

**RECEIVED**  
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Gold Commissioner's Office  
VANCOUVER, B.C.

MAPPING  
on the

BORNITE 2 CLAIM  
Omineca Mining Division

N.T.S. 93-K-13E

Lat.: 54°55'N Long.: 125°32'W

by

U. Mowat, P. Geo.

GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT BRANCH  
VANCOUVER

27405

April 21, 2004

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## Maps

Sample Location Map 1:10000	in pocket
Bornite 2: Cu ppm 1:5000	in pocket

## 1.0 Introduction

On July 22, 2003 three men spent 1 day on the Bornite 2 claim in an attempt to locate the postulated dislocated portion of the mineralization found in Vass's Pit. Twelve hectares were examined with disappointing results. No outcrop, other than that exposed along the gorge walls, and no float were located. Consequently no samples were collected.

## 2.0 Location and Access

The Bornite claims are located 100 km northwest of Fort St. James on map sheet 93-K-13E. The property is located at co-ordinates 54° 55'N and 125° 32'W.

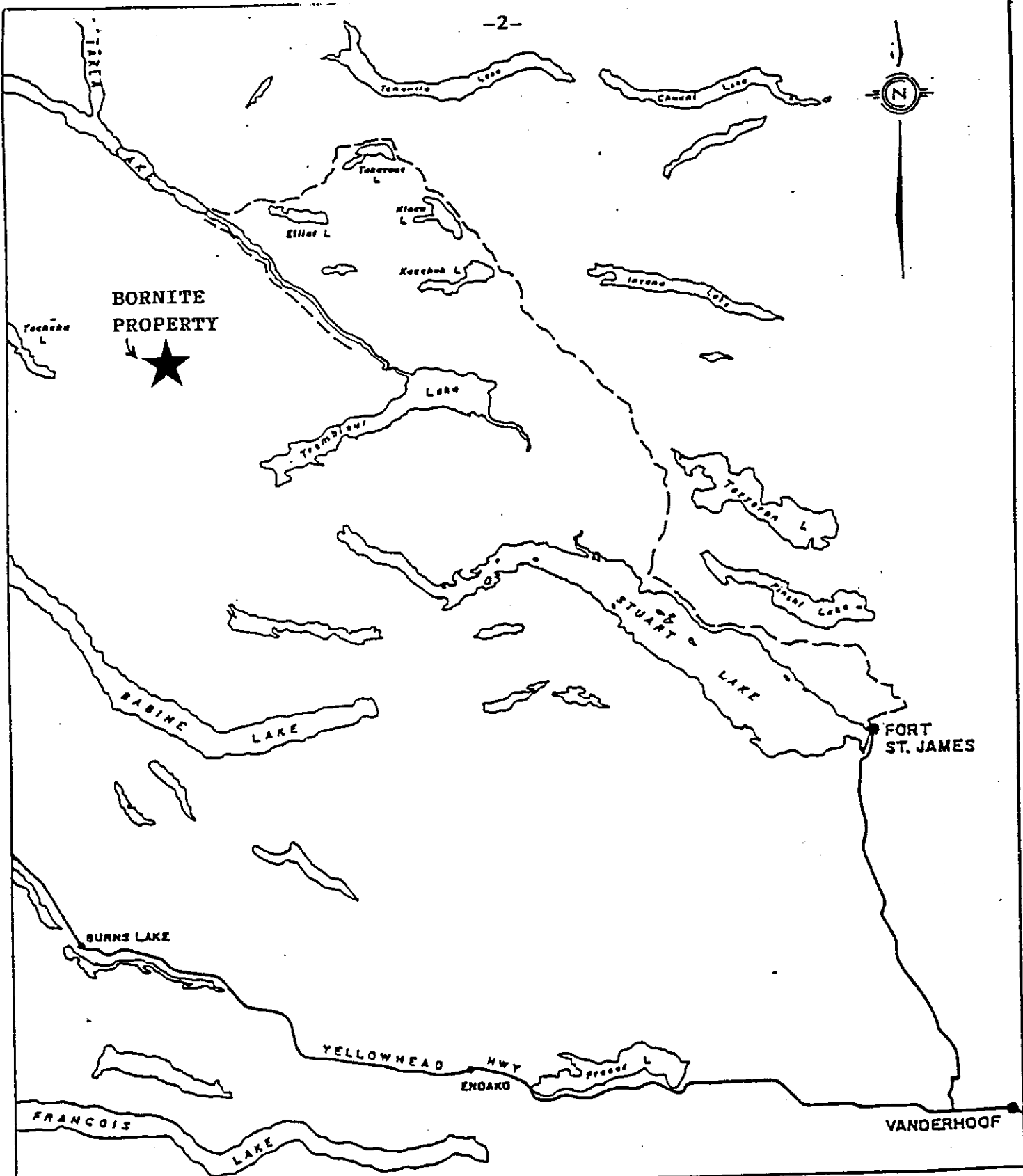
Access to the property is by helicopter from either Fort St. James or Smithers and by logging roads from Burns Lake.

## 3.0 Claim Data

The Bornite property consists of the following claims:

<u>Claim Name</u>	<u>Record Number</u>	<u>No. of Units</u>
Bornite 1	334030	20
Bornite 2	334031	20

The property consists of two four-post claims totalling 40 units and is located in the Omineca Mining Division.



