1971 Geological,
Geochemical and Geophysical Report

3690

TITLE	Spout Lake Copper Property
AUTHOR	C.J. Hodgson, P.Eng. (B.C.) and G.M. DePaoli
DATE	April 1972
COMMODITY	Cu
LOCATION - Area	Lac la Hache
- Mining Divisions	Clinton and Cariboo
- Coordinates	Latitude 52°00'N Longitude 121°25'
- NTS	92 P 14 and 93 A 3
CLASS	Prospect Surveyed

AMAX VANCOUVER OFFICE

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ILLUSTRATIONS

SUMMARY

The Spout Lake property consists of 169 WC claims staked by Amax Exploration, Inc. and Amax Potash Limited during the period June to September, 1971. The claims are located 14 miles north of the village of Lac la Hache on Highway 97 in south central British Columbia, and are easily accessible via secondary roads.

Between July 20 and August 28 a crew of ten men under the supervision of C.J. Hodgson laid down a 28 line-mile picket grid over the area of the showing and conducted geochemical, geological and magnetometer surveys. A bulldozer was used to construct an access road to the showings and to excavate about twenty exploration trenches. Exposures were blasted and sampled for assay.

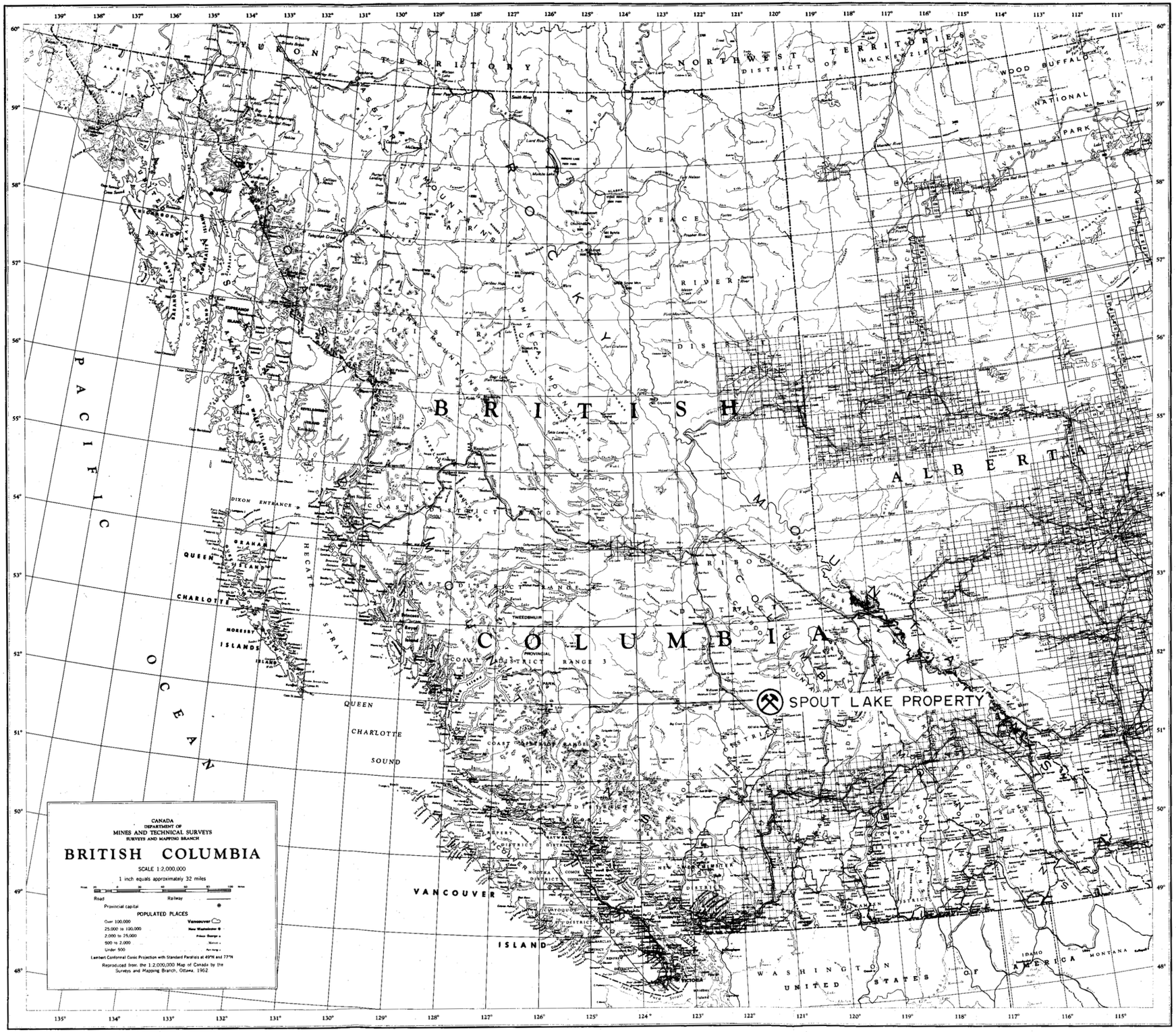
The main sulphide occurrence lies near a contact of basalt and siltstone units and measures about 2300 x 600 feet. Chalcopyrite and pyrite are disseminated in several types of skarn assemblages. A second zone was discovered late in the season in the northwest corner of the grid. Numerous other minor showings occur throughout the grid area.

A geochemical survey was conducted on the grid, with a total of 630 samples collected at 200 foot intervals on picket lines. Samples were analyzed for eight common metals at AMAX's Burnaby laboratory. A number of copper anomalies are indicated on the grid area, but the only clearly significant anomaly occurs over the main sulphide showing. The relatively minor degree of dispersion of copper from the source area of this anomaly is probably the result of a combination of factors: locally thick overburden, lack of appreciable weathering of sulphides and lack of significant surface drainage over the showing. Small possibly significant anomalies occur in the vicinity of the road junction on claims WC #34, #36 and #48.

A magnetometer survey over the grid revealed the presence of a major north-northwest trending magnetic anomaly 2800 feet long

and between 200 and 900 feet wide coincident with the main sulphide zone. The shape of the anomaly suggests a vertically dipping, dyke-like body that is fault controlled. Two other smaller anomalies occur at the extreme west and east sides of the grid. The former coincides with the second sulphide zone mentioned above, the latter is unexplained.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3690 MAP #1



LOCATION MAP Figure 1

INTRODUCTION

Location, Access, Topography

Spout Lake is situated in south central British Columbia at latitude 52°00'N, longitude 121°25' (Figure 1). The WC claims straddle Spout Lake and are easily accessible via secondary roads from Lac la Hache village on Highway 97, 14 miles to the south. The Pacific Great Eastern mainline runs parallel to the highway one mile west of the village.

Topographic relief on the property is subdued, with elevations ranging from 3535 feet (Spout Lake) to 4000 feet. The main showing immediately south of Spout Lake is at about 3700 feet elevation.

Climate, Drainage, Vegetation

The Spout Lake property is situated in the so-called "dry belt" of south central British Columbia. Annual rainfall here averages twenty inches. Summers are typically short and hot, and the effective exploration season is from May to October.

The main drainage in the Spout Lake area is provided by Eagle Creek which flows northwestward from Spout Lake through Two-Mile Lake eastward to Murphy Lake, tracing a clockwise route which closely coincides with the position of a major air magnetic annular anomaly. The largest tributary of Spout Lake is an unnamed stream which flows northward through the eastern portion of the WC claims. It is a perennial stream about three feet wide.

Most of the property is wooded with immature stands of fir and pine. Large aspen groves occur on the north shore of Spout Lake.

Logging, ranching and tourism provide the main basis of the local economy.

Claims

Pertinent information on the WC and other AMAX claim groups in the area is tabulated below. Figure 2 shows the WC claims in detail.

Property Name	Claim	Record Number	Mining Division	Staking Date	Expiry Date
Spout Lake					
	WC #1-12	26573-26584	Clinton	June 22,1971	July 5,1972
	15-26	26585-26596	Clinton	June 22,1971	July 5,1972
	29-40	26597-26608	Clinton	June 22,1971	July 5,1972
	45-54	26771-26780	Clinton	July 10,1971	July 22,1972
	55-96	26781-26822	Clinton	July 15,1971	July 22,1972
	143-147	27254-27258	Clinton	Sept. 9,1971	Sept.20,1972
	148-169	27298-27319	Clinton	Sept.23,1971	Oct. 1,1972
	13-14	63318-63319	Cariboo	June 22,1971	June 29,1972
	27-28	63320-63321	Cariboo	June 22,1971	June 29,1972
	41-42	63322-63323	Cariboo	June 22,1971	June 29,1972
	43-44	63691-63692	Cariboo	July 10,1971	July 22,1972
	97-142	63693-63738	Cariboo	July 15,1971	July 22,1972

Picket Grid

A north-south base line was cut out between the main Coranex access road and Spout Lake, starting at the claim location line between WC #69 and #70. Chaining back from the lake, picket lines were turned off the baseline at 400 foot intervals between the lake and 60S. These were extended to 26+00W and 68+00E. All lines were blazed and flagged at 100 foot intervals. North-south tie lines were chained out at 24W and along the claim location lines at 26E and 56E. For the purpose of base map preparation it was assumed that line 52S (apparently one of the more accurate lines) was cut due east-west. Other picket lines were located with respect to this line by the tie line measurements. The picket grid totals about 28 line miles.

PROPERTY GEOLOGY

General Remarks

The following discussion is based on geological mapping

of the area of the picket grid by the writer, R. Bailes and D. Simon at a scale of 1" = 400' (Figure 3). The immediate area of the main showing was mapped concurrently on a scale of 1"=200' (Figure 6).

Representative specimens of intrusive rocks were cut and stained for potash feldspar. A selected suite was submitted for thin section, and petrographic descriptions have been incorporated into this report.

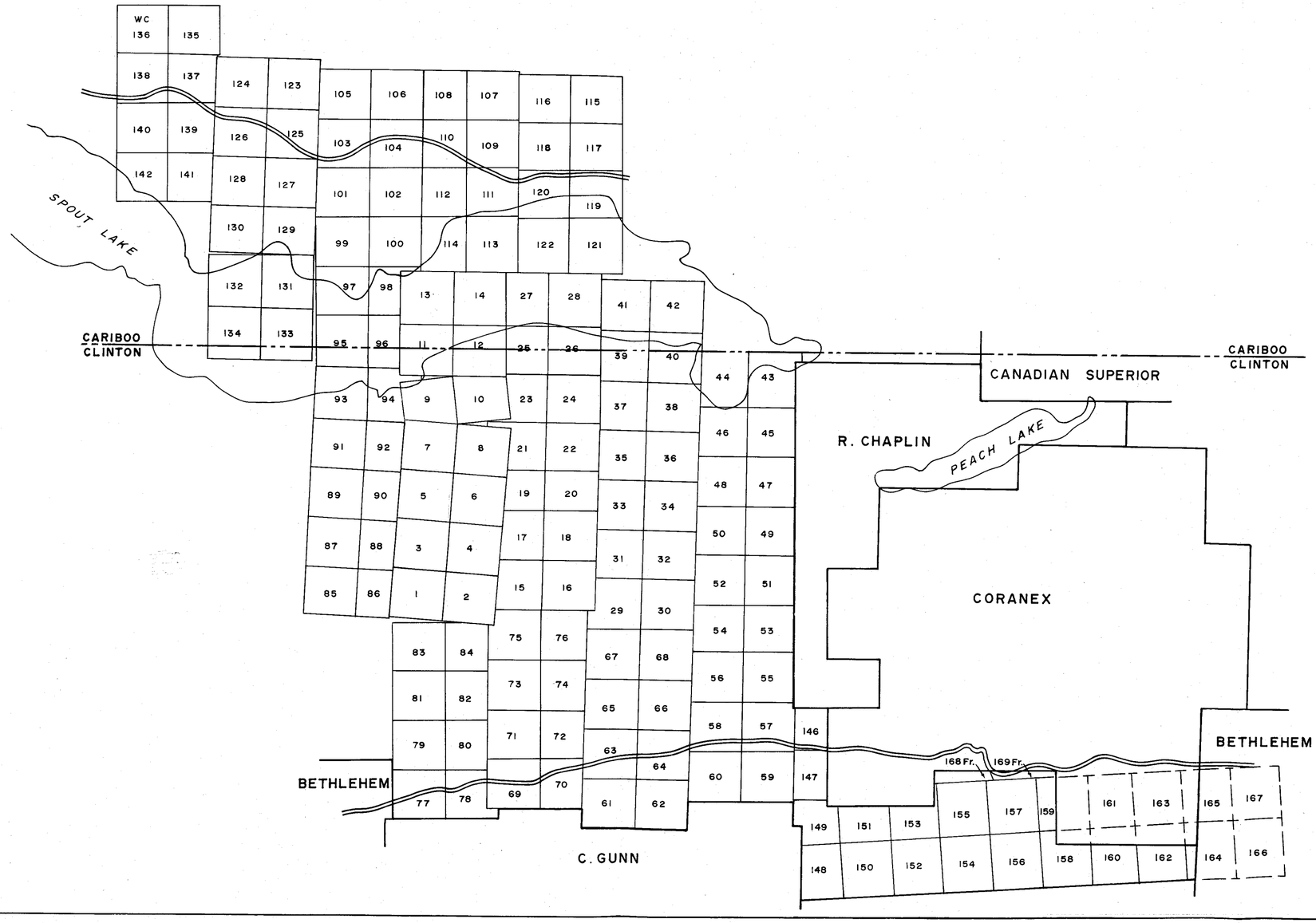
Rock Types

The grid area is underlain mainly by interbedded volcanic flows and related volcanic sediments and by minor intrusive rock types including pink syenite dykes and hornblende monzonite of the Takomkane batholith. Several types of skarn assemblages are intimately associated with copper sulphides.

