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3/86

GABRIEL RESOURCES INC.  
Report on the  
AHBAU CREEK PROPERTY  
CARIBOO MINING DIVISION  
GEOLOGY, GEOPHYSICS AND GEOCHEMISTRY  
N.T.S. 93G/1W

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CLAIMS WORKED

GROUP NAME

CLAIM NAMES

Ahbau	G 23, G 24, G 27, G 30 and G 31
Norm	G 25, G 28, G 29, G 33 and G 34
Gene	G 22, G 26 and G 32

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

13,712

Location: Ahbau Creek Area - 5°10'N, 122°21'W

Owner: Gabriel Resources Inc.

Operator: Gabriel Resources Inc.

Consultant: A.G. Troup, P.Eng., Archean Engineering Ltd.

Project Geologist: J.C. Freeze, B.Sc., Mark Management Ltd.

Geologist: B.P. Butterworth, B.Sc., Mark Management Ltd.

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SUMMARY

The Ahbau Creek property is a lode and placer gold prospect located approximately 25 km northeast of Quesnel, B.C. The property includes thirteen mineral claims totalling 260 units.

In 1984 Gabriel Resources Inc. of Vancouver, B.C. carried out follow-up geological mapping, geochemistry and geophysics on the property.

In 1983 a trenching programme exposed a massive sulphide zone with a width of up to 1.9 metres and a strike length of at least 80 metres. Chip samples from the zone assayed up to 0.43 oz/ton gold, 6.46 oz/ton silver, 3.36% copper, 5.20% zinc and 1.81% lead. A VLF survey has outlined a 1200 m long VLF conductor running proximal and parallel to the zone as well as several other parallel zones on the property. Soil sampling has outlined a highly anomalous copper and zinc zone extending for 500 metres to the southwest of the main showing. This zone coincides with a weak trend of peaks and troughs in the magnetic susceptibility survey. Several other copper, zinc, arsenic, silver and gold anomalies in soils have been outlined elsewhere on the property. Biogeochemistry has outlined some interesting gold, copper and zinc anomalies on the property.

Additional work consisting of geophysics, geochemistry, detailed geological mapping, trenching and percussion or diamond-drilling is recommended.

**AHBAU CREEK PROPERTY  
GEOLOGY, GEOPHYSICS AND GEOCHEMISTRY**

**1. INTRODUCTION**

This report covers the Ahbau Creek claim block, located in central British Columbia. These claims cover areas that have been gold prospects since the beginning of this century.

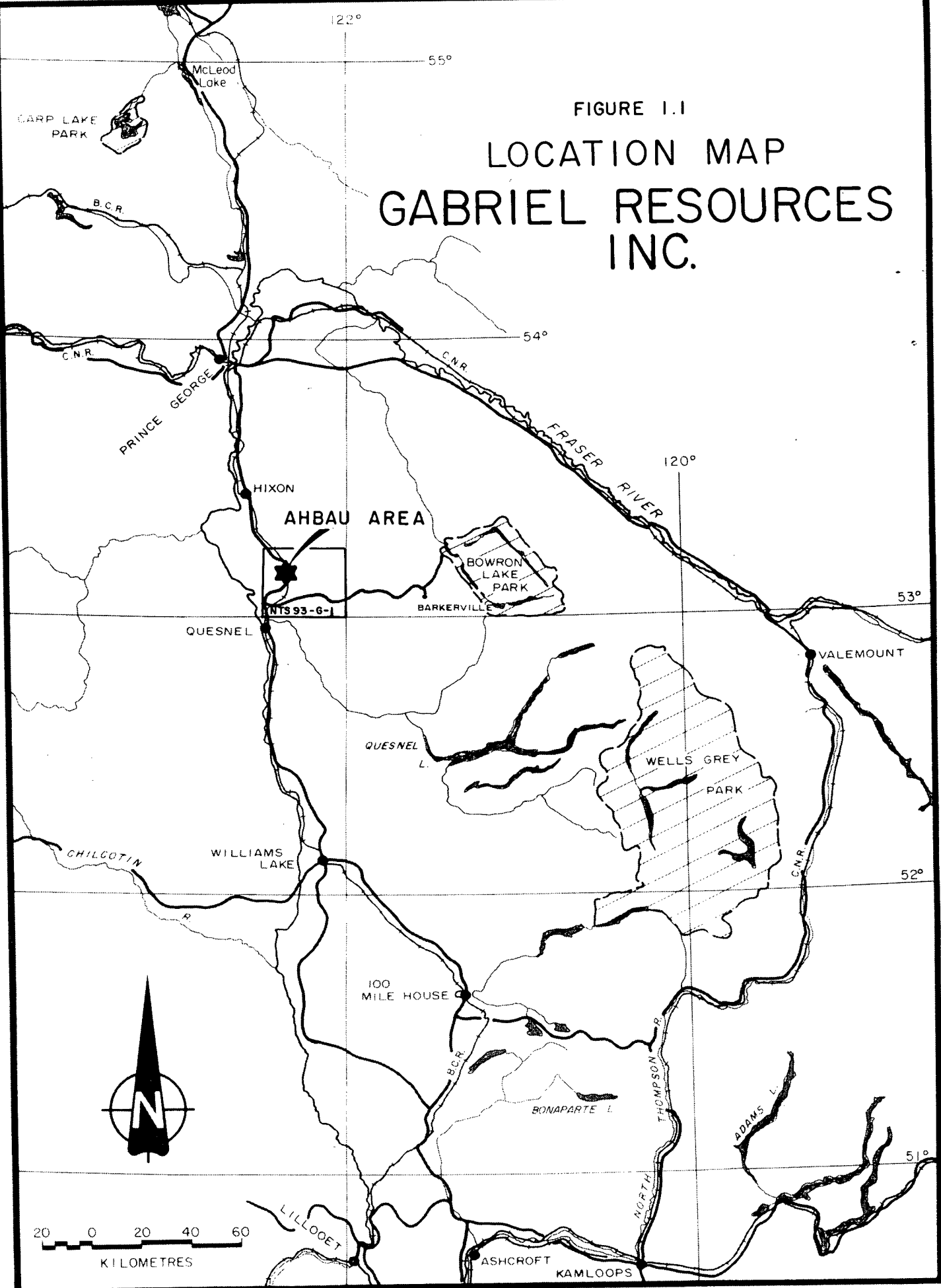
The purpose of the 1984 field programme was to follow up areas which were indicated as possible sources of gold by results of the 1981, 1982 and 1983 field programmes. Geological, geophysical and geochemical work was carried out over the property from June 4 to July 8 and September 18 to October 6 by a crew of five to ten persons working out of a camp on the property. The programme was supervised by Mark Management project geologist, J.C. Freeze and geologist, Brian Butterworth under the direction of consulting geologist, A.G. Troup of Archean Engineering Ltd.

**1.1 Location and Access**

The Ahbau Creek property is situated in the Cariboo Mining Division of central British Columbia. It begins 18 km north of Quesnel and extends northwards for 12 kms, covering an area of 65 square kilometres.

The Ahbau property is centred at 53°10'N, 122°21'W, approximately 1 km southeast of the community of Ahbau, B.C. Access is by Highway 97 and several gravel roads that follow the Ahbau Creek and the Cottonwood River. A railway (B.C.R.) which parallels Highway 97 at this point also provides access. (See Figure 1.1).

FIGURE 1.1  
LOCATION MAP  
GABRIEL RESOURCES  
INC.



## 1.2 Physiography

The Ahbau Creek property is in a fairly moderate climatic zone. Average annual precipitation is 50 to 75 cm. Mean daily temperature in July is 14 to 18 degrees Celsius and in January is -15 to -10 degrees Celsius.

The topography of the property consists predominantly of gently-rolling hills and valleys. Steep canyons occur along Thunder Creek and along the Cottonwood River. Elevations range from 625 m (2050 ft.) to 1024 m (3360 ft.)

Vegetation over the area is predominantly heavy to moderate bush consisting of pine, spruce, tamarack and alder trees. Heavy undergrowth occurs where reforestation has replaced trees removed by logging or forest fires. Several large cleared areas occur where logging has been carried out without reforestation. Tall grasses and devil's club are found in several large swamps.

The Ahbau area is drained by Ahbau Creek and the Cottonwood River and several south or northward flowing tributaries. The major drainage systems on the property flow westward into the southward-flowing Fraser River.

## 1.3 Claim Information

The Ahbau Creek Property is comprised of 13 modified grid claims, totalling 260 units. These are divided into 3 groups (Table 1.3.1, Map 1.3.1). In 1984 Gabriel Resources Inc. carried out field work over most of these claims.



TABLE 1.3.1

## CLAIM STATUS

AREA	GROUP	CLAIM	UNITS	RECORD NO.	EXPIRY
Ahbau Creek	Ahbau	G 23	20	3230	16/3/86
		G 24	20	3231	13/3/86
		G 27	20	3234	16/3/87
		G 30	20	3237	16/3/87
		G 31	20	3238	13/3/87
	Norm	G 25	20	3232	13/3/87
		G 28	20	3235	13/3/87
		G 29	20	3236	16/3/87
		G 33	20	3240	16/3/87
		G 34	20	3241	16/3/86
	Gene	G 22	20	3229	16/3/86
		G 26	20	3233	13/3/86
		G 32	20	3239	13/3/86

#### 1.4 History

The Ahbau Creek area was first explored for placer gold in the early 1900's and has been explored for lode gold and copper since 1968.

A reconnaissance heavy mineral concentrate sampling programme was carried out over the area by the A.T. Syndicate in 1980. Results of that survey lead to the staking of the present property.

In 1981, 1982 and 1983, Gabriel Resources Inc. worked the claims through an option agreement with the A.T. Syndicate. (See 1981, 1982 and 1983 Assessment Reports on the G South property for more details).

### 1.5 Work by Gabriel Resources Inc. in 1984

In 1984 field work by Gabriel Resources Inc. was conducted from June 4 to July 8 and from September 18 to October 6. During this period the following surveys were completed:

- 1) Soil samples collected in 1982 over the Ahbau VLF grid were reanalysed for copper, zinc, arsenic and silver.
- 2) The Thunder Creek VLF survey was extended to cover a total of 289.5 kilometres.
- 3) Detailed (1:2,500 scale) geologic mapping and rock chip sampling was carried out over the Thunder Creek grid.
- 4) Soil sampling was carried out over the Thunder Creek VLF grid.
- 5) Biogeochemical, Humus, sampling was carried out over areas of the Thunder Creek grid underlain by deep overburden.
- 6) A Magnetic Susceptibility survey was carried out over the Thunder Creek grid.
- 7) A VLF survey was carried out on claims G 30 and 31 to delineate an airborne EM conductor on the ground.

## 2. GEOLOGY

### 2.1 General Geology

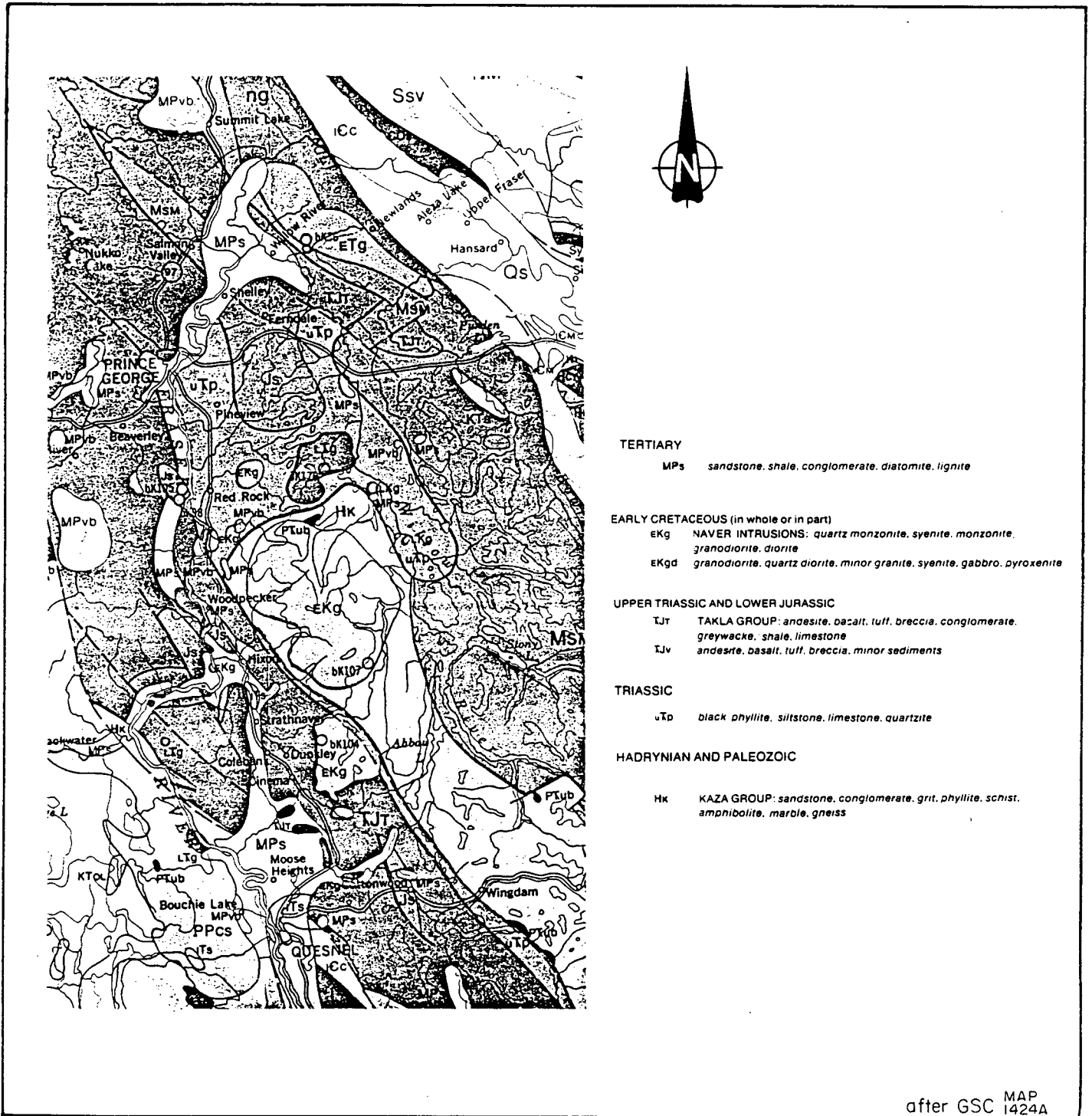
The geology of topographic sheet 93G was mapped by Amos Bowman of the Geological Survey of Canada in 1885-6, by H.W. Tipper, also of the G.S.C. in 1961 and was updated in 1974 on Geologic Sheet 93: Geology of the Parsnip River area; Fig.2.1.