BORNITE  
PROPERTY



**LEGEND**  
- - - LOGGING ROAD  
—— PAVED HIGHWAY



PROJECT LOCATION MAP  
FIGURE 1

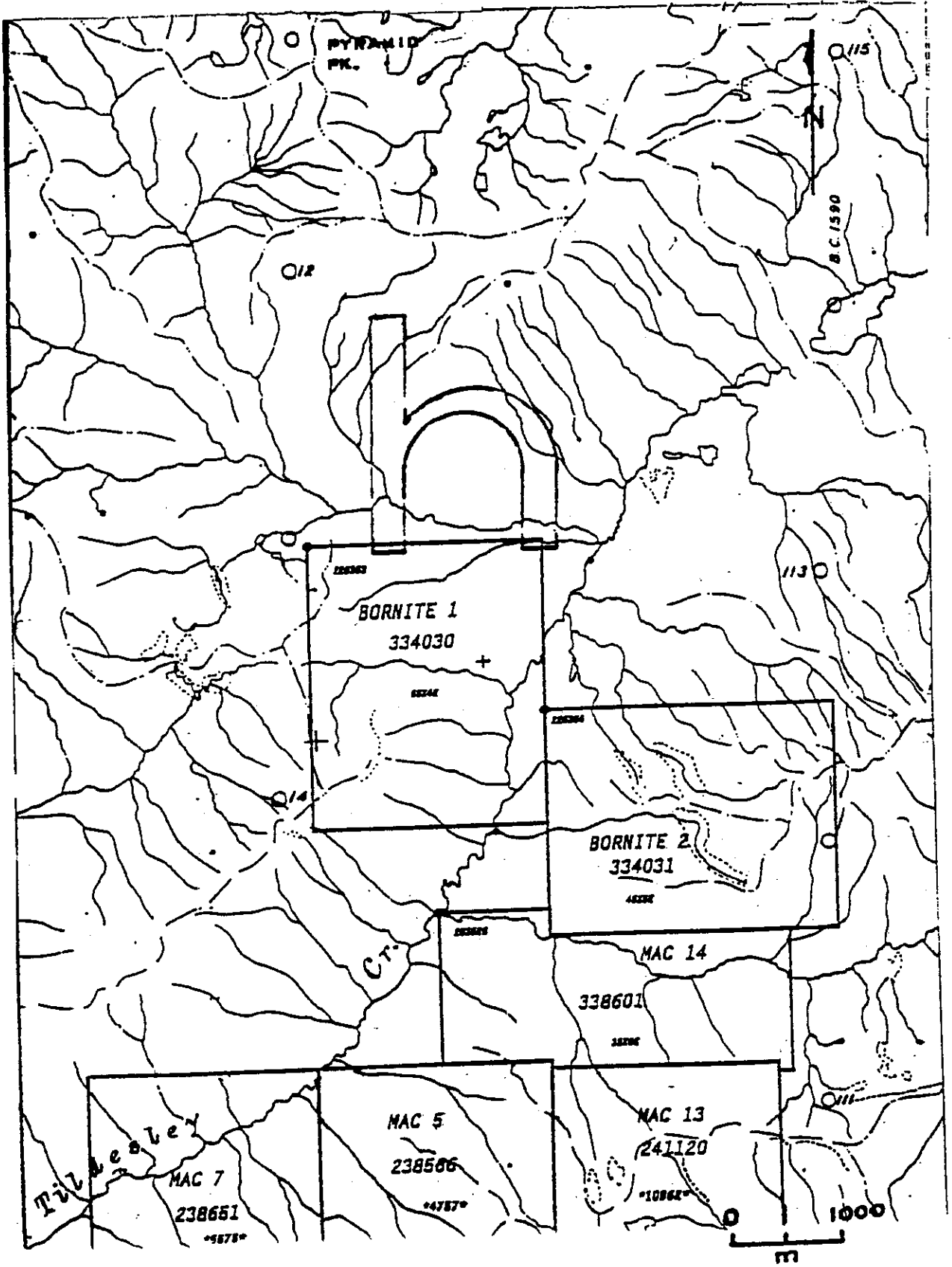


Figure 2: Claim Map

#### 4.0 History

The general area of the Bornite claims has received a limited amount of geologic work or exploration. The first mention of the Bornite property area is made in 1936 and 1937 when J. E. Armstrong of the GSC conducted some preliminary mapping. With the onset of World War II, the GSC conducted a program of mapping and exploration for chromite deposits in the ultramafic rocks outlined by the previous work of J. E. Armstrong. During the mapping in 1947, the GSC located bornite and chalcopyrite in peridotite talus. In one locality bornite the size of a man's fist was found resting on dunite. Old claim posts plus a small blasted pit, Vass's Pit, indicate that prospectors attempted to locate the source of the mineralized float.

In 1967, the ultramafic which underlies the Bornite 2 claim was staked by L. Vass. No exploration work is recorded on the VSF claims.

In 1969, reconnaissance silt sampling by MacDonald Consultants for Terra Nove Explorations located highly anomalous copper values in silt samples from a small stream, now called Anomaly Creek, located on the Bornite 1 claim. This prompted the staking of the Diane claims plus follow-up soil sampling and a ground magnetometer-EM survey.

More recently, exploration in the area has been focused on the MAC claims which lie immediately south of the Bornite claims. The most recent exploration has consisted of a drill program to define the molybdenum-copper potential of the MAC claims.

On February 27 and 28, 1995, the Bornite 1 and 2 claims were staked to cover the copper in soil anomaly outlined by MacDonald Consultants in 1969 on the Diane claims and to cover the area of the bornite and chalcopyrite boulders in the peridotite talus.

## 5.0 Regional Geology

The area of the Bornite claims is underlain by a 15 km wide belt of northwesterly-trending Pennsylvanian and Permian Cache Creek Group rocks consisting of ribbon chert, argillaceous quartzite, argillite, slate, greenstone, limestone with minor conglomerate and greywacke. The Cache Creek Group has been intruded by Upper Jurassic or Lower Cretaceous Omineca Intrusions consisting of granodiorite, quartz diorite, diorite with minor granite, syenite, gabbro and pyroxenite. As well, Post-Middle Permian, Pre-Upper Triassic Trembleur Intrusions consisting of peridotite, dunite, minor pyroxenite and gabbro with serpentized and steatized equivalents intrude the Cache Creek Belt.