The east half of the grid area is underlain predominantly by finely banded to massive, grey-green, weakly calcareous siltstones. Bedding attitudes indicate consistent northwesterly strikes and vertical to steep northeasterly dips.

Interbedded with the siltstones are lenses of lapilli tuff (fragments <$1\frac{1}{2}$"), minor volcanic breccia (fragments >$1\frac{1}{2}$") and volcanic flows. The lapilli tuffs and breccias are essentially the same as those forming the main unit immediately to the east of the grid area. They are unsorted, unbedded, and contain a fair proportion of pink microsyenite fragments in addition to a variety of volcanic rock fragments.

The western portion of the property is underlain by volcanic flows with very minor interbedded sediments. The flows have been subdivided primarily into porphyritic and non-porphyritic varieties, and the latter again into amygdaloidal and non-amygdaloidal types. Typically the amygdaloidal basalts contain 10-20 per cent 2-10 mm diameter amygdales with calcite and zeolite fillings in a grey, fine grained groundmass. Olivine and pyroxene



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3690 MAP #2

C.J. Hodgson

AMAX POTASH LTD.

SPOUT LAKE PROPERTY
CLINTON AND CARIBOO MINING DIVISIONS - BRITISH COLUMBIA

CLAIM MAP

SCALE — 1"= 1/2 mile

DATE REVISED	DATE PRINTED		
		Drawn by FJF	fig. 2
		Dec. 28, 1971	
		N.T.S. File 92 P 14	

To accompany report "SPOUT LAKE PROPERTY" by C.J. Hodgson

phenocrysts may be present but never comprise more than 2-3 per cent of the rock. Augite porphyries, on the other hand, contain 10-25 per cent euhedral pyroxene phenocrysts, and the augite-plagioclase porphyries contain in addition 10 per cent 1-3 mm subparallel plagioclase laths. The flows are all moderately magnetic.

Pink syenite dykes occurring on the east side of the property are fine to medium grained, commonly porphyritic with 2-4 mm plagioclase laths in a potash feldspar groundmass. Minor disseminated magnetite is present.

Three types of skarn assemblage have been identified on the claims.

1. Grossularite-diopside-calcite
2. Magnetite-diopside-scapolite
3. Diopside-epidote-actinolite-tourmaline

All three types contain variable amounts of calcite (up to 25%) and accessory pyrite and chalcopyrite. The best copper grades occur in magnetite-diopside-scapolite skarn.

The first-mentioned type is most abundant at the main zone. It is light buff, fine grained and flinty in appearance, and looks sufficiently "intrusive" to have been referred to as "latite" during field mapping. The average composition of this skarn, based on two thin sections, is grossularite 60%, diopside 20%, calcite 15% with accessory white mica, opaques, sulphides, K-feldspar(?), scapolite(?) and tourmaline.

The magnetite skarn is seen only in the area of the main zone. Two thin sections average 30% opaques (largely magnetite), 30% scapolite, 25% diopside, 5% chlorite, with accessory calcite, chlorite, actinolite and sphene. Scapolite, where best developed, forms distinctive 8 mm laths in the skarn, although in many hand specimens it is not distinguishable. Magnetite skarn forms veins in the previously mentioned grossularite skarn.

Diopside-epidote tourmaline skarn occurs predominantly in the west zone. It is quite variable in composition but averages about 35% diopside, 25% epidote, 20% actinolite, tourmaline 5%, calcite 10% and accessory magnetite, sulphides, garnet and sphene. Hand specimens are dark green and pitted, due to the weathering out of interstitial calcite. The rock is locally coarse grained, and diopside and tourmaline prisms 5 mm or more in length are fairly common.

Finally, an unusual calcite breccia best exposed in an outcrop at 22S, 8E is the youngest intrusive phase recognized in the vicinity of the main zone. Medium to coarse grained calcite in the matrix of the breccia encloses 40 - 70 per cent rounded fragments up to six inches diameter of basalt and mineralized skarn. The calcite matrix itself is unmineralized.

Structure

A number of faults are inferred on the grid area on the basis of apparent lithological displacements and airphoto lineaments. Most are oriented either north-south or east-west, and may be tangential and radial faults related to the intrusion of hornblende monzonite. The main ones are (1) an east-west fault through the center of the grid area, necessitated by an apparent right hand offset of about 1500 feet in the augite porphyry-amygdaloidal basalt contact. A magnetic anomaly associated with the main sulphide zone terminates against this inferred fault at 32S, 16E; (2) a north-south fault near the baseline to accommodate an apparent offset of the above fault. This may coincide with a suspected fault on the west side of the main sulphide zone, but both are indicated on the basis of airphoto lineaments. The latter was also indicated in a test RADEM survey over the main showing; (3) an east or north-east trending fault is assumed to underlie a linear swamp on claims WC #49 and #50 and to extend to the east under Peach Lake. The fault is necessitated by the

presence of a fairly thick siltstone sequence north of the swamp which is on strike with coarse volcanic breccia south of the swamp (not shown on Figure 3).

The grid magnetometer survey indicated a number of other east-west and north-south breaks which are discussed by G. DePaoli in a following section.

Too little is known of the sulphide-bearing skarn zones at this point to say much about their structure.

GEOCHEMICAL SURVEY

A total of 630 soil samples were collected at 200 foot intervals on picket lines and baselines. These were analyzed in AMAX's Burnaby Laboratory for Cu, Mo, Ni, Mn, Fe, Ag, Zn, and Pb.

Accepting the regional threshold of 50 ppm Cu, a number of copper anomalies are indicated. These are circled and numbered on Figure 5.

Anomaly 1 extends from 4S to 28S east of the baseline. It is roughly coincident with the main sulphide zone, but is centered on the west side of it. Only weak anomalies of other metals occur in association with this Cu anomaly. Even Fe, closely associated with Cu in the sulphide zone, occurs in anomalous amounts in only two samples over the zone.

Anomaly 2 west of the baseline coincides for the most part with an area of reasonably continuous outcrop and shallow overburden. The obvious close association of Mn, Ni, and Fe anomalies suggests that the Cu anomaly is simply a result of the proximity of outcrops of Nicola strata with their typically high metal background. The southwesterly tail of the Cu anomaly may be significant, although copper content in soils here is only slightly above threshold.

Anomaly 3 coincides with a low swampy area between ridges to the north and south. This anomaly must be downgraded since two of the five samples constituting the anomaly have a high organic content (QS1005, 6).

Anomalies 4 and 5 are similar to 3. They coincide with a ridge of fairly continuous outcrop and show a 1:1 correlation with anomalies of other metals. The anomalies are almost certainly a reflection of the proximity of outcrops in these areas.

Anomaly 6 may be a valid anomaly, although some samples were noted to contain organic debris (QS1016, US699). Chalcopyrite was noted in some outcrops in this area.

Anomaly 7 lies east of 6 and is separated from it by a large swampy unsampled area. Here also some samples are suspect because of high humic content (US665, QS1017) although the remainder are apparently validly anomalous. Sample US666 is actually a stream silt, although indicated as a soil on Figure 5.

Anomalies 8 and 10 are each based on only four samples. They are multi-element anomalies and consequently downgraded.

Anomaly 9 is a small, weak anomaly barely above threshold.

In conclusion, anomaly 1 is the only clearly valid anomaly and coincides closely with the main sulphide zone. It measures only 2500 by 1000 feet and was not picked up in the regional reconnaissance traverse over this area. Its limited size is probably due to a combination of factors: negligible weathering of sulphides in the main zone, locally thick boulder clay deposits over the deposit (especially on the east side), and lack of significant drainage channels over the deposit to provide dispersion. Anomalies 6 and 7 are small possible anomalies.

MAGNETICS

General Statement

Copper mineralization on the WC claims in part consists of chalcopyrite associated with magnetite in a magnetite breccia. A magnetite-chalcopyrite association is of major significance in many economic copper deposits in British Columbia.

The main showing on the property is reflected by a 1500 gamma aeromagnetic anomaly which in turn is part of a larger annular-shaped belt of magnetic highs approximately three miles wide and having a circumference of 23 miles. In terms of susceptibility and complexity this belt is one of the most impressive magnetic features in British Columbia.

The WC claims are situated on the southern side of this magnetic ring and its associated anomaly is the highest magnetic closure of the entire complex.

Ground Magnetometer Survey

Introduction and Theory

Initial geological mapping on the WC claim group revealed extensive magnetite mineralization associated with chalcopyrite. The main outcropping is located on a gentle topographic high but overburden cover results in little bedrock exposure in the surrounding area. Consequently a magnetometer survey was undertaken to aid in the geological interpretation of the property.

The magnetism of all rocks is controlled by their content of ferromagnetic material; i.e. substances possessing a relatively high susceptibility and capable of acquiring permanent magnetization.

The main purpose of the magnetometer survey was to define the limits of the magnetite-breccia observed in the discovery showing and also reveal any further concentrations of magnetite, hopefully with a chalcopyrite association, in the

APPENDIX I - STATEMENT OF COSTS

immediate vicinity. Any sharp magnetic trends would also serve in the recognition of major structures which often are important controls in sulphide deposits.

Instrument and Procedure

The instrument employed was the Model MF-2 magnetometer manufactured by Sharpe Instruments, a division of Scintrex Ltd., Downsview, Ontario. It operates on the fluxgate principle measuring the vertical component of the earth's magnetic field.

The MF-2 circuitry is temperature-compensated to less than 1 gamma/C° from -40°C to +40°C.

The MF-2 measurement range is from +100,000 gammas to -100,000 gammas and, on the most sensitive scale, the sensitivity is 20 gammas per scale division or a readability of 10 gammas.

The MF-2 is a hand held instrument requiring only coarse levelling.

The MF-2 latitude adjustment was employed to establish a background of approximately 100 gammas so that the majority of the readings would be observed on the most sensitive 1000 gamma scale.

The north-south baseline was surveyed at 100 foot station intervals. Surveying of the baseline began at station 24S working north to the lake, then returning to station 24S and making the necessary diurnal corrections. In a similar fashion the values for the southern section of the baseline were obtained. Using the corrected values of the baseline stations as references, readings at 100 foot station intervals were taken on the cross lines. In doing the cross lines the operator would begin at the baseline, proceed easterly or westerly to the end of the line, cross over to the adjacent line, return to the baseline and loop back to his starting point. This enabled him to apply reference and diurnal corrections to his readings.

The corrected values were annotated and contoured at

1000 gamma intervals. The final map at a scale of 1" = 400' is presented in Figure 4.

Results and Discussion

A strong positive anomaly 2800 feet long and trending north-northwest was obtained over the main showing. Width of the anomaly is generally between 200 and 400 feet with the northern end of the anomaly spreading to 900 feet. Gradients as high as 20,000 gammas within 100 feet were encountered. The central and most intense portion of the anomaly, which has been followed continuously for 800 feet, is a reflection of a magnetite-chalcopyrite breccia. The northern and southern ends of the anomaly are largely overburden covered. The shape and position of the anomaly suggests a narrow, vertically dipping, dyke-like body that is fault controlled.

Two other smaller anomalies occur on the extreme eastern and western parts of the map area. An epidote-tourmaline breccia containing some chalcopyrite coincides with the western anomaly. Further survey work is recommended to more accurately define its western and northern limits. The eastern anomaly appears to be caused by magnetite concentrations within volcanic sandstones and to date only traces of chalcopyrite have been found in this vicinity.

A major zone of weakness trending north-northwest is proposed approximately 600 feet west of the center of the main anomaly. This conforms with the position of an aero-magnetic feature and in part coincides with a geologically interpreted fault. The main anomaly has parallel strike and one suspects that the two features are structurally related.

In general the ground magnetics are not too helpful in defining lithologies. The magnetite distribution is highly variable within any one rock type and strong magnetic trends traverse several rock types. The dominant magnetic grain on the

map is north-northwest with only one east-west trend. A favourable north-west trending belt of high susceptibility is recognizable and correlatable with an aeromagnetic trend. Within this belt several other sulphide concentrations similar to the main anomaly are possible.

C.J. Hodgson, P.Eng. (B.C.)

G.M. DePaoli

C.J. Hodgson

Period of Work - July 20, 1971 to August 28, 1971

Summary of Work

Picket Grid - 28 line miles
Geological Survey - 28 line miles
Geochemical Survey - 28 line miles
Magnetometer Survey - 28 line miles

Carried out on claims WC #6,#8,#10,#12,#17-26 inclusive, #31-40 inclusive, #43-52 inclusive.

