

GEOPHYSICAL AND GEOCHEMICAL REPORT

ON THE

PUMA GROUP

NTS 82E/5

Osoyoos Mining Division

Latitude  $49^{\circ} 23'$

Longitude  $119^{\circ} 49'$

for

Grand National Resources Inc.

915 - 470 Granville St.

Vancouver, B.C.

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**12,699**

July 10, 1984  
Box 63  
Westbridge, B.C.

Roy Kregosky  
BSc. Geology

TABLE OF CONTENTS

Introduction.....Page 5 /

Property History.....Page 5 /

Property Geology.....Page 6 /

Geophysical Survey.....Page 6 /

Geochemical Survey.....Page 8 /

Technical Data and Interpretation.....Page 9 /

Conclusion.....Page 10 /

Itemized Cost Statement.....Page 11 /

Author's Qualifications.....Page 11 /

Illustrations

Location Map.....Page 1 /

Claim Location Map.....Page 2 /

Assay Results.....Page 3 /

Geochemical results: preliminary staking survey.....Page 4 /

VLF-EM Survey: Dip angle N/S lines.....Back Pocket 1 /

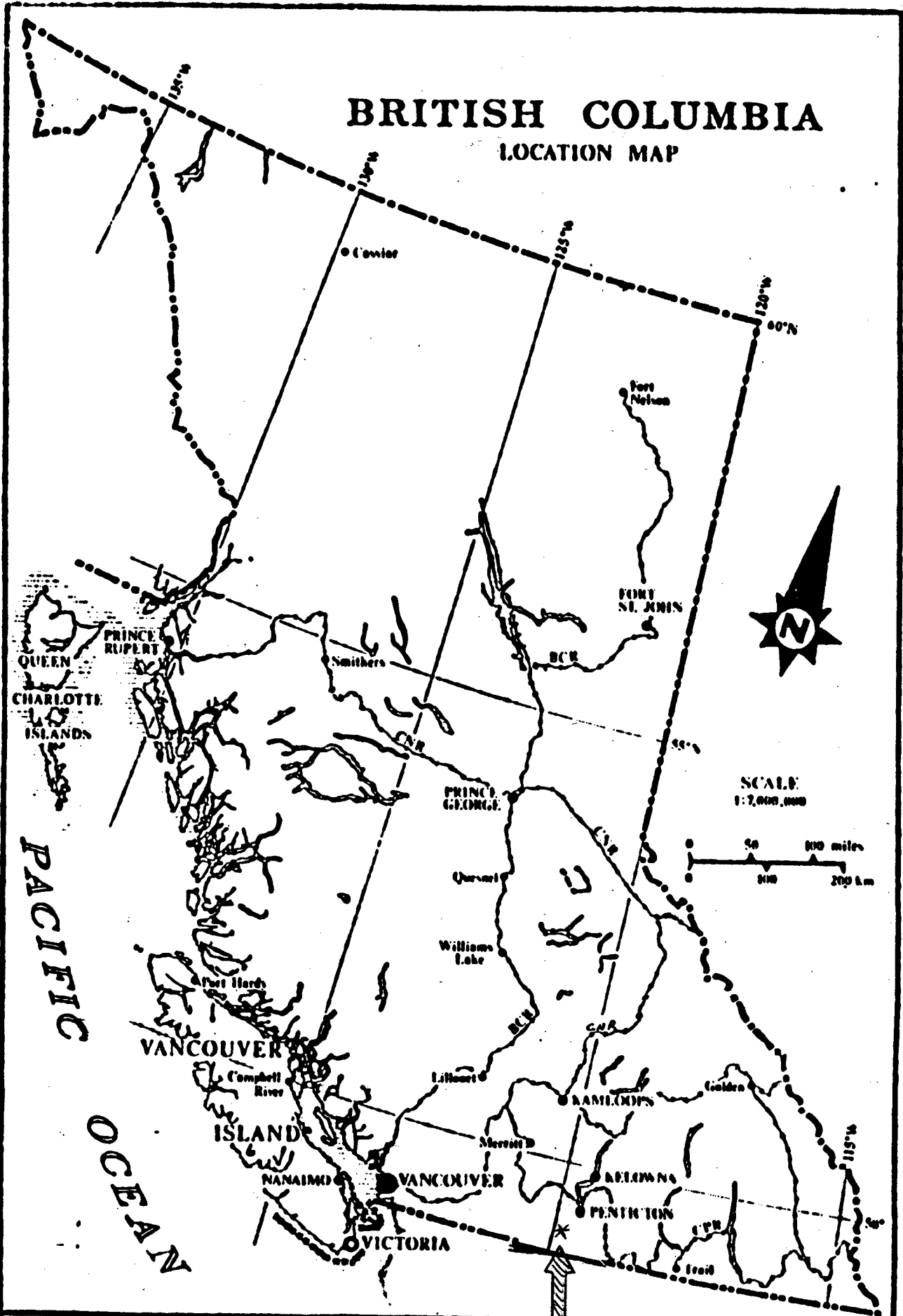
VLF-EM Survey: Dip angle E/W lines.....Back Pocket 2 /

