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**GEOLOGICAL and GEOCHEMICAL  
ASSESSMENT REPORT ON  
THE JOH PROPERTY  
N.T.S.: MAPSHEET 94D/9**

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Operator: Hemlo Gold Mines Inc.  
Date: September, 1994

**G E O L O G I C A L   B R A N C H  
A S S E S S M E N T   R E P O R T**

**23,543**

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## **1.0 INTRODUCTION**

During the period between June 14 and June 27, 1994, Noranda Exploration Company, Limited conducted soil and rock geochemistry as well as mapping on the Castra Group of claims of the Joh Property.

This report describes the work conducted by Noranda during the early portion of the 1994 field season and incorporates historic data (gained through Government assessment reports) in an effort to define possible Cu-Au occurrences.

### **1.1 Location and Access**

The Joh project area is located approximately 200 km north-northeast of Smithers, B.C. on N.T.S. Mapsheet 94D/9 in the Omineca Mining Division.

Camp mobilization was based at the eastern end of Johanson Lake and the property was accessed via helicopter (see Drawing #1).

### **1.2 Topography and Physiography**

The Joh project area is situated within the Osilinka Ranges and is located directly east of Goldway and Doretelle Peaks. The claim groupings stretch from Johanson Lake in the north to the upper portions of Darb Creek in the south. Most of the area is above treeline with elevations ranging from 1460 to 2380 meters. The project area is drained by Darb Creek in the north, Johanson Creek to the west and the headwaters of Lay Creek to the east.

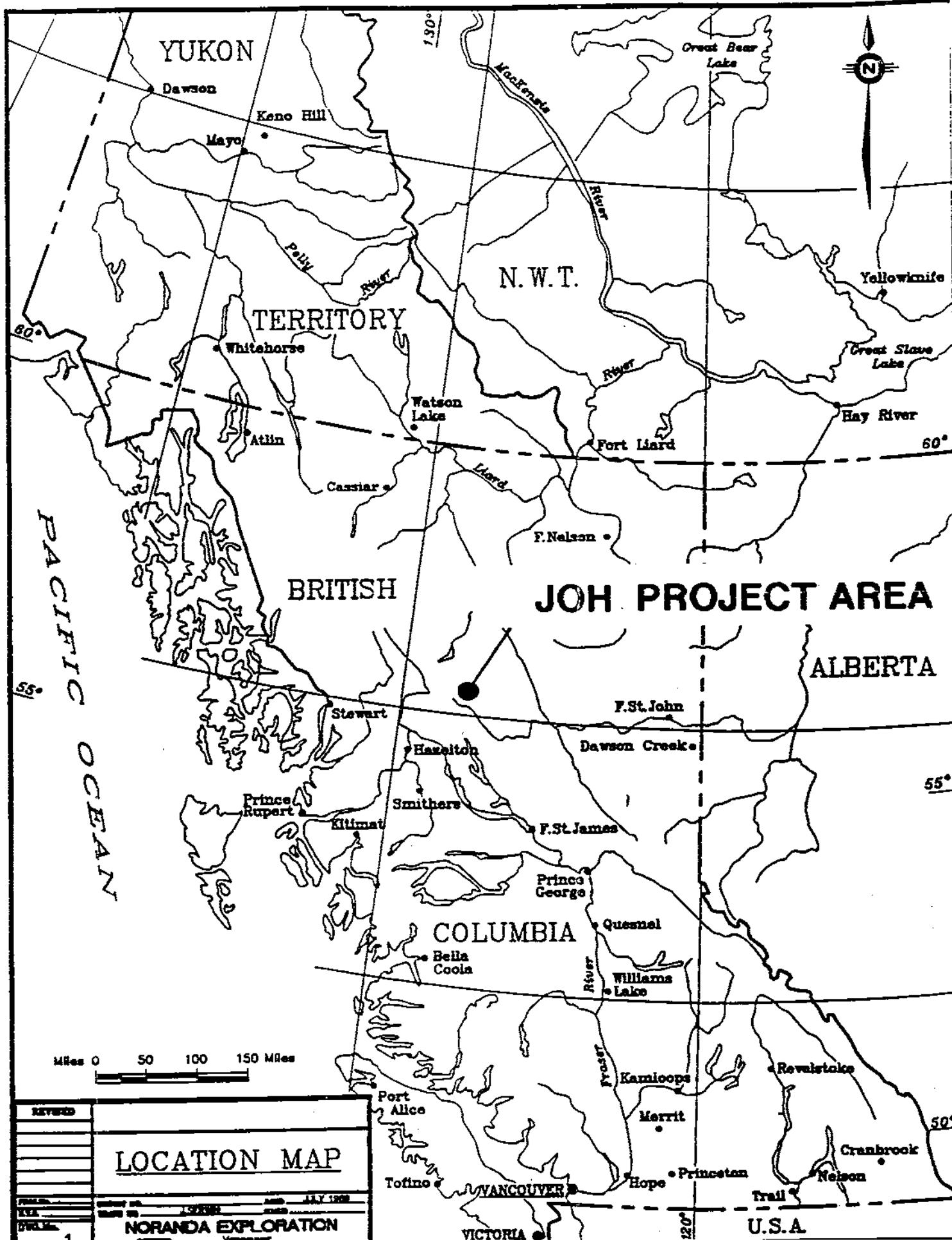
Slopes of +45° occur along the dominantly north-northwest trending ridges although the central portion of the area consists of the Darb Lake valley floor..