The northwesterly-trending belt of Cache Creek Group rocks is bordered on the east by the Pinchi Fault and Upper Triassic Takla Group andesites, basaltic flows, tuffs, breccias and agglomerates with interbedded conglomerate, shale, greywacke and limestone. On the west, the Cache Creek Group Belt is bounded by the Takla Fault, an east-dipping zone which is up to 5 km wide and contains a melange of serpentine and greenstone. The melange is adjacent to Triassic metamorphosed pyroclastic rock, basalt, rhyolite, greywacke and argillite of the Sitlika Assemblage.

Between the Pinchi Fault and the Takla Fault, the predominant units of the Cache Creek Group of chert, phyllite, argillite and greenstone with minor greywacke and limestone are highly deformed. Three deformational periods have been recognized in the Cache Creek Group which has been metamorphosed to lower greenschist facies with local glaucophane. The oldest structures are a prominent foliation that parallels compositional layering and trends east-west, marking the axial planes of isoclinal folds. A later structure consists of chevron folds which trend north-south with axial planes dipping moderately westwards. The youngest structures are warps and kinks, probably related to late faulting.

Mineral occurrences in the area include the MAC molybdenum-copper porphyry deposit, the Mount Sidney Williams gold-bearing listwanites, the O'Neil Creek jade occurrence plus several chromite occurrences associated with the Trembleur ultramafics.

## 6.0 Property Geology

The Bornite 1 claim is predominantly underlain by andesitic volcanics which range from lapilli tuffs to limey aquagene tuffs and volcanic glass. Minor amounts of limestone, silicified limestone and skarn have been seen as locally derived float. Mapping and soil sampling also indicate that the volcanics are cut by two dyke-like intrusives, a gabbro and a monzonite.

Traverses along the newly constructed logging road shows that the southern portion of the Bornite 1 claim has three types of float plus andesitic volcanics as subcrop. The dominant variety of float consists of a greyish green to blackish green dense-looking andesitic volcanic. The second most common lithology is peridotite. No peridotite was seen in outcrop but the angularity and size of the float suggests a local source. Small amounts of a sucrosic silicified limestone were also noted. The only subcrop occurs towards the northern half of the road and consists of andesitic volcanics.

A traverse of line 1+00N showed the area to be underlain by andesitic volcanics identical to the volcanics found in subcrop along the logging road. A traverse to the north of drill hole 95-1 and over a strong copper in soil anomaly did not locate any outcrop but several small angular boulders of andesitic volcanics and peridotite were noted.

A traverse down line 5+00N back to the logging road showed the lithologies to be predominantly andesitic volcanics with minor amounts of gabbro.

The central portion of the Bornite claims is underlain by black argillites with minor siltstone. The argillites appear to trend 320° and are vertical to steeply dipping. The argillites in drill hole 95-3 are rather unique in comparison to the argillites seen in outcrop. The argillite in drill hole 95-3 is intensely sheared with siltstone lenses forming an augen texture. The argillite also contains pyrrhotite and chalcopyrite. The sulphides occur along bedding planes, parallel to bedding planes and as small lenses.