VLF-EM Survey: filtered dip angle, E/W lines....Back Pocket 3 /

Geochemical Survey.....Back Pocket 4 /

# BRITISH COLUMBIA

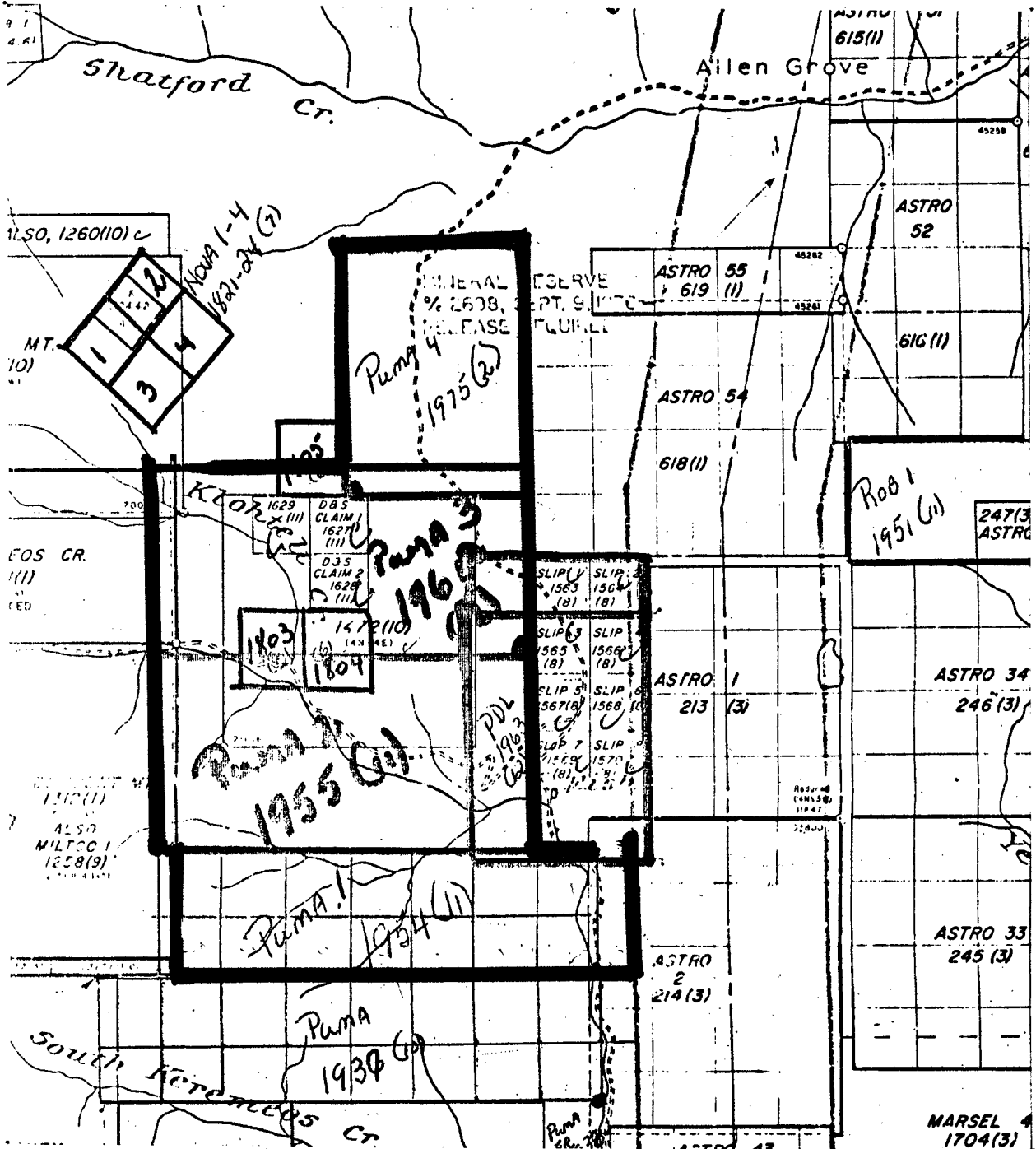
## LOCATION MAP



Monashee  
Geological  
Services

Grand National Resources Inc.  
Puma Group

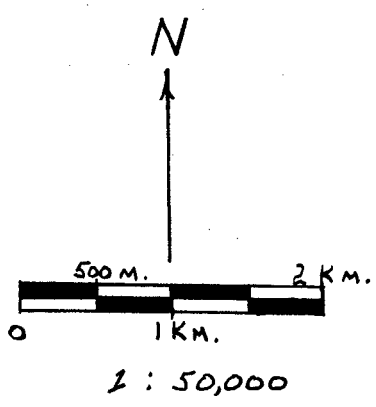
DATE July 10/84  
FIG. No. 1



Claim Location Map

Puma Group

osoyoos mining division



ACME ANALYTICAL LABORATORIES LTD.  
852 E. HASTINGS, VANCOUVER B.C.  
PH: (604)253-3158 COMPUTER LINE:251-1011

DATE RECEIVED JUNE 27 1984

DATE REPORTS MAILED *June 29/84*

### ASSAY CERTIFICATE

SAMPLE TYPE : ROCK - CRUSHED AND PULVERIZED TO -100 MESH.

ASSAYER *D. Toye* DEAN TOYE, CERTIFIED B.C. ASSAYER

GRAND NATIONAL RES FILE# 84-1289B

PAGE# 1

SAMPLE	AU OZ/T
65020	.001
65021	.001

ICME ANALYTICAL LABORATORIES LTD.  
352 E. HASTINGS, VANCOUVER B.C.  
PH: 253-3158 TELEX: 04-53124

