

GEOPHYSICAL-GEOCHEMISTRY REPORT

on

MAGNETIC AND SOIL SAMPLE SURVEYS

TIL CLAIM

STEFFENS CREEK AREA, NICOLA M.D., B.C.

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TIL CLAIM : 18.5 kms N05°W Merrit, B.C.  
 : 50° 120° SW  
 : N.T.S. 92I/7W

Written for : Ashcroft Resources Ltd.  
728-510 West Hastings Street  
Vancouver, B.C.

by : David G. Mark  
GEOTRONICS SURVEYS  
420-890 W Pender S  
Vancouver, B.C.

dated : April 24th, 1980



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Engineering & Mining Geophysicists  
VANCOUVER, CANADA

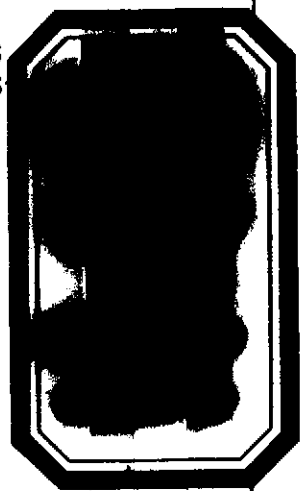
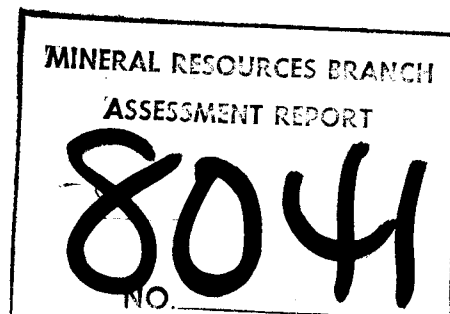


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MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT

NO. \_\_\_\_\_

### SUMMARY

During the last part of November of 1979, magnetic and soil geochemistry surveys were carried out on the Til Claim. The Til Claim is located 18.5 kms. N05°W of Merritt, abutting the west side of Neville Creek. Access to much of the property is easily gained by a two-wheel drive vehicle. The terrain consists of mainly moderate slopes forested with moderately dense coniferous trees and open grasslands. The purpose of the surveys was to map geological structure and locate probable areas of lead, zinc and copper mineralization similar to the nearby Tolman Lake mineral zones.

A VLF-EM survey is the only known previous work on the property.

The property is mainly underlain by Upper Triassic Nicola Group volcanics. The rock types are greenstone, andesite, basalt, agglomerate, breccia, tuff, minor argillite, limestone and conglomerate. Faulting on the property is predominantly north-south, as is evidenced by the government aeromagnetic survey. The writer is unaware of any known mineralization occurring on the property.

The magnetic readings and soil samples were taken every 30 meters on 120-meter separated east-west lines. The magnetic readings were diurnally corrected, plotted, and contoured and the soil sample results were statistically analyzed plotted and contoured.

CONCLUSIONS

1. The magnetic results are relatively flat and appear to only reflect rock-type changes within the Nicola volcanics. There is poor correlation of the magnetics with the VLF-EM and soil geochemistry results.
  
2. There are four copper and three zinc soil geochemistry anomalies that are somewhat encouraging. The copper correlates with magnetic lows and the zinc correlates quite well with the VLF-EM conductive zones. There are no significant lead anomalies. There are sub-anomalous zones which do not correlate with VLF-EM, magnetic, zinc, or copper results.

RECOMMENDATIONS

The results are not encouraging enough to warrant any significant exploration attempts. However, it would be useful to geologically map the property paying attention to the zinc and copper anomalies.

GEOPHYSICAL-GEOCHEMISTRY REPORT

on

MAGNETIC AND SOIL SAMPLE SURVEYS

TIL CLAIM

STEFFENS CREEK AREA, NICOLA M.D., B.C.

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INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data, and the interpretation of a detailed soil sampling survey and a ground magnetic survey carried out on the Til Claim from the 14th to 27th of November, 1979.

The surveys were done under the supervision of the writer and under the field supervision of S. G. Diakow with the aid of a field technician. A total of 660 soil samples were picked up and 19.5 line kms. of magnetic survey were done. The samples were tested for lead, zinc and copper.

The object of the magnetic survey was to locate sulphide mineralization as well as map lithology and delineate faults and/or shear zones.

The primary purpose of the soil geochemistry survey was to locate probable zones of lead, zinc and copper mineralization similar to the nearby Tolman Lake deposit.

PROPERTY AND OWNERSHIP

The Til Claim consists of one claim of 9 units as shown on Sheet 1 and as described below:

<u>Claim Name</u>	<u>No. Units</u>	<u>Record No.</u>	<u>Tag No.</u>	<u>Expiry Date</u>
Til	9	381 (2)	19859	Feb 8/81

The surveys described within this report will advance the expiry date to 1985.

The property is owned by Ashcroft Resources Ltd. of Vancouver, British Columbia.

LOCATION AND ACCESS

The Til Claim is found about 18.5 km. N05°W of the town of Merritt, British Columbia, and about 10.0 kms. due south of Mamit Lake. The east side of the property abuts Neville Creek.

The geographical coordinates are 50° 16'N latitude, and 120° 38'W longitude.

Access to the property is quite good and can be gained by a passenger car providing the road is dry (See Figure 2). One travels along the Logan Lake Road for 21 kms. north of Merritt or 27 kms. south of Logan Lake and then turns east onto a dirt road. The western boundary of the Til Claim is about 0.6 kms. along the dirt road.

#### PHYSIOGRAPHY

The Til Claim lies in the southern part of the physiographic division known as the Thompson Plateau which is part of the Interior Plateau System. The terrain is generally that of flat or rolling hills over most of the property, with the slope being mainly to the west. The general trend of the topography runs north-south. Elevations vary from 1030 meters a.s.l. in the northwest corner to 1250 meters a.s.l. in the northeast corner to give a relief of only 220 meters.

The main water source would be Neville Creek or a few small swamps within the property.

Vegetation on the property could be considered to be open-forested grassland with the trees being pine, fir and spruce.

#### HISTORY OF PREVIOUS WORK

A VLF-EM survey was carried out under the writer's supervision during July 1978. A report on the results was subsequently written.