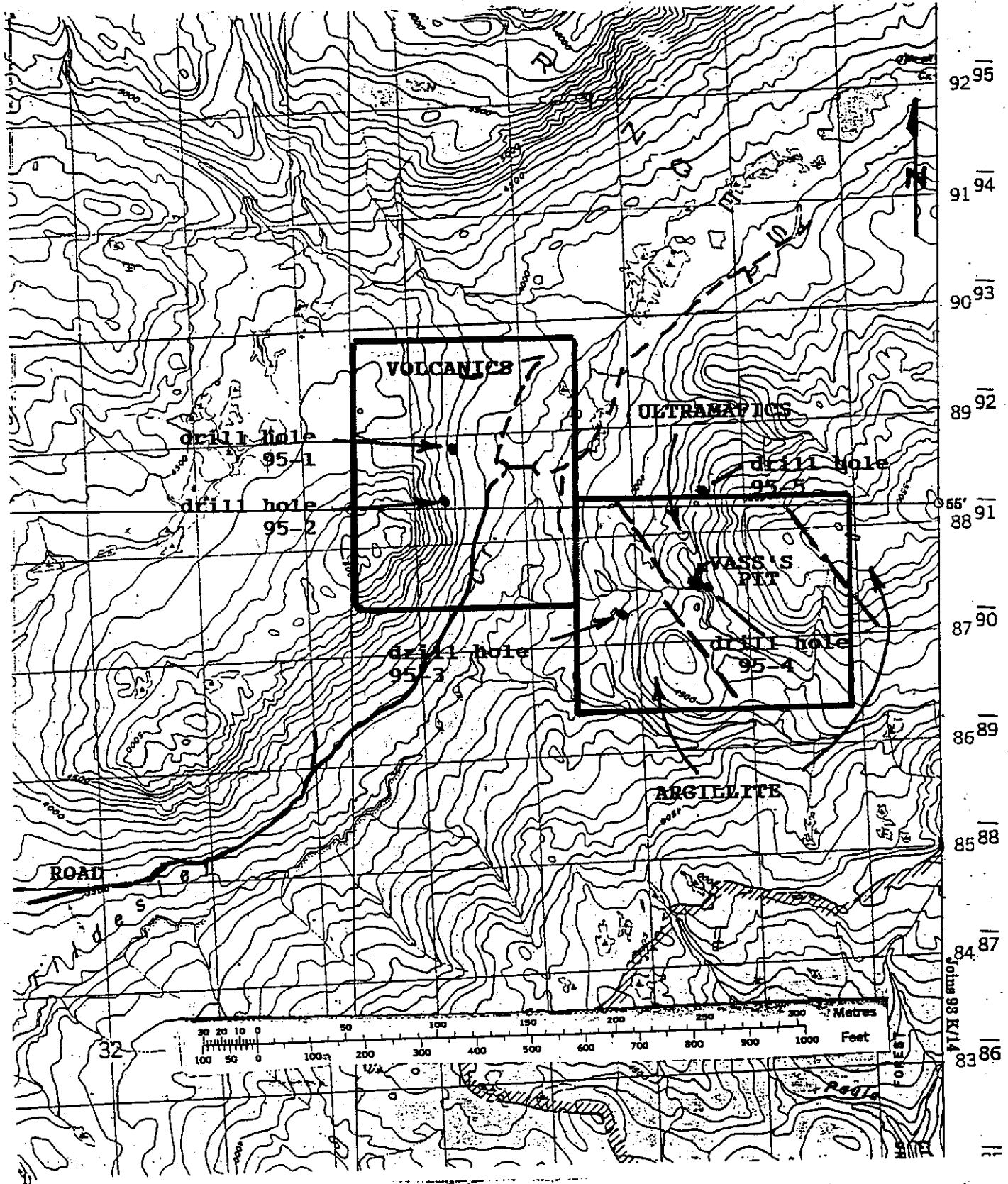


FIGURE 3: GENERAL GEOLOGY AND LOCATION OF VASS'S PIT

The eastern half of the Bornite 2 claim is predominantly underlain by a plug of Trembleur ultramafics consisting of peridotite with minor dunite. The peridotite is a dark green to black, massive with no obvious layering and is very altered to serpentine +/- talc +/- carbonate near shear zones and granitic intrusives. The serpentine near the granitic intrusives often is a yellow green in colour. In the northeast corner of the Bornite 2 claim and along the gorge north of Vass's Pit the intensely serpentinized peridotite becomes a tectonic breccia with serpentinized cobbles in a dark green textureless serpentine matrix. In one locality in the gorge the cobbles are elongated into ovoids. In numerous locations, the peridotite has been intruded by diorite and aplite dykes which trend  $310^{\circ}$  and range in dip from vertical to  $75^{\circ}$  easterly.

A traverse through the gorge west and southeasterly from Vass's Pit showed the dominant lithology to be very altered peridotite. Two hundred and five meters south of the Pit a fine grained quartz monzonite was encountered. The dyke, which is exposed for 5 meters has a sharp contact with the peridotite and trends  $310^{\circ}/90^{\circ}$ . Approximately 200 meters further south from the quartz monzonite a feldspar porphyry dyke was encountered. The feldspar porphyry is exposed for 10 meters as subcrop on both sides of the gorge. The feldspar porphyry has a pale grey siliceous looking matrix in which there is 20% two to four mm white subeuhedral feldspar phenocrysts. The feldspar porphyry has a distinctly sub-volcanic appearance. The quartz monzonite and the feldspar porphyry are separated by altered peridotite. Three hundred meters more of gorge traverse showed it to be underlain by very altered peridotite except at sample site 158645 where large angular blocks of "chert" were noted. The "chert" may be float as this material has not been seen in outcrop to date.

A traverse along the ridge heading north showed a substantial amount of diorite as dykes and possibly a plug as 50 meters was exposed along the ridge top. The contact of the diorite and peridotite is marked by intense yellow serpentine and is knife sharp. In places the diorite is overlain by the peridotite. The diorite dykes appear to have a relatively flat  $30^{\circ}$  easterly dip and show signs of severe dislocation by east-west shears. At least six outcrops of diorite were noted over a distance of 700 meters.

The geology in the Pit area consists of very altered peridotite and in areas of elevated gold and in the Pit itself the peridotite has a high feldspar content giving it a fine grained diabasic texture. Feldspar in peridotite is not common on the property but has been noted infrequently and usually occurs in close proximity to diorite dykes suggesting that the feldspar may be secondary. The Pit contains 15 cm angular blocks of felsic peridotite. The angularity of the blocks suggest that the material is in place. The Pit occurs at the intersection of two major faults also suggesting that the angular blocks may be part of a breccia.

## 7.0 Mineralization

### 7.1 Vass's Pit

The most significant mineralization located to date occurs in Vass's Pit. A sample, 158646, of felsic peridotite returned values of 81405 ppm Cu, 80.1 ppm Ag, 1345 ppm Ni, 649 ppm Co and 670 ppb Au. The mineralization consists of bornite and is associated with magnetite. The bornite appears to be fairly massive. Not much more can be said as fresh surfaces are not common. The angular nature of the boulders and the location of Vass's Pit in relation to the regional aeromagnetic map (see Figure 4) somewhat suggest the presence of a pipe.

### 7.2 Volcanics

Volcanics on both the eastern and western portions of the Bornite claims are generally devoid of mineralization but where present consists of minor amounts of chalcopyrite, pyrite or pyrrhotite. The sulphides are generally fine grained to very fine grained but also occur as clots 5 mm in diameter. Several areas locally contain 5% to 20% coarse grained pyrite with minor chalcopyrite. The best value obtained from the volcanics is 970 ppm Cu and 479 ppm Ni.