DATE RECEIVED DEC 12 1983

DATE REPORTS MAILED *Dec 13/83*

### GEOCHEMICAL ASSAY CERTIFICATE

A .500 GM SAMPLE IS DIGESTED WITH 3 ML OF 3:1:3 HCL TO HNO3 TO H2O AT 90 DEG.C. FOR 1 HOUR.  
THE SAMPLE IS DILUTED TO 10 MLS WITH WATER. ELEMENTS ANALYSED BY AA : AG.  
SAMPLE TYPE : SOIL & ROCK  
AU\* - 10 GM, IGNITED, HOT AQUA REGIA LEACH MIBK EXTRACTION, AA ANALYSIS.

ASSAYER *Al Toy* DEAN TOYE, CERTIFIED B.C. ASSAYER

GRAND NATIONAL PROJECT # SCHARM FILE # 83-3120 PAGE# 1

SAMPLE	AG PPM	AU* PPB
PUMA 2N-4W-1	.1	5
PUMA 2N-4W-2	.3	5
PUMA 2N-4W-3	.2	5
PUMA2 3N	.3	5
PUMA2 1N	.2	5
PUMA2 3N-5W	.1	5
PUMA2 3N-4W	.1	5
PUMA2 3N-3W	.1	5
PUMA2 3N-2W+200M	.2	5
PUMA2 3N-2W	.2	5
PUMA2 3N-1W	.1	5
PUMA2 6W-2NA	.4	5
PUMA2 6W-2N	.3	5
PUMA2 6W-1N	.1	5
PUMA3 2N	.9	70
PUMA3 1N	.7	25
PUMA3 3N-5W	.1	5
PUMA3 3N-4W	.1	5
PUMA3 3N-3W	.3	5
PUMA3 3N-2W	.3	250
PUMA3 3N-1W	.6	100
PUMA3 6W-3N	.1	5
PUMA3 6W-2N	.1	5
PUMA3 6W-1N	.2	5