#### GEOLOGY

According to the G.S.C. map of the area, the property is underlain only by the Upper Triassic Nicola Group of rocks. These are comprised of greenstone, andesite, basalt, agglomerate, breccia tuff, minor argillite, limestone and conglomerate.

The closest intrusive is the Guichon Creek Batholith which is of Upper Triassic to Middle Jurassic Age and which is about two kms. to the west. It is composed of acidic intrusives, the main ones being quartz monzonite, granodiorite, and quartz diorite.



The mineralization on the Tolman Lake property centered about 5 kms. to the northeast, is found within three zones. The mineralization within zones 2 and 3 is found in a strong brecciated shear zone striking N35E. The sulphides consist of sphalerite, galena, chalcopyrite and pyrite with silver values, which is found in a zone of brecciated and bleached andesite, with quartz and calcite forming the matrix. Zone No. 1 contains the same sulphides but the mode of mineralization is more the vein-type.

#### MAGNETIC SURVEY

##### 1. Instrumentation and Theory:

The magnetic survey was carried out using a portable vertical component, Model G-110 fluxgate magnetometer manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. This is a visual-null type instrument using a digital dial readout with a range of 100,000 gammas and a reading accuracy of 10 gammas.

Only two commonly occurring minerals are strongly magnetic; magnetite and pyrrhotite. Hence, magnetic surveys are used to detect the presence of these minerals in varying concentrations. Magnetic data are also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

##### 2. Survey Procedure:

The readings were taken on the same grid as that for the previously done VLF-EM survey, that is, every 30 meters on east-west lines 120 meters apart.

The magnetic diurnal change was monitored in the field by the closed loop method and double-checked by a series of base stations.

### 3. Compilation of Data

The magnetic data was plotted on Sheet 5 at a scale of 1:3,000 (1 cm = 30 meters). For ease of plotting and discussion, 50,000 gammas was subtracted from all values and contours.

The magnetic values were grouped into arithmetic intervals of 100 gammas. The cumulative frequency for each interval was then calculated and then plotted against the correlating interval to obtain the arithmetic cumulative frequency graph as shown on Sheet 3.

The statistical parameters taken from the graph are as follows:

Anomalous low threshold	(97½% level)	9010 gammas
Sub-anomalous low threshold	(84% level)	9200 gammas
Mean background	(50% level)	9390 gammas
Sub-anomalous high threshold	(16% level)	9580 gammas
Anomalous high threshold	(2½% level)	9770 gammas

The sub-anomalous and anomalous levels are 1 and 2 standard deviations away from the mean background level, respectively.

From this, the contour interval was then chosen to be 200 gammas which is close to the standard deviation. The mean background contour of 9400 gammas was not drawn in. The contours below the mean background level, 9200 gammas and lower, were dashed in, and the contours, 9600 gammas and higher, were drawn in solid.

## SOIL GEOCHEMISTRY SURVEY

### 1. Survey Procedure:

The soil samples were picked up at 30-meter intervals on the same grid as for the VLF-EM and magnetic surveys. The samples were picked up with a D-handled shovel at about a 15-centimeter depth. The horizon sampled was B except where it could not be obtained, then horizon C was sampled. Samples were placed in brown wet-strength paper bags with grid coordinates marked thereon.

### 2. Testing Procedure:

All samples were tested by Acme Analytical Laboratories Ltd of Burnaby, B.C. The sample is first thoroughly dried and then sifted through a -80 mesh screen. A measured amount of the sifted material is then put into a test tube with subsequent measured additions of aqua regia. This mixture is next heated for a certain length of time. The parts per million (ppm) lead, zinc, or copper is then measured by atomic absorption.

### 3. Treatment of Data:

The values in ppm lead, zinc and copper were first grouped into a logarithmic interval of 0.075. The cumulative frequency for each interval was then calculated and then plotted against the correlating interval to obtain the logarithmic cumulative frequency graphs as shown in Sheet 4.

The coefficient of deviation, indicative of the range or spread of values for lead, zinc and copper were calculated to be 0.07 to 0.09 which are very low values. This indicates a low mobility of lead, zinc and copper ions and/or little mineralization of these metals on the property.

The mean background value for each of the three elements is taken at the 50% level. The sub-anomalous threshold value (a term used by the writer to denote the minimum value that is not considered anomalous but still important as an indicator of mineralization), is taken at a one standard deviation from the mean background value which is at the 16% level and the anomalous threshold value is two standard deviations away at the 2½% level.

The subsequent parameters for each element are thus as follows:

	Lead	Zinc	Copper
Mean background value	12	108	34
Sub anomalous threshold value	14	128	42
Anomalous threshold value	17	150	52

The lead, zinc and copper results were then subsequently plotted on sheets 6 to 8, respectively, at a scale of 1:3,000 (1 cm = 30 m) and then contoured at intervals close to the standard deviations. The sub-anomalous contours were dashed in and the anomalous contours drawn in solid.

## DISCUSSION OF RESULTS

### 1. Magnetics:

The magnetic survey results, by and large, vary from about 8800 gammas to 10,200 gammas giving a range of 1400 gammas, which is relatively low. In addition, the data is fairly quiet, that is, there is little variation in the data from one station to the next.

The G.S.C. map for the area shows the property is underlain by Nicola volcanics. The characteristics of the magnetic field described above indicate the property is probably underlain by one rock-type, though the magnetic high within the eastern center of the survey area may be reflective of an intrusive phase.

The magnetic lows that correlate with the south-flowing creek on the eastern part of the property suggest the creek may be structurally controlled.

There is only minor correlation with the VLF-EM results.

### 2. Soil Geochemistry:

The lead results are fairly flat except for a one-value high on line 108S.

The zinc results have revealed three anomalies that may be of further interest. These have been labelled by the upper case letters A to C.

Anomaly A is about 240 m long, say, 30 m wide (though the causative source may be as little as a meter wide), and strikes northerly. It contains two anomalous values with the highest being 238 ppm. It correlates very well with VLF-EM anomaly f indicating the causative source is probably

structurally controlled.

Anomaly B is 150 m long, 30 m wide, and strikes north to northeasterly. It also contains two anomalous values with the highest being 242 ppm. It correlates excellently with the western edge of anomaly b which also indicates structural control of the causative source.