10

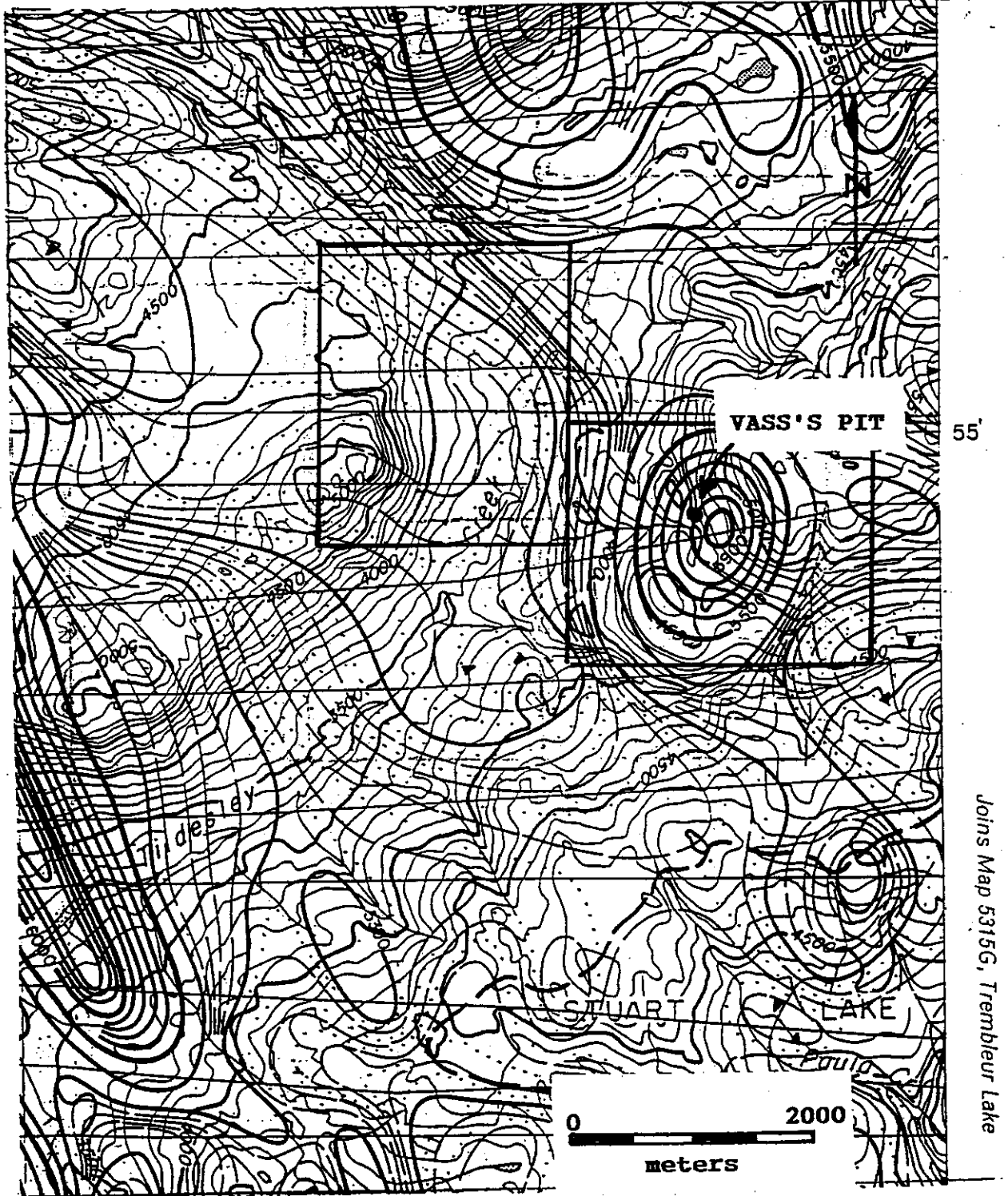
VASS'S PIT

FIGURE 4: AIRPHOTO OF GORGE NEAR  
VASS'S PIT

0 1750  
meters

scale approximately 1:270 m





**FIGURE 5: Aeromagnetic Map of the Bornite Claims and Vass's Pit**

### 7.3 Ultramafics

The ultramafics on the Bornite claims are highly anomalous in nickel and variably so for cobalt. The nickel-cobalt mineralization occurs as rather uniform very fine grained disseminations and consists of heazlewoodite, bravoite, siegenite? and awaruite. The ultramafics are sporadically mineralized with gold as in Vass's Pit. The gold values are not correlatable to any element and it is believed that the gold occurs in native form. Several areas of felsic peridotite all returned anomalous gold values and it is believed that the feldspar is related to gold values.

In the northeast corner of the Bornite 2 claim, brecciated peridotite located near an aplite dyke contains patches of coarse grained pyrrhotite with minor chalcopyrite.

Generally the ultramafics are totally devoid of copper values. However a sample of textureless serpentine (158647) collected approximately 100 meters east of Vass's Pit returned values of 1581 ppm Cu, 1.8 ppm Ag, 1684 ppm Ni and 101 ppm Co.

### 7.4 Argillite

Argillites are generally devoid of mineralization on the Bornite claims. Drill hole 95-3 intersected a substantial amount of pyrrhotite with minor chalcopyrite. In addition, a brown mineral tentatively identified as sphalerite was noted in the core. The "sphalerite" appears to be related to white carbonate veining while the pyrrhotite-chalcopyrite occurs along bedding planes, parallel to bedding planes and as small lenses up to 5 cm in length.

Argillites located just west of drill hole 95-3 contain minor amounts of chalcopyrite which occur as very fine grained disseminations within the argillite and particularly within the siltstone lamina. A minor amount of malachite was noted on the surface of the argillite.

## 7.5 Limestone

Limestone which is only seen as float on the Bornite 1 claim is generally devoid of mineralization particularly when silicified. Locally minor amounts of covellite has been seen. Occasionally the limestone is completely replaced by magnetite. Silicified limestones located along the logging road contained 0.5% disseminated pyrite plus abundant limonite filled voids. One specimen returned a value of 12762 ppm manganese.

## 8.0 Alteration

### 8.1 Ultramafics

On the Bornite claims, the most noticeable and the most intense alteration occurs in the ultramafics and consists of serpentine +/- talc +/- carbonate. Serpentine alteration which ranges in colour from dark green to black occurs throughout the peridotite and is particularly intense along major shears destroying all primary textures. Intense serpentine alteration is also present along the contacts of the granitic intrusives and is commonly a pale yellow green in colour. The serpentine alteration may be accompanied by variable amounts of talc +/- carbonate.