Trenching WC #22 - 3 trenches
#24 - 9 trenches
#26 - 7 trenches
#39 - 2 trenches

Personnel

Nick Sworyk - Box 235, Houston, B.C.	
Labourer; 40 days @ $23.94/day	$957.60
R.J. Bailes - 36 Greenwich Bay, Winnipeg 6, Manitoba	
Senior Assistant; 10 days @ $28.21/day	282.10
T.R. Underwood - Box 150, Montrose, B.C.	
Junior Assistant; 17 days @ $20.15/day	342.55
K.M. Clark - 2719 Valleyview Drive, Kamloops, B.C.	
Junior Assistant; 17 days @ $16.24/day	276.08
B.P. Hayashi - 2763 Thompson Drive, Kamloops, B.C.	
Junior Assistant; 10 days @ $16.24/day	162.40
S.P. Dobrowolski - 1950 Cardinal Drive, Kamloops, B.C.	
Junior Assistant; 3 days @ $15.39/day	46.17
D.G. Colley -4359 Harder Road, Victoria, B.C.	
Junior Assistant; 40 days @ $19.66/day	786.40
D.B. Simon - 16223 N.E. 27th Ave., Bellevue, Wash.	
Senior Assistant; 26 days @ $21.54/day	560.04
C.J. Hodgson - 601-535 Thurlow Street, Vancouver 5,B.C.	
Staff Geologist; 3 days @ $65.00/day	195.00
G.M. DePaoli - 5305 East Georgia Street, Burnaby, B.C.	
Geophysicist; 7 days @ $50.00/day	350.00
R.F. Horsnail - 4627 Hoskins Road, North Vancouver,B.C.	
Geochemist; 3 days @ $72.00/day	216.00
	4,174.34

Bulldozer Work -(John Deere D-4)

2 miles of access roads
21 trenches averaging 50'x10'wide x 5'deep

Total of 100 hours @ $15.50/hour	1,550.00
Hauling (Princeton - Lac la Hache)	200.00

Geophysical Survey

Magnetometer Rental - 8 days @ $9.00/day	72.00

Geochemical Survey

630 samples for Cu, Mo, Ni, Mn, Fe, Ag, Zn and Pb
@ $3.00/sample $1,890.00

Camp Accommodation

176 man days @ $10.00/man day 1,760.00

Report Preparation 200.00

$9,846.34

C. J. Hodgson

APPENDIX II - GEOCHEMICAL ANALYSES

and

PROCEDURES FOR COLLECTION AND PROCESSING OF GEOCHEMICAL SAMPLES

P.O. Box 131, [illegible]

AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug. Friday 13/71

TYPE SAMPLES Soil

PROJECT 375

LOCATION [illegible]

REQUESTED BY D. Colley / C. Hodgson

DISPOSITION OF REJECTS Discard.

No.	Sample	pH	Mo	Cu	Ni		Mn	Fe%	Ag	Zn	Pb			No.
01	1WUS 500		1	20	20		260	2.5	.5	44	12			01
02	501		1	14	16		280	2.5	.5	52	12			02
03	502		1	46	38		400	3.8	.5	83	10			03
04	503		1	166	60		520	4.8	.5	122	22			04
05	504		1	86	32		380	3.5	.5	100	18			05
06	505		1	24	16		340	2.8	.5	48	8			06
07	506		1	26	16		360	2.8	.5	48	12			07
08	507		1	20	12		260	2.0	.5	34	10			08
09	508		1	22	12		300	2.2	.5	44	10			09
10	509		1	22	12		460	2.7	.5	64	12			10
11	510		1	66	30		520	4.1	.5	76	14			11
12	511		1	10	8		200	1.6	.5	30	6			12
13	512		1	16	14		200	2.1	.5	42	6			13
14	513		1	20	16		380	2.3	.5	52	10			14
15	514		1	20	16		260	2.2	.5	48	8			15
16	515		1	14	12		220	2.1	.5	58	12			16
17	516		1	16	14		220	2.4	.5	44	14			17
18	517		1	40	24		420	3.1	.5	72	12			18
19	518		1	26	10		260	1.7	.5	38	10			19
20	519		1	20	14		300	3.0	.5	79	12			20
21	520		1	10	10		580	1.9	.5	63	6			21
22	521		1	28	10		300	2.4	.5	40	10			22
23	522		1	80	18		340	2.8	.5	42	14			23
24	523		1	38	10		380	2.7	.5	41	16			24
25	524		1	40	12		420	3.5	.5	38	18			25
26	525		1	126	22		520	2.7	.5	54	12			26
27	526		1	46	16		360	2.3	.5	48	14			27
28	527		1	54	24		300	2.8	.5	76	18			28
29	528		1	170	30		700	3.7	.5	80	16			29
30	529		1	724	20		460	3.2	.5	74	14			30
31	530		1	x960	36		820	3.1	.5	96	14			31
32	531		1	16	18		220	2.1	.5	36	6			32
33	532		1	18	14		260	2.0	.5	42	10			33
34	533		1	18	16		240	1.6	.5	42	8			34
35	534		1	16	16		260	2.1	.5	36	12			35
36	535		1	22	16		360	1.9	.5	46	10			36
37	536		1	40	24		320	2.1	.5	50	10			37
38	537		1	18	12		240	1.3	.5	30	12			38
39	71WUS 539		1	20	12		220	1.2	.5	36	10			39
40	B-1		7	126	24		540	4.2	1.5	268	38			40

COMMENT:

DATE SAMPLES RECEIVED

DATE REPORTS MAILED

ANALYST

AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 375 LOCATION Iron Hat

REQUESTED BY D. Colby DISPOSITION OF REJECTS Discard

(Hoffman

No.	Sample	pH	Mo ✓	Cu ✓	Ni ✓	Mn	Fe %	As	Zn	Pb			No.
01	7WU5540		1	12	8	220	1.3	.5	22	10			01
02	541		1	14	8	260	1.4	.5	26	10			02
03	542		1	18	12	260	1.8	.5	40	10			03
04	543		1	16	12	240	1.6	.5	28	12			04
05	544		1	16	12	260	1.6	.5	28	10			05
06	545		1	36	32	540	3.8	.5	284	22			06
07	546		1	56	26	340	3.4	.5	78	14			07
08	547		1	30	22	280	2.9	.5	54	12			08
09	548		1	54	40	360	3.9	.5	68	14			09
10	549		1	26	38	500	3.4	.5	80	12			10
11	550		1	74	32	480	3.4	.5	52	18			11
12	551		1	26	20	260	2.8	.5	56	14			12
13	552		1	50	28	400	3.1	.5	60	16			13
14	553		1	28	18	300	3.0	.5	46	14			14
15	554		1	26	20	360	3.1	.5	48	16			15
16	555		1	124	60	1200	4.4	1.0	80	24			16
17	556		1	28	18	400	2.7	.5	48	12			17
18	557		1	54	26	340	3.0	.5	52	30			18
19	558		1	28	26	320	3.3	.5	76	20			19
20	559		1	32	28	260	2.9	.5	40	14			20
21	560		1	90	32	420	2.9	.5	108	22			21
22	561		1	60	30	340	3.2	.5	128	20			22
23	562		1	50	16	400	2.5	.5	48	14			23
24	563		1	58	20	500	3.5	.5	88	20			24
25	564		1	46	14	300	2.6	.5	36	14			25
26	565		1	64	22	320	3.1	.5	56	18			26
27	566		1	32	16	380	2.8	.5	54	16			27
28	567		1	26	16	260	3.0	.5	44	16			28
29	568		1	30	20	300	3.0	.5	96	18			29
30	569		1	18	22	260	3.3	.5	68	20			30
31	570		1	20	20	240	2.5	.5	35	16			31
32	571		1	18	16	240	2.2	.5	52	14			32
33	572		1	30	36	260	2.8	.5	68	16			33
34	573		1	14	8	220	1.8	.5	30	18			34
35	574		1	16	10	200	2.2	.5	32	15			35
36	575		1	18	12	260	1.6	.5	30	14			36
37	576		1	16	8	220	1.5	.5	32	14			37
38	577		1	18	10	260	1.8	.5	32	16			38
39	7WU5578		1	14	14	320	2.8	.5	48	16			39
40	B-1		72	134	18	560	4.9	1.5	264	16			40

COMMENT:

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 375- LOCATION Lac La Hache

REQUESTED BY D. Colby DISPOSITION OF REJECTS Discard

C. Hodgson

No.	Sample	pHv	Mo ✓	Cu ✓	Ni ✓	Mn	Fe%	Ag	Zn	Pb	No.
01	711W1557A		1	30	12	220	1.8	.5	25	16	01
02	580		1	26	16	240	1.8	.5	32	14	02
03	581		1	22	14	220	1.8	.5	32	14	03
04	582		1	24	12	220	1.6	.5	32	12	04
05	583		1	34	12	260	2.1	.5	32	10	05
06	584		1	30	24	260	2.5	.5	44	12	06
07	585		1	38	18	220	2.9	.5	36	8	07
08	586		1	30	20	240	2.6	.5	40	8	08
09	587		1	50	14	300	2.7	.5	38	8	09
10	588		1	56	22	220	2.7	.5	46	8	10
11	589		1	42	36	320	3.6	.5	80	10	11
12	590		1	36	24	240	2.5	.5	56	10	12
13	591		1	50	28	320	3.5	.5	52	6	13
14	592		1	66	28	300	3.6	.5	48	8	14
15	593		1	28	18	260	1.5	.5	48	10	15
16	594		1	30	28	260	3.3	.5	70	12	16
17	595		1	40	22	280	2.1	.5	64	6	17
18	596		1	38	22	260	2.7	.5	56	8	18
19	597		1	34	20	340	2.8	.5	76	6	19
20	598		1	32	20	220	2.4	.5	46	6	20
21	599		1	20	16	200	1.4	.5	30	6	21
22	600		1	28	12	220	1.6	.5	28	10	22
23	601		1	22	12	220	2.8	.5	32	10	23
24	602		1	30	14	250	2.1	.5	32	8	24
25	603		1	56	26	260	2.8	.5	68	8	25
26	604		1	22	10	180	1.4	.5	32	6	26
27	605		1	28	18	260	2.5	.5	60	8	27
28	606		1	22	16	240	2.2	.5	47	12	28
29	607		1	30	14	200	1.9	.5	40	10	29
30	608		1	26	20	200	2.1	.5	42	8	30
31	609		1	20	14	260	2.4	.5	31	10	31
32	610		1	26	12	300	2.0	.5	30	10	32
33	611		1	26	14	280	2.4	.5	60	8	33
34	612		1	16	10	210	1.5	.5	20	10	34
35	613		1	48	16	320	2.2	.5	27	10	35
36	614		1	74	26	800	2.0	.5	34	10	36
37	615		1	336	96	860	6.1	1.5	84	26	37
38	616		1	130	40	440	3.1	.5	55	20	38
39	1W1S 617		1	156	34	360	3.4	.5	54	20	39
40	B-1		72	128	20	500	4.0	1.5	256	40	40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 375- LOCATION Loc 6a Hachi

REQUESTED BY D. Colby DISPOSITION OF REJECTS Discard

C. Hodgson.

No.	Sample	pH	Mo	Cu	Ni		Mn	Fe%	Ag	Zn	Pb			No.
01	7/W/S 61F		1	34	12		220	2.0	.5	32	14			01
02	7W/S 619		1	34	12		200	1.8	.5	36	20			02
03	620		1	52	22		240	2.4	.5	42	14			03
04	621		1	58	14		320	3.1	.5	56	14			04
05	622		1	58	18		440	4.2	.5	52	16			05
06	623		1	40	20		500	2.8	.5	68	14			06
07	624		1	38	20		340	2.4	.5	42	12			07
08	625		1	26	18		260	2.1	.5	40	10			08
09	626		1	30	17		240	2.0	.5	54	10			09
10	627		1	30	16		280	2.2	.5	52	14			10
11	628		1	32	18		280	1.9	.5	42	10			11
12	629		1	30	18		180	2.4	.5	48	14			12
13	630		1	26	16		200	1.8	.5	37	12			13
14	631		1	28	18		260	1.9	.5	36	8			14
15	632		1	32	16		230	2.1	.5	34	12			15
16	633		1	64	28		240	2.6	.5	64	14			16
17	634		1	18	24		300	2.5	.5	72	14			17
18	635		1	40	34		260	3.0	.5	68	12			18
19	636		1	32	23		280	2.5	.5	44	8			19
20	637		1	46	20		340	2.3	.5	56	10			20
21	638		1	56	24		420	2.9	.5	68	12			21
22	639		1	30	14		180	1.4	.5	28	10			22
23	640		1	40	28		320	3.2	.5	72	14			23
24	641		1	22	22		340	2.9	.5	78	14			24
25	642		1	26	20		320	3.0	.5	52	10			25
26	643		1	40	26		260	2.9	.5	54	10			26
27	644		1	30	24		260	3.1	.5	46	10			27
28	645		1	28	14		220	1.6	.5	36	10			28
29	646		1	24	16		340	2.2	.5	48	12			29
30	647		1	30	20		240	1.7	.5	78	10			30
31	648		1	70	28		400	3.2	.5	40	14			31
32	649		1	38	16		260	1.9	.5	36	10			32
33	650		1	70	28		260	3.1	.5	44	16			33
34	651		1	28	12		240	1.8	.5	28	12			34
35	652		1	20	12		200	1.2	.5	34	10			35
36	653		1	30	15		280	1.9	.5	36	6			36
37	654		1	22	14		240	1.6	.5	43	8			37
38	655		1	22	16		280	1.9	.5	34	10			38
39	7/W/S 656		1	22	20		290	2.5	.5	34	10			39
40	B-1		72	134	24		520	4.6	1.5	264	40			40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 — TYPE SAMPLES Soil