Anomaly C occurs on L-0 on the northern boundary of the property and has a high of 163 ppm. Its strike length cannot be determined but it could well extend further to the north. It also correlates with the western edge of a VLF-EM anomaly (h).

Four copper anomalies have been singled out for discussion and are labelled D to G. These correlate poorly with the VLF-EM results.

Anomaly D correlates with a magnetic low and appears to be part of a much broader sub-anomalous high within the northwest corner. It contains several anomalous values, the highest of which is 72 ppm. It is open to the west and therefore its strike and length cannot be determined. However, its minimum dimensions are 120 by 240 m.

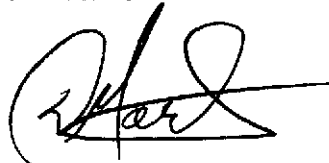
Anomaly E strikes northerly with Anomaly D being on its strike. Its causative source is about 270 m long and is quite narrow. It consists of three anomalous values the highest of which is 76 ppm.

Anomaly F has similar characteristics as E.

Anomaly G consists of four anomalous values, the highest of which is 65 ppm. Its dimensions appear to be 120 x 60 m with a strike of northwest.

There is little correlation between the lead, zinc and copper results which is unlike those of the Tolman Lake property.

Respectfully submitted,  
GEOTRONICS SURVEYS LTD.,

A handwritten signature in black ink, appearing to read 'D. Mark', written over a horizontal line.

David G. Mark  
Geophysicist

April 24, 1980

SELECTED BIBLIOGRAPHY

- Aeromagnetic Map, Mamit Lake, B.C. Geol. Survey of Canada, Map 5212G, Sheet 92I/7, 1968.
- Cockfield, W.E. Geology and Mineral Deposits, Nicola Map-Area, B.C. Geol. Surv. of Can. Mem. 249, 1961.
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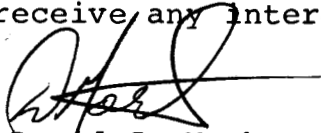
GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

THAT I am a Consulting Geophysicist of Geotronics Surveys Ltd. with offices at 420-890 West Pender Street, Vancouver, British Columbia.

I further certify:

1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc., degree in Geophysics.
2. I have been practising my profession for the past 12 years and have been active in the mining industry for the past fifteen years.
3. I am an active member of the Society of Exploration Geophysicists and a member of the European Association of Exploration Geophysicists.
4. This report is compiled from data obtained from magnetic and soil geochemistry surveys carried out by a field crew under the supervision of myself from November 14th to 27th, 1979.
5. I have no direct or indirect interest in the properties or securities of Ashcroft Resources Ltd., Vancouver, B.C. nor do I expect to receive any interest therein.

  
David G. Mark

April 24, 1980

AFFIDAVIT OF EXPENSES

The soil geochemistry and magnetic surveys were carried out on the Til Claim, Steffens Creek Area, Nicola M.D., B.C. to the value of the following:

FIELD

Geophysical technicians, 16 man days at \$190/man day	\$3,040.00
Vehicle Rental	323.00
Room and Board	448.00
Survey supplies	86.00
Magnetometer rental 75/week for 2 weeks	<u>150.00</u>
	\$4,047.00

LAB

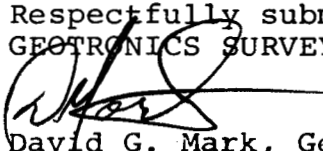
Soil testing, 660 samples at \$2.25/sample	1,683.00
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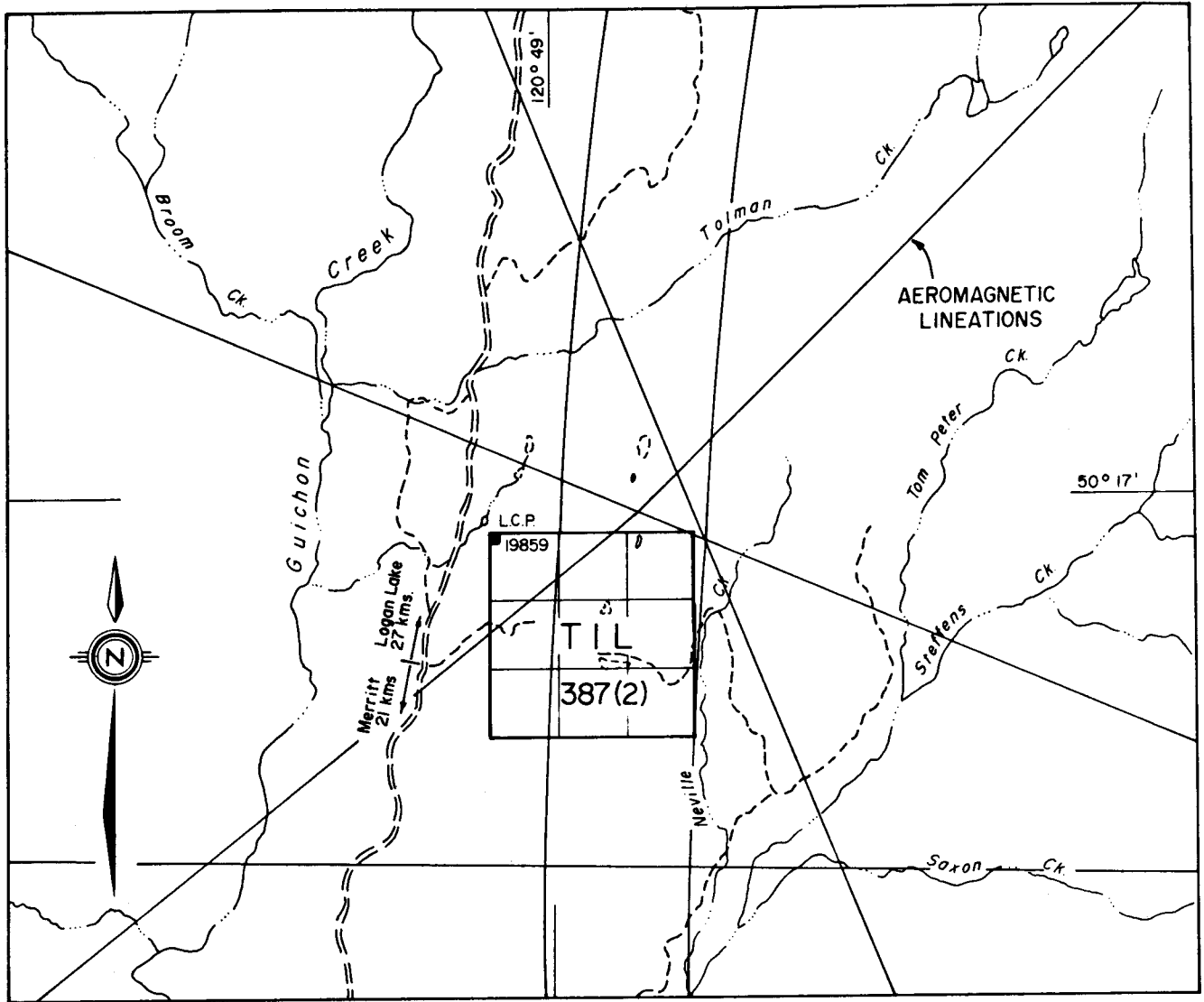
REPORT