The contacts of the ultramafic are marked by intense talc alteration which is typically an orange grey with vertical quartz veinlets up to 2 cm wide. The talc is coarse grained and has totally replaced the ultramafic.

Carbonate +/- talc alteration occurs along the contact of the aplite dyke located in the northeast corner of the Bornite 2 claim. The carbonate-talc alteration has completely replaced the brecciated ultramafic leaving the breccia texture visible on the weathered surface.

On line 11+00S/7+25E the contact of the ultramafic and argillites has been totally silicified with colour variation showing the sedimentary layering. Silicification is not commonly observed.

The most significant alteration is the secondary feldspar in the peridotite as in Vass's Pit. The feldspar gives the peridotite a diabasic appearance and is variable in intensity but pervasive. The feldspathic peridotite has been shown to be gold +/- copper bearing. The source of the feldspar is believed to be related to diorite intrusives.

Ultramafics on the Bornite 1 claim are variably altered by serpentine. The alteration is less intense than the serpentine alteration on the Bornite 2 claim.

Dunite located on the Bornite 2 claim appears fresh in appearance.

## 8.2 Volcanics

Volcanics on the Bornite 1 claim are variably altered by sericite, carbonate, chlorite, epidote, tremolite and plagioclase. Carbonate, quartz and chalcedony veining are relatively common. Corundum has been seen in thin section. Limey volcanics host significant garnet development in drill core.

Volcanics located along the logging road are typically altered by coarse to very coarse sericite development. The greenish colouration suggests weak chlorite development as well. Several specimens showed weak pervasive silicification and minor fine grained garnet.

## 8.3 Argillites

Argillites show the least amount of alteration. Generally the argillites appear fresh except near the contact with the ultramafic where they are intensely silicified. Minor biotite has been seen on some fracture surfaces. Locally the argillite is cut by numerous white carbonate veinlets.

## 8.4 Limestones

The limestones located to date are typically altered by sucrosic quartz replacement. Locally the limestones are replaced by magnetite or intense epidote. The limestones also have local garnet development.



## 8.5 Intrusives

All intrusives located to date are generally devoid of alteration and appear fresh.

## 9.0 Work Program

On July 22, 2003 three men spent one day on the Bornite 2 claim with the purpose of locating, mapping and sampling the postulated, dislocated portion of the mineralization found in Vass's Pit or possibly a second occurrence of chalcopyrite mentioned in H. W. Little's 1947 thesis. The program was focused around station 6+25E/12+00S which previous soil sampling showed was anomalous in copper (131 ppm), Co (78 ppm) and gold (76 ppb) and is the same geochemistry as the mineralization in Vass's Pit (81405 ppm Cu, 649 ppm Co, 670 ppb Au). No outcrop other than the serpentinized peridotite exposed along the gorge walls was seen in this area or above station 6+25E/12+00S. No float was located in the area or above the station indicating that the distinctly anomalous soil sample was not hydromorphic or transported. Examination of the area also showed that it did not fit the criteria described in Little's 1947 thesis for the second copper occurrence which were:

1. the presence of a chromite occurrence consisting of 2 lenses 2.5' by 5' in a shear zone of light green serpentine located a few hundred yards west of the copper occurrence and
2. a hand dug trench 20 feet long.

None of the above were noted in the area examined.

During crew deployment a substantial amount of quartz was noted on a sandbar in Tildesley Creek. A brief stop was made to sample the rather large and angular pieces. One sample was collected (TIL 1) and analysed for Au, Pt and Pd by fire assay ICP-ES.

Twelve hectares were traversed by the three men.

## **10.0 Results**

The attempt to locate the postulated dislocated portion of the mineralization located in Vass's Pit failed dismally in that no mineralization was located, no outcrop was located and no float was seen over the entire 12 hectares traversed. The source of the coincident Cu-Au-Co soil anomaly was not determined but would appear to be in place.

The sample of angular quartz taken from Tildesley Creek did not return any precious metal content.

## **11.0 Conclusions**

The copper +/- gold in soil anomaly outlined by previous exploration is believed to be an in situ anomaly. Due to the lack of outcrop and float a more sophisticated approach of exploration seems to be required. Since the mineralization in Vass's Pit is associated with considerable amount of magnetite, even more than the magnetite content of the ultramafics, a magnetometer survey would be an inexpensive method of testing the soil anomaly.

**12.0 References**

- Armstrong, J. E., Preliminary Report Northwest Quarter of the Fort Fraser Map-Area, B. C., G.S.C. Paper 38-10, 1938.
- Armstrong, J. E. Fort St. James Map-Area, Cassiar and Coast Districts, British Columbia, G.S.C. Memoir 252, 1965.
- Little, H. W., The Ultrabasic and Associated Rocks of the Middle River Range, B. C., Ph. D. Thesis, 1947.
- Assessment Report 2414, Report on a Geochemical and Geophysical Survey on the Diane 1 - 16 Mineral Claims, Tsitsutl Mountain Area, by E. D. Dodson, P. Eng., May 25, 1970.
- Assessment Report 24277, Drilling and Sampling Program on the Bornite Property, by U. Mowat, January, 1996.
- Assessment Report 25477, Geochemical Report on the Bornite Claims, by U. Mowat, April, 1998.
- Assessment Report 25668, Mapping and Sampling Program on the Bornite Claims, by U. Mowat, October, 1998.
- Assessment Report 26513, Mapping and Sampling on the Bornite Claims, by U. Mowat, February, 2001.
- Assessment Report 27104, Mapping and Sampling on the Bornite 2 claim, by U. Mowat, February, 2003.