### **1.3 History**

Below is a brief outline of documented work performed in the project area in chronological order.

1949: Preliminary work on auriferous quartz veins conducted by Goldway Peak Mines Ltd. in the Goldway Peak area.

1970-1972: The Kliyul property was staked and geochemically and geophysically surveyed by Kennco Explorations. These surveys delineated a 2.5 km x 1.0 km I.P. chargeability anomaly and coincident (yet smaller) copper soil geochemical and magnetic anomalies.



- 1971-1972: Geological, geochemical and geophysical (magnetics) surveys were conducted by El Paso Mining and Milling Co. who discovered skarn zones along the sheared contact between ultramafics and volcanics on lower Kliyul Creek.
- 1973: Kliyul property optioned to Sumac Mines Ltd. who drilled 3 x-ray holes (no results available).
- 1973: San Jacinto Explorations Ltd. performed soil surveying near the gold/quartz veins on Goldway Peak.
- 1974: Sumac Mines drilled 6 'BQ' holes on the Kliyul property to test the West and East Zone copper soil anomalies and 5 'BQ' holes into the magnetic high. The latter drill holes intersected magnetite-copper-gold mineralization within a well fractured, sericite, chlorite, epidote, carbonate, quartz, pyrite skarn hosted by calcareous andesite tuffs and agglomerates and lesser dioritic units. A reserve of 2.5 million tons of 0.3% Cu and 0.03 opt Au was returned from this skarn zone.
- 1974-1975: BP Minerals Ltd. completed geological, geochemical and geophysical (mag/JEM) over the Bap mineral claims which overly intensely sheared, clay-sericite altered feldspar porphyry volcanics/intrusives and auriferous quartz veins.
- 1976: Maxmin (EM) surveying completed over the Bap claims by BP Minerals Ltd.
- 1981: Geological and geochemical surveying was completed by Dupont of Canada on the AS 1 claim near Goldway Creek.
- 1981: Kennco and Vital Pacific drilled 4 NQ holes (1978 feet) into the central skarn zone on the Kliyul property; all in a southerly direction.
- 1982: A trace element study was performed by BP Minerals on previously collected samples from the Bap claims.
- 1982: Further geochemistry was completed in the Goldway Peak area by Dermot Fahey and by Laramie Mining Corporation.
- 1983: A preparatory study to determine road access to Goldway Peak was undertaken by Laramie Mining Corporation.
- 1984: BP Minerals relogged and sampled portions of available core and conducted geological mapping and geochemical sampling on the Kliyul property.

- 1984: Laramie Mining Corporation conducted mapping, geophysics (VLF) and sampling/assaying of their Goldway Peak Property.
- 1984: Mapping and geochemistry was completed in the lower Kliyul Creek area by BP Resources Canada, Ltd.
- 1984: After obtaining the KC 1 & 2 mineral claims and conducting preliminary sampling and prospecting, Golden Rule Resources Ltd. completed further geological, geochemical and geophysical (magnetics) surveys.
- 1985: Geological and geochemical surveying in the Goldway Peak area by BP Resources, Canada, Ltd. delineated auriferous quartz veins and fractures within quartz-carbonate-pyrite altered zones.
- 1985: Further geological, geochemical and geophysical work (magnetics, VLF) was performed by Golden Rule Resources Ltd. on the KC 1 & 2 claims.
- 1985-1986: Prospecting, mapping, trenching and sampling of the auriferous quartz veins in the Goldway Peak area continued with Laramie as the operator.
- 1986: Soil surveying was performed by Lemming Mining Resources for BP Resources on the Bap claims.
- Ritz Resources Ltd. for Goldnev Rule Resources Ltd. performed further geological, geochemical and geophysical (magnetics, VLF) work on the KC 1 & 2 claims.
- 1990: Placer Dome conducted linecutting, magnetometer and VLF-EM surveying, soil and rock sampling and prospecting on the Kliyul property in order to delineate magnetic anomalies similar to the known skarn zone, possible porphyry style mineralization and/or mineralized structures parallel to the large glacial valley.
- 1992: Noranda Exploration Company, Ltd. conducted 1:5,000 geological mapping on the Kliyul property, concentrating on alteration assemblages as well as rock and minor sampling.
- 1993: Noranda completed a 6 hole, 560 meter reverse circulation drill programme on the Kliyul main skarn zone. Results were encouraging enough to pursue options on surrounding properties which host similar stratigraphy, intrusives and mineralization.

#### **1.4    Claims**

The claims which comprise the Joh property are listed below with corresponding owner, expiry dates, and tenure numbers.