The Ahbau Creek property is underlain predominantly by the Upper Triassic - Lower Jurassic Takla Group which is intruded by Early Cretaceous Naver stocks and dykes. The plateaus above the Cottonwood River are underlain by tertiary sandstone, slate, conglomerate, diatomite and lignite.

The Naver intrusives consist of quartz monzonite, syenite, monzonite, granodiorite, diorite and quartz feldspar porphyry dykes. Pyroxenites and serpentinites are also found associated with the intrusives. The intrusive bodies intrude the Takla Group of andesite flows, tuffs, agglomerate, basalt, breccia and argillite. (See 1981 Assessment Report on the G South property for details, Map 2.1.1).

### 2.2 Property Geology and Mineralization

In the Ahbau Creek area, mineralization consisting of pyrite, pyrrhotite, arsenopyrite, chalcopyrite, sphalerite and galena occurs as massive sulphide beds and veins in the andesites and argillites of the Takla Group. Disseminated pyrite and pyrrhotite occurs in both foot and hanging wall rocks. Quartz feldspar porphyry and diorite dykes and stocks occur in the andesites proximal and parallel to these massive sulphide zones. The dykes themselves contain disseminated pyrite and occasional low grade gold mineralization. These dykes are believed to be the heat source for hot mineralizing fluids. (Map 2.2.1).



**TERTIARY**

MPs sandstone, shale, conglomerate, diatomite, lignite

**EARLY CRETACEOUS (in whole or in part)**

EKg NAVER INTRUSIONS: quartz monzonite, syenite, monzonite, granodiorite, diorite

EKgd granodiorite, quartz diorite, minor granite, syenite, gabbro, pyroxenite

**UPPER TRIASSIC AND LOWER JURASSIC**

TJt TAKLA GROUP: andesite, basalt, tuff, breccia, conglomerate, greywacke, shale, limestone

TJv andesite, basalt, tuff, breccia, minor sediments

**TRIASSIC**

uTd black phyllite, siltstone, limestone, quartzite

**HADRYNIAN AND PALEOZOIC**

Hk KAZA GROUP: sandstone, conglomerate, grit, phyllite, schist, amphibolite, marble, gneiss

Gabriel Resources Inc.

GOVERNMENT CK.; YARDLEY LK.  
& AHBANU PROPERTIES

CARIBOO M.D.-B.C.  
NTS 93-G-7 & 8

REGIONAL GEOLOGY

J.C.R. r.w.r. FEB. 7/82

FIG. 2.1

### **3. GEOCHEMISTRY**

#### **3.1 Soil Sampling**

##### **3.1.1 Sampling**

In the Ahbau Creek area, a soil sample survey which commenced in 1983 was extended over the Thunder Creek VLF grid. A total of 423 samples were collected at 25 metre stations on northwest - southeast lines spaced 50 metres apart.

##### **3.1.2 Sample Preparation and Analytical Procedures**

All soil samples were collected from the 'B' soil horizon with the aid of a lightweight mattock and were sent to Chemex Labs Ltd. in North Vancouver for analysis.

In the laboratory, samples were oven dried at approximately 60°C. The dried samples were sieved to minus 80 mesh and were analysed for the elements copper, lead and zinc by atomic absorption after digestion with hot concentrated nitric and hydrochloric acids.

##### **3.1.3 Treatment and Presentation of Results**

In assessing the soil geochemical results, graphical statistical methods were used to separate background from anomalous metal concentration. Threshold and anomalous levels were determined at the mean plus two standard deviations ( $x+2s$ ) and the mean plus three standard deviations ( $x+3s$ ), respectively, from log probability plots prepared for each element. This data is given in Table 3.1.3.

Sample locations and analytical results are shown on Maps 3.1.1 to 3.1.3. Results for all elements have been contoured at threshold ( $x+2s$ ) and anomalous ( $x+3s$ ) levels.

TABLE 3.1

**MEAN, THRESHOLD AND ANOMALOUS  
METAL VALUES IN 'B' HORIZON  
SOIL SAMPLES FROM THE AHBAU CREEK PROPERTY**

<b>METAL</b>	<b>N</b>	<b>MEAN (x)</b>	<b>THRESHOLD (x+2s)</b>	<b>ANOMALOUS (x+3s)</b>
Ag	576	0.185 ppm	0.88 ppm	2.0 ppm
Cu	1113	26 ppm	95 ppm	170 ppm
Pb	557	3.5 ppm	11 ppm	19 ppm
Zn	1132	64 ppm	140 ppm	210 ppm
As	576	5.6 ppm	24 ppm	52 ppm

#### 3.1.4 Discussion of Results

Results from the Thunder Creek grid reveal a large copper-zinc anomaly extending from the main showing for 500 metres to the southwest. Two other strong copper-zinc anomalies were outlined. One was found along strike to the northeast of the main showing and the second occurs due north of the showing. Zinc anomalies are not as extensive as copper but show a moderate correlation with copper. Lead values are very spotty and do not show a strong correlation with either copper or zinc. (Map 3.1.1 to 3.1.3).

Results from the Ahbau grid show a strong arsenic-copper-silver-gold anomaly 500 metres to the northeast along strike with the main showing. A zinc-silver-arsenic-gold-copper anomaly was outlined on line 56N at 74E. Copper anomalies occur over the same areas outlined on the Thunder Creek grid as well as on line 44N at 54E and 55+50 to 57E and line 42N at 57E where silver is also anomalous. Zinc anomalies occur to the north on lines 63N to 64+75N between 50+50 to 52E. (Map 3.1.4).

## 3.2 Lithogeochemistry - Rock Chip Sampling

### 3.2.1 Sampling, Sample Preparation and Analytical Procedures

Rock chip samples were collected from all outcrops with visible mineralization, boxwork, iron staining or silicification, and from all quartz veins and mineralized intrusive dykes.

In most cases, grab samples were taken where outcrop exposures were poor. Chip samples were taken at regular intervals (according to the size of the unit) across the width of massive sulphide beds and veins, wallrock to beds and veins and gossanous, siliceous or pyritic zones. A total of 54 rock samples were collected for analysis.

The samples were placed in numbered plastic bags and sent to Chemex Labs Ltd. in North Vancouver for analysis. In the laboratory, samples were put through primary and secondary jaw crushers and a tertiary cone crusher. A sub-sample of approximately 250 gm was then pulverized in a rotary pulverizer. Pulp for precious metal analysis was screened to minus 100 mesh and examined for 'metallics'. The pulp was then preconcentrated by fire assay and analysed by atomic absorption for copper, lead, zinc, silver and gold.

### 3.2.2 Presentation and Discussion of Results

Assay results, locations, and descriptions of samples are given in Table 3.2 and shown on Map 2.2

Results from grab samples and chip samples from outcrops show values ranging from trace amounts up to 5700 ppb Au, 75 ppm Ag, 8500 ppm Cu and 280 ppm Zn. The highest values were obtained from a massive sulphide zone in an argillite bed and a mineralized shear zone in a diorite stock. Trace amounts of gold were obtained from siliceous, iron stained andesite containing both disseminated and hair line veinlets of pyrite, pyrrhotite and chalcopyrite.

TABLE 3.2 - ASSAYS AND SAMPLE DESCRIPTIONS

ASSAYS	LOCATION	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Au PPB	DESCRIPTION
3071	0+50NE 0+25NW	288	6	60	0.5	<5	And tuff - Py dis
3072	1+00SW 0+20SE	117	3	32	0.3	<5	"
3073	2+00SW 1+00SE	580	1	33	0.8	45	And - Py Cp dis
3074	3+75SW 1+10SE	2900	43	65	0.9	45	Sil And-Dior dyke-Py Cp vnl-t- mal
3075	2+50SW 1+00SE	2900	65	105	4.8	570	Dior- qtz-cal vein Cp Cy 9 cm wide
3251	0+75SW 2+82SE	585	6	26	2.1	40	Msv sulf vein
3252	"	480	3	43	1.0	<5	And host to vein
3253	"	305	27	56	0.6	15	Diorite near vein
3254	"	480	4	45	0.5	5	Qtz veining in And
3255	"	815	11	68	0.7	<5	Hb P And proximal to diorite
3256	"	145	14	50	0.6	<5	Int silic Hb And
3257	0+70SW 2+35SE	638	8	60	0.8	15	Pyr Hb P And/Dior
3258	" 2+45SE	310	12	42	0.7	10	Pyr Hb And
3259	0+50NE 3+25SE	360	140	47	0.4	35	Sil And -dis Py Cp
3260	6+00NE 2+50NW	130	310	58	0.3	<5	Pyr And w/Ep vugs
3278	1+00SW 3+00SE	295	8	40	0.5	30	Sil And /Dior- dis Py&Cp <1%
3279	"	530	2	30	1.0	55	Dior-dis Cp,Py 1%
3280	2+00NE 3+87SE	185	5	40	0.3	40	Hb P And tuff- Py
3281	4+50SW 2+80NW	990	3	32	1.4	5	Hb P And tuff-dis Py 2% Cp
3282	2+00NE 2+00SE	343	1	30	0.6	<5	Sil Hb P And tuff 1-2% Py
3283	2+00NE 2+00SE	290	3	23	0.3	5	"
3284	3+00NE 1+50SE	160	2	60	0.2	<5	"
3285	2+75NE 2+00SE	215	2	36	0.4	<5	Sil And tuff-dis Py
3286	" 2+25SE	84	1	38	1.0	<5	"
3301	2+50NE 1+30NW	150	18	83	0.6	25	Hb P And-dis Py Cp
3302	" 1+60NW	65	21	66	0.3	10	Aug P And-Aspy Py



TABLE 3.2 - ASSAYS AND SAMPLE DESCRIPTIONS Continued

ASSAYS	LOCATION	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Au PPB	DESCRIPTION
3303	2+25NE 0+60NW	135	18	58	0.5	10	"
3304	2+75NE 5+10NW	415	17	67	0.4	20	And - Py in frctrs
3305	"	40	12	64	0.3	30	And - Py vnlts+dis
3306	0+50SW 3+35NW	158	420	54	0.5	20	Sil And -dis Py,Po
3307	0+25SW 3+70NW	70	38	42	0.4	25	And -dis aspy 2%
3308	" 3+85NW	45	58	52	0.7	25	Hb P And - dis Aspy 1%, Cp, Bo,Po
3309	0+00 4+20NW	47	36	95	0.5	20	Plag P And -Po >2%
3310	1+00SW 2+63NW	78	109	150	0.5	40	Hb P And - dis Py
3311	1+10SW 2+80NW	265	51	102	1.0	40	Sil And -Aspy, Py,Cp - 15% qtz vning
3312	1+00SW 3+07NW	98	31	70	0.6	35	Hb P And-Aspy dis & in frctrs
3313	0+50SW 2+73NW	95	33	55	0.3	20	Hb P And Aspy dis 2%
3314	0+50SW 2+72NW	390	33	85	1.8	35	Hb P And-Py dis 2%
3315	0+50NE 2+83NW	150	40	228	0.5	40	And tuff -Aspy dis
3316	5+00NE 1+50NW	45	28	68	0.5	5	Hb P And - dis Py
3317	5+34NE 1+74NW	34	125	100	0.6	80	"
83151	4+00NE 0+12SE	3980	23	73	8.2	95	Arg-msv Py+Cp vein
83152	3+90NE "	>10000	15	205	46.0	5700	Arg-msv Py, Aspy, Bo + Cp
83153	1+00NE 4+10SE	4900	6	93	12.8	510	Diorite- min shr 2 m-dis&str Cp,Py,Po
83154	"	470	5	46	0.4	40	Microdi-HW-min shr dis Py Po 2%- 1.5m
83155	1+00NE 4+10SE	2700	6	80	8.9	920	Dior-min shr 1m-Cp Py 5% dis & str slfs extr oxidized
83156	"	5900	2	138	11.5	1220	Dior/Microdi-HW to shr 1.6m dis Cp+Py
83157	"	1650	1	77	1.4	275	Dior-FW-shr dis Py