PROJECT 373- — LOCATION Cariboo Creek

REQUESTED BY D. Colley — DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo	Cu	Ni		Mn	Fe %	Ag	Zn	Pb			No.
01	IWUS657		1	20	16		220	1.9	.5	36	16			01
02	658		1	22	28		220	2.8	1.0	48	16			02
03	659		1	20	22		240	2.8	.5	46	16			03
04	660		1	28	22		280	2.6	.5	64	16			04
05	661		1	38	20		300	2.8	.5	40	18			05
06	662		1	148	26		520	3.3	1.0	48	20			06
07	663		1	110	31		640	4.1	.5	56	24			07
08	664		1	38	20		560	3.3	.5	42	20			08
09	665		1	120	8		240	1.0	.5	16	18			09
10	666		1	156	14		320	2.2	.5	62	24			10
11	667		1	36	20		360	2.6	.5	45	18			11
12	668		1	20	16		380	2.3	.5	52	18			12
13	669		1	12	12		200	1.5	.5	40	12			13
14	670		1	32	28		360	2.8	.5	88	22			14
15	671		1	17	16		280	2.4	.5	60	16			15
16	672		1	15	12		280	2.1	.5	32	16			16
17	673		1	24	21		280	2.9	.5	52	18			17
18	674		1	20	14		320	2.1	.5	43	16			18
19	675		1	24	18		280	2.3	.5	46	16			19
20	676		1	20	16		310	3.1	.5	50	18			20
21	677		1	52	20		350	2.5	.5	44	20			21
22	678		1	26	19		240	2.6	.5	40	18			22
23	679		1	66	32		480	4.8	.5	108	24			23
24	680		1	44	28		450	4.2	.5	92	28			24
25	681		1	112	36		980	5.2	1.0	120	32			25
26	682		1	168	38		760	4.8	1.0	144	44			26
27	683		1	224	40		1240	5.1	1.0	100	28			27
28	684		1	22	18		280	3.0	.5	44	18			28
29	685		1	28	19		280	2.8	.5	46	18			29
30	686		1	118	46		300	4.1	1.0	94	24			30
31	687		1	120	42		300	3.9	.5	88	20			31
32	688		1	28	20		320	2.3	.5	62	14			32
33	689		1	18	24		240	2.9	.5	52	14			33
34	690		1	18	14		400	2.7	.5	44	12			34
35	691		1	12	10		200	2.1	.5	32	9			35
36	692		1	140	32		420	3.4	1.5	54	16			36
37	693		1	92	20		480	3.1	.5	36	10			37
38	694		1	200	40		520	5.9	1.0	108	32			38
39	IWUS695		1	24	16		260	2.8	.5	44	12			39
40	-		19	64	68		320	2.9	4.0	96	64			40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 — TYPE SAMPLES Soil

PROJECT 375- — LOCATION Lac La Hache

REQUESTED BY P. Colley C. Hodgson — DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo	Cu	Ni	Mn	Fe%	Ag	Zn	Pb	No.
01	WWS 696		1	62	20	280	3.1	.5	32	8	01
02	697		1	44	26	290	3.0	.5	44	12	02
03	698		1	36	24	360	3.1	.5	46	8	03
04	699		1	300	26	350	2.5	.5	36	10	04
05	700		1	96	32	740	3.1	.5	64	16	05
06	701		1	36	20	460	2.6	.5	68	10	06
07	702		1	80	26	520	3.5	.5	148	24	07
08	703		1	32	20	370	2.6	.5	48	12	08
09	704		1	20	23	280	2.8	.5	44	12	09
10	705		1	20	24	270	2.6	.5	36	8	10
11	706		1	20	20	280	2.4	.5	32	10	11
12	707		1	36	21	260	2.6	.5	32	12	12
13	708		1	56	20	350	2.6	.5	44	12	13
14	709		1	30	24	260	2.2	.5	28	10	14
15	710	Not sampled	1	116	38	640	3.9	.5	52	16	15
16	711		1	16	20	660	2.5	.5	96	12	16
17	712		1	52	22	380	2.4	.5	36	12	17
18	713		1	28	24	380	2.8	.5	56	10	18
19	714		1	60	24	270	2.8	.5	36	12	19
20	715		1	30	20	240	2.5	.5	40	10	20
21	716		1	32	18	230	1.5	.5	24	14	21
22	717		1	20	38	360	4.7	.5	60	16	22
23	718		1	24	36	300	3.7	.5	56	16	23
24	719		1	20	25	280	2.9	.5	40	14	24
25	720		1	24	20	320	2.8	.5	32	14	25
26	721		1	20	28	360	4.4	.5	104	18	26
27	722		1	30	28	360	4.1	.5	72	12	27
28	723		1	40	34	390	5.0	.5	68	16	28
29	724		1	20	22	340	3.0	.5	28	16	29
30	725		1	14	20	240	2.6	.5	32	14	30
31	726		1	72	24	280	2.9	.5	36	14	31
32	727		1	24	18	280	2.5	.5	28	10	32
33	728		1	16	18	260	3.1	.5	42	12	33
34	729		1	24	29	340	4.4	.5	46	15	34
35	730		1	52	30	280	3.8	.5	62	13	35
36	731		1	36	40	240	3.7	.5	80	14	36
37	732		1	28	32	240	3.3	.5	44	12	37
38	733		1	20	30	230	2.8	.5	52	15	38
39	WWS 734		1	36	30	290	3.3	.5	56	14	39
40	[illegible]		8	65	68	340	2.8	40	92	60	40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE ~~9 Aug~~ Aug 13/71 TYPE SAMPLES Soil

PROJECT 3733 LOCATION Lucky Hercules

REQUESTED BY D. Colby DISPOSITION OF REJECTS Discard

C. Hodgson

No.	Sample	pH	Mo	Cu	Ni		Mn	Fe%	As	Zn	Pb			No.
01	IWH5735		1	36	36		420	5.1	.5	96	16			01
02	736		1	32	32		360	3.7	.5	64	14			02
03	737		1	44	40		480	4.8	.5	156	18			03
04	738		1	48	40		680	5.1	.5	188	20			04
05	739		1	44	24		380	3.2	.5	36	14			05
06	740		1	32	32		1320	4.3	.5	128	16			06
07	741		1	192	60		620	6.5	.5	148	24			07
08	742		1	128	44		500	4.6	.5	156	16			08
09	743		1	116	46		1180	4.4	.5	164	22			09
10	744		1	192	32		350	4.0	.5	72	34			10
11	745		1	46	32		400	3.9	.5	124	20			11
12	746		1	40	50		780	5.1	.5	156	22			12
13	747		1	112	32		740	6.0	.5	116	20			13
14	748	Alone	2	144	112		840	6.4	.5	124	24			14
15	749		1	32	76		620	4.3	.5	120	14			15
16	75-0		1	68	28		320	3.5	.5	40	16			16
17	75-1		1	20	26		300	3.2	.5	64	18			17
18	752		1	20	28		300	3.1	.5	36	16			18
19	753		1	28	24		600	3.6	.5	164	16			19
20	75-4		1	68	40		1180	6.1	.5	X520	28			20
21	75-5		1	74	92		640	5.5	.5	88	20			21
22	75-6		1	64	34		400	4.6	.5	72	20			22
23	75-7		1	84	84		800	4.8	.5	172	24			23
24	75-8		1	68	60		600	4.7	.5	288	20			24
25	75-9		1	104	36		520	5.3	.5	124	22			25
26	760		1	82	28		720	4.8	.5	240	38			26
27	761		1	92	30		520	3.7	.5	88	20			27
28	762		1	40	22		360	3.8	.5	36	14			28
29	763		1	52	24		440	3.1	.5	68	18			29
30	764		1	36	20		290	3.2	.5	52	13			30
31	765		1	128	26		680	4.7	.5	156	20			31
32	766		1	42	20		640	4.0	.5	168	24			32
33	767		1	36	20		580	3.3	.5	124	22			33
34	768		1	38	22		360	3.0	.5	68	12			34
35	769		1	44	40		320	3.7	.5	96	16			35
36	770		1	36	26		280	3.2	.5	64	16			36
37	771		1	22	20		360	3.0	.5	40	16			37
38	772		1	36	28		280	3.4	.5	64	16			38
39	IWH5773		1	32	20		300	2.6	.5	40	16			39
40	A-1		18	64	64		310	2.8	1.0	88	60			40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 3725- LOCATION Lac La Hache

REQUESTED BY D. Colley DISPOSITION OF REJECTS Discard

C. Hodgson

No.	Sample	pH	Mo	Cu	Ni	Mn	Fe%	As	Zn	Pb
01	TWLS774		1	44	216	480	3.0	tr	40	14
02	775		1	28	208	240	2.3	.5	44	12
03	776		1	44	26	320	3.1	.5	60	12
04	777		1	44	20	390	2.8	.5	44	12
05	778		1	16	18	280	2.5	.5	60	12
06	779		1	36	24	360	3.0	.5	60	8
07	780		1	52	34	400	3.2	.5	80	8
08	781		1	96	28	500	4.0	.5	148	16
09	782		1	300	46	900	5.8	1.0	88	20
10	783		2	X720	34	720	7.4	1.0	68	16
11	784		1	24	16	200	2.0	.5	32	4
12	785		1	300	32	270	3.1	.5	128	12
13	786		1	48	24	360	3.1	.5	48	14
14	787		1	20	22	360	2.2	.5	52	8
15	788		1	28	24	260	2.6	.5	40	8
16	789		1	16	14	200	2.0	.5	36	8
17	790		1	28	26	220	2.6	.5	52	8
18	791		1	20	18	260	2.0	.5	36	4
19	792		1	24	16	240	2.2	.5	32	6
20	793		1	20	16	200	2.1	.5	44	8
21	794		1	20	12	180	1.3	.5	32	8
22	795		1	16	11	180	1.1	.5	28	4
23	796		1	16	10	160	1.1	.5	28	6
24	797		1	24	14	220	1.6	.5	40	10
25	798		1	28	16	200	1.6	.5	36	8
26	799		1	24	12	200	1.5	.5	24	10
27	800		1	26	14	240	1.8	.5	48	10
28	801		1	76	34	580	4.0	.5	42	16
29	802		2	24	28	240	3.0	.5	44	8
30	803		1	20	28	280	3.2	.5	48	12
31	804		1	16	24	340	2.4	.5	52	10
32	805		1	16	20	160	2.3	.5	40	8
33	806		1	24	24	200	2.7	.5	44	8
34	807		1	44	30	290	4.1	.5	68	10
35	808		1	24	24	260	3.6	.5	60	10
36	809		1	72	42	560	4.2	.5	160	14
37	810		1	44	34	400	3.2	.5	116	12
38	811		1	20	18	270	2.6	.5	72	12
39	TWLS812		1	42	28	290	3.3	.5	60	10
40	A-1		18	66	68	320	2.8	20	81	60

COMMENT:

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 375 LOCATION Lac La Hache

REQUESTED BY D. Colley DISPOSITION OF REJECTS Discard.
C. Hodgson

No.	Sample	pH	Mo ppm	Cu ppm	Ni ppm	Mn ppm	Fe %	As	Zn ppm	Pb ppm	No.
01	7/W/45813		1	28	20	400	3.4	.5	60	16	01
02	814		1	60	54	520	5.8	.5	136	24	02
03	815		1	60	52	480	5.0	.5	112	28	03
04	816		1	300	88	540	5.0	.5	160	24	04
05	817		1	20	48	840	4.1	.5	132	20	05
06	818		1	60	40	510	3.9	.5	72	16	06
07	819		1	80	34	430	4.8	.5	54	18	07
08	820		1	40	60	580	4.6	.5	112	20	08
09	821		1	32	28	310	3.4	.5	68	16	09
10	822		1	36	16	680	2.6	.5	88	14	10
11	823		1	84	32	560	4.5	.5	112	20	11
12	824		1	48	28	560	4.8	.5	328	24	12
13	825		1	272	24	1520	6.1	.5	272	32	13
14	826		1	36	22	450	3.6	.5	92	18	14
15	827		1	104	36	760	5.6	.5	284	24	15
16	828		1	108	50	590	5.8	.5	176	24	16
17	829		1	40	72	1360	4.4	.5	224	20	17
18	830		1	88	24	640	4.1	.5	184	22	18
19	831		1	44	18	1520	2.9	.5	x480	14	19
20	832		1	96	20	480	3.2	.5	112	16	20
21	833		1	24	20	280	3.3	.5	92	14	21
22	834		1	52	16	320	3.4	.5	40	14	22
23	835		1	328	36	800	4.5	.5	72	22	23
24	836		1	40	18	320	3.2	.5	36	14	24
25	837		1	140	30	720	4.0	.5	152	24	25
26	838		1	60	16	600	3.9	.5	64	18	26
27	839		1	44	16	430	3.1	.5	44	14	27
28	840		1	92	18	360	3.1	.5	40	14	28
29	841		1	48	14	320	2.9	.5	32	12	29
30	842		1	60	20	470	3.8	.5	44	16	30
31	7/W/45843		1	36	14	250	3.0	.5	28	13	31
32	M-7-1		1	124	24	840	3.4	.5	88	18	32
33											33
34											34
35											35
36											36
37											37
38											38
39											39
40	M-G-1										40

COMMENT:

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil.