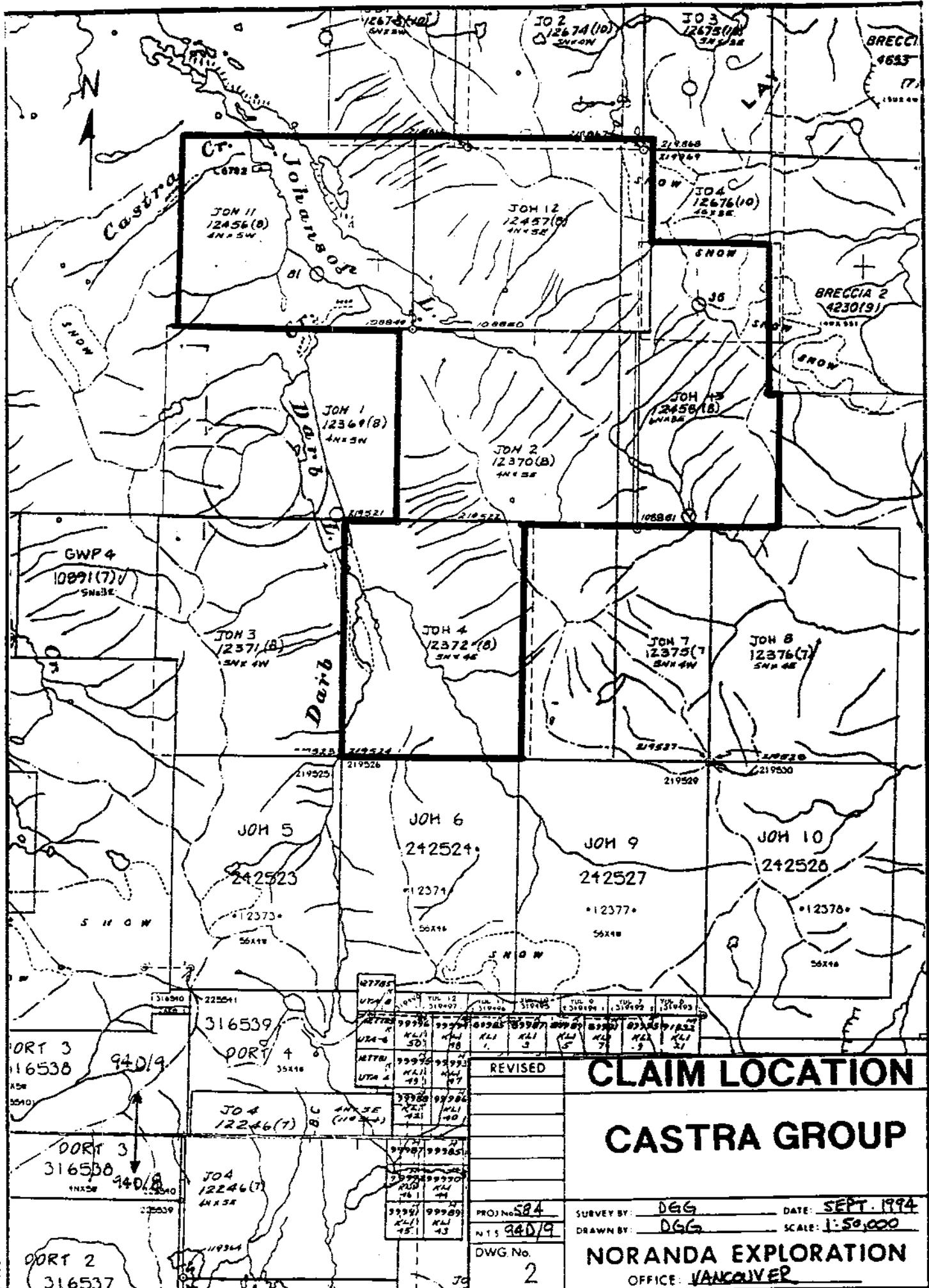
<b>CLAIM</b>	<b>TENURE NO.</b>	<b>UNITS</b>	<b>EXPIRY DATE</b>	<b>OWNER</b>
JOH 1	242519	20	August 1, 1997	Hemlo Gold Mines
JOH 2	242520	20	August 1, 1997	Inc.
JOH 3	242521	20	August 1, 1996	" "
JOH 4	242522	20	August 1, 1997	" "
JOH 5	242523	20	August 1, 1996	" "
JOH 6	242524	20	August 1, 1996	" "
JOH 7	242525	20	July 31, 1997	" "
JOH 8	242526	20	July 31, 1996	" "
JOH 9	242527	20	July 31, 1997	" "
JOH 10	242528	20	July 31, 1998	" "
*JOH 11	242606	20	August 21, 1996	" "
*JOH 12	242607	20	August 21, 1996	" "
*JOH 13	242608	18	August 21, 1996	" "

Only those claims with an asterisk are being filed for assessment. Please refer to the Statement of Exploration at the beginning of this report for further clarification of assessment and work performed.

#### **1.5    Economic Potential**

The Joh project area is considered to be ideal for hosting high-grade Cu-Fe-Au skarn deposits and/or bulk-tonnage Au-Cu deposits for the following reasons.

1. Favourable stratigraphy (Takla Volcanics) and related intrusive complexes (monzonites - diorites) which form the northern part of the Hogem Batholith, a large hydrothermal cell associated with known porphyry Cu deposits (Mt. Milligan) are known to exist on the property.
2. Known Cu-Fe-Au skarn occurrences exist on the property within calcareous stratigraphic horizons which remain under-explored.
3. The positioning between the Cu rich porphyry systems to the south and Au-Cu rich porphyry and epithermal deposits to the north (Kemess/Cheni) may suggest a more Au rich zonation northward from the Hogem Batholith.



### **1.6      Survey Control**

The surveying of the flagged and blazed grid lines was conducted with the aid of a compass and metric hipchain and were tied into topographic features such as lakes and drainages. All lines were slope corrected. A total of 12.5 line kilometers of grid was established.

### **1.7      Sampling**

Soil sampling was conducted along metrically chained lines with samples taken every 50 meters to the depth of 20-40 cm with the aid of a shovel or mattock. Soils were collected in brown kraft envelopes for drying, storage, and shipping purposes and sent to Noranda Exploration Laboratory at Unit #1, 7550 - 76th Street, Delta, B.C. Rock samples were collected as grabs whenever representative, altered and/or mineralized formations were encountered.