TABLE 3.2 - ASSAYS AND SAMPLE DESCRIPTIONS Continued

ASSAYS	LOCATION	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Au PPB	DESCRIPTION
83158	"	1650	21	37	13.8	560	Shr-.15m 1% dis Cp Py- Cp+Py in frctr
83159	"	8500	32	155	75.0	4000	"
83160	"	3100	12	95	10.6	410	Dior frctrd .7m Sp+Py dis & in frc
83161	"	1750	13	92	6.2	255	Dior frctrd-Py+Cp <1% dis
83162	"	2700	6	68	9.3	430	Hnflsd Arg ext frc Cp +Py <1%
83163	5+00NE 1+25SE	80	16	54	0.4	35	Chrty Arg frctrd Py+Cp in frc <1%
83164	5+00NE 1+30SE	210	21	63	0.9	45	P And bed in arg dis Py Cp Aspy <1%
83165	4+25NE 1+50SE	278	197	120	1.7	120	Sil Hb P And - dis Py Cp as 1%
83166	6+00NE 0+25SE	75	227	135	1.2	95	P And- dis Py Aspy Cp <1%
83167	5+00NE 3+10SE	145	500	280	2.9	320	Hb P And- dis py Aspy <1%

## Abbreviations Used in Table 3.2

And	Andesite	Sp	Sphalerite	Min	Mineralized
Arg	Argillite	Po	Pyrrhotite	Shr	Shear
Dior	Diorite	Bo	Bornite	M	Metre
Microdi	Microdiorite	Aspy	Arsenopyrite	Dis	Disseminated
Cp	Chalcopyrite	Sil	Siliceous	Str	Stringer
Py	Pyrite	Hw	Hanging Wall	Hnflsd	Hornfelsesd
Ga	Galena	Fw	Foot Wall		

### **3.3 Biogeochemical - Humus Sampling**

#### **3.3.1 Sampling**

Biogeochemical sampling was carried out over the Thunder Creek grid in areas of deep overburden where soil sampling is not effective. Over mineralized areas decaying vegetable matter often becomes enriched in base and precious metals. Copper and zinc are deposited directly by ground water passing through the humus layer. Gold is taken up by deep root systems and transported into needles which drop annually and become part of the humus layer. A total of 181 samples were collected at 25 metre stations along northwest-southeast lines spaced 50 metres apart.

#### **3.3.2 Sample Preparation and Analytical Procedures**

Humus samples were collected from the organic horizon above the 'A' soil horizon with the aid of a lightweight mattock and were sent to Chemex Labs. Ltd. in North Vancouver for analysis.

In the laboratory, samples were ring pulverized to approximately minus 100 mesh and were analysed for gold by neutron activation and for copper and zinc by atomic absorption following digestion in perchloric-nitric acid.

#### **3.3.3 Treatment and Presentation of Results**

In assessing the humus geochemical results, graphical statistical methods were used to separate background from anomalous metal concentration. Threshold and anomalous levels were determined at the mean plus two standard deviations ( $x+2s$ ) and the mean plus three standard deviations ( $x+3s$ ) respectively, from log probability plots prepared for each element. This data is given in the Table 3.3.3.

TABLE 3.3

**Mean, Threshold and Anomalous  
Metal Values in Humus samples  
From the Ahbau Creek Property**

<b>Metal</b>	<b>N</b>	<b>Mean (x)</b>	<b>Threshold (x+2s)</b>	<b>Anomalous (x+3s)</b>
Au	181	<1 ppb	10 ppb	43 ppb
Cu	181	10.5 ppm	27.5 ppm	45 ppm
Zn	181	58 ppm	118 ppm	170 ppm

### 3.4 Discussion of Results

Results from the humus samples reveal a strong gold-copper-zinc anomaly extending southeast from the main showing from 0+25 to 1+00SE. This coincides with a 'B' horizon soil gold anomaly of up to 3000 ppb discovered in 1982. A large zinc anomaly was outlined southwest of the main copper soil anomaly on Thunder creek. A copper-zinc anomaly was found 550 metres southeast of the main showing.

## 4. GEOPHYSICS

### 4.1 VLF-EM Survey

#### 4.1.1 Instrument and Survey Techniques

A Geonics EM-16 unit was used to carry out VLF surveys on two grids.

The 1983 Thunder Creek survey carried out over the trenched massive sulphide zone was extended in 1984. The 17.8kHz Annapolis, Maryland submarine transmitting station was used. In-phase quadrature readings were taken in a northerly ( $350^{\circ}$ ) direction to insure that south dips were negative. In-phase dip angle readings were later converted by means of the Fraser filtering techniques (Fraser, 1969) to data which could be contoured. Readings were taken at 25 m intervals along 50 m NW - SE lines for a total of 27.5 kilometres.

A second VLF survey was carried out on claims G30 and 31 to delineate an airborne EM conductor on the ground. The 24.8kHz Seattle, Washington submarine transmitting station was used. In-phase quadrature readings were taken in a westerly ( $270^{\circ}$ ) direction to insure that east dips were negative. In-phase dip angle readings were later converted by means of the Fraser filtering techniques (Fraser, 1969) to data which could be contoured. Readings were taken at 25 m intervals along 200 m spaced northeast-southwest ( $050^{\circ}$ ) lines for a total of 1400 metres.

#### 4.1.2. Presentation and Discussion of Results

The results of the VLF surveys are shown on Maps 4.1.1 and 4.1.2. These maps give the in-phase dip angle and filtered dip angle results (Fraser, 1969) with the filtered data contoured at a 10% contour interval.

The Thunder Creek survey outlined a strong conductive zone over the main massive sulphide zone. This conductor extends 800 metres to the west-southwest and 300 metres to the northeast of the main showing. It appears to be disjointed by faulting or folding at several locations. A second conductive zone occurs on trend with the first between 5+00NE and 10+00NE. Two parallel zones found southeast of the main conductor are up to 1000 metres in length. A small conductor also parallels the main zone 300 metres to the west.

The survey on claims G30 and 31 located the airborne VLF and Magnetic anomaly as a strong northwest - southeast trending conductor on the ground.

## 4.2 Fluxgate Magnetometer Survey

### 4.2.1. Instrument and Survey Techniques

A fluxgate magnetometer survey was conducted over the Thunder Creek grid. A total of 13.5 line kilometres were surveyed using a Scintrex MF-2 fluxgate magnetometer. A base station was established and readings were taken at 30 minute intervals with a Scintrex MF-1 fluxgate magnetometer. Base station magnetometer readings taken in the morning and throughout the day were used to correct for day-to-day and diurnal variations. In the field, readings were taken at 25 metre intervals along northwest-southeast survey lines spaced 50 metres apart. At each station, readings were taken in a northerly direction including an established tie-in point which was checked for day to day variations. The time of day was recorded with all readings.

### 4.2.2. Presentation and Discussion of Results

Magnetometer readings are in gammas and have been corrected for daily variations. Results of the survey are shown on Maps 4.2.1. and 4.2.2

The purpose of the magnetometer survey was to outline local areas of increased magnetic susceptibility. Results of the survey show a weak series of peaks and troughs over the main showing which extends for 100 metres to the northeast and 100 metres to the southwest. A 200 metre long trend of peaks parallels the main showing 200 metres to the west. Magnetic susceptibility gradually increases towards the southeastern portion of the grid.

## 5. CONCLUSIONS

The results of the 1984 programme may be summarized as follows:

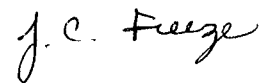
1. The massive sulphide zone which was exposed by trenching in 1983 remains as the largest mineralized zone outlined on the property. However, other similar mineralized zones have been discovered on the property indicating that mineralization is not confined to the one area.
2. Soil geochemistry has outlined a large copper-zinc anomaly extending from the main showing for 500 metres to the southwest. Biogeochemistry has outlined a large zinc anomaly proximal to and southwest of the copper soil anomaly. Biogeochemistry has also outlined a strong gold-copper-zinc anomaly 100 metres southeast of the main showing. Several arsenic-copper-silver-gold soil anomalies have been outlined elsewhere on the property.
3. A VLF conductor running parallel and adjacent to the main massive sulphide zone extends for 800 metres to the west-southwest and 300 metres to the northeast. The structure appears to be faulted or folded at several locations. Several other conductive zones were outlined on the property running parallel to the main zone.
4. The magnetic susceptibility survey showed a weak series of peaks and troughs over the massive sulphide zone extending for a total length of 450 metres. While the weak trend coincides with the copper-zinc soil anomaly it does not coincide with the VLF conductor. The two instruments appear to be outlining different geologic features.



Respectfully Submitted,

A handwritten signature in cursive script, appearing to read "A. G. Troup". The signature is written in dark ink and is positioned above the printed name.

A.G. Troup, P.Eng.

A handwritten signature in cursive script, appearing to read "J. C. Freeze". The signature is written in dark ink and is positioned above the printed name.

J.C. Freeze, B.Sc.

B.P. Butterworth, B.Sc.

## References

- Fraser, D.C.                      Contouring of VLF-EM Data  
1969                                      Geophysics v.34, No.6, pp.958-967.
- Ridley, J.C. and                      G South Property - Assessment  
Troup, A.G.                              Report - Geology, Geochemistry  
February 1982                              Geophysics and Physical.
- Ridley, J.C. and                      G South Property - Assessment  
Troup, A.G.                              Report - Geology, Geochemistry  
December 1982                              and Geophysics.

COST STATEMENT  
G and G SOUTH CLAIMS  
GEOLOGY, GEOPHYSICS, and GEOCHEMISTRY  
3 May - 31 October 1984

GENERAL COSTS

<u>FOOD AND ACCOMMODATION</u>		
14 Pers., 3May-9Oct, 655 man days @ \$18.83		\$12,338.43
<u>REPAIRS &amp; MAINTENANCE</u>		1,005.53
<u>SUPPLIES</u>		6,061.28
<u>SHIPPING AND POSTAGE</u>		717.20
<u>RENTAL EQUIPMENT</u>		
U-Haul Trailer, 3May-31Oct, 159 days	\$ 329.60	
Mark Mgmt 4WD Bronco		
3May-9Oct, 114 days @ \$43	4,902.00	
Airways 4WD Blazer, 3May-9Oct, 39days @ \$35	1,365.00	
Airways 4WD Blazer, 28May-9Oct, 78days @ \$35	2,730.00	
Tilden GMC PU, 8-10Jul, 3days @ \$91.92	275.76	
Gabriel SBX-11A, 159 days @ \$11	1,749.00	
Gabriel Field Equipment, 655 Man days @ \$6	3,930.00	15,281.36
<u>FIXED WING</u>		
Hastings Travel, CP Air, 9Jun, Vcr-Qsl		118.25
<u>GREYHOUND</u>		38.80
<u>FUEL</u>		2,715.11
<u>PROJECT PREPARATION</u>		4,004.06
<u>PROJECT DEMOBILIZATION</u>		3,465.09
<u>CONSULTANT</u>		
Archean Engineering		2,223.00
<u>REPORT PREPARATION</u>		<u>6,699.37</u>
<u>TOTAL GENERAL COSTS</u>		<u>\$51,437.39</u> =====

GEOLOGY COSTSSALARIES AND WAGES

13 Pers., 147 Man days @ \$116.50	\$17,093.77
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BENEFITS @ 20%

	3,420.17
--	----------

GENERAL COSTS APPORTIONED

147/545 Man days X \$51,437.39	<u>13,873.94</u>
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TOTAL GEOLOGY COSTS

	\$34,424.54
	=====

AIRBORNE SURVEYCONTRACTOR

Questor Surveys Limited	\$81,611.07
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	=====
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GEOPHYSICS COSTSSALARIES AND WAGES

13 Pers., 227 Man days @ \$73.33	\$16,645.98
----------------------------------	-------------

BENEFITS @ 20%

	3,329.20
--	----------

RENTAL EQUIPMENT

Geonics EM16, 4Jun-25Jul, 52days @ \$27	\$ 1,404.00	
Gabriel EM16, 92 days @ \$27	2,484.00	
Goliath MF1, 27 days @ \$8	216.00	
Gallant MF2, 27 days @ \$24	648.00	
Shipping	<u>38.15</u>	4,790.15

GENERAL COSTS APPORTIONED

227/545 Man days X \$51,437.39	<u>21,424.38</u>
--------------------------------	------------------