Geophysicist, 14 hours at \$35/hour	470.00
Office Assistant, 20 hours at \$15/hour	300.00
Drafting and printing	300.00
Typing, xeroxing and compilation	<u>110.00</u>
	\$1,200.00

TOTAL..... \$6,930.00

Respectfully submitted,  
GEOTRONICS SURVEYS LTD.,

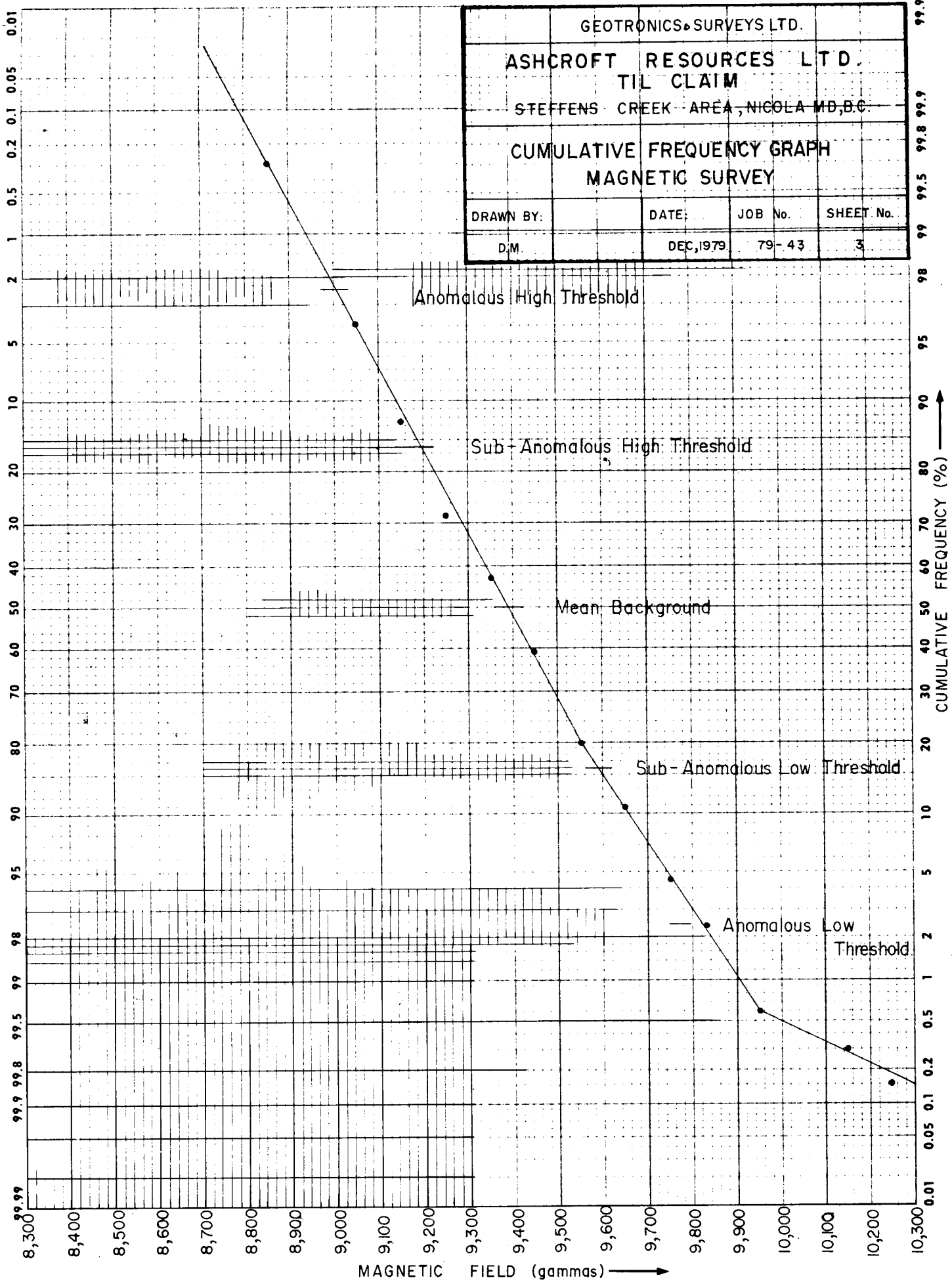
  
David G. Mark, Geophysicist



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ASHCROFT RESOURCES LTD.				
TIL CLAIM				
STEFFENS CREEK AREA, NICOLA M.D., B.C.				
<b>CLAIM MAP</b>				
DRAWN BY:	JOB No.	DATE:	SCALE:	SHEET No
Altair	78-39	March 1979	1:50,000	1

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CLEARPRINT PAPER NO. C327 ARITHMETIC PROBABILITY

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STEFFENS CREEK AREA, NICOLA MB, B.C.			
CUMULATIVE FREQUENCY GRAPH			
MAGNETIC SURVEY			
DRAWN BY:	DATE:	JOB No.	SHEET No.
D.M.	DEC, 1979	79-43	3