Please refer to Appendix I for the laboratory analytical techniques and Appendix II & III for sample assay values and descriptions where applicable.

A total of 194 soils and 46 rocks and their accompanying analytical charges are being applied for assessment.

## 2.0 GEOLOGY

### 2.1 Regional Geology (See Drawing #3)

The Joh property is situated within the Intermontane Belt which is comprised of Upper Triassic to Lower Jurassic island arc volcanics, volcaniclastics and sediments of the Takla Group which hosts such Cu-Au porphyry deposits as Mt. Milligan and Kemess. The dominantly volcanic package has been intruded by Jura-Cretaceous aged diorites, monzonites and syenites associated with the Hogem Batholith.

Prominent structural features in the area include NW, E-W, N-S and NNE-SSW trending fault systems.

### 2.2 Detailed Geology

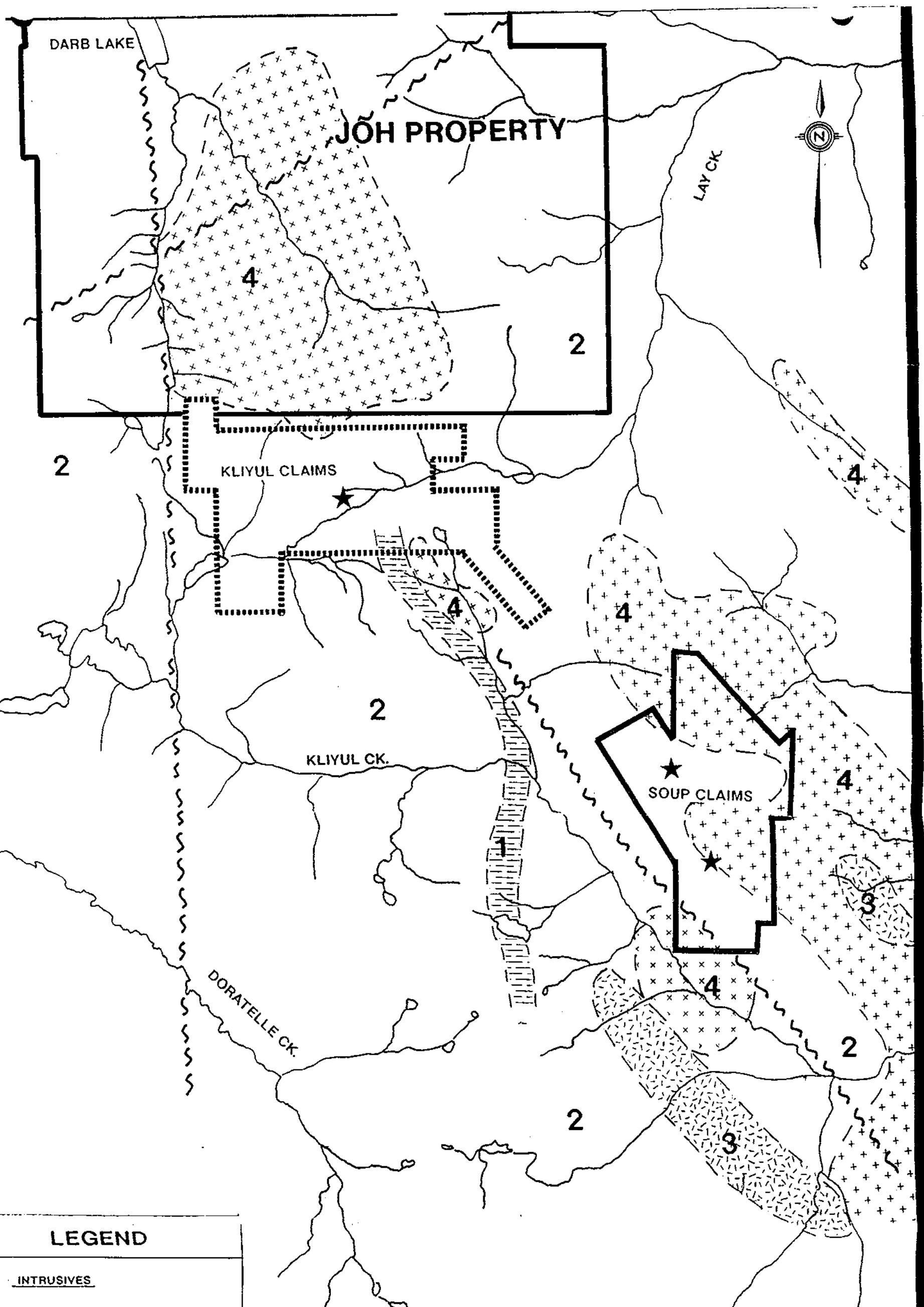
Mapping of the Joh grid was conducted in an effort to delineate the source of anomalous copper and gold values in soils taken in the same area by Reliance Geological in 1992.

In the area investigated the rocks are well exposed in cliffs west of and along the NNW trending ridge crest. Smaller areas of outcrop also occur in the steep talus slopes below the ridge while no exposures were observed in the valley of Darb Lake to the west.

Forming rugged, inaccessible cliffs at the top of the ridge are augite porphyritic, feldspar phric flows and flow breccias (Unit 2). Dark green, euhedral to subhedral augite phenocrysts range in size to 5 mm and comprise from 5% to 30% of the rock. The medium grey-green colored matrix consists of <1 mm euhedral feldspar crystals in a finer grained, dark green groundmass.