PROJECT 375 LOCATION Lac La Hache

REQUESTED BY D. Colby DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo	Cu	Ni		Mn	Fe%	Ag	Zn	Pb			No.
01	7LWCS260		~~Tr~~ 1	84	48		460	3.6	.5	132	20			01
02	261		1	44	32		320	3.5	.5	72	14			02
03	262		1	20	24		240	2.6	.5	36	12			03
04	263		1	20	23		560	2.5	.5	44	16			04
05	264		1	35	28		520	3.2	.5	46	20			05
06	265		1	28	26		620	6.9	.5	136	16			06
07	266		1	152	40		400	2.9	.5	50	22			07
08	267		1	232	64		1640	4.9	1.0	72	30			08
09	268		1	20	22		200	1.7	.5	36	16			09
10	269		1	38	32		360	2.8	.5	62	20			10
11	270		1	74	44		300	3.9	.5	68	18			11
12	271		1	52	37		~~280~~	3.3	.5	72	18			12
13	272		1	50	40		360	3.7	.5	76	18			13
14	273		1	46	42		500	3.5	.5	68	16			14
15	274		1	40	42		460	3.8	.5	80	20			15
16	275		1	62	39		380	3.7	.5	74	18			16
17	276		1	184	28		320	2.1	.5	52	14			17
18	277		1	104	39		460	2.9	.5	128	18			18
19	278		1	32	34		240	2.2	~~.5~~ .5	90	16			19
20	279		1	24	26		240	2.5	.5	42	12			20
21	280		1	62	40		440	2.3	.5	68	18			21
22	281		1	32	28		300	2.6	.5	54	14			22
23	282		1	12	20		180	1.0	.5	28	12			23
24	283		1	20	32		360	3.1	.5	72	14			24
25	284		1	20	28		220	1.6	.5	66	14			25
26	285		1	16	24		400	2.2	.5	40	12			26
27	286		1	26	34		320	2.8	.5	64	16			27
28	287		1	24	23		200	2.4	.5	42	14			28
29	288		1	16	23		240	2.0	.5	44	12			29
30	289		1	24	27		240	2.5	.5	48	12			30
31	290		1	20	18		280	1.9	.5	48	14			31
32	291		1	20	24		280	1.9	.5	60	12			32
33	292		1	16	20		280	1.8	.5	46	12			33
34	293		1	28	20		220	1.9	.5	50	14			34
35	294		1	32	28		240	1.8	.5	48	14			35
36	295		1	28	28		260	1.6	.5	46	20			36
37	296		1	26	24		320	1.7	.5	48	14			37
38	297		1	58	38		440	3.0	.5	58	20			38
39	7LWCS298		1	>500	106		1600	4.4	1.0	76	24			39
40	D-1		~~617~~	64	60		320	2.5	4.0	88	60			40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

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BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 — TYPE SAMPLES Soil

PROJECT 375- — LOCATION Lac la Hache

REQUESTED BY D Colby — DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo	Cu	Ni	Mn	Fe %	As	Zn	Pb	Ag	No.
01	71WCS299		1	68	32	710	3.3	1.5	64 136	18	940	01
02	300		1	192	44	6[illegible]	3.7	.5	5296	20	620	02
03	301		1	32	23	[illegible]60	3.1	.5	4448	16	360	03
04	302		1	24	22	[illegible]50	2.3	.5	5264	14	280	04
05	303		1	26	28	[illegible]00	2.5	.5	70	16	320	05
06	304		1	32	24	[illegible]20	3.0	.5	44	12	320	06
07	305		1	20	32	[illegible]00	3.2	.5	104	20	400	07
08	306		1	22	16	[illegible]70	2.7	.5	48	16	700	08
09	307		1	32	32	[illegible]50	2.8	.5	96	18	280	09
10	308		1	18	24	[illegible]00	1.9	.5	136	14	1160	10
11	309		1	174	30	[illegible]40	2.9	.5	48	16	200	11
12	310		1	208	30	[illegible]0	2.3	.5	44	12	420	12
13	311		1	24	16	[illegible]0	2.4	.5	52	14	360	13
14	312		1	16	16	[illegible]60	2.5	.5	42	14	300	14
15	313		1	22	16	[illegible]20	3.1	.5	116	16	480	15
16	314		1	32	20	[illegible]0	3.0	.5	40	14	360	16
17	315		1	18	12	[illegible]0	3.5	.5	30	12	240	17
18	316		1	16	12	[illegible]0	3.5	.5	28	14	220	18
19	317		1	20	28	[illegible]00	3.1	.5	40	16	220	19
20	318		1	26	24	[illegible]80	2.3	.5	44	18	280	20
21	319		1	18	20	[illegible]40	2.6	.5	48	18	240	21
22	320		1	32	22	[illegible]0	2.7	.5	48	16	240	22
23	321		1	20	16	[illegible]0	2.6	.5	36	16	240	23
24	322		1	104	44	[illegible]0	3.8	.5	56	24	840	24
25	323		1	182	36	[illegible]0	2.9	.5	46	24	440	25
26	324		1	52	19	[illegible]0	2.6	.5	30	18	260	26
27	325		1	16	16	[illegible]0	2.1	.5	30	18	320	27
28	326		1	28	22	[illegible]50	2.6	.5	48	20	480	28
29	327		1	92	42	[illegible]16	3.4	.5	44	24	1116	29
30	328		1	76	30	[illegible]50	2.9	.5	48	24	520	30
31	329		1	28	14	[illegible]0	2.7	.5	40	20	380	31
32	330		1	130	16	[illegible]0	3.4	.5	52	22	580	32
33	331		1	68	20	[illegible]0	3.1	.5	84	24	280	33
34	333		1	340	24	[illegible]60	2.7	.5	84	24	600	34
35	334		1	22	14	[illegible]0	2.0	.5	54	20	280	35
36	335		1	16	16	[illegible]0	2.1	.5	64	24	260	36
37	336		1	35	20	[illegible]0	2.5	.5	70	24	240	37
38	337		1	30	16	[illegible]40	1.9	.5	60	22	200	38
39	71WCS338		1	20	14	[illegible]40	1.9	.5	46	20	240	39
40	A-1		18	60	64	[illegible]30	2.4	4.0	92	62	320	40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 — TYPE SAMPLES Soil

PROJECT 335- — LOCATION Lac La Hache

REQUESTED BY D. Colby — DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo ✓	Cu ✓	Ni ✓	Mn	Fe %	Ag	Zn	Pb			No.
01	71WCS339		1	24	16	300	1.4	.5	36	12			01
02	340		1	18	16	160	1.4	.5	26	12			02
03	341		1	24	18	260	1.6	.5	36	12			03
04	342		1	12	16	160	1.7	.5	28	10			04
05	343		1	13	12	160	1.5	.5	32	10			05
06	344		1	20	18	240	2.0	.5	56	14			06
07	345		1	12	10	160	1.1	.5	24	8			07
08	346		1	12	12	150	1.2	.5	32	10			08
09	347	5.5	1	20	16	180	1.4	.5	66	12			09
10	348		1	28	20	200	1.9	.5	44	16			10
11	349		1	16	16	120	1.1	.5	34	10			11
12	350		1	26	18	220	1.7	.5	40	12			12
13	351	6.3	1	20	16	200	1.7	.5	36	14			13
14	352		1	16	16	180	3.5	.5	54	20			14
15	353		1	30	14	160	1.6	.5	36	15			15
16	354		1	28	16	200	1.7	.5	41	16			16
17	355	5.8	1	40	24	180	2.9	.5	32	18			17
18	356		1	30	24	200	2.4	.5	38	18			18
19	357		1	32	30	280	3.0	1.0	72	20			19
20	358		1	292	32	540	4.3	1.0	112	28			20
21	359	5.7	1	32	28	100	2.2	.5	74	20			21
22	360		1	49	20	580	1.7	.5	52	18			22
23	361		1	16	14	140	1.6	.5	47	14			23
24	362		1	20	16	120	1.8	.5	35	16			24
25	363	5.5	1	22	13	150	1.8	.5	36	16			25
26	364		1	22	12	160	1.6	.5	266	16			26
27	365		1	20	14	140	2.4	.5	34	18			27
28	366		1	18	12	160	1.9	.5	58	18			28
29	367	5.1	1	22	20	170	2.4	.5	44	18			29
30	368		1	22	22	250	2.6	.5	96	20			30
31	369		1	108	20	560	2.8	.5	186	24			31
32	370		1	24	18	140	2.7	.5	58	14			32
33	71WCS371	6.0	1	20	32	120	2.2	.5	86	16			33
34	A-1		17	52	60	200	2.8	(1)	80	18			34
35													35
36													36
37													37
38													38
39													39
40													40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 375 LOCATION Hoe Lay Hochi

REQUESTED BY D. Colby DISPOSITION OF REJECTS Discard

c/c Hodgson

No.	Sample	pH	Mo ✓	Cu ✓	Ni ✓		Mn	Fe%	Ag	Zn	Pb			No.
01	IWQ5918	6.0	1	20	24		250	2.4	.r	60	16			01
02	919		1	38	32		320	2.7	.r	72	16			02
03	920		1	52	36		280	4.0	.r	76	16			03
04	921		1	64	24		360	3.5	.r	64	16			04
05	922	6.6	1	184	30		320	3.0	.r	56	14			05
06	923		1	32	24		260	3.0	.r	44	16			06
07	924		1	20	16		290	2.5	.r	32	12			07
08	925		1	28	20		320	2.2	.r	40	14			08
09	926	6.0	1	28	22		320	2.2	.r	36	14			09
10	927		1	20	20		250	2.2	.r	36	12			10
11	928		1	20	18		280	2.0	.r	30	12			11
12	929		1	20	16		260	1.8	.r	32	14			12
13	930	5.6	1	18	18		240	1.8	.r	40	10			13
14	931		1	16	18		240	2.0	.r	36	12			14
15	932		1	30	32		280	3.1	.r	76	16			15
16	933		1	24	22		300	2.3	.r	68	14			16
17	934	5.0	1	24	24		280	2.4	.r	56	16			17
18	935		1	20	20		240	2.1	.r	48	15			18
19	936		1	20	23		240	2.6	.r	50	14			19
20	937		1	20	18		210	2.3	.r	28	18			20
21	938	6.7	1	44	18		240	2.5	.r	26	12			21
22	939		1	28	22		260	2.6	.r	32	12			22
23	940		1	34	36		400	3.3	.r	64	16			23
24	941		1	36	32		240	3.1	.r	60	18			24
25	942	5.4	2	60	30		260	3.1	.r	68	20			25
26	943		1	30	22		440	2.8	.r	72	14			26
27	944		1	88	35		500	3.4	.r	68	16			27
28	945		1	64	32		1000	3.8	.r	124	19			28
29	946	6.9	1	x680	88		1000	5.7	2.0	84	24			29
30	947		1	34	32		320	4.2	.r	76	16			30
31	948		1	188	62		1920	4.4	1.0	76	24			31
32	949		1	28	36		760	4.5	.r	164	26			32
33	950		1	28	22		260	3.0	.r	44	14			33
34	951	6.7	1	40	24		320	2.5	.r	44	16			34
35	953		1	20	18		560	2.8	.r	84	14			35
36	95X		1	x640	96		1020	6.7	2.5	148	26			36
37	955		1	32	20		280	2.1	.r	48	14			37
38	956	6.6	1	44	22		240	3.0	.r	56	12			38
39	IWQ957		1	28	30		280	3.0	.r	68	12			39
40	[illegible]-1		1	140	32		880	4.1	.r	100	22			40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 — TYPE SAMPLES Soil

PROJECT 375- — LOCATION Hoe La Hache

REQUESTED BY D. Colby ? C. Hodgson — DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo	Cu	Ni	Mn	Fe%	Ag	Zn	Pb	No.
01	JWQ5 958		1	100	22	280	3.1	.5	56	12	01
02	959		1	36	28	240	2.9	.5	68	14	02
03	960		1	20	17	620	3.0	.5	84	10	03
04	961	6.3	1	64	16	320	3.2	.5	40	8	04
05	962		1	24	24	240	2.7	.5	76	14	05
06	963		1	168	34	720	3.1	.5	76	10	06
07	964		1	50	40	280	3.4	.5	88	16	07
08	965	6.2	1	24	18	220	2.8	.5	44	8	08
09	966		1	36	26	190	2.6	.5	52	10	09
10	967		1	16	12	160	1.4	.5	44	8	10
11	968		1	18	12	200	1.7	.5	32	8	11
12	969	5.9	1	24	16	240	1.8	.5	48	12	12
13	970		1	20	12	220	1.6	.5	32	12	13
14	971		1	22	12	280	1.9	.5	40	10	14
15	972		1	24	14	270	1.7	.5	36	12	15
16	973	5.3	1	24	12	220	1.5	.5	30	10	16
17	974		1	24	14	320	2.1	.5	28	10	17
18	975		1	36	20	360	3.5	.5	44	16	18
19	976		1	28	16	440	2.4	.5	40	8	19
20	977	5.9	1	64	30	510	2.9	.5	64	12	20
21	978		1	24	20	260	2.2	.5	44	16	21
22	979		1	22	14	200	1.8	.5	36	8	22
23	980		1	48	18	300	2.4	.5	52	10	23
24	981	6.4	1	90	30	480	3.2	.5	52	16	24
25	982		1	36	16	240	1.8	.5	32	12	25
26	983		1	60	24	400	2.3	.5	56	12	26
27	984		1	44	20	250	2.3	.5	40	14	27
28	985	5.8	2	48	26	160	2.4	.5	56	14	28
29	986		1	48	28	160	2.2	.5	56	14	29
30	987		1	28	18	120	2.0	.5	40	12	30
31	988		1	30	18	280	1.8	.5	52	12	31
32	989	6.0	1	76	22	360	2.9	.5	52	12	32
33	990		1	74	21	400	2.1	.5	64	10	33
34	991		1	28	16	260	2.1	.5	80	12	34
35	992		1	28	24	220	2.7	.5	92	12	35
36	993	5.9	1	30	28	1360	3.2	.5	136	12	36
37	994		1	20	22	180	2.7	.5	64	12	37
38	995		1	48	18	240	2.5	.5	60	12	38
39	JWQ5 996		1	60	30	350	2.8	.5	72	16	39
40	FIG-1		1	116	24	720	2.9	.5	84	16	40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 375 LOCATION Lac La Hache District