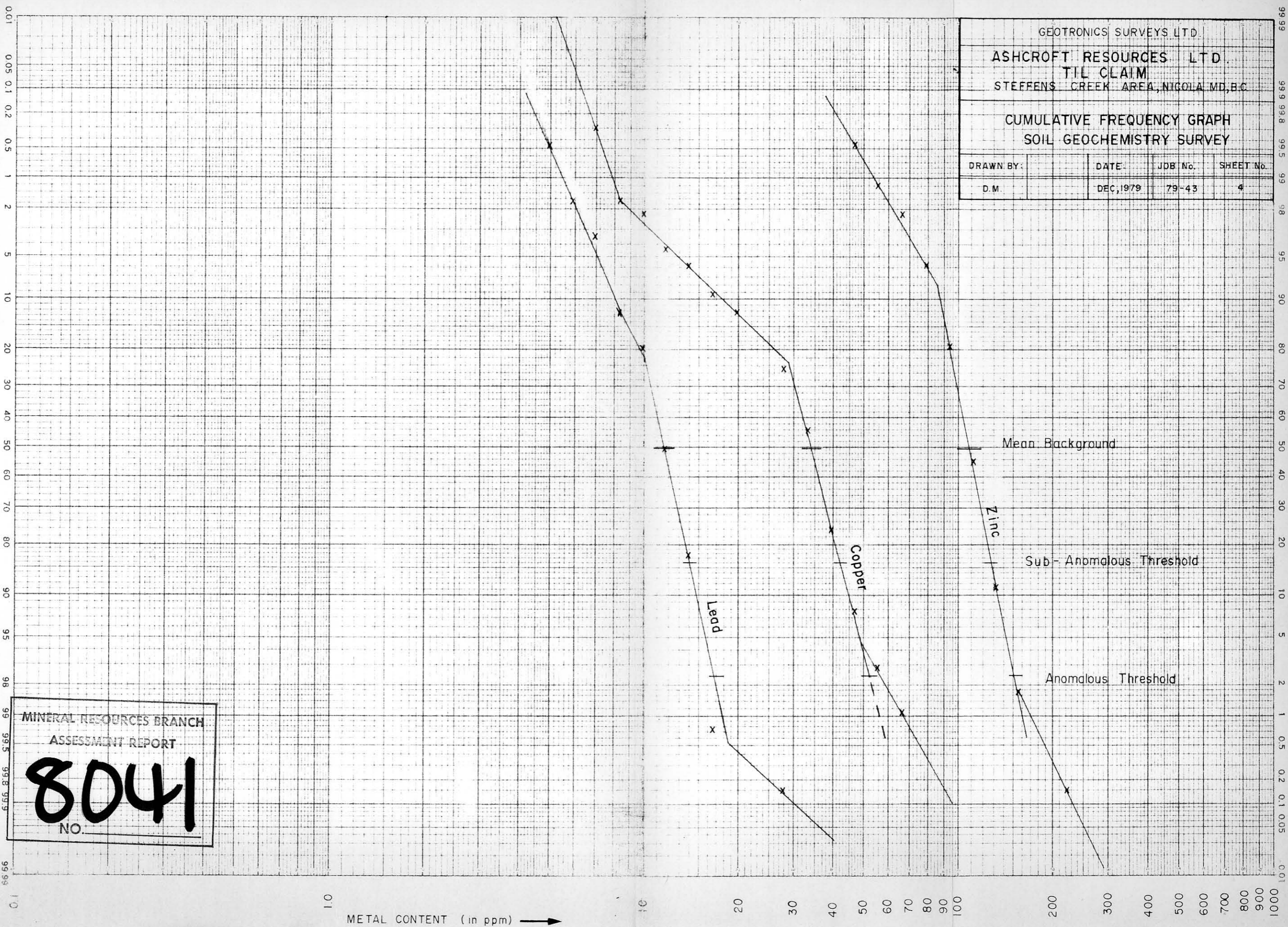
MAGNETIC FIELD (gammas) →

CUMULATIVE FREQUENCY (%) ↑

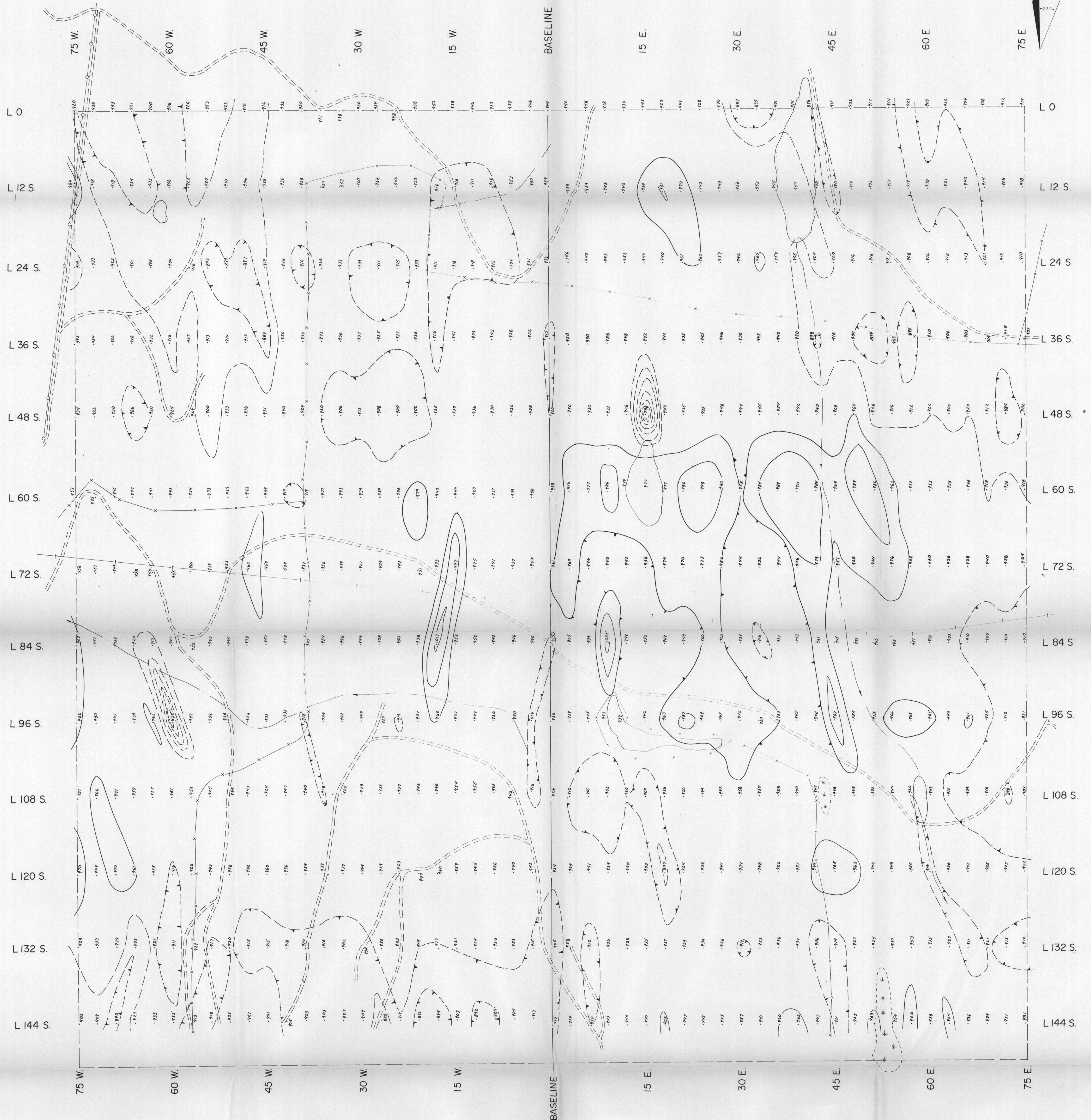
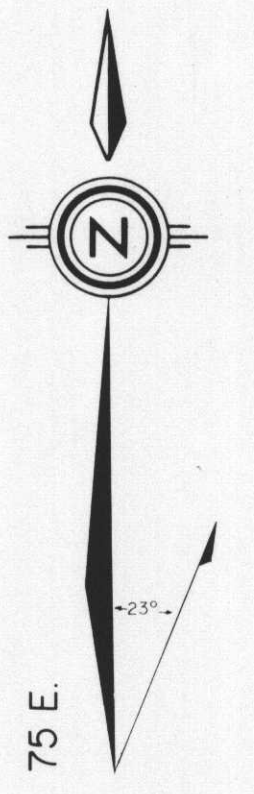
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 TIL CLAIM  
 STEFFENS CREEK AREA, NICOLA MD, B.C.