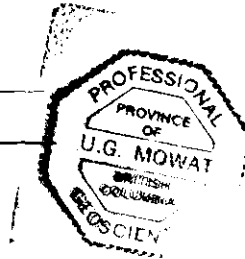
**13.0 Statement of Costs**

Helicopter		
1.7 hours at \$725.00/hour		\$1232.50
193.8 liters at \$0.90/liter		174.42
GST		<u>98.48</u>
		\$1505.40
Labour		
1 man for 1 day at \$275.00/day		\$ 275.00
1 man for 2 days at \$200.00/day		400.00
1 man for 5 days at \$400.00/day		<u>2000.00</u>
		\$2675.00
Analyses		
1 rock sample analysed for		\$ 13.25
Au, Pt, Pd by fire assay		
ICP-ES at \$13.25/sample		
1 rock prep at \$5.00/sample		5.00
GST		<u>1.28</u>
		\$ 19.53
Accommodation		
1 night at \$64.40/night		\$ 64.40
1 night at \$46.86/night		<u>46.86</u>
		\$ 111.26
Food		\$ 95.68
Truck		
2 days at \$75.00/day		\$ 150.00
Gas		<u>38.94</u>
		\$ 188.94
Reproduction		\$ 10.92
	<b>TOTAL</b>	<b>\$3401.43</b>

**14.0 Statement of Qualifications**

- 1.0 I am a graduate of the University of British Columbia having graduated in 1969 with a Bachelor of Science in Geology.
- 2.0 I have practiced my profession since 1969 in mineral exploration, oil and gas exploration and coal exploration.
- 3.0 I am a registered member of the Association of Professional Engineers and Geoscientists of British Columbia.
- 4.0 I have a direct interest in the Bornite Claims.

*Ursula Mowat*  
Ursula G. Mowat, P. Geo.



Dated this 2nd day of May, 2004  
at Vancouver, B. C.



GEOCHEM PRECIOUS METALS ANALYSIS



Mowat, Ursula PROJECT RECCE File # A302858

1405 - 1933 Robson St., Vancouver BC V6G 1E7 Submitted by: Ursula Mowat

SAMPLE#	Au** ppb	Pt** ppb	Pd** ppb	Sample gm
SI	<2	<2	<2	-
G-2	<2	<2	<2	900
G-3	<2	<2	2	1400
G-4	7	<2	6	1500
G-5	3	<2	<2	900
RD-1	<2	<2	2	900
RD-2	<2	2	<2	1100
RD-3	16	<2	<2	1600
RD-4	<2	<2	<2	1300
RD-5	10	4	5	2800
RD-6	<2	2	3	1900
RD-7	20	<2	<2	1100
RD-8	<2	2	4	500
RE RD-8	<2	<2	3	-
<u>BORNITE</u> TIL-1	<2	<2	2	1300
TSIT-1	<2	4	4	1400
TSIT-2	<2	6	6	1000
TSIT-3	<2	<2	2	400
TSIT-4	26	21	13	1500
B 158674	<2	124	141	1000
STANDARD FA-10R	482	485	489	-

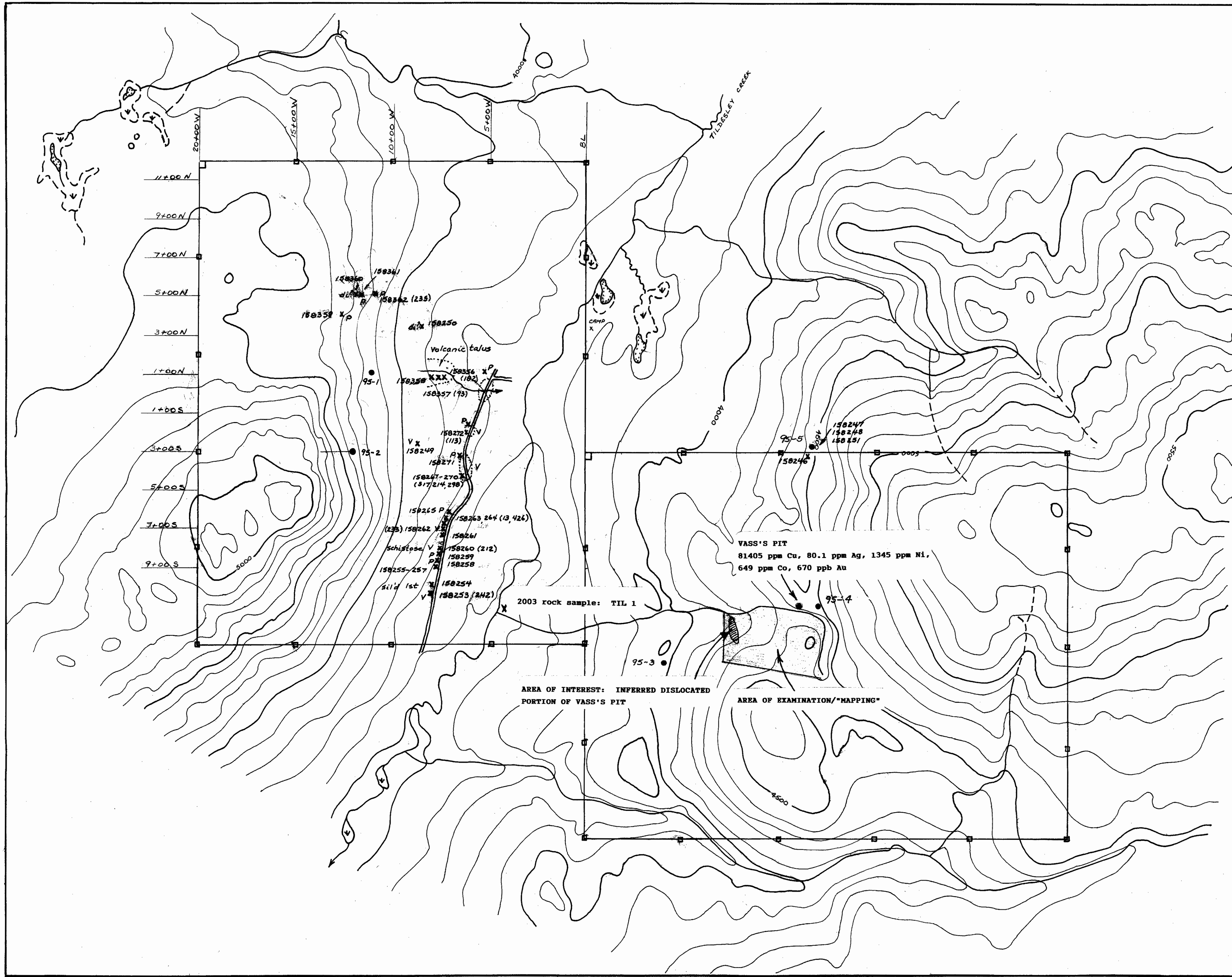
GROUP 3B - FIRE GEOCHEM AU, PT, PD - 30 GM SAMPLE FUSION, DORE DISSOLVED IN AQUA - REGIA, ICP ANALYSIS. UPPER LIMITS = 10 PPM.