REQUESTED BY D. Colley DISPOSITION OF REJECTS

P.C. Hollosy

No.	Sample	pH	Mo	Cu	Ni		Mn	Fe%	Ag	Zn	Pb			No.
01	1WQ5997	5.6	1	36	24		280	2.7	.5	80	12			01
02	998		1	40	40		220	2.8	.5	76	14			02
03	999		1	28	26		520	3.1	.5	76	12			03
04	1000		1	48	24		300	3.5	.5	44	16			04
05	1001	5.7	1	32	30		200	3.1	.5	48	16			05
06	1002		1	56	20		200	2.1	.5	44	10			06
07	1003		1	40	18		220	1.9	.5	32	8			07
08	1004		1	22	16		200	2.4	.5	36	12			08
09	1005	5.9	1	152	32		320	3.0	.5	44	14			09
10	1006		1	90	31		320	3.1	.5	48	14			10
11	1007		1	28	16		240	2.2	.5	36	10			11
12	1008		1	24	16		200	1.9	.5	48	8			12
13	1008	5.9	1	24	16		200	1.6	.5	32	8			13
14	1010		1	24	15		220	2.0	.5	32	6			14
15	1011		1	26	14		260	2.0	.5	32	8			15
16	1012		1	20	12		300	2.4	.5	28	10			16
17	1013	6.2	1	20	12		310	2.1	.5	28	6			17
18	1014		1	16	12		200	1.7	.5	24	8			18
19	1015		1	36	14		240	2.1	.5	28	8			19
20	1016		1	114	36		540	3.5	.5	44	16			20
21	1017	6.1	1	90	26		240	2.8	.5	44	12			21
22	1018		1	24	16		230	1.7	.5	36	8			22
23	1019		1	28	16		240	2.2	.5	44	8			23
24	1020		1	20	12		250	1.9	.5	24	8			24
25	1021	5.3	1	16	12		240	2.1	.5	28	6			25
26	1022		1	20	18		250	2.6	.5	40	10			26
27	1023		1	28	18		180	2.6	.5	60	12			27
28	1024		1	20	16		980	2.8	.5	44	10			28
29	1025	5.5	1	20	20		290	3.3	.5	88	12			29
30	1026		1	28	30		290	2.9	.5	44	10			30
31	1027		1	24	16		240	2.3	.5	36	14			31
32	1028		1	52	20		300	3.0	.5	36	12			32
33	1029	6.4	1	16	14		330	2.1	.5	32	8			33
34	1030		1	116	26		230	2.8	.5	60	12			34
35	1031		1	36	36		400	3.7	.5	100	14			35
36	1032		1	28	16		240	2.1	.5	30	10			36
37	1033	5.0	1	44	28		350	2.9	.5	52	12			37
38	1034		1	44	36		320	3.8	.5	108	12			38
39	1WQ5 1035		1	56	36		250	3.4	.5	92	14			39
40	M i - 1		1	130	30		800	3.3	.5	92	16			40

COMMENT:

DATE SAMPLES RECEIVED

DATE REPORTS MAILED

ANALYST

AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 — TYPE SAMPLES Soil

PROJECT 375 — LOCATION Rocha Stock

REQUESTED BY D. Colley — DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo √	Cu √	Ni √		Mn	Fe%	Ag	Zn	Pb.			No.
01	WQS1036		1	16	20		880	2.7	.5	174	10			01
02	1037	5.6	1	44	28		620	3.6	.5	116	14			02
03	1038		1	16	24		320	2.9	.5	68	12			03
04	1039		1	28	28		380	3.5	.5	52	12			04
05	1040		1	86	30		260	3.5	.5	44	12			05
06	1041	5.4	1	15	16		200	2.7	.5	20	6			06
07	1042		1	12	18		210	2.8	.5	24	10			07
08	1043		2	116	32		1080	3.5	.5	40	12			08
09	1044		1	17	22		390	3.1	.5	72	10			09
10	1045	5.3	1	12	18		440	3.1	.5	68	10			10
11	1046		1	20	28		380	3.4	.5	84	10			11
12	1047		1	32	24		420	3.4	.5	60	8			12
13	1048		1	36	28		430	3.7	.5	52	12			13
14	1049	5.7	1	16	24		600	2.8	.5	96	10			14
15	1050		1	14	20		720	3.0	.5	96	8			15
16	1051		1	28	20		360	3.7	.5	48	8			16
17	1052		2	7	58		680	5.1	.5	136	20			17
18	1053	5.3	2	16	24		420	3.5	.5	56	12			18
19	1054		1	20	32		320	3.8	.5	92	12			19
20	1055		1	32	32		430	3.9	.5	72	8			20
21	1056		1	40	32		640	3.5	.5	76	12			21
22	1057	5.5	1	36	30		520	3.4	.5	184	16			22
23	1058		1	34	20		280	3.5	.5	60	12			23
24	1059		1	108	24		680	4.4	.5	96	16			24
25	1060		1	45	28		1080	4.3	.5	204	16			25
26	1061	6.1	2	252	32		1360	6.3	.5	72	12			26
27	1062		2	20	20		1460	2.5	.5	208	12			27
28	1063		1	58	32		560	3.8	.5	172	16			28
29	1064		1	62	29		800	5.7	.5	116	18			29
30	1065	5.6	1	48	32		400	3.4	.5	176	14			30
31	1066		1	64	36		1160	5.2	.5	204	14			31
32	1067		1	48	30		800	4.4	.5	292	16			32
33	1068		1	27	23		320	3.4	.5	96	10			33
34	1069	5.8	1	18	20		400	3.3	.5	112	8			34
35	1070		1	32	25		260	3.3	.5	72	12			35
36	1071		1	24	26		260	3.4	.5	96	14			36
37	1072		1	32	20		240	3.0	.5	84	14			37
38	1073	7.1	1	60	22		320	3.1	1.0	128	12			38
39	WQS 1074		1	31	22		260	3.7	.5	84	16			39
40	[illegible]		1	116	28		680	3.4	.5	84	16			40

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ANALYST

AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Aug 13/71 TYPE SAMPLES Soil

PROJECT 375 LOCATION Lac La Hache

REQUESTED BY D. Colley DISPOSITION OF REJECTS Discard

No.	Sample	pH	Mo	Cu	Ni		Mn	Fe%	Ag	Zn	Pb			No.
01	IWQS1075		1	54	11		240	2.5	.5	34	20			01
02	1076		1	30	16		220	3.4	.5	30	14			02
03	1077	5.1	1	44	16		280	3.6	.5	28	14			03
04	1078		1	40	20		260	3.3	.5	64	12			04
05	1079		1	202	28		460	3.3	.5	220	14			05
06	1080		1	42	20		320	3.2	.5	60	10			06
07	1081	5.6	1	32	14		240	2.6	.5	36	10			07
08	1082		1	32	14		320	2.9	.5	28	12			08
09	1083		1	26	8		200	2.0	.5	24	12			09
10	1084		1	31	10		200	2.2	.5	20	10			10
11	1085	5.1	1	44	16		360	3.0	.5	60	12			11
12	1086		1	37	16		320	2.7	.5	40	10			12
13	1087		1	88	23		360	2.5	.5	56	14			13
14	1088		1	54	18		300	2.8	.5	36	16			14
15	1089	5.4	1	36	18		280	2.9	.5	40	8			15
16	1090		1	24	22		220	2.9	.5	56	8			16
17	IWQS 1091		1	32	20		240	2.6	.5	48	12			17
18	IWQ-1		1	120	28		760	3.4	.5	88	16			18
19														19
20														20
21														21
22														22
23														23
24														24
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26														26
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39														39
40														40

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ANALYST

Procedures for Collection and Processing of Geochemical Samples

Analytical Methods for Ag, Mo, Cu, Pb, Zn, Fe, Mn, Ni, Co and W in sediments and soils; Mo, Cu, Zn, Ni and SO_4^{--} in waters.

Amax Exploration, Inc.
Vancouver Office.

September 1970

R.F. Horsnail

SAMPLE COLLECTION

Soils

B horizon material is sampled and thus organic rich topsoil and leached upper subsoil are avoided. Occasionally organic rich samples have to be taken in swampy depressions.

Samples are taken by hand from a small excavation made with a cast iron mattock. Approximately 200 gms of finer grained material is taken and placed in a numbered, high wet-strength, Kraft paper bag. The bags are closed by folding and do not have metal tabs.

Observations as to the nature of the sample and the environment of the sample site are made in the field.

Drainage Sediments

Active sediments are taken by hand from tributary drainages which are generally of five square miles catchment or less. Composite samples are taken of the finest material available from as near as possible to the centre of the drainage channel thus avoiding collapsed banks. More than one sample is taken if marked mineralogical or textural segregation of the sediments is evident.

Some 200 gm of finer material is collected unless the sediment is unusually coarse in which case the weight is increased to 1 kg. Samples are placed in the same type of Kraft paper bag as are employed in soil sampling. Water samples are taken at all appropriate sites. Approximately 100 mls are sampled and placed in a clean, screw sealed, polythene bottle. Observations are made at each site regarding the environment and nature of the sample.

Rock Chips

Composite rock chip samples generally consist of some ten small fragments broken from unweathered outcrop with a steel hammer. Each fragment weighs some 50 gms. Samples are placed in strong polythene bags and sealed with non-contaminating wire tabs. Samples are restricted to a single rock type and obvious mineralization is avoided.

Soil, sediment and rock samples are packed securely in cardboard boxes or canvas sacks and dispatched by road or air to the AMAX geochemical laboratory in Vancouver.

SAMPLE PREPARATION

Packages of samples are opened as soon as they arrive at the laboratory and the bags placed in numerical sequence in an electrically heated sample drier (maximum temperature 70°C).

After drying soil and sediment samples they are lightly pounded with a wooden block to break up aggregates of fine particles and are then passed through a 35 mesh stainless steel sieve. The coarse material is discarded and the minus 35 mesh fraction replaced in the original bag providing that this is undamaged and not excessively dirty.

Rock samples are exposed to the air until the outside surfaces are dry; only if abnormally wet are rocks placed in the sample drier. Rock samples are processed in such manner that a fully representative $\frac{1}{2}$ g sample can be obtained for analysis. The entire amount of each sample is passed through a jaw crusher and thus reduced to fragments of 2 mm size or less. A minimum of 1 kg is then passed through a pulverized with plates set such that 95% of the product will pass through a 100 mesh

screen. Where samples are appreciably heavier than 2 kg the material is split after jaw crushing by means of a Jones splitter. After pulverizing the sample is mixed by rolling on paper and is then placed in a Kraft paper bag.

SAMPLE DIGESTION

Digestion tubes (100 x 16 mm) are marked at the 5 ml level with a diamond pencil. Tubes are cleaned with hot water and concentrated HCl. 0.5 g samples are weighed accurately, using a Fisher Dial-O-Gram balance, and placed in the appropriate tubes.

To each of the samples thus prepared are added 2 ml of an acid mixture comprising 15% nitric and 85% perchloric acids. Racks of tubes are then placed on an electrical hot plate, brought to a gentle boil ($\frac{1}{2}$ hour) and digested for $4\frac{1}{2}$ hours. Samples unusually rich in organic material are first burned in a porcelain crucible heated by a bunsen burner before the acid mixture is added. Digestion is performed in a stainless steel fume hood.

After digestion tubes are removed from the hot plate and the volume is brought up to 5 ml with deionized water. The tubes are shaken to mix the solution and then centrifuged for one minute. The resulting clear upper layer is used for Cu, Mo, Pb, Zn, Ag, Fe, Mn, Ni and Co determination by a Perkin-Elmer 290B atomic absorption spectrophotometer. Analytical procedures are given on the following pages.

ANALYTICAL PROCEDURES

Silver

1. Scope - This procedure covers a range of silver in the sample from less than .5 to 1000 ppm

2. Summary of Method - The sample is treated with nitric and perchloric acid mixture to oxidize organics and sulphides. The silver then is present as perchlorate in aqueous solution. The concentration is determined by atomic absorption spectrophotometer

3. Interferences - Silver below 1 gamma/ml is not very stable in solution. Maintaining the solution in 20% perchloric prevents silver being absorbed on the glass container. Determination must be completed on the same day as the digestion.

   Samples high in dissolved solids, especially calcium, cause high background absorbance. This background absorbance must be corrected using an adjacent Ag line.