Stratigraphically below the augite porphyritic andesite is a sequence of interlayered andesite volcaniclastics and minor augite porphyritic, feldspar phric flows all included within Unit 2. The volcaniclastics comprise 70% of this sequence and consist of crystal tuffs characterized by broken, <1 mm white feldspar crystals and fragmental tuffs containing up to 1 cm, subangular clasts of feldspar crystal tuff in a feldspar crystal matrix. These flows and tuffs are variably magnetic and locally contain up to 3% fracture filled pyrite.

North of Line 72800N the tuffaceous andesites contain layers of very fine grained volcaniclastics possibly ash tuffs and sediments (Unit 1). These commonly contain 7% fine grained, disseminated pyrite and as a result have a distinctive rusty, red gossanous weathering surface.



To the north of Line 72600N another prominent gossan zone trending 320° and occurring within the tuffaceous andesites of Unit 2 is attributed to similar trending fractures as seen within the pyritized ash tuffs/sediments of Unit 1. This zone varies from 6 m to 20 m in width. Within and immediately adjacent to the fractures and shears (steep dips to the west) the country rock is silicified with propylitic or argillically altered sheared margins. Pyrite content ranges from 10-15% and is very fine grained and disseminated. Distal to the fracture sets the tuffs are weakly chloritic and contain 3-5% pyrite occurring as disseminations and fracture fillings. Mapping indicates that at least two subparallel fracture systems may be present in the area north of Line 72600N and are separated by approximately 100 meters.

The diorite, Unit 3, occurs throughout the mapped area with the exception of the extreme north end of the grid. In the southeast portion of the grid the diorite is exposed along the ridge crest and extends southwestward without interruption to the underlying granodiorites (Unit 4). In the central and northwest areas of the grid the dioritic body appears contained within the andesites of Unit 2 suggesting a sill-like body.

In general the diorite is grey-green in color, fine grained, equigranular and variably weakly magnetic. Minerals identified in hand samples are feldspars and hornblende. Locally feldspar and/or hornblende phenocrysts, are present creating a porphyritic texture. (A 'gabbroidal' texture is also evidenced along the contacts between the diorite and the andesite). The mafic minerals of the diorite have been weakly chloritized and epidote and/or carbonate may occur along fracture planes. More rarely the felsic minerals exhibit pervasive epidote alteration turning the entire rock a pistachio green color. Within the diorite unit are localized areas of more mafic-rich (melanocratic) and more felsic-rich (leucocratic) phases suggesting a magmatic segregation or more than one intrusive event. Quartz-feldspar porphyry dykes are also seen (not mapped) cutting the diorite unit.

Observed along the western ends of the grid lines are exposures of granodiorite (Unit 4) which weather a distinctive light grey-white color and exhibit a massive rounded weathered surface. This intrusive is medium grained and equigranular. Minerals identified are quartz, plagioclase and potassium feldspars, hornblende and biotite. Locally the contact between the granodiorite and diorite appears to be a zone of hybridization containing quartz monzonite with xenoliths of melanocratic diorite to hornblende porphyritic granodiorite. These areas are also cut by pink, aplitic and grey quartz-feldspar porphyry dykes, the latter of which contains rare quartz-eyes and 7-10% white feldspar phenocrysts in a fine grained, grey coloured granodioritic matrix.

Rock sampling on the Joh grid was mainly focused on the rusty weathering, gossanous structural zones in the northern portions of the grid where higher gold in soil values had been previously reported. No anomalous gold or copper values were returned from the grab and chip samples taken in this zone.

Copper mineralization observed on the grid was restricted to malachite stained fracture surfaces and in quartz veins which cut both the andesite and dioritic units.

No obvious alteration zonation was observed in the gridded area that may have indicated the presence of large scale mineralization associated with a porphyry and/or related skarn system.

### **3.0      SOIL GEOCHEMISTRY (See Drawings #6 and #7)**

The soil geochemical survey completed on the Joh grid reveals a northwest trend, semi-coincident copper-gold anomaly which extends from Line 72800N through 71200N and ranges from 100 to 350 meters in width. The copper plan map has been contoured at 500 and 1000 ppm and the gold values have been contoured at 50 and 100 ppb contour intervals. These anomalies confirm those found by Reliance Geological during their programme in 1992. It is apparent that both the copper and gold values in soils overlie both the main northwest trending dioritic body and the gossanous fracture sets evident in the north end of the grid.

#### **4.0 CONCLUSIONS**

Although a large 1.6 km x 100-350 m coincident copper-gold soil anomaly has been detected overlying an area of dioritic intrusions and related structural deformation, rock sampling and geological mapping have not confirmed the existence of continuous surface mineralization or alteration expected with a large scale porphyry or skarn related system. Best rock sample values are from small discontinuous vein and fracture related mineralization and the soil geochemistry may only be a function of mechanical enrichment and downslope dispersion from these structurally controlled, mineralized systems. No further work is recommended on the grid area described in this report.

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**APPENDIX I**

**LABORATORY ANALYTICAL TECHNIQUES**

## ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver.

### Preparation of Samples:

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for geochemical analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples \* from constant volume), are analysed in its entirety, when it is to be determined for gold without further sample preparation.

### Analysis of Samples:

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.4 g and chemical quantities are doubled relative to the above noted method for digestion.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn can be determined directly from the digest (dissolution) with a conventional atomic absorption spectrometric procedure. A Varian-Techtron, Model AA-5 or Model AA-475 is used to measure elemental concentrations.