**CUMULATIVE FREQUENCY GRAPH  
 SOIL GEOCHEMISTRY SURVEY**

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D.M.	DEC, 1979	79-43	4



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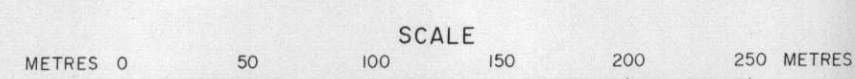
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- x— Fence
- o— Claim line showing claim post
- o— Center of power line
- |— Creek
- |— Intermittent stream
- |— Logging road
- o— Lake
- o— Swamp

**PARAMETERS**

- ANOMALOUS LOW THRESHOLD 9010 gammas
- SUB-ANOMALOUS LOW THRESHOLD 9200 gammas
- MEAN BACKGROUND 9390 gammas
- SUB-ANOMALOUS HIGH THRESHOLD 9580 gammas
- ANOMALOUS HIGH THRESHOLD 9770 gammas

**CONTOURS**

- CONTOUR INTERVAL: - 200 gammas
- 9200 gammas and lower
- 9600 gammas and higher.

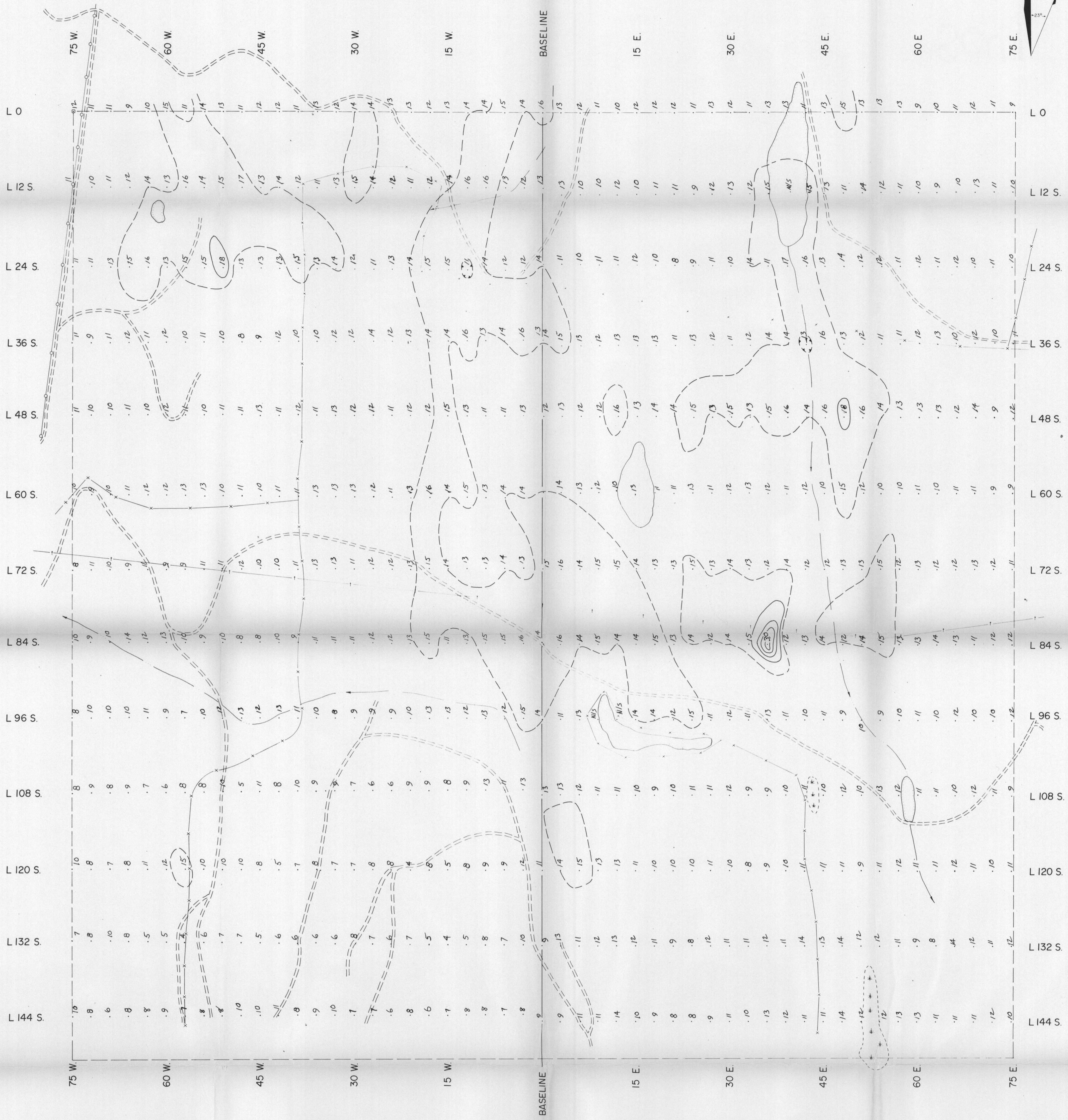


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NO.