Silver AA Settings P.E. 290

Lamp - Ag

Current 4 ma position 3

Slit 7 A

Wavelength 3281A Dial 287.4

Fuel - acetylene - flow - 14

Oxidant - air - flow - 14

Burner - techtron AB_51 in line

Maximum Conc. 3 to 4x

Calibration

1. Set 1 gamma/ml to read 40 equivalent to 20 gamma/gm

   Factor $\frac{1}{2}$ x meter reading

   Check standards

   4, 10, 20, 40 ppm Ag in sample

2. Set 15 gamma/ml to 100 equivalent to 100 ppm

   Check standards

   40, 100 ppm

   Factor directly in ppm Ag

3. Rotate burner to maximum angle

   Set 10.0 gamma/ml Ag to read 100

   Check standards

   100,200,400,1000 ppm Ag

   Factor 10x scale reading

4. Samples higher than 1000 ppm should be re-analyzed by assay procedure

5. Background correction for sample reading between 1 to 5 ppm

   Calibrate AA in step 1

   Dial wavelength to 300 (peak)

   Read the samples again

   Subtract the background reading from the first reading

Standards

1. 1000 gamma/ml Ag - 0.720 gm Ag_2SO_4 dissolved in 20 mls $Hxlo_3$ and dilute to 500 mls

2. 100 gamma/ml Ag - 10 mls of above + 20 mls $HClO_4$, dilute to 100 mls

3. Recovery spiked standard

5 gamma/ml Ag - 5 mls 100 gamma/ml dilute to 100 mls with "mixed" acid

Working AA Standards

Pipette .2, .5, 1, 2, 5, 10 mls of 100 gamma/ml and 2, 5 mls 1.000 gamma/ml dilute to 100 mls with 20% $HClO_4$. This equivalent to 4, 10, 20, 40, 100, 200, 400, and 1000 ppm Ag in the sample .50 gm diluted to 10 mls.

Recovery Standard

Pipette 2 mls of 5 gamma/ml Ag in mix acids into a sample and carry through the digestion. This should give a reading of 20 ppm Ag + original sample content.

Follow the general geochemical procedure for sample preparation and digestion.

For low assay Ag, the same procedure is used. Ag is then calculated in oz/ton.

1 ppm = .0292 oz/ton

conversion factor

oz/ton = .0292 x ppm Ag

Zn Geochemical AA Setting

Lamp Zn

Current 8 #3 Slit 20A

Wave length 2138 Dial 84.9

Fuel - Acetylene Flow 14

Oxidant - Air Flow 14

Burner - P.E. short path 90°

Range

0 - 20 gamma/ml Factor 4x - 0 to 400 ppm

0 - 50 gamma/ml Factor 10x -0 to 1000 ppm

For Waters - Burner AB- 51 in line 1 gamma/ml read 100 to give 0 to 1000 ppb

High Zn Burner Boling in line. Wavelength 3075. Dial 250 Slit 7A

Fuel 14 Air 14.5

0 to 1000 gamma/ml read 0 to 20 Factor 400 x

Pure Standard 10,000 gamma/ml

1 gm Zn dissolved, H_2O, HCl, HNO_3, $HClO_4$, fumed to $HClO_4$ - make up to 100 mls H_2O

1000, 100 gamma/ml and 100 ml by dilution in 20 % $HClO_4$

0 to 200 gamma/ml Zn use combined Cu, Ni, Co, Pb, Zn standards

Pipette

1, 2, 3, 5, 8, 10 mls of 10,000 gamma/ml - dilute to 100 mls with 20% $HClO_4$ to give

100, 200, 300, 500, 800, 1000 gamma/ml Zn for high standards

Co Geochemical AA Setting

Lamp - 5 multi element

Current 10 #4 Slit 2A

Wavelength 2407 Dial 133.1

Fuel - Acetylene Flow 14

Oxidant - Air Flow 14

Burner - AB 51 in line

Range

0 - 10 gamma/ml read 100 Factor 2 x reading to 200 ppm

0 - 20 ganma ml read 100 Factor 4 x reading to 400 ppm

Burner at maximum angle

0 - 100 gamma/ml read 100 Factor 20 x reading to 2000 ppm

0 - 200 gamma/ml read 100 Factor 40 x reading to 4000 ppm

Standards - 1000 gamma/ml

1.000 gm cobalt metal dissolved in HCl, HNO, and fumed into $HClO_4$, dilute to 1 liter

Pipette

1, 2, 10, 20 mls into 100 ml vol flasks diluted to mark with 20% $HClO_4$

This gives

10, 20, 100, 200 gamma/ml Co

Mixed - combination standards of Cu, Ni, Co, Pb, Zn of

1, 2, 5, 10, 20, 30, 50, 80, 100, 150, 200 gamma/ml are used for calibration

Mn Geochemical AA Setting

Lamp Multi element Ca, Ni, Co, Mn Cr

Current 10 #4 Slit 7A

Wave length 4030.8 Dial 425.2

Fuel - Acetylene Flow 14.0

Oxidant - Air Flow 14.0

Burner - P.E. short path (or AB 50)

Range

0 - 100 gamma/ml Factor 20x - 0 to 2000 ppm

0 - 200 gamma/ml Factor 40x - 0 to 4000 ppm

Burner 90°

0 - 1000 gamma/ml Factor 200x - 0 to 20,000 ppm

0 - 2000 gamma/ml Factor 400x - 0 to 40,000 ppm

EDTA Extraction - use AB 51 in line

0 - 20 gamma/ml Factor 4x - 0 to 400 ppm

Standards

Fisher 10,000 gamma/ml (ml)

10x Dilution 1000 gamma/ml

Pippette

.5, 1, 2, 3, 5, 8, 10, ml of 1000 gamma/ml

2, 3, 5, 8, 10, 15, 20 ml of 10,000 gamma/ml dilute to 100 mls with 20% $HClO_4$. This gives

5, 10, 20, 30, 50, 80, 100, 200, 300, 500, 800, 1000, 1500, 2000 gamma/ml.

Mo Geochemical AA Setting

Lamp ASL H/C Mo

Current 5 #5 Slit 7A

Wavelength 3133 Dial 260.2

Fuel - Acetylene Flow 12.0 to give 1" red feather

Oxidant - Nitrous oxide Flow 14.0

Burner - AB 50 in line

Caution read the operation using N_2O and acetylene flame at end of general AA procedure

Range

0 - 10 gamma/ml Factor 2x - 0 to 200 ppm

Rotate burner to max. angle

0 - 50 gamma/ml Factor 10 x 0 to 1000 ppm

0 - 100 gamma/ml Factor 20 x 0 to 2000 ppm

Standards 1000 gamma/ml

Dissolve .750 gms MoO_3 (acid molybdic) with 20 mls H_2O, 6 lumps NaCH, when all dissolved, add 20 mls HCl, dilute to 500 mls 100 gamma/ml - 10 x dilution

Pipette

.2, .5, 1, 2, 3, 5, 8, 10 mls of 100 gamma/ml

2, 3, 5, 8, 10 mls of 1000 gamma/ml add 5 mls 10% $AlCl_3$ and dilute to 100 mls with 20% $HClO_4$

This gives

.2, .5, 1, 2, 3, 5, 8, 10, 20, 30, 50, 80, 100 gamma/ml Mo

Fe Geochemical AA Setting

Lamp - Fe

- Do not use multi element Fe

Current 10 #4 Slit 2A

Wavelength 3440.6 Dial 317.5

Fuel - Acetylene Flow 14.0

Oxidant - Air Flow 14.0

Burner - PE Short Path 90°

Range

0 - 5000 gamma/ml 0.1 x % - 0 to 10.0%

0 - 10,000 gamma/ml 0.2 x % - 0 to 20.0%

Higher Fe - 10 x dilution

Standards 10,000 gamma/ml

Weigh 5.000 gms iron wires, into beaker, add H_2O, HCl, HNO_3, $HClO_4$, heat to $HClO_4$ fumes. Add $HClO_4$ to 100 mls + 100 mls H_2O, warm, dilute to 500 mls

Pipette

1, 5, 10, 20, 30, 50, 80 mls 10,000 gamma/ml dilute to 100 mls with 20% $HClO_4$ to give

100, 500, 1000, 2000, 3000, 5000, 8000 gamma/ml to be equivalent to .2, 1.0, 2.0, 4.0, 6.0, 10.0%, 16.0% Fe in geochem sample

Ni Geochemical AA Setting

Lamp P.E. H/C. Ni or multi element Cu, Ni, Co, Mn, Cr

Current 10 #4, Slit 2A

Wave length 3415 Dial 312.5

Fule - Acetylene Flow 14.0

Oxidant - Air Flow 14.0

Burner AB 51 in line

Range

0 - 20 gamma/ml Factor 4x - 0 - 400 ppm

0 - 100 gamma/ml Factor 20x - 0 - 2000 gamma

45° 0 - 200 gamma/ml Factor 40x - 0 - 4000 ppm

0 - 500 gamma/ml Factor 100x - 0 - 10,000 ppm

Ni in waters and very low ranges

Wave length 2320 Dial 118

Range 0 - 5 gamma/ml Factor 1x - 0 - 100 ppm

Standards 10,000 gamma/ml

1.000 gm pure Ni metal dissolved in HCl, HNO_3, $HClO_4$ to perchloric fumes, dilute to 100 ml H_2O

1000 gamma/ml and 100 gamma/ml Successive 10x dilutions in 20% HClO

1, 2, 5, 8, 10 mls of 100 gamma/ml

2, 5, 8, 10 mls 1000 gamma/ml

2, 5, 8, 10 mls 10,000 gamma/ml - dilute to 100 mls in 20% HClO4. This gives

1, 2, 5, 8, 10, 20, 50, 80, 100, 200, 500, 800, 1000 gamma/ml N

Combined Standards - Cu, Ni, Co, Pb, Zn is used as a working standard

Cu Geochemical AA Setting

Lamp Single Cu or

5 multi element

Current 10 for multi element #4 Slit 7A

4 for single #3 Slit 7A

Wavelength 3247 Dial 280

Burner Techtron AB 51 (For Cu in natural waters)

P.E. Short Path (For geochem)

Fuel Acetylene Flow 14

Oxidant Air Flow 14

Range

0 - 5 gamma/ml Factor 1x to 100 ppm (for low Cu)

0 - 20 gamma/ml Factor 4x to 400 ppm

Burner 90°

0 - 200 gamma/ml Factor 40x to 4000 ppm

Wavelength 2492 Dial 147

Burner in line

Range

0 - 1000 gamma/ml Factor 200x to 20,000 ppm

0 - 2000 gamma/ml Factor 400x to 40,000 ppm

Higher range than 40,000 ppm requires 10x dilution

Standards

10,000 gamma/ml

1.000 gm metal powder, H_2O, HCl, HNO_3 until dissolved, add $HClO_4$, fume dilute to 100 mls

1000 gamma/ml 10x dilution above in 20% $HClO_4$

2000 gamma/ml 20 mls 10,000 gamma/ml - dilute to 100 mls in 20% $HClO_4$

100 gamma/ml 10x dilution 1000 gamma/ml dilute to 100 mls in 20% $HClO_4$

200 gamma/ml 10x dilution 2000 gamma/ml dilute to 100 mls in 20% $HClO_4$

Pipette

1, 2, 3, 5, 8, 10 mls 100 gamma/ml - dilute to 100 mls with 20% $HClO_4$ to give 1, 2, 3, 5, 8, 10 gamma/ml

Combined standards Cu, Ni, Co, Pb, Zn

1, 2, 5, 10, 20, 30, 50, 80, 100, 150, 200 gamma/ml

Pb Geochemical AA Setting

Lamp ASL H/c Pb

Current 5 ma Slit 7A

Wave length 2833 Dial 208

Fuel - acetylene Flow 14

Oxidant - air Flow 14

Burner AB 51 in line

Range

0 - 20 gamma/ml to read 0 to 80. Factor 5x 0 to 500 ppm

0 - 200 gamma/ml to read 0 to 80. Factor 50x 0 to 5000 ppm

Standards - 10,000 gamma/ml

1.000 pure metal, dissolved in HNO_3, fumed to $HClO_4$ make up to 100 mls in 20% $HClO_4$

1000 gamma/ml and 100 gamma/ml Successive 10x dilutions in 20% $HClO_4$

Pipette

1, 2, 5, 8, 10 mls 100 gamma/ml

2, 5, 8, 10, 20 mls 1000 gamma/ml dilute to 100 mls in 20% $HClO_4$ this gives

.1, 2, 5, 8, 10, 20, 50, 80, 100, 200 gamma/ml

Combined Standards Cu, Ni, Co, Pb, Zn, are used as working standards

W in Soils and Silts

Reagents and apparatus

Test tubes - pyrex disposable

Test tubes - screw cap

Bunsen Burner

Flux - 5 parts Na_2CO_3

4 parts NaCl

1 part KNO_3 pulverized to -80 mesh

7% $SnCl_2$ in 70% HCl

20% KSCN in H_2O

Extractant - 1 part tri-n-butyl phosphate

9 parts carbon tetrachloride

Standards

1000 gamma/ml W

.18 gms Na_2WO_4 $2H_2O$ dissolved in H_2O, make up to 100 mls

100 gamma/ml, 10 gamma/ml by dilution

Standardization

Pipette .5, 1, 2, 3, 5, 8, 10 ml of 10 gamma/ml

and 1.5, 2 mls of 100 gamma/ml - dilute to 10 mls

continue from step #4

Artificial colors - Nabob pure Lemon Extract, dilute with 1:1 ethanol and water to match. Tightly seal these for permanent standards

Procedure

1. Weigh 1.0 gram sample, add 2 gm flux, mix

2. Sinter in rotary for 2 to 3 minutes (Flux dull read for one minute)
3. Cool, add 10 mls H_2O, heat in sand bath to boiling, cool, let sit overnight
4. Stir, crush, and mix. Let settle
5. Take 2 ml aliquot into screw cap test tube
6. Add 7 mls $SnCl_2$, heat in hot water bath for 5 minutes (80°C)
7. Cool to less than 15°C
8. Add 1 ml 20% KSCN, mix (if lemmon yellow; compare color standard 10x)
9. Add $\frac{1}{2}$ ml extractant, cap, shake vigorously 1 minute
10. Compare color

Molybdenum in Water Samples

1. Transfer 50 mls to 125 separatory funnel
2. Add 5 ml .2% ferric chloride in conc HCl
3. Add 5 mls of mixed KSCN and $SnCl_2$
4. Add 1.2 mls isopropyl ether, shake for 1 minute, and allow phases to separate
5. Drain off water
6. Compare the color of extractant

Standardization

Pipette 0, .2, .5, 1, 2, 3, 4, 5, mls of 1 gamma/ml and 1, 1.5, 2, mls of 10 gamma/ml dilute to 50 mls with demineralized H_2O, and continue step #2.