### Elements Requiring Specific Decomposition Method:

Antimony - Sb: 0.2 g sample is attacked with 3.3 ml of 6% tartaric acid, 1.5 ml conc. hydrochloric acid and 0.5 ml of conc. nitric acid, then heated in a water bath for 3 hours at 95°C. Sb is determined directly from the dissolution with an AA-475 equipped with electrodeless discharge lamp (EDL).

Arsenic - As: 0.2 - 0.3 g sample is digested with 1.5 ml of perchloric 70% and 0.5 ml of conc. nitric acid. A Varian AA-475 equipped with an As-EDL is used to measure arsenic content in the digest.

Barium - Ba: 0.1 g sample digested overnight with conc. perchloric, nitric and hydrofluoric acid; Potassium chloride added to prevent ionization. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

Bismuth - Bi: 0.2 - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest with an AA-475 complete with EDL.

**Gold - Au:** 10.0 g sample is digested with aqua regia (1 part nitric and 3 parts hydrochloric acid). Gold is extracted with MIBK from the aqueous solution. AA is used to determine Au.

**Magnesium - Mg:** 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the range of atomic absorption. The AA-475 with the use of a nitrous oxide flame determines Mg from the aqueous solution.

**Tungsten - W:** 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

**Uranium - U:** An aliquot from a perchloric-nitric decomposition, usually from the multi-element digestion, is buffered. The aqueous solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

**N.B.:** If additional elemental determinations are required on panned samples, state this at the time of sample submission. Requests after gold determinations would be futile.

**LOWEST VALUES REPORTED IN PPM:**

Ag - 0.2	Mn - 20	Zn - 1	Au - 0.01
Cd - 0.2	Mo - 1	Sb - 1	W - 2
Co - 1	Ni - 1	As - 1	U - 0.1
Cu - 1	Pb - 1	Ba - 10	
Fe - 100	V - 10	Bi - 1	

**APPENDIX II**

**ROCK GEOCHEMICAL DESCRIPTIONS/ASSAYS**



T.T. No.	SAMPLE No.	Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Li ppm	Mg %	Ma ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sr %	Ti ppm	V ppm	Zn ppm	8407-008 Pg. 2 of 2
115	RL-11	5	0.4	1.42	10	32	0.2	5	2.23	0.6	61	19	53	275	4.57	0.12	15	6	0.60	431	2	0.13	16	0.09	2	56	0.30	144	23	
116	13	5	0.2	2.21	8	23	0.2	6	2.78	0.3	65	13	50	102	3.35	0.09	14	5	0.51	425	3	0.11	19	0.09	2	105	0.23	91	24	
117	14	5	0.2	3.29	11	44	0.2	5	3.74	0.5	69	19	38	149	4.43	0.17	14	6	0.86	600	2	0.15	12	0.10	2	125	0.32	144	27	
118	15	5	0.2	2.64	13	63	0.2	6	3.02	0.5	69	24	81	198	3.59	0.20	18	6	0.53	421	5	0.13	29	0.08	3	90	0.24	126	30	
119	RL-16	20	0.2	3.26	9	32	0.2	5	4.28	0.3	75	7	57	87	4.92	0.07	16	4	0.38	776	5	0.11	13	0.10	2	145	0.26	108	31	
120	RL-17	5	0.2	3.33	10	42	0.2	5	3.99	0.3	74	10	32	130	4.16	0.18	14	6	0.42	570	4	0.08	7	0.13	2	146	0.27	101	25	
121	18	5	0.2	3.32	2	35	0.4	6	4.54	0.5	83	11	42	68	3.79	0.10	19	6	0.19	620	5	0.08	13	0.12	2	259	0.22	101	22	
122	19	5	0.2	2.54	5	33	0.3	5	3.30	0.4	74	13	49	144	4.00	0.08	16	5	0.25	643	3	0.11	23	0.11	2	132	0.24	90	29	
123	20	5	0.2	2.34	7	11	0.3	5	3.26	0.2	75	8	63	129	4.25	0.04	24	4	0.12	650	4	0.07	12	0.11	3	114	0.21	66	32	
124	RL-21	5	0.2	2.00	3	12	0.2	5	3.29	0.2	70	13	71	218	4.04	0.03	17	4	0.14	522	5	0.09	24	0.10	2	90	0.25	73	35	
125	RL-22	5	0.2	3.14	2	17	0.3	5	6.92	0.4	85	11	86	118	2.63	0.04	15	5	0.07	674	5	0.05	30	0.11	2	45	0.22	60	52	
126	23	5	0.2	2.41	2	42	0.2	5	3.18	0.2	66	7	43	113	4.14	0.07	16	3	0.16	482	3	0.08	12	0.09	2	118	0.23	86	25	
127	RL-24	5	0.2	4.70	3	806	0.2	5	2.03	0.2	58	25	26	351	7.41	0.97	14	14	1.46	378	9	0.12	12	0.08	2	123	0.38	352	28	