- NOTE:**
1. 50,000 gammas have been subtracted from each reading.
  2. 0 has been dropped off of end of each reading eg 971 reads 9710 gammas.

To accompany geochemical and geophysical report by DAVID G. MARK, geophysicist.

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<b>TIL CLAIM</b>				
STEFFENS CREEK AREA, NICOLA MD, B.C.				
<b>MAGNETIC SURVEY</b>				
<b>DATA &amp; CONTOURS</b>				
DRAWN BY: D.G.M. & R.R.F.	JOB No: 79-43	DATE: Dec., 1979	SCALE: 1:3000	SHEET No.: 5



**LEGEND**

- Telephone line
- Fence
- Claim line showing claim post
- Center of power line
- Creek
- Intermittent stream
- Logging road
- Lake
- Swamp

**PARAMETERS**

- MEAN BACKGROUND VALUE 12 ppm
- SUB-ANOMALOUS THRESHOLD VALUE 14 ppm
- ANOMALOUS THRESHOLD VALUE 17 ppm

**CONTOURS**

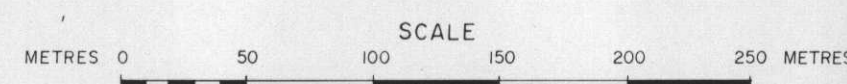
- CONTOUR INTERVAL: 1 STANDARD DEVIATION
- 14 ppm
- 17, 20, 24, 29, ppm

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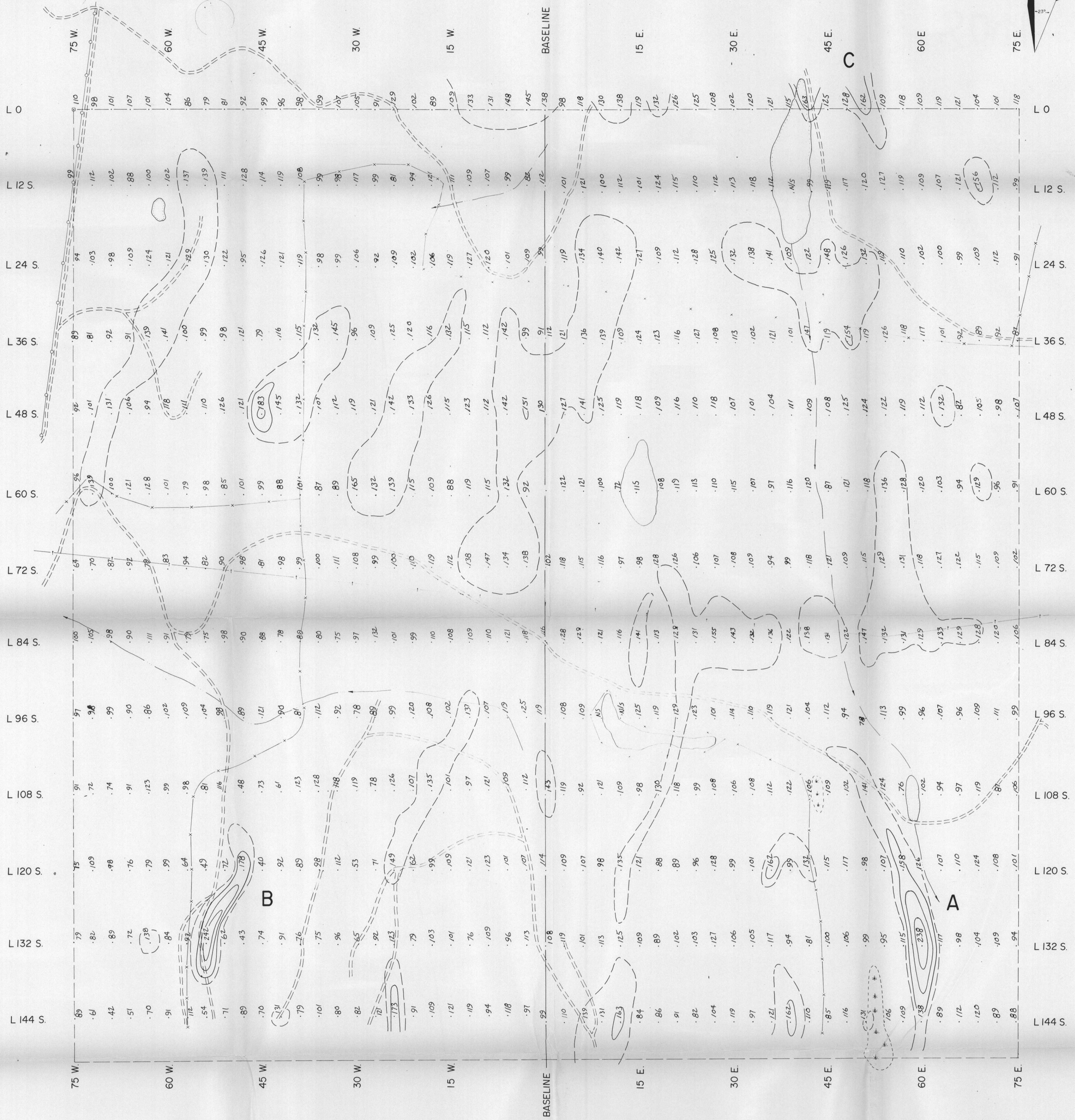
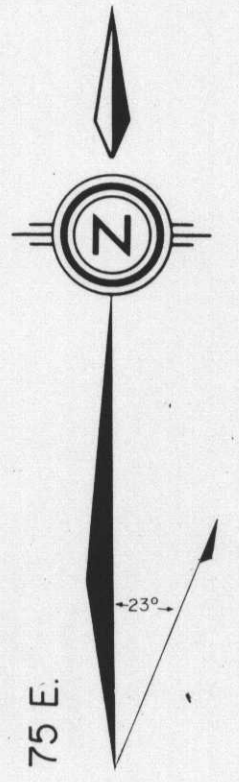
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TIL CLAIM  
STEFFENS CREEK AREA, NICOLA, B.C.