TOTAL GEOPHYSICS COSTS

	\$46,218.84
	=====

GEOCHEMISTRY COSTSALARIES AND WAGES

13 Pers., 171 Man days @ \$79.07	\$13,521.48
----------------------------------	-------------

BENEFITS @ 20%

	2,704.30
--	----------

GEOCHEMICAL ASSAYS and ANALYSES CHEMEX LABS

Supplies	\$ 160.00	
1 Whole Rock Analysis	38.25	
26 Rock for Zn,Ag @ \$12.50	325.00	
21 Rock for Cu,AG,Au @ \$12.90	270.90	
58 Rock for Cu,Pb,Zn,Ag,Au @ \$14.70	852.60	
66 HMC for Au @ \$19	1,254.00	
181 Humus for Cu,Zn,Au @ \$11.15	2,018.15	
87 Silt for Cu,Pb,Zn,Ag,As @ \$8.65	752.65	
989 Soil for Cu,Pb,Zn @ \$4.50	4,450.50	
373 Soil re-analysed for Cu,Zn @ \$2,90	1,081.70	
578 Soil re-analysed for Cu,Zn,Ag,AS @ \$6.92	4,003.20	15,206.95

GENERAL COSTS APPORTIONED

171/545 Man days X \$51,437.39	<u>16,139.07</u>
--------------------------------	------------------

TOTAL GEOCHEMISTRY COSTS

	<u>\$47,571.80</u>
	=====

**STATEMENT OF QUALIFICATIONS****J.C. FREEZE (nee RIDLEY), B.SC.****Academic**

1978	B.A. Geography	University of Western Ontario
1981	B.Sc. Geology	University of British Columbia

**Practical**

1981 - Present	Mark Management Ltd. Vancouver, B.C.	Project Geologist. Involved with geological, geochemical and geophysical aspects of precious metals exploration in B.C.
1980 - 1981	Utah Mines Vancouver, B.C.	Temporary Summer and part-time Winter Geologist in Charge of mapping and diamond drilling of a coal property in N.E. B.C. logging of rotary drilling chip samples on another coal property in N.E. B.C.
1979	Utah Mines Vancouver, B.C.	Temporary Summer. Reconnaissance and detailed mapping, logging of diamond drill core on coal properties in N.E. B.C.

## STATEMENT OF QUALIFICATIONS

A. TROUP, P.ENG.

## ACADEMIC

1967	B.Sc. Geology	McMaster University, Ontario
1969	M.Sc. Geochemistry	McMaster University, Ontario

## PRACTICAL

1981 -	3605 Creery Avenue West Vancouver, B.C.	Consulting Geologist with Archean Engineering Ltd.
1977 - 1980	Geological Survey of Malaysia	Project Manager on a CIDA supported mineral explora- tion survey over peninsular Malaysia.
1969 - 1977	Rio Tinto Canadian Exploration Ltd. Vancouver, B.C.	Geologist involved in all aspects of mineral explora- tion in B.C., the Yukon and N.W.T.
1968	McMaster University Dept. of Geology Hamilton, Ontario	M.Sc. thesis work. Reconnaissance mapping and geochemical study, Lake Shubenicadia area, Nova Scotia.
1967 (summer)	Canex Aerial Exploration Ltd. Toronto, Ontario	Geologist in charge of detailed mapping and reconnaissance geochemical program in Gaspé, Quebec
1966 (summer)	McMaster University Dept. of Geology Hamilton, Ontario	Detailed and reconnaissance mapping in Northern Ontario.
1965 (summer)	International Nickel Co. of Canada Thompson, Manitoba	Detailed mapping in the Thompson area, Manitoba.
1964 (summer)	Geological Survey of Canada Ottawa, Ontario	Regional geochemical survey in the Keno Hill area, Yukon.

## STATEMENT OF QUALIFICATIONS

BRIAN P. BUTTERWORTH

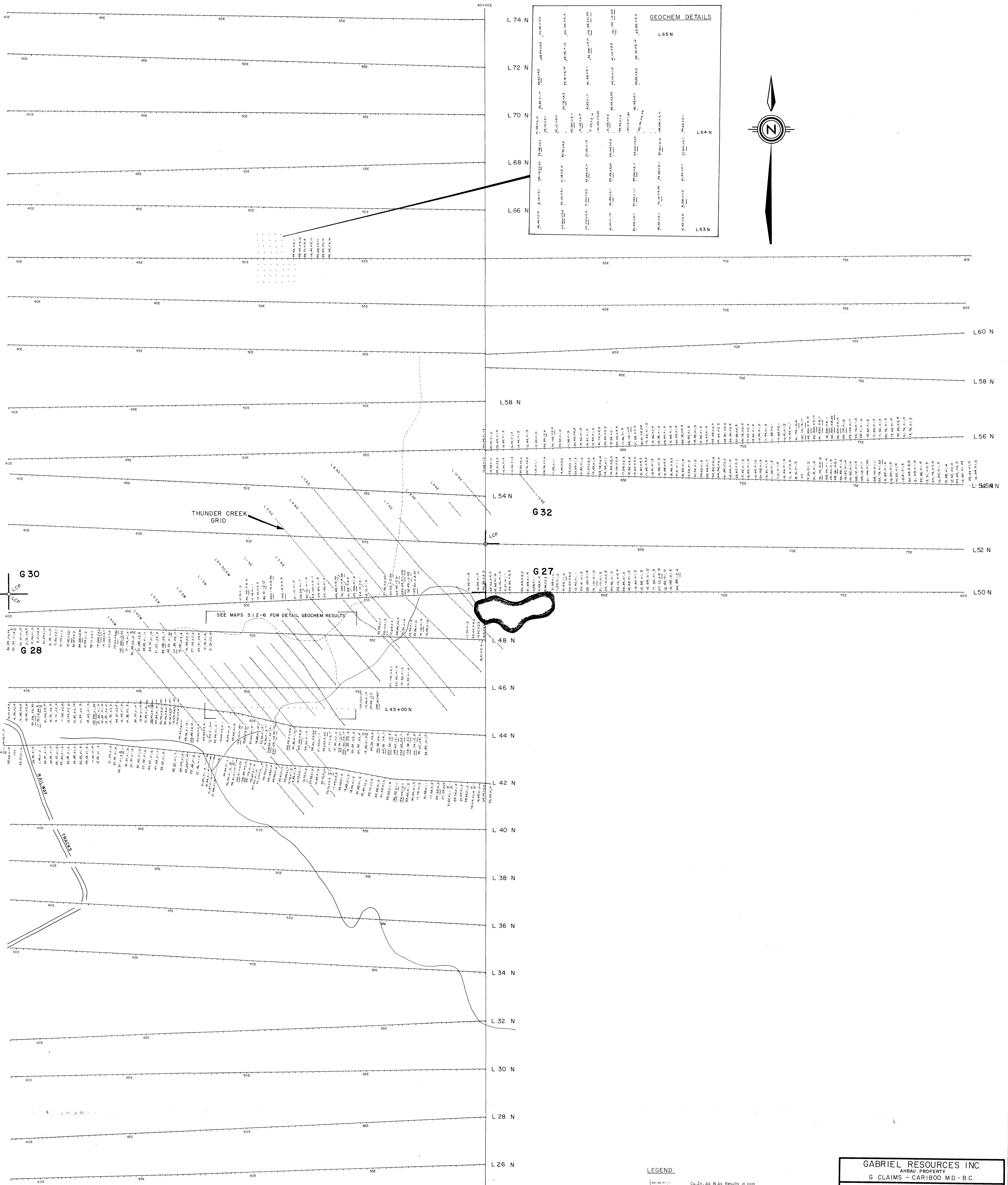
## ACADEMIC

1983	B.Sc. Geology	University of B.C.
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## PRACTICAL

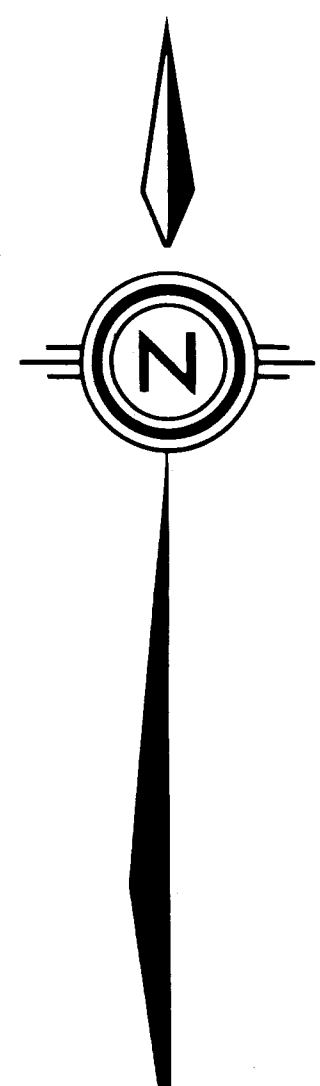
1983 -	Mark Management Vancouver, B.C.	Geologist involved in all aspects of precious metals exploration in B.C.
1982 (Summer)	Riocanex Vancouver, B.C.	Property work in Central B.C. which included detailed outcrop and trench mapping, core description and geochemical surveys.
1981 (Summer)	Riocanex Vancouver, B.C.	Regional geochemical survey, prospecting and property work throughout Central B.C. and Southern Yukon.
1980 (Summer)	Riocanex Vancouver, B.C.	Geochemical survey and and geologic mapping on properties in Central and Southeastern Yukon.





**GEOCHEM DETAILS**

Sample ID	Cu (ppm)	Zn (ppm)	Ag (ppm)	As (ppm)
L63N	10	15	0.1	0.05
L64N	12	18	0.1	0.05
L65N	15	20	0.1	0.05
L66N	18	25	0.1	0.05
L67N	20	30	0.1	0.05
L68N	25	35	0.1	0.05
L69N	30	40	0.1	0.05
L70N	35	45	0.1	0.05
L71N	40	50	0.1	0.05
L72N	45	55	0.1	0.05
L73N	50	60	0.1	0.05
L74N	55	65	0.1	0.05



G31  
G30  
G29  
G28

G32  
G27

THUNDER CREEK GRID

SEE MAPS 3.1.2-6 FOR DETAIL GEOCHEM RESULTS

**LEGEND**

Symbol	Cu, Zn, Ag & As Results in ppm
+	1-25
o	26-50
△	51-100
□	101-200
◇	201-500
×	501-1000
*	1000+