46-584  
PROJECT # \_\_\_\_\_

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 94D/9  
DATE June 29/94

PROJECT JOH

## ROCK SAMPLE REPORT

**NORANDA EXPLORATION COMPANY, LIMITED**

PROJECT # 45-581

N.T.S. 940/9

**LAB REPORT #** \_\_\_\_\_

DATE June 29/96

PROJECT JOH

## **ROCK SAMPLE REPORT**

## NORANDA EXPLORATION COMPANY, LIMITED

PROJECT # 584

N.T.S. 940/9

**LAB REPORT #** \_\_\_\_\_

DATE June 25/74

PROJECT 5th

## **ROCK SAMPLE REPORT**

SAMPLE NO.	LOCATION & DESCRIPTION	ROCK MASS CLASSIFICATION			SAMPLING BY
		% SULPH.	TYPE	WIDTH (m)	
KP0020	Uggy leucocratic diorite weak propy (alter), Kf. n (chlor. epid.) Line 7260SW/st 7490SW	Tr Py/Mt	Grab		K, P
KP0028	Line 7260SW/st 7490SW Felsic, purple-grey phyllite dk grey, mgt, limonite along fractures		Grabs		K, P
KP0030	Line 7260SW/7477SE (~80m). xtr. ruff. Oregon F.g. weak propylitic silic if alter & weakly Calcareous, epidote Py as clss / stringers and as surface weathering	≤ 5% Py	Grabs Tr Crys?		K, P

## NORANDA EXPLORATION COMPANY, LIMITED

PROJECT # 584N.T.S. 740/9

LAB REPORT # \_\_\_\_\_

DATE Scne 23/94PROJECT J04

## ROCK SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	% SULPH.	TYPE	WIDTH (m)	SAMPLED BY
KP0033	Line 724000N/74845E (25m N) 0K grn aug. feld phryic, py mod-well propylitic alter in stony chlor. Py and clss	≤ 1% Pj	Chip	1.5m	K,P
KP0034	Line 724000N/74830E (25m N) Aug. feld phryic, py mod propylitic, weak Siliceous alter in mod chlor. weak epid.	4-6% Pj	Chip	1.5m	K,P
KP0035	Line 724000N/74820E (25m N) Aug/ feld phryic, py mod propylitic, weak silica, mod chlor epid	5-6% Pj	Chip	1.5m	K,P.



**NORANDA EXPLORATION COMPANY, LIMITED**

PROJECT # 584

N.T.S. 94 D/9

**LAB REPORT #** \_\_\_\_\_

**DATE** \_\_\_\_\_

PROJECT JOH

## **ROCK SAMPLE REPORT**

ROCK SAMPLE REPORT								SAMPLED BY	
SAMPLE NO.	LOCATION & DESCRIPTION	% SULPH.	TYPE	WIDTH (m)	Magnetite	Malach.	Chal.	Pyrite	Pyrrhotite
LE0002	Fs xtl. tuff, dis Py	8% Py	Grab						LE
LE0013	Qz - carb Shear zone dis/ff Py	<1% Py	Grab						LE
LF0005	Aug-Fs phryic andesite dis/ff Py	1% Py	Grab		2%				LE
LE0006	Aug-Fs phryic andesite, bleached, fracture zone, rusty weather. 3/c.	5% Py	Grab						LE
LF0018	Mc ff in Diorite, dis Py	Tr Py	Grab			4%			LE
LE0024	Aug-Fs phryic andesite, Mg, propylitic, argillic, silica altn	3% Py	Chip	1.5m	3%				Cr/G
LE0030	Strongly propylitized Sheared contact zone with sericite	2% Py	Chip	0.75m					Cr/G
LE0031	xtl tuff/di? propylitized, argillic altn with pyrite	6% Py	Chip	1.5m					Cr/G
LE0032	xtl tuff, argillic altn, sericite on margins, sheared zone	5% Py	Chip	1m					LE
LE0033	xtl tuff, Silicified, local argillic altn	10% Py	Chip	2m					LE
LE0034	xtl tuff, weak propylitic, hanging wall of LE0033	3% Py	Chip	2m					LE

NORANDA EXPLORATION COMPANY, LIMITED

PROJECT # 45-584

LAB REPORT # \_\_\_\_\_

PROJECT JOH

N.T.S. 94D/9

DATE June 28/94

## ROCK SAMPLE REPORT

ROCK SAMPLE REPORT							SAMPLED BY
SAMPLE NO.	LOCATION & DESCRIPTION	% SULPH.	TYPE	WIDTH (m)			
LE0050	dk grey Di, rusty W.S., mod magnet.	3 Py	chip	2m			DC
LE0051	med grey Andesite tuff, wk magnet.	3 Py	chip	2m			DC
LE0052	leucocratic Di, Py ranges 7% - 15%	10 Py	chip	2m			DC
LE0054	Andesitic xltff, wk silic, carb/chlor Inff, argillitic attn in center of frags spine forming	2 Py	chip	1m			DC
LE0055	Andesitic xltff, wk ep	Tr Py	chip	2m			DC
LE0056	Andesitic xltff, wk silic, wk ep	4 Py	chip	2m			LE
LE0057	Andesitic xltff, wk chlor/ep, mafic to chlor	1 Py	chip	2m			DC
LE0058	Andesitic xltff, wk chlor/ep	1 Py	chip	2m			



## NORANDA EXPLORATION COMPANY, LIMITED

PROJECT # 584

**LAB REPORT #** \_\_\_\_\_

PROJECT ZOH

N.T.S. 94 D/9

DATE July 16/94

## **ROCK SAMPLE REPORT**

SAMPLE NO.	LOCATION & DESCRIPTION	% SULPH.	TYPE	WIDTH (m)					SAMPLED BY
PM10102	Diorite with tr. cpy. and malachite on fracture faces	tr	Cpy	GRAB					P.G.M.
PM10103	Diorite, sheared and rusty in carb VMS following f.d. Sheared with med-sh. propy. alt. on either side	1	Rgy	GRAB					P.G.M.
PM10104	Diorite, At 2 W/ within the dior. with malachite stain and tr. cpy/cpy. Gp concern in pinched black stringers	tr	Rgy, Cpy	GRAB					P.G.M.
PM10105	Diorite, sample of malachite stained fracture set within unit. Moderate Propy. alt.	1%	Rgy, Cpy	GRAB					P.G.M.
PM10106	Diorite, Med-Sh. propy alt. w/ py concern in FF.	2	Rgy/cpy	GRAB					P.G.M.