# Monashee Geological Services

P.O. Box 63

Westbridge, B.C. V0H 2B0

Telephone 446-2525

Page 5

## INTRODUCTION

The Puma group of mineral claims is located in the Osoyoos Mining Division and is situated approximately 25 kilometers north of Keremeos, B.C. (Plate 1). Access is from B.C. Highway 3A to the Apex Mountain Road just north of Ollala, B.C. The Apex Mtn. Road provides good two-wheel drive access to the claim group.

The property (Plate 2) is located on the eastern flank of Apex and Green Mountains. The main topographical feature on the claims is Keremeos Creek which traverses the central and eastern portions of the Puma Group. The terrain is steep, with slopes frequently in excess of 50°, having elevations ranging from approximately 915 meters on Apex Mtn. road to more than 1500 meters in the western portions. The exposure is generally easterly with low precipitation values providing for moderately open forests of immature Douglas fir. There is sufficient timber resources available for exploration and development purposes with water availability being limited to Keremeos Creek.

## PROPERTY HISTORY

The Puma group consists of the following mineral claims;

<u>Claim</u>	<u>Record #</u>	<u>Expiry Date</u>	<u>Units</u>
Puma 1	1954	Nov. 25, 1984	14
Puma 2	1955	Nov. 25, 1984	18
Puma 3	1961	Dec. 15, 1984	18
Puma 4	1975	Feb. 10, 1985	12
		TOTAL	62

The claims are currently registered to Grand National Resources Inc. of #915 - 470 Granville Street, Vancouver, B.C. The claims have good mineral potential due to its close proximity to the Hedley and Fairview Gold camps where exploration history is well recorded in the Annual Reports of the Ministry of Mines. A brief examination of Assessment reports failed to locate areas of previous exploration in the immediate claim group.

#### PROPERTY GEOLOGY

According to H.W. Little's Geological Map 15-1961 the Fuma Group is underlain by Triassic Cherts, greenstones minor tuffs and diorites from three contemporaneous formations including the Independence, Shoemaker and Old Tom. These formations have been intruded by Cretaceous dioritic plutons of the Nelson Batholith. Bedding in the area trends northeasterly with moderate to steep dips to the southeast. The main structural feature in the area is the fault zone as represented by Keremeos Creek.

#### GEOFYSICAL SURVEY

This years geophysical and geochemical surveys (back pocket 1-4) on the Fuma Group were conducted from May 15 to June 21, 1984. A total of 9½ days were spent on these surveys which were carried out by the author plus one field assistant, Mr. M. Schram of Ollala, B.C. It was Mr. Schram's initial geochemical survey (fig.4) conducted during the actual staking of the Fuma claims that prompted further exploratory work. Mr. Schram obtained 21 soil samples from 500 meter intervals along the claim location line. As can be seen from the geochemical analysis (fig.4) the Fuma 3, 3N-2W and 3N-1W I.D. posts indicated considerable gold values (up to 250 p.p.b.) in the soil.



As a result of these values a combined geophysical and geochemical survey were conducted in the area of Puma 3 I.D. post 3N-2W. Initially, an east/west baseline was located along the Puma 3/4 claim location line with north/south cross lines positioned every 100 meters along the baseline. Stations were established every 25 meters along the cross lines. A total of 10.3 line kilometers were surveyed. A Sabre VLF-EM (Model 27) instrument was utilized for this survey. It was tuned to the Annapolis, Maryland transmitter which operates at a frequency of 21.4 Khz. The Sabre VLF-EM measures the dip angle (in phase) of the vertical component of secondary electromagnetic fields as well as changes in the field strength or amplitude of the horizontal component of the field. The magnitude of the field strength is related to 'cross-over' features of the dip angle and its filtered component thereby giving a combined effect in the interpretation of anomalies. A quadrature (out of phase) component is available as a residual reading when measuring the dip angle. Field procedure requires a 'gain control' adjustment to provide a suitable relative field strength measurement.