**GEOLOGICAL BRANCH ASSESSMENT REPORT**

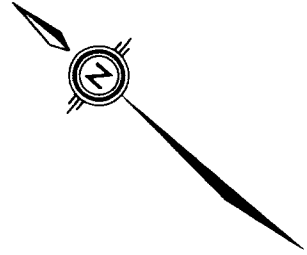
**13,712**

**GABRIEL RESOURCES INC.**  
 AHBAY PROPERTY  
 G CLAIMS - CARIBOO M.D. - B.C.

**GEOCHEMICAL SURVEY**  
 (Cu, Zn, Ag & As)

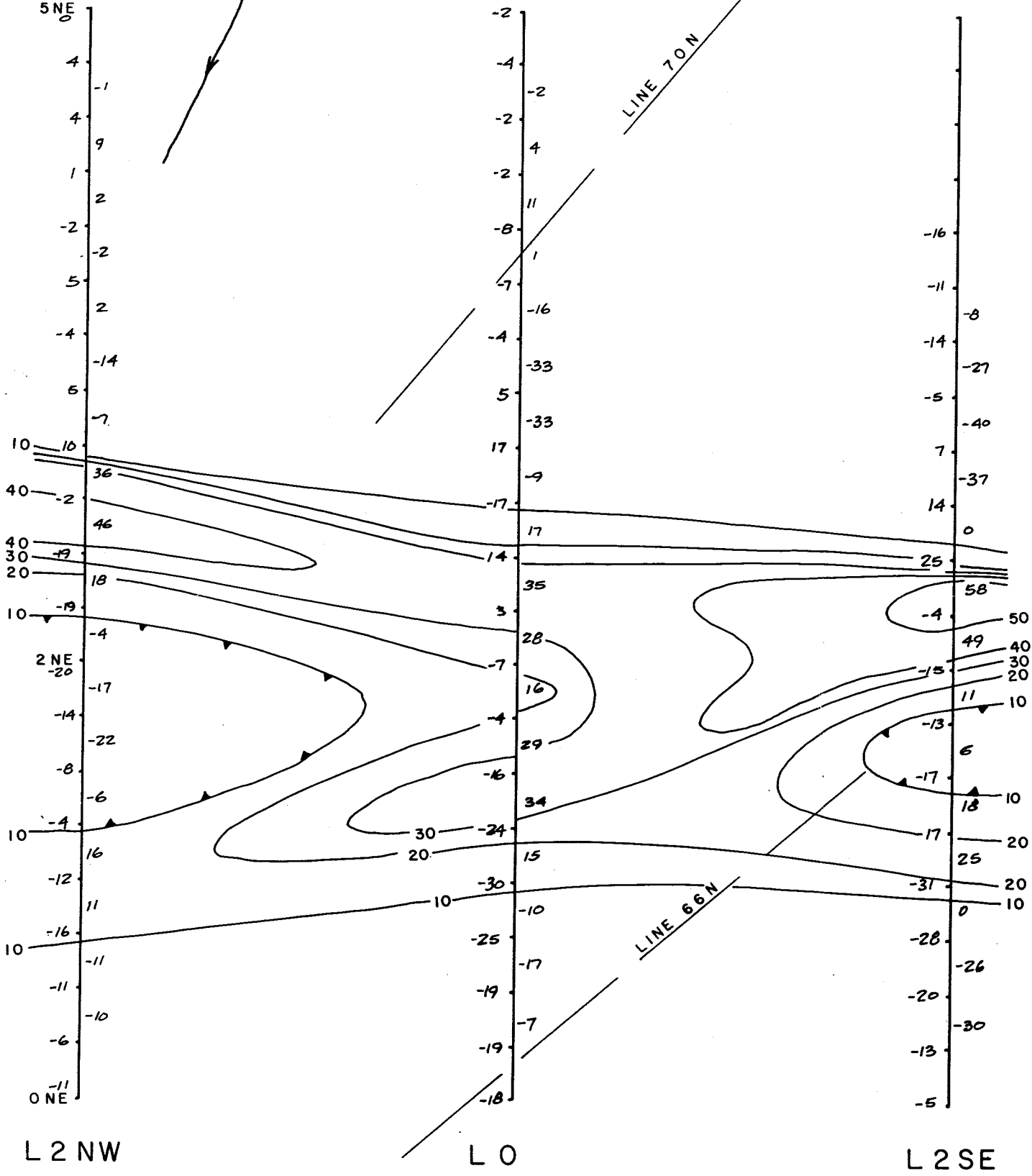
0 100 200 300 400 500 METRES  
 1:5,000

DATE JUNE 1984, MAR., 1985  
 NTS 93-G-1 JCR/rwr MAP No. 3.1.4



**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,712**



**LEGEND**

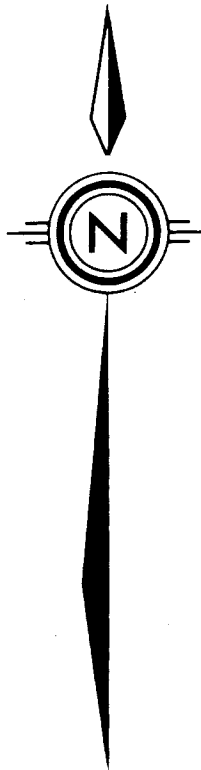
FRASER FILTER RESULT (%)  
IN-PHASE READING  
INSTRUMENT: GEONICS EM-16  
CONTOUR INTERVAL = 10 %

GABRIEL RESOURCES INC.  
G 30 & 31 CLAIMS

**VLF-EM SURVEY**

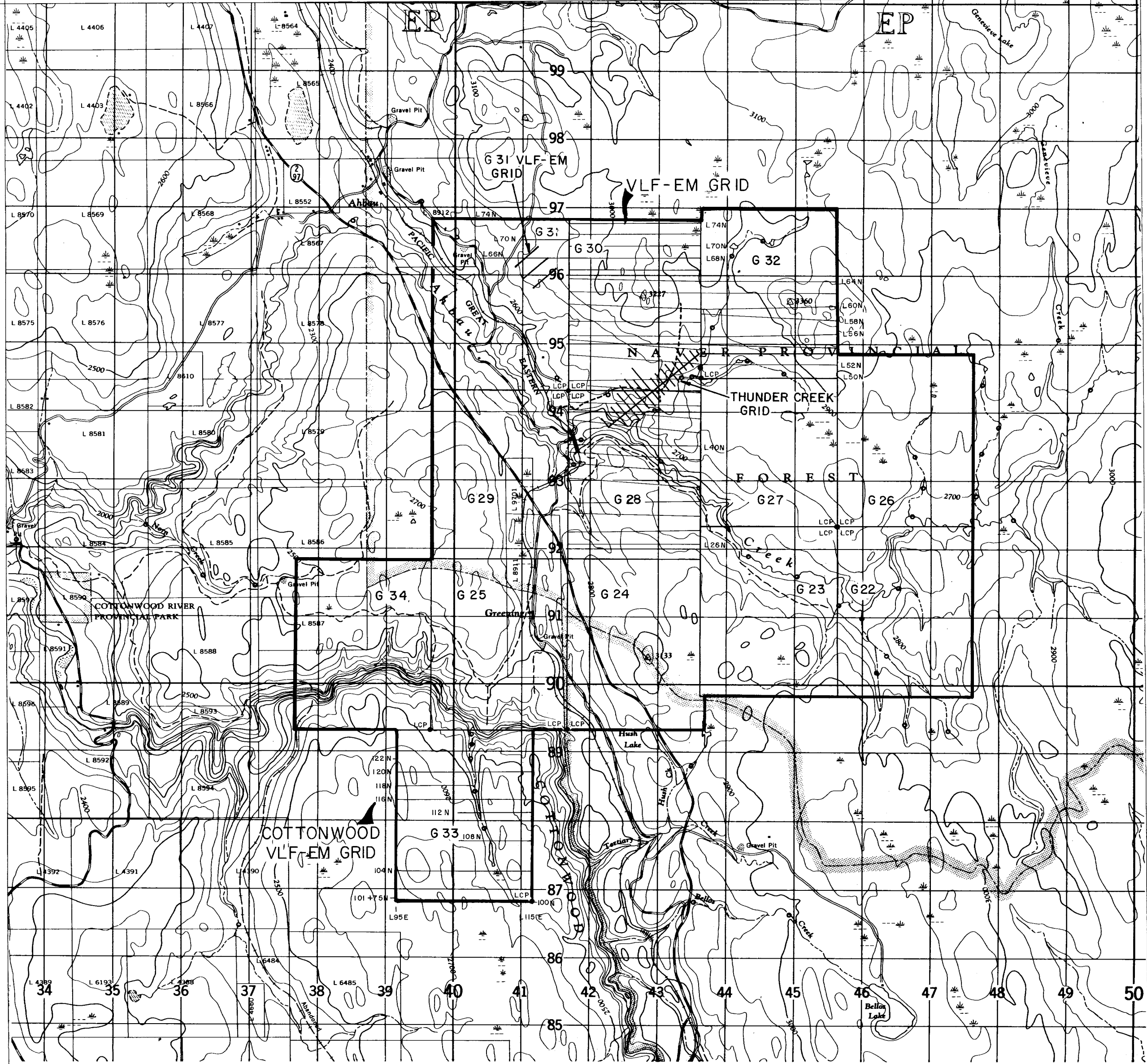
SCALE 1:2,500 in metres

BY: B.D.B., J.C.F./r.w.r  
DATE: MARCH 1985  
MAP: 4.1.2



122°30'  
53°15'

122°15'  
53°15'

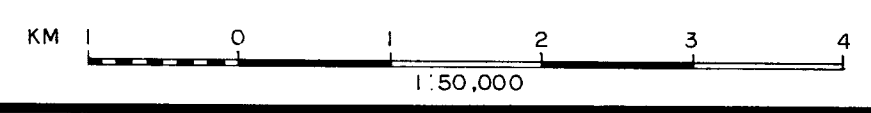


**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

# 13,712

GABRIEL RESOURCES INC.  
AHBAU PROPERTY  
G CLAIMS - CARIBOO M.D - B.C.

## CLAIM MAP

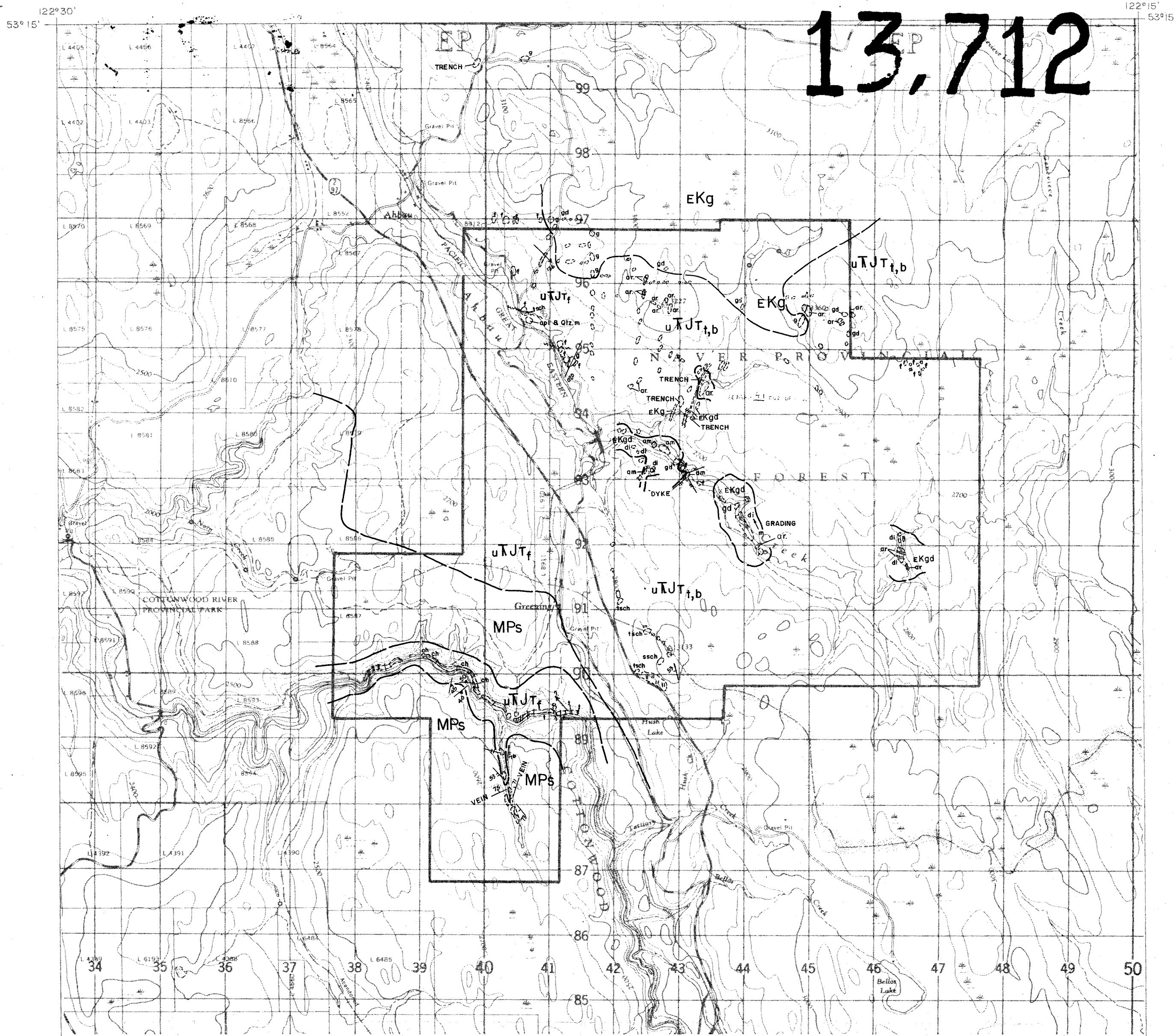
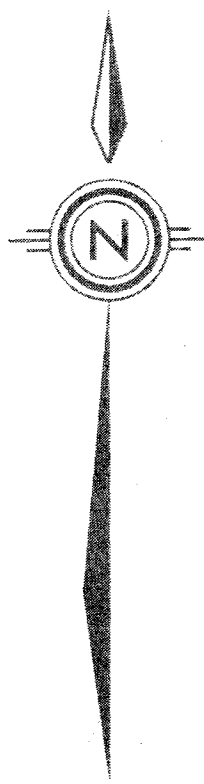


DATE Nov./81 - Dec./82 APR., 1985  
NTS 93-G-1 J.C.R./rwr

MAP 1.3.1

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,712**



**ROCK TYPES**

- f, t, bc ANDESITE-FLOW, TUFF, BRECCIA
- ar ARGILLITE
- ch CHERTS (mostly bedded)
- c CONGLOMERATES
- gd, m GRANODIORITE, MONZONITE
- g, opl GRANITE, APLITE
- um PYROXINITE-SERPENTINITE
- qtz QUARTZ (veins and pods)
- csch, msch, tsch SCHIST - CHLORITE, MICA, TALC
- slst - mdst SILTSTONE-MUDSTONE
- Ps PLEISTOCENE SEDIMENTS
- gs GRANITIZED SEDIMENTS

**LEGEND:**

- TERTIARY**
- MPs** SANDSTONE, SHALE, CONGLOMERATE, DIATOMITE, LIGNITE
- EARLY CRETACEOUS - Nover Intrusions**
- EKgd** QTZ. MONZONITE, SYENITE, MONZONITE, GRANODIORITE, DIORITE (di)
- UPPER TRIASSIC - LOWER JURASSIC**
- uTJt** Tolu Group ANDESITE, (b) BASALT, (f) FLOW (t) TUFF, (bc) BRECCIA, (c) CONGLOMERATE, GREYWACKE, (ar) ARGILLITE, LIMESTONE
- UPPER TRIASSIC**
- uTp** BLACK PHYLLITE, SILTSTONE, LIMESTONE QUARTZITE, SERPENTINIZED PERIDOTITE & SERPENTINITE (uTps)
- HADRYNIAN**
- Hk** Kozo Group SANDSTONE, CONGLOMERATE, GRIT, PHYLLITE, SCHIST, (am) AMPHIBOLITE, MARBLE, GNEISS.