PROJECT # 584

**LAB REPORT #** \_\_\_\_\_

## NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 94 D/9

DATE July 16/94

PROJECT Joh

## **ROCK SAMPLE REPORT**

SAMPLE NO.	LOCATION & DESCRIPTION	% SULPH.	TYPE	WIDTH (m)						SAMPLED BY
PM0107	Sheared Andesite fels. Py disseminated and concentrated in Veinslets	10	Pg	GIRAB						P.G.M.
PM0108	Sheared Andesite with Py commonly in VNS. Weakly pyrophytically altered	2	Pg	GIRAB						P.G.M.
PM0109	Sheared Andesite with layered Py and strong mineralization, moderately pyrophytically altered	15	Pg	GIRAB						P.G.M.



PROJECT # 507

## NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 94D/9  
DATE July 17/94

PROJECT JOH

## **ROCK SAMPLE REPORT**

PROJECT # 584

## NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 10079

## **LAB REPORT #**

PROJECT Jeff

DATE July 17 / 94

## **ROCK SAMPLE REPORT**

**APPENDIX III**  
**SOIL GEOCHEMICAL ASSAYS**











**APPENDIX IV**  
**STATEMENT OF COSTS**

**NORANDA EXPLORATION COMPANY, LIMITED**  
**STATEMENT OF COSTS**

PROJECT: JOH

DATE: OCTOBER 1994

TYPE OF REPORT: GEOLOGICAL/GEOCHEMICAL

- a) Wages:
- No. of Mandays : 40 mandays  
Rate per Manday: \$169.05/manday  
Dates From : June 14 to June 27, 1994  
Total Wages : 40 mandays x \$169.05/manday \$6,762.00
- b) Food & Accommodations:
- No. of Mandays : 40 mandays  
Rate per Manday: \$35.65/manday  
Dates From : June 14 to June 27, 1994  
Total Costs : 40 mandays x \$35.65/manday \$1,426.00
- c) Transportation:
- No. of Mandays : 40 mandays  
Rate per Manday: \$26.10/manday  
Dates From : June 14 to June 27, 1994  
Total Costs : 40 mandays x \$26.10/manday \$1,044.00
- d) Instrument Rental:
- Type of Instrument:  
No. of Mandays :  
Rate per Manday:  
Dates From :  
Total Costs :
- e) Type of Instrument:
- No. of Mandays :  
Rate per Manday:  
Dates From :  
Total Costs :
- f) Camp Supplies \$509.00

e)	Analysis: (See attached schedule)	\$3,367.20
f)	Cost of Preparation of Report:	
	Author :	\$520.00
	Drafting:	\$220.00
	Typing :	\$200.00
g)	Other:	
	Contractor: Pacific Western Helicopters 6.25 hours @ \$702.00/hour (including fuel)	\$4,399.00
		<b>TOTAL COST</b>
		<b>\$18,447.20</b>
h)	Unit Costs for Geology	
	No. of Mandays : 19 mandays	
	No. of Units : 19 mandays	
	Unit Costs : \$377.00/manday	
	Total Cost : 19 mandays x \$377.00/manday	\$7,163.00
i)	Unit Costs for Geochem	
	No. of Mandays : 8 mandays	
	No. of Units : 240 samples	
	Unit Costs : \$26.60/sample	
	Total Cost : 240 samples x \$26.60/sample	\$6,383.20
j)	Unit Costs for Linecutting	
	No. of Mandays: 13 mandays	
	No. of Units : 12.5 line km	
	Unit Costs : \$394.48/km	
	Total Costs : 12.5 line km x \$394.48/km	\$4,931.00

**GRAND TOTAL**

**18,477.20**

**NORANDA EXPLORATION COMPANY, LIMITED**

**DETAILS OF ANALYSIS COSTS**

**PROJECT: JOH**

<b>ELEMENT</b>	<b>NO. OF DETERMINATIONS</b>	<b>COST PER DETERMINATION</b>	<b>TOTAL COSTS</b>
ICP (30 Element) + Geochem Au	46 Rocks	\$15.00	\$690.00
ICP (30 Element) + Geochem Au	194 Soils	\$13.80	<u>\$2,677.20</u>
		<b>GRAND TOTAL</b>	<b>\$3,367.20</b>

**APPENDIX V**  
**STATEMENT OF QUALIFICATIONS**

## STATEMENT OF QUALIFICATIONS

I, D. Graham Gill of the City of Vancouver, Province of British Columbia, hereby certify that:

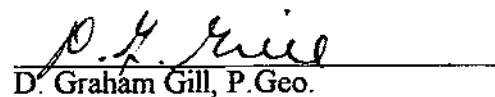
I am a geologist residing at 5442 - 7th Avenue, Delta, B.C.

I have graduated from the University of British Columbia in 1983 with a BSc in geology.

I have worked in mineral exploration since 1979.

I have been a temporary employee with Noranda Exploration Company, Limited since May, 1983 and a permanent employee since November 1987.

I am a member in good standing of the Professional Engineers & Geoscientist of British Columbia.

  
D. Graham Gill, P.Geo.