**SOIL GEOCHEMISTRY SURVEY**  
**LEAD**  
**DATA & CONTOURS**



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**LEGEND**

- Telephone line
- Fence
- Claim line showing claim post
- Center of power line
- Creek
- Intermittent stream
- Logging road
- Lake
- Swamp

**PARAMETERS**

- MEAN BACKGROUND VALUE 108 ppm.
- SUB-ANOMALOUS THRESHOLD VALUE 128 ppm.
- ANOMALOUS THRESHOLD VALUE 150 ppm.

**CONTOURS**

- CONTOUR INTERVAL: — 1 STANDARD DEVIATION
- 128 ppm.
- 150, 180, 215 ppm.

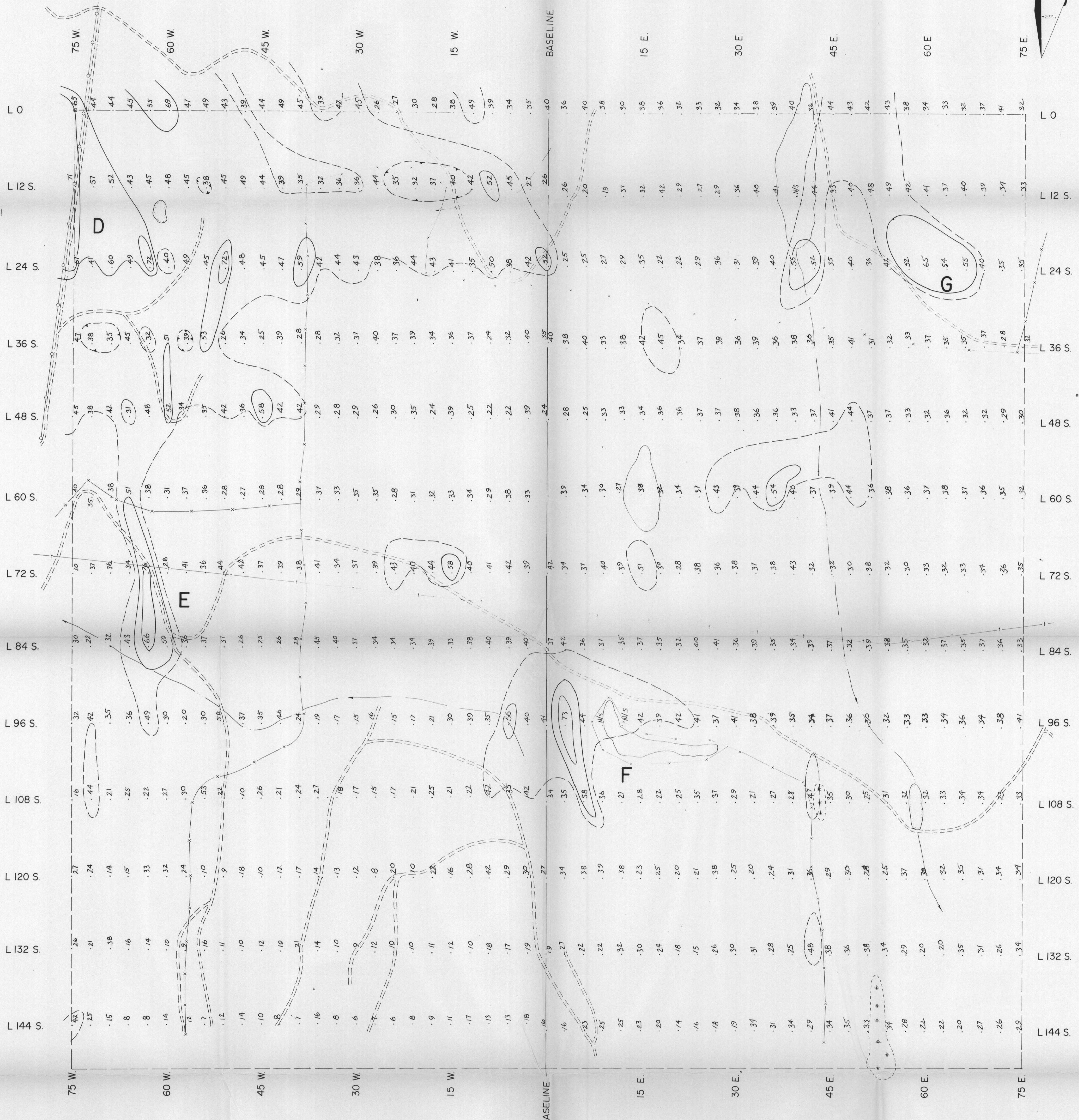


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To accompany geochemical and geophysical report by DAVID G. MARK, geophysicist.

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TIL CLAIM				
STEFFENS CREEK AREA, NICOLA M.D., B.C.				
SOIL GEOCHEMICAL SURVEY				
ZINC				
DATA & CONTOURS				
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**LEGEND**

- +— Telephone line
- x— Fence
- o— Claim line showing claim post
- o— Center of power line
- Creek
- Intermittent stream
- Logging road
- Lake
- Swamp

**PARAMETERS**

MEAN BACKGROUND VALUE 34 ppm.  
 SUB-ANOMALOUS THRESHOLD VALUE 42 ppm.  
 ANOMALOUS THRESHOLD VALUE 52 ppm.

**CONTOURS**

CONTOUR INTERVAL - 1 STANDARD DEVIATION

--- 42 ppm.  
 — 52, 65 ppm.

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**SOIL GEOCHEMISTRY SURVEY  
 COPPER  
 DATA & CONTOURS**

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