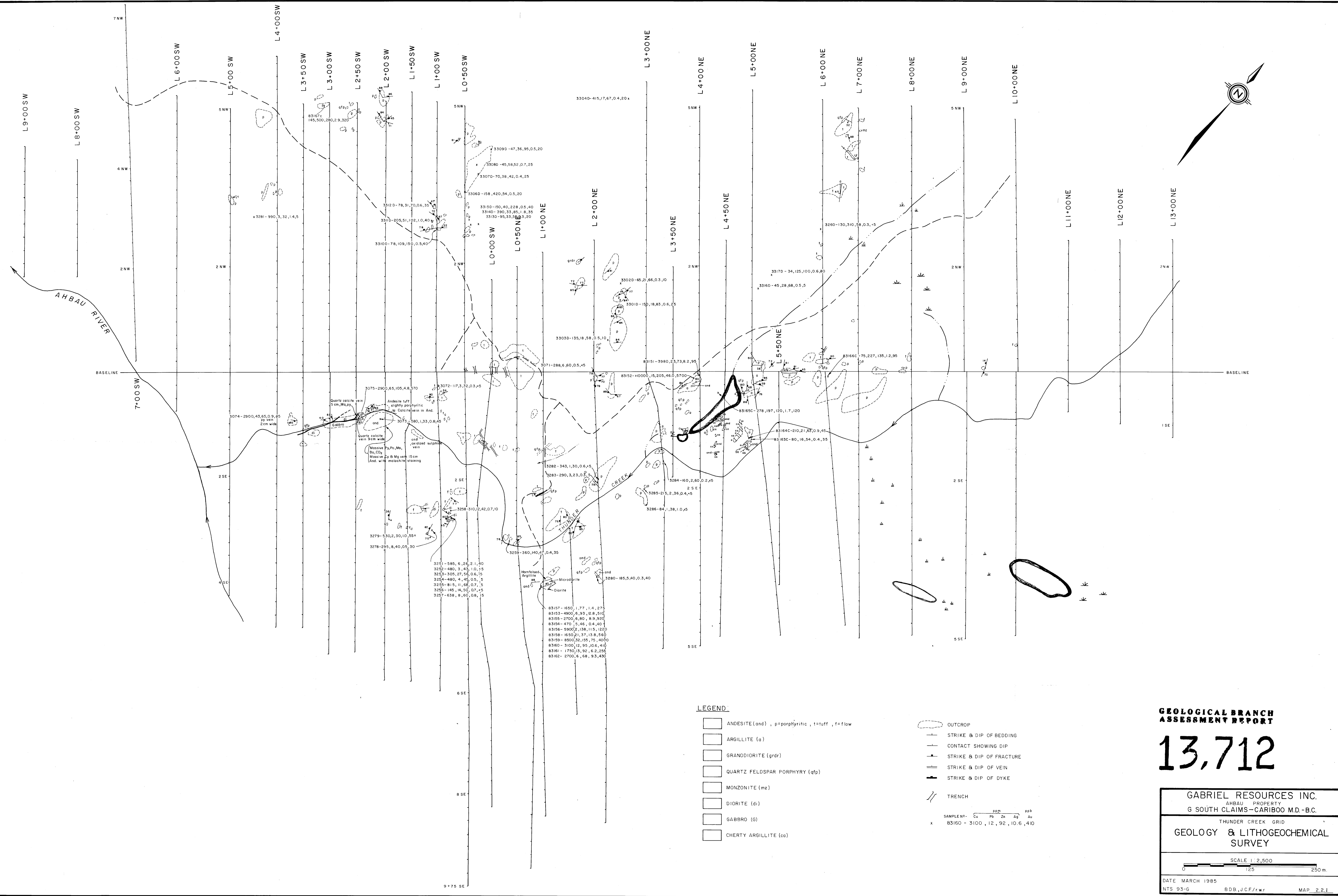
- JOINTS strike & dip (inclined, vertical)
- BEDDING " " ( " , " )
- FOLIATION strike & dip
- FRACTURE " "
- CLEAVAGE " "
- FOLD AXIS & PLUNGE
- FAULT ZONE
- SHEAR ZONE
- F FLOAT

GABRIEL RESOURCES INC.  
 AHBANU PROPERTY  
 G. CLAIMS - CARIBOO M.D. - B.C.

**REGIONAL GEOLOGICAL MAP**

KM 0 1 2 3 4  
 1:50,000

DATE FEB. 7/82 JAN., 1983  
 NTS 93-G-1 J.C.R./rwr MAP 2.1.1



**LEGEND**

- ANDESITE (and), p=porphyritic, t=tuff, f=flow
- ARGILLITE (a)
- GRANDIORITE (grdr)
- QUARTZ FELDSPAR PORPHYRY (qfp)
- MONZONITE (mz)
- DIORITE (di)
- GABBRO (g)
- CHERTY ARGILLITE (ca)

- OUTCROP
- STRIKE & DIP OF BEDDING
- CONTACT SHOWING DIP
- STRIKE & DIP OF FRACTURE
- STRIKE & DIP OF VEIN
- STRIKE & DIP OF DYKE
- TRENCH

SAMPLES - Cu Pb Zn Ag Au ppm  
 x 83160 - 3100, 12, 92, 10.6, 4.0

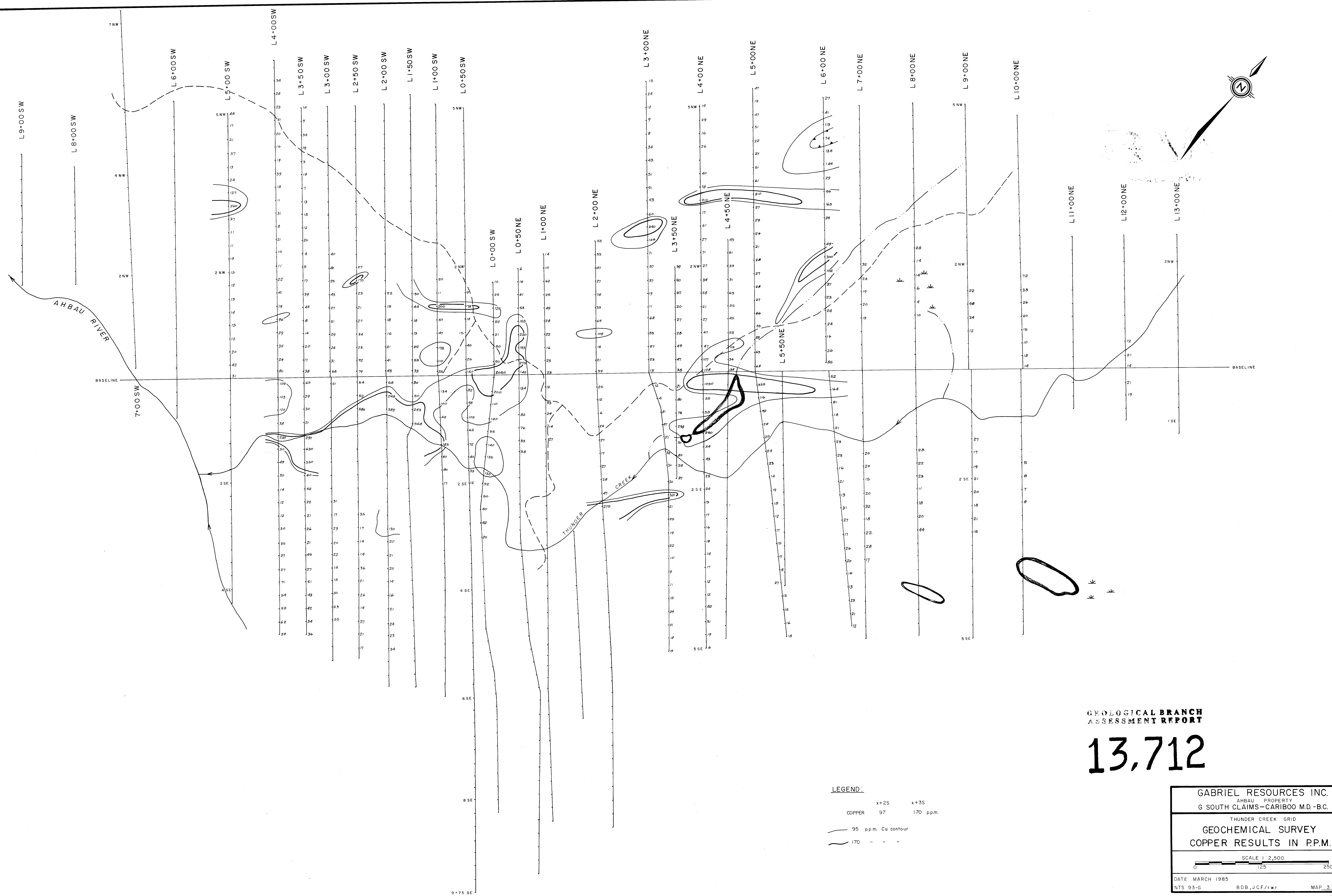
**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,712**

GABRIEL RESOURCES INC.  
 AHBAU PROPERTY  
 G SOUTH CLAIMS - CARIBOO M.D. - B.C.  
 THUNDER CREEK GRID  
**GEOLOGY & LITHOGEOCHEMICAL SURVEY**

SCALE 1:2,500  
 0 125 250 m.

DATE MARCH 1985  
 NTS 93-G BDB,JCF/rwr MAP 2.2.1



**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

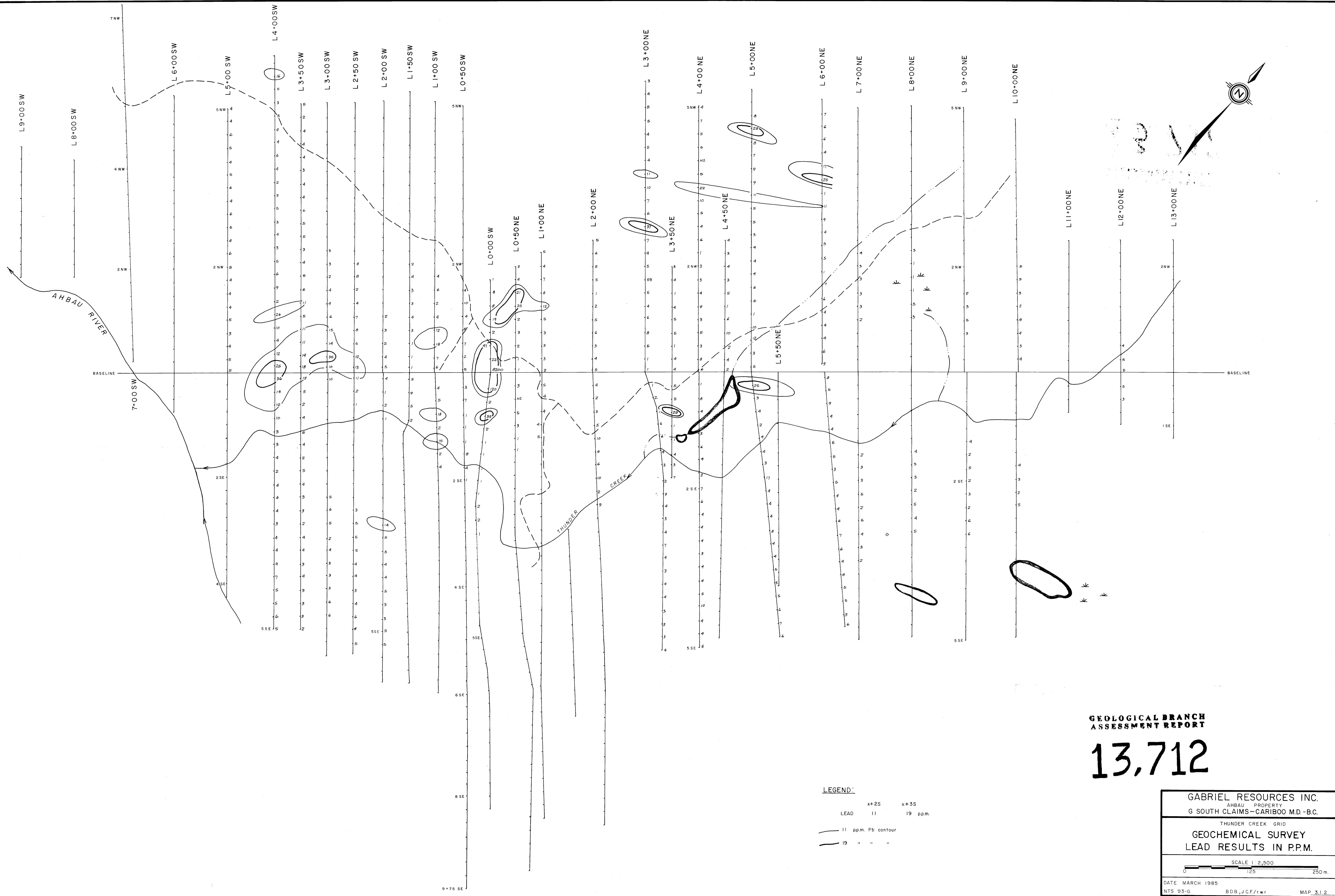
**13,712**

**LEGEND:**  
 x+2S x+3S  
 COPPER 97 170 p.p.m.  
 — 95 p.p.m. Cu contour  
 - - - 170 " " "

GABRIEL RESOURCES INC.  
 AHBAU PROPERTY  
 G SOUTH CLAIMS—CARIBOO M.D.—B.C.  
 THUNDER CREEK GRID  
**GEOCHEMICAL SURVEY**  
**COPPER RESULTS IN P.P.M.**