This equivalent to -

1, 4, 10, 20, 40, 60, 80, 100, 200, 300, 400 ppb Mo

Artificial color - Nabob orange extract dilute with 1:1 H_2O to methanol to match. Seal tightly

$SnCl_2$ - 15% in 15% HCl

300 gm $SnCl_2 \cdot 2H_2O$ + 300 mls HCl, until $SnCl_2$ dissolved

dilute to 2 liters

KSCN - 5% in H_2O

Mixed $SnCl_2$ - KSCN

3 parts $SnCl_2$ to 2 parts KSCN

Water Samples Run for AA

1. Cu - 2 gamma/ml reads 80 scale therefore 1 unit = 25 ppb

2. Zn - 1 gamma/ml reads full scale therefore 1 unit = 10 ppb

3. Ni - 2.5 gamma/ml reads 50 scale therefore 1 unit = 50 ppb

Burner: long slot techtron burner in line

Sulphate in Natural Waters

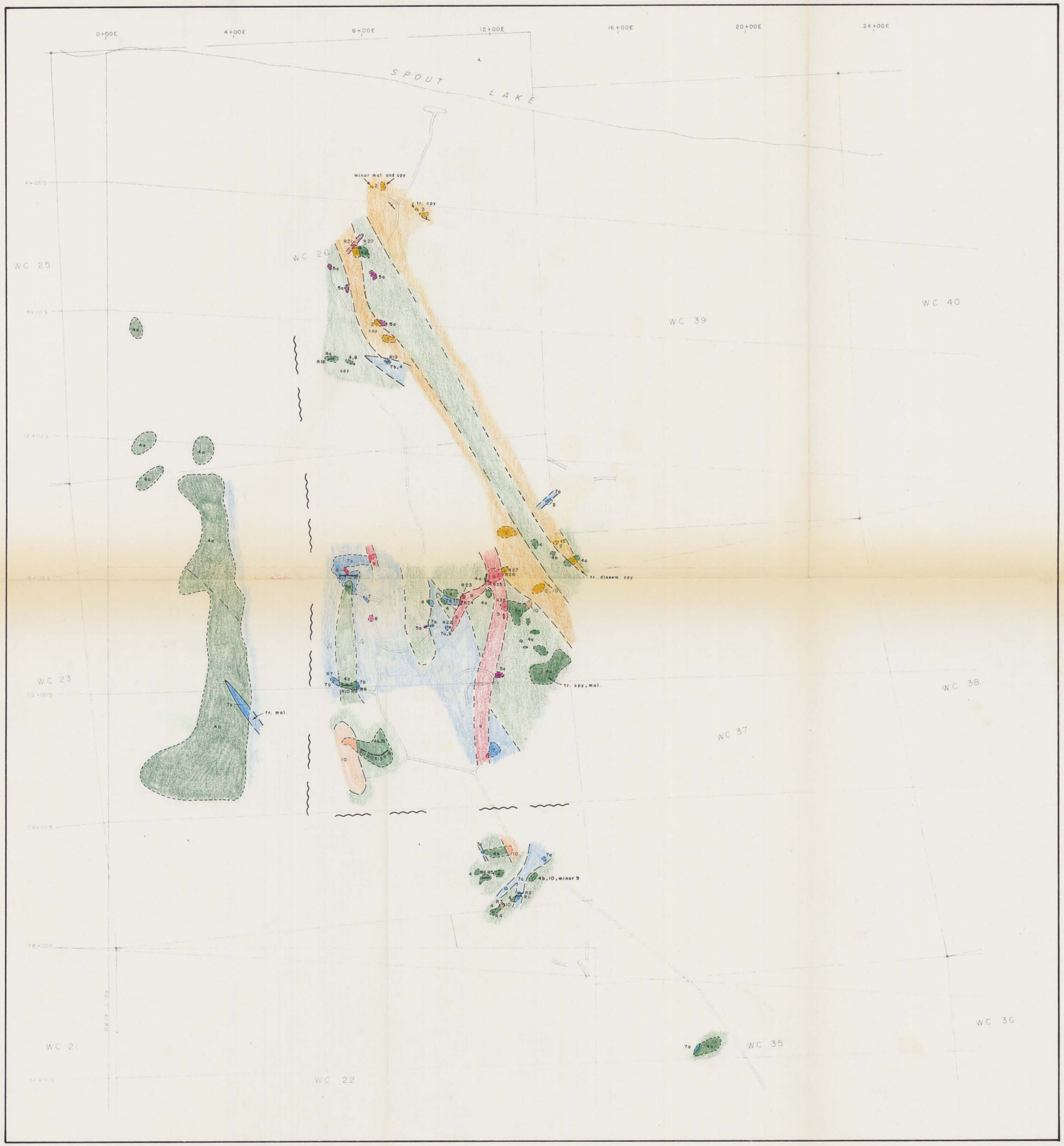
1. Pipette 0.5 ml sulphate reagent mix into a colorimetric tube
2. Add 5 ml water sample and mix
3. Read at 343 mμ against a demineralized water blank
4. Read again at 400 mμ and subtract from sulphate reading
5. Calculate ppm sulphate from the graph

Reagent

Dissolve 54 grams red mercuric oxide (J.T. Baker 2620- Can Lab) in 185 ml 70% perchloric acid and 20 ml H_2O, shake for one hour. Add 46.3 grams ferric perchlorate $[Fe(ClO_4)_3 \cdot 6H_2O]$ (GFS 39) and 47 grams aluminum perchlorate $[Al(ClO_4)_3 \cdot 8H_2O]$ (GFS 2) Add 400 ml water to dissolve, let settle overnight, decant into bottle and make to 1 liter

pH MEASUREMENTS

Soil and drainage sediment samples are dampened with water in a glass beaker to a pasty consistency. Demineralized water is used for this purpose as it has a low buffer capacity and thus does not influence the pH of the sample. Measurement is made with a Fisher Acumet pH meter. Electrodes are stored in buffer overnight. A 30 minute warm up time is allowed for the instrument each morning. A 10 ml aliquot is taken from water samples for pH measurement.



N

LEGEND

JURASSIC

11 — *Coarse-grained hornblende monzonite (Takomkane batholith).*

UPPER TRIASSIC OR JURASSIC

10 — *Calcite breccia.*

9 — *Magnetite - diopside - scapolite skarn.*

8 — *Diopside - epidote - actinolite - tourmaline skarn.*

7 — *7a - Grossularite - diopside - calcite skarn.*
7b - Grossularite - diopside - calcite skarn, with abundant partially assimilated basaltic inclusions.

6 — *Fine grained monzonite and syenite porphyry dykes.*

5 — *5a - Augite porphyry basalt.*
5b - Augite - plagioclase porphyry basalt.

4 — *4a - Fine-grained basalt.*
4b - Amygdaloidal fine-grained basalt.

3 — *Volcanic breccia and lapilli tuff.*

2 — *Volcanic sandstone, siltstone.*

1 — *Argillite.*

SYMBOLS

Geological contact; defined, approximate, assumed.

Assumed fault.

Bedding attitude.

Trench.

R1 2 3 — XR4 *Assay sample location.*

Outcrop.

Road.

Note - Geology by R.J. Bailes.

C. J. Hodgson

AMAX POTASH LIMITED
SPOUT LAKE PROPERTY
CLINTON AND CARIBOO MINING DIVISIONS-BRITISH COLUMBIA

DETAIL MAP OF MAIN SHOWING

SCALE 1"=200'

DATE REVISED	DATE PRINTED		
25/5/72	Jan 13, 1972	Drawn by FJF	fig. 6
		Date Jan. 13, 1972	
		N.T.S. File 92 P 14	

To accompany report "SPOUT LAKE PROPERTY" by C.J. Hodgson. 1971.

SPOUT LAKE
(Elev. 3535')

WC 13 WC 14 WC 27 WC 28 WC 41 WC 42 WC 25 WC 39 WC 40 WC 11 WC 44 WC 43 WC 24 WC 37 WC 38 WC 9 WC 45 WC 46 WC 10 WC 21 WC 22 WC 35 WC 36 WC 7 WC 47 WC 48 WC 19 WC 20 WC 33 WC 34 WC 5 WC 6 WC 49 WC 50 WC 17 WC 18 WC 31 WC 32 WC 3 WC 4 WC 51 WC 52

1 2 3 4 5 6 7 8 9

BSF LINE

AMAX POTASH LTD
R. CHAPLIN

PL 15
PL 16

3700 3600 3800 3900

US-500 US-509 QS-918 US-510 QS-937 US-511 US-524 US-537 US-539 US-544 US-545 QS-1026 QS-1038 CS-331 CS-350 US-546 US-779 US-800 US-547 US-584 US-548 US-769 US-561 CS-308 CS-260 CS-275 CS-261 CS-274 QS-938 QS-940 QS-952 QS-939 QS-953 QS-986 US-585 US-599 US-632 US-986 QS-987 QS-989 QS-1001 QS-988 QS-1002 QS-1016 QS-1017 QS-1025 US-633 US-664 US-665 US-678 US-647 US-634 QS-309 CS-329 CS-330 CS-351 CS-36 US-704 US-716 CS-310 CS-362 CS-37 US-679 US-700 US-701 US-703 US-729 US-680 US-717 US-730 US-768 QS-1085 QS-1086 QS-1091 US-731 US-744 US-843 US-801 US-802 QS-1052 QS-1039 QS-1051 QS-1053 QS-1084

LEGEND

$_{25}$ Soil sample site showing values in Cu.

Range in Cu values.

- ○ < 50 ppm Cu - Background.
- ◌ 50-125 ppm Cu - Positive.
- ● > 125 ppm Cu - Anomalous.

Sample collectors.

C - Clark.
Q - Colley.
U - Underwood.

- Claim post, location lines.
- Trench.
- Road.
- Swamp.
- 3700 Topographic contour.

LEGEND

AMAX POTASH LTD.
SPOUT LAKE PROPERTY
CLINTON AND CARIBOO MINING DIVISIONS - BRITISH COLUMBIA

GEOCHEMICAL MAP

SCALE 1"= 400'

DATE REVISED	DATE PRINTED	DEC. 7, 1971	Drawn by FJF Date Dec. 7, 1971 N.T.S. File 92 P 14

fig. 5

To accompany report "SPOUT LAKE PROPERTY" by C. J. Hodgson 1971.

C. J. Hodgson

SPOUT LAKE
(Elev. 3535')

WC 27 WC 28 WC 41 WC 42
WC 13 WC 14
WC 25 WC 26 WC 39 WC 40
WC 11 WC 12
WC 44 WC 43
WC 24 WC 38
WC 23
WC 9
WC 46 WC 45
WC 21 WC 22 WC 35 WC 36
WC 7
WC 48 WC 47
WC 19 WC 20 WC 33 WC 34
WC 5 WC 6
WC 49
WC 50
WC 17 WC 18 WC 31 WC 32
WC 3
WC 51 WC 52

AMAX POTASH LTD
R. CHAPLIN
PL 15
PL 16

LEGEND

1000 Isomagnetic contour (1000 gamma interval).
Magnetic low.
Claim post, location lines.
Road.
Swamp.

NOTE- Instrument used - Scintrex MF-2
Operator - G. M. DePaoli

AMAX POTASH LTD.
SPOUT LAKE PROPERTY
CLINTON AND CARIBOO MINING DIVISIONS - BRITISH COLUMBIA

MAGNETOMETER SURVEY

Scale 1" = 400'

DATE PRINTED	DATE REVISED		
Dec. 21, 1971		Drawn by FJF	fig 4
		N.T.S. File 92 P 14	

To accompany report "SPOUT LAKE PROPERTY" by C. J. Hodgson 1971

C. J. Hodgson

L E G E N D

JURASSIC

- 11 — *Coarse grained hornblende monzonite (Takomkane batholith).*

UPPER TRIASSIC OR JURASSIC

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- 4 — *4a - Fine grained basalt.*
  4b - Amygdaloidal fine grained basalt.
- 3 — *Volcanic breccia and lapilli tuff.*
- 2 — *Volcanic sandstone, siltstone.*
- *Argillite.*

SYMBOLS

- *Limit of copper sulphides.*
- *Geological contact; defined, approximate, assumed.*
- *Fault; approximate, assumed.*
- *Bedding attitudes.*
- *Trench.*
- *Claim post, location lines.*
- *Outcrop.*
- *Swamp.*
- *Road.*
- *Topographic contour.*

AMAX POTASH LTD.
SPOUT LAKE PROPERTY
CLINTON AND CARIBOO MINING DIVISIONS – BRITISH COLUMBIA

GEOLOGICAL MAP

SCALE 1" = 400'

DATE APPROVED	25/5/72	DATE PRINTED	DECEMBER 2, 1971	Drawn by F.J.F.	fig. 3
				Date Dec. 2, 1971	
				N.T.S. File 92 P 14	

To accompany report "SPOUT LAKE PROPERTY" by C. J. Hodgson 1971