- SAMPLE TYPE: ROCK R150 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 25 2003

DATE REPORT MAILED: *Aug 6/03*

SIGNED BY: *C. Leong* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS



- x 158264 (426)  
rock sample number  
(Cu in ppm)
- subrop
- drill hole
- // road
- P peridotite
- V volcanic
- di diorite

VASS'S PIT  
 81405 ppm Cu, 80.1 ppm Ag, 1345 ppm Ni,  
 649 ppm Co, 670 ppb Au

2003 rock sample: TIL 1

AREA OF INTEREST: INFERRED DISLOCATED  
 PORTION OF VASS'S PIT

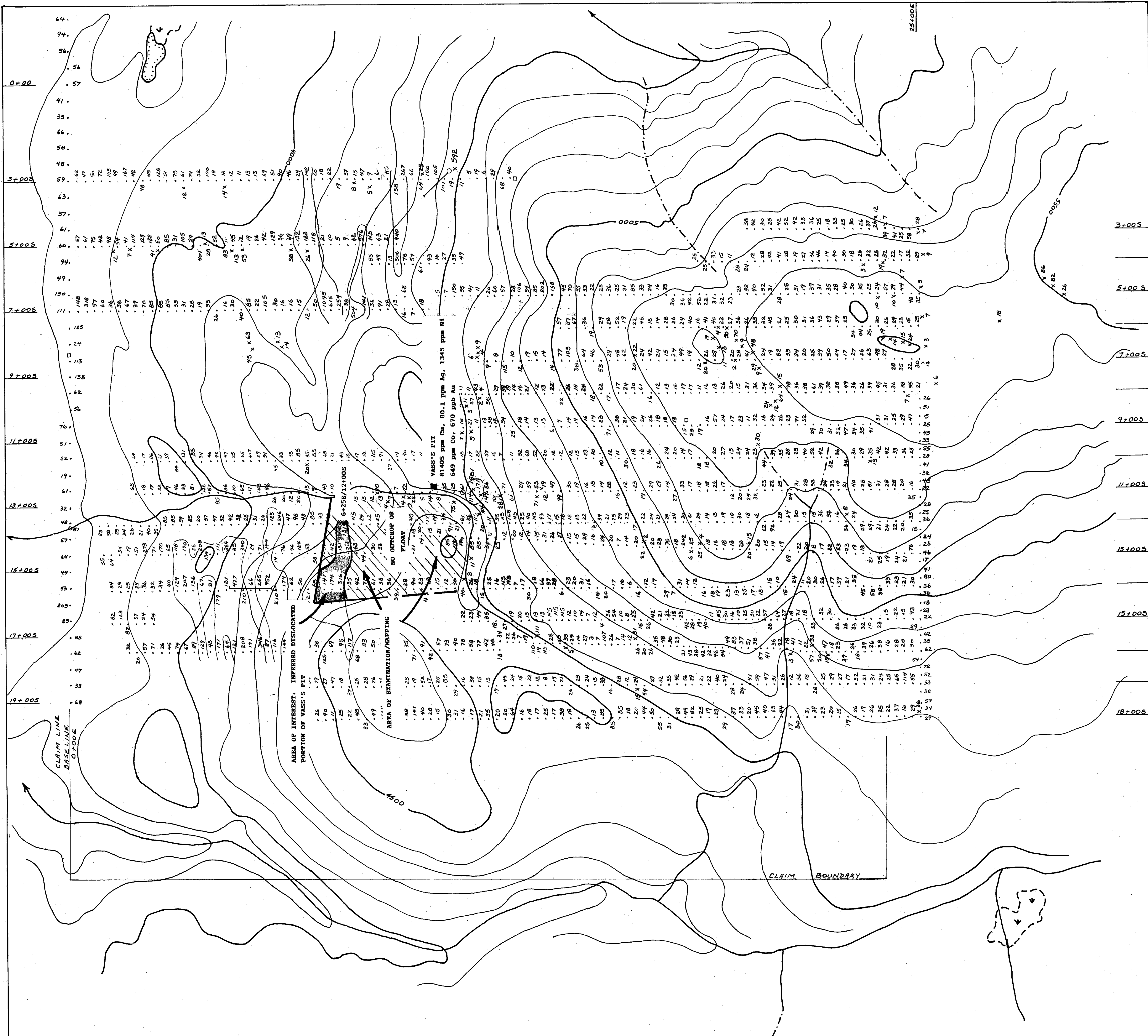
AREA OF EXAMINATION/"MAPPING"

SAMPLE LOCATION MAP  
 SURVEY BRANCH  
 REPORT

27,405

0 500  
 meters





0+00  
3+005  
5+005  
7+005  
9+005  
11+005  
13+005  
15+005  
17+005  
19+005

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53.  
203.  
85.  
17+005  
62.  
47.  
33.  
19+005  
68.

BORNITE 2

GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT

27.425  
meters