SCALE 1" = 2,500'  
 0 125 250 m

DATE MARCH 1985  
 NTS 93-G BDB,JCF/rwr MAP 3.1.1

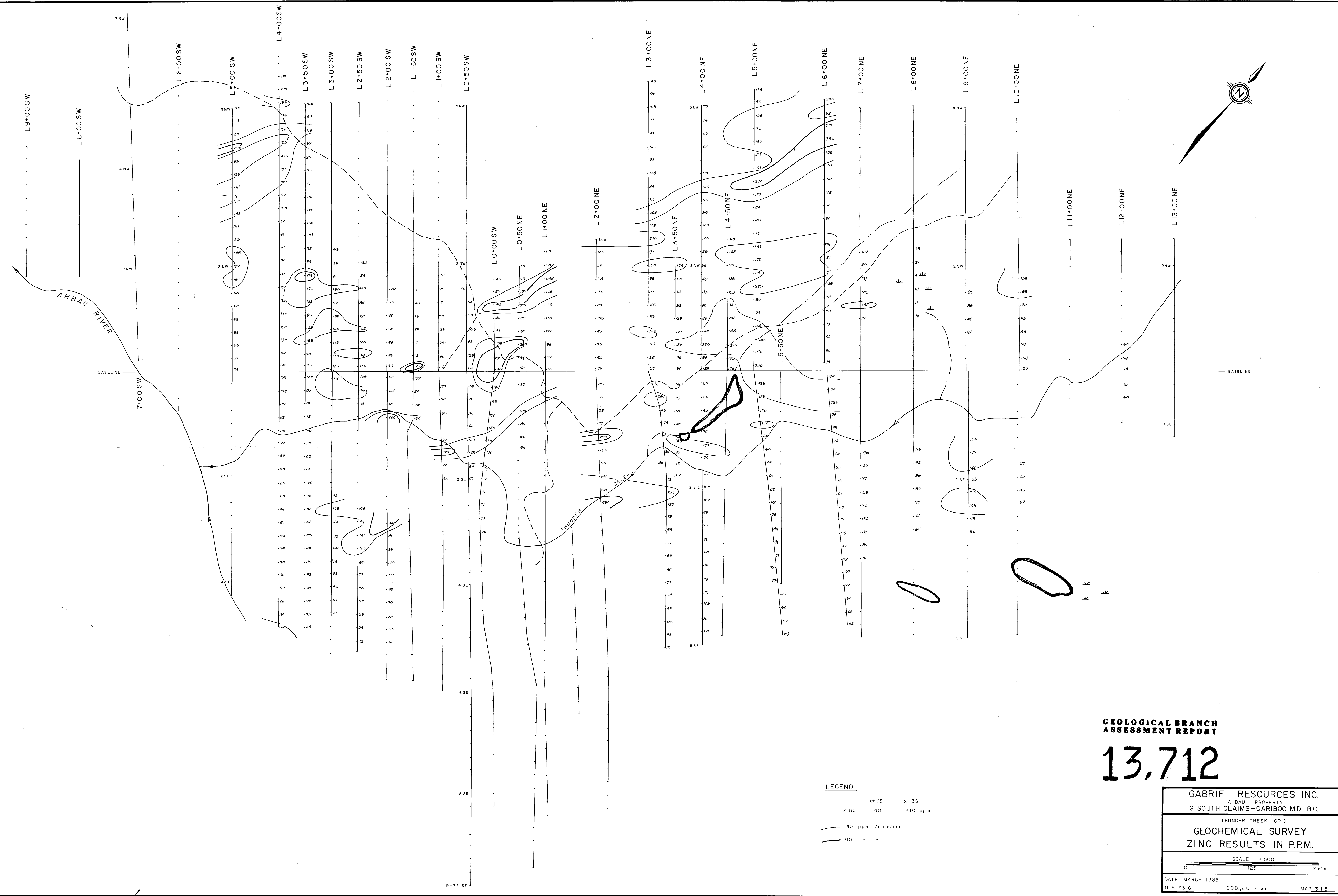


**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,712**

**LEGEND:**  
 x+2S    x+3S  
 LEAD    11    19 pp.m.  
 11 pp.m. Pb contour  
 19 " " "

GABRIEL RESOURCES INC.	
AHBAU PROPERTY	
G SOUTH CLAIMS-CARIBOO M.D.-B.C.	
THUNDER CREEK GRID	
GEOCHEMICAL SURVEY	
LEAD RESULTS IN P.P.M.	
SCALE 1:2,500	
0 125 250m.	
DATE MARCH 1985	NTS 93-G BDB,jcf/rwr MAP 3.1.2



**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

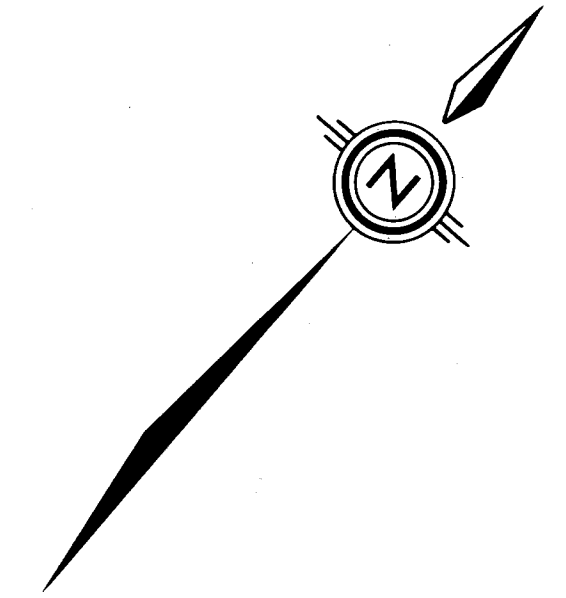
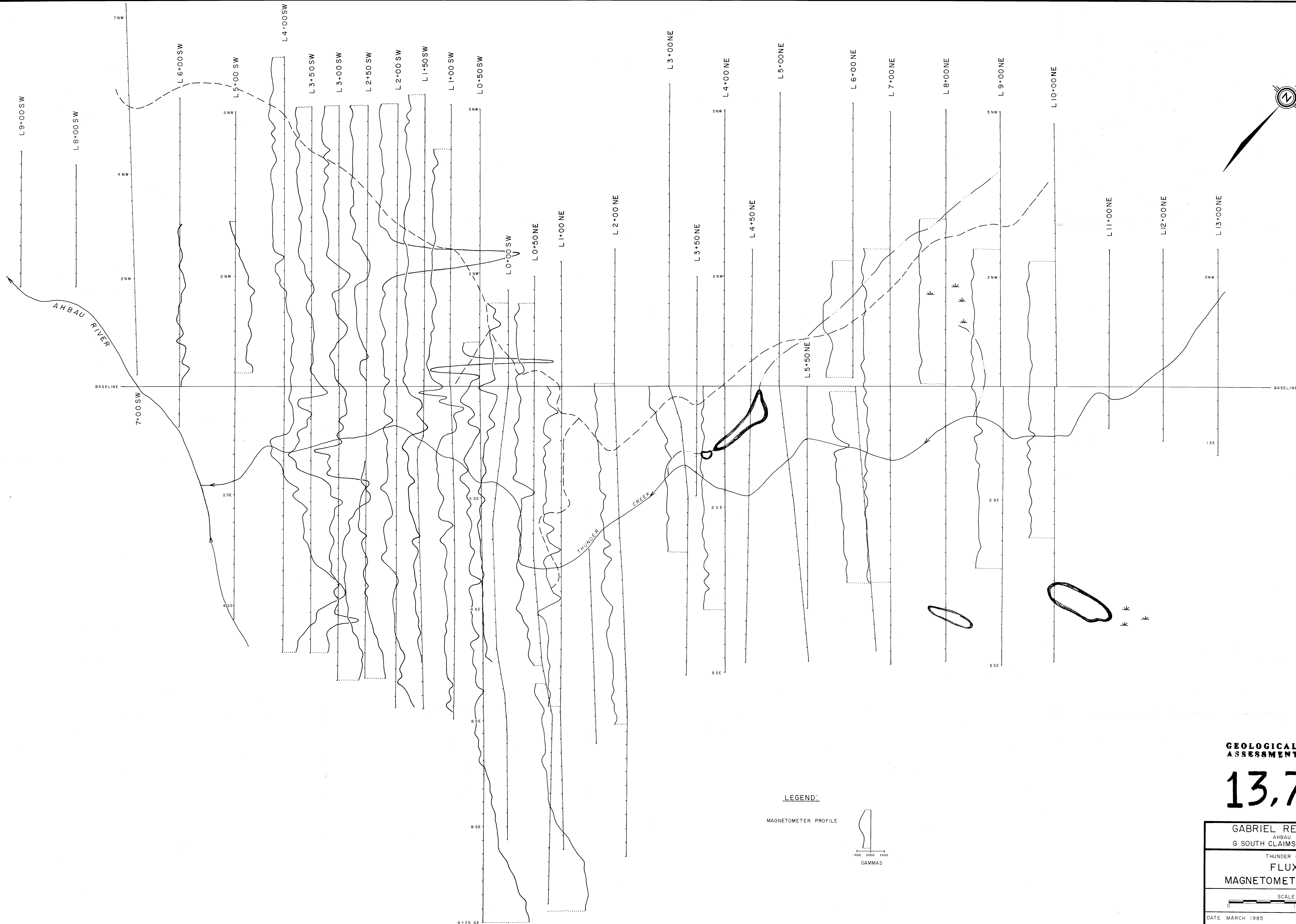
**13,712**

**LEGEND**

x+2S	x+3S
ZINC 140	210 p.p.m.
— 140 p.p.m. Zn contour	
— 210 " " "	

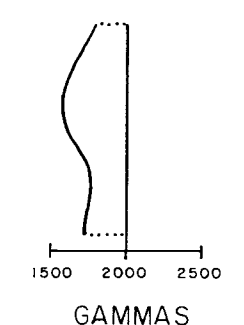
GABRIEL RESOURCES INC. AHBAU PROPERTY G SOUTH CLAIMS-CARIBOO M.D.-B.C.
THUNDER CREEK GRID GEOCHEMICAL SURVEY ZINC RESULTS IN P.P.M.
SCALE 1:2,500 0 25 250 m.
DATE MARCH 1985 NTS 93-G BDB,JCF/rwr MAP 3.1.3





**LEGEND:**

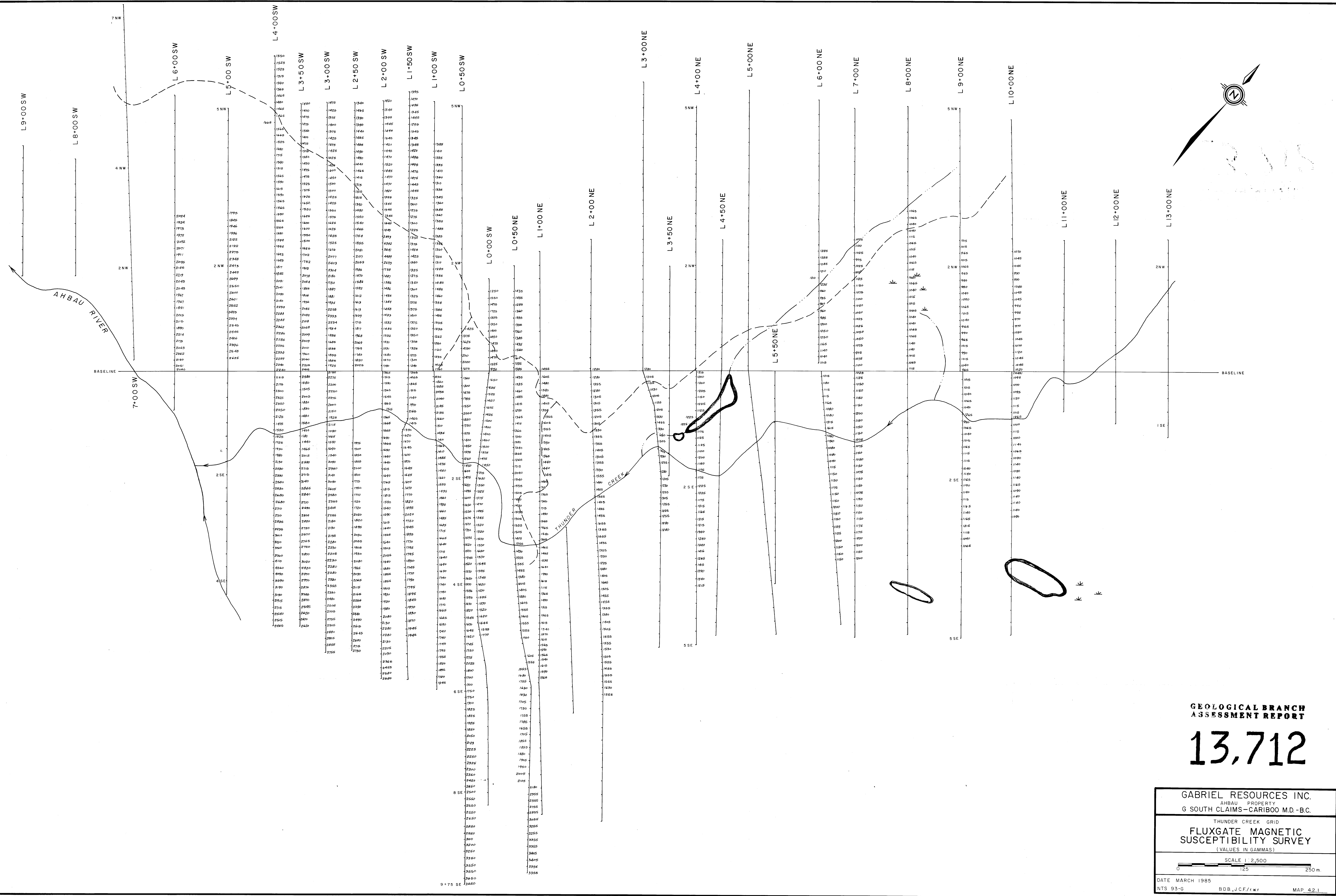
MAGNETOMETER PROFILE



**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,712**

GABRIEL RESOURCES INC. <small>AHBAY PROPERTY</small> G SOUTH CLAIMS - CARIBOO M.D. - B.C.	
THUNDER CREEK GRID <b>FLUXGATE MAGNETOMETER PROFILES</b>	
SCALE 1:2,500 	
DATE MARCH 1985 NTS 93-G	BDB, JCF/twr MAP 4.2.2



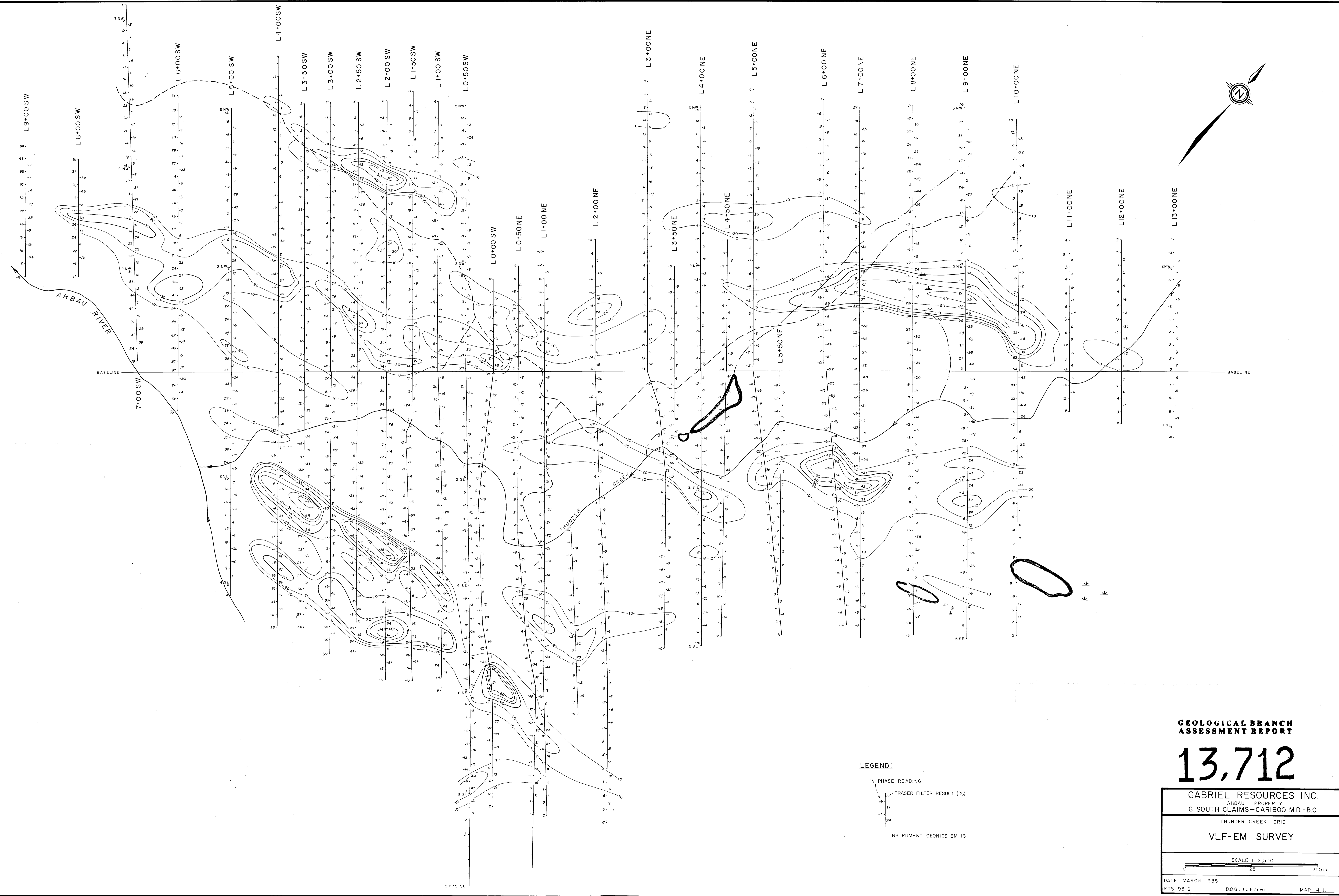
GEOLOGICAL BRANCH  
ASSESSMENT REPORT

13,712

GABRIEL RESOURCES INC.  
 AHAU PROPERTY  
 G SOUTH CLAIMS - CARIBOO M.D. - B.C.  
 THUNDER CREEK GRID  
 FLUXGATE MAGNETIC  
 SUSCEPTIBILITY SURVEY  
 (VALUES IN GAMMAS)

SCALE 1:2,500  
 0 125 250 m.

DATE MARCH 1985  
 NTS 93-G BDB, J.C.F./rwr MAP. 42.1

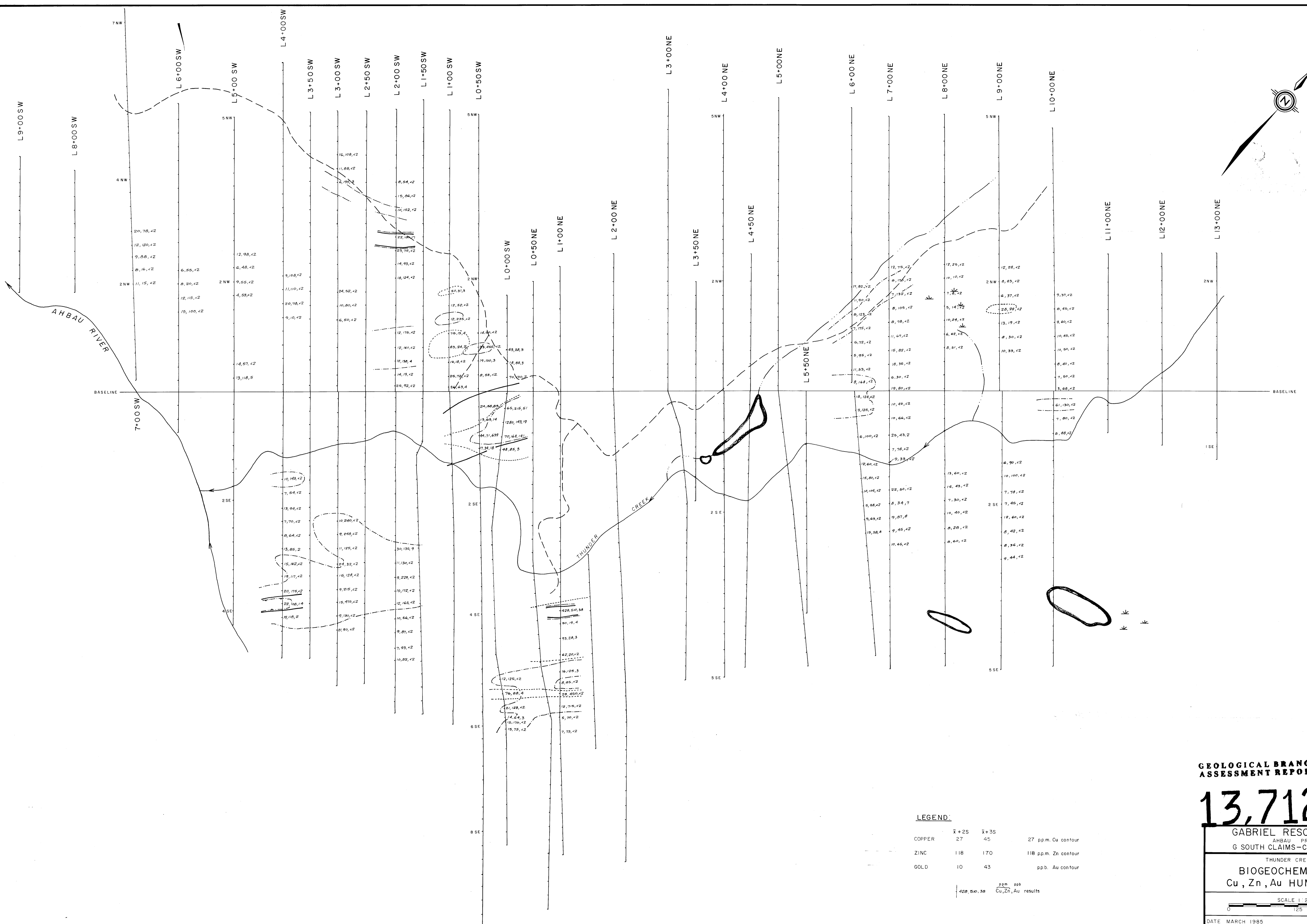
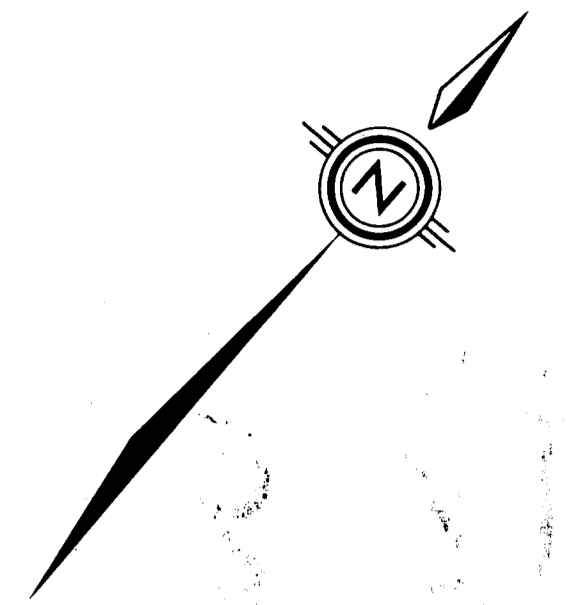


**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,712**

<b>GABRIEL RESOURCES INC.</b> AHBAU PROPERTY G SOUTH CLAIMS-CARIBOO M.D.-B.C. THUNDER CREEK GRID	
<b>VLF-EM SURVEY</b>	
SCALE 1:2,500 	
DATE MARCH 1985 NTS 93-G	BDB, JCF/rwr MAP 4.1.1

**LEGEND:**  
 IN-PHASE READING  
 FRASER FILTER RESULT (%)  
 INSTRUMENT GEONICS EM-16



**LEGEND:**

	7+25	7+35	
COPPER	27	45	27 pp.m. Cu contour
ZINC	118	170	118 pp.m. Zn contour
GOLD	10	43	pp.b. Au contour

ppm ppb  
420, 500, 500  
Cu, Zn, Au results

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,712**

GABRIEL RESOURCES INC.  
 AHBANU PROPERTY  
 G SOUTH CLAIMS-CARIBOO M.D.-B.C.

THUNDER CREEK GRID  
**BIOGEOCHEMICAL MAP**  
 Cu, Zn, Au HUMUS RESULTS

SCALE 1:2,500  
 0 125 250 m.

DATE MARCH 1985  
 NTS 93-G BDB, J.C.F./rwr MAP 3.2