The north/south lines (back pocket #1) yielded low in phase response and inflections except where a topographical response is recorded in the southeastern portion of the grid. Nonetheless, one anomalous zone was located at L2 to 4+00E and 3+75S to 4+25S but was not further delineated. As the survey progressed to the west, it became apparent that there was an anomalous zone situated at L4+00W 2+50S trending to L2+00W 2+25N that intersected the north/south lines at an acute angle and as such was yielding poor coupling effects. At this point, it was decided to survey

the baseline using Seattle, Washington (24.8 Khz.) as the transmitter station. The anomalous zone at BL 2+25W supported the presence of this NE/SW trending anomaly and the fact that east/west lines, with Seattle as a transmitter source, gave better responses.

As a result of the above findings a number of shorter anomaly associated east/west lines were established to trace out this electromagnetically conductive zone. These new lines (back Pocket #2) effectively traced out the presence of the NE/SW trending structure.

#### GEOCHEMICAL SURVEY

Due to the anomalous gold values obtained during the staking of the Puma claims, it was decided to cover the electromagnetic anomaly with additional soil samples in an attempt to obtain more information. The soil samples (back pocket 4) were obtained during two separate time periods. The first group were taken from stations directly above and down slope from the VLF-EM anomaly. These samples were analyzed for gold (in p.p.b.) and silver (in p.p.m.) Upon receiving the results from Acme Analytical Laboratories Ltd. of Vancouver it became apparent that the surface geochemical anomaly trended in a more northwesterly direction and further down slope than the electromagnetic anomaly indicated. As a result, additional soil samples were collected in an attempt to further trace this geophysical and geochemical anomaly. This second group of soil samples were analyzed only for gold (in p.p.b.) due to the lack of correlation between the trace elements for gold and silver in the soil. In all, a total of 138 soil samples were collected.

In both cases, the survey consisted of collecting soil samples from the 'B' soil horizon with rocks and organic material being removed by hand. The 'B' horizon was found to be from 5-10 cm. deep. The samples were placed in numbered kraft paper bags and sent to Acme Analytical Laboratories Ltd. of Vancouver, B.C. The silver analysis was carried out by hot acid digestion followed by atomic absorption. The gold was analyzed by Atomic absorption after hot aqua regia leaching. All samples were sieved to -80 mesh.

Two chip samples (fig.3 & back pocket 4) were also obtained from locations on the grid and assayed for gold.

#### TECHNICAL DATA AND INTERPRETATION

The geophysical and geochemical surveys on the Puma Group were conducted in an attempt to locate anomalous zones that were related to the high gold values in soils found during the staking of the Puma claims.

The VLF-EM survey (back pocket 1) on the north/south lines located a number of electromagnetic inhomogeneities. The anomalies of greatest interest formed a northeast trending zone which appears to be associated with the high (250 p.p.b.) gold soil sample located at I.D. post 3N-2W.

This zone is more defined on the east/west lines (back pocket 2) and appears as a distinct structure dipping to the west and trending in a northerly direction for a length of approximately 600 meters. In comparison to the rest of the grid, this anomaly gives the best inflections with the strongest being those located on L1+00N 2+25W, L2+00N 1+75W and L3+00N 1+75W. This is well defined by the contoured data (back pocket 3) with the filtering procedure having increased the anomaly resolution. A comparison

of the dip angle data and the filtered data for these lines suggests a considerable amplification of the anomaly at these points which, in turn, suggest a near surface dike-like anomaly source, possibly less than 20 meters.

The magnitude of the individual anomalous stations is enhanced by the field strength measurements (back pocket 3) as well as by the residual quadrature readings (back pocket 3) which both are related to and correlate well with the indicated electromagnetic anomaly.

The geochemical survey outlined a considerable gold soil anomaly which trends in a northerly direction for a distance of 500 to 600 meters. This anomaly is offset in a down slope direction from the geophysical anomaly and considering the steepness (locally greater than  $50^{\circ}$ ) of the terrain this difference can be partially explained.

The two assay samples obtained (fig.3) yielded low gold values. Sample 65020 was obtained from an old open cut in a heavily gossaned volcanic rock. Pyrite with some chalcopyrite was visible in this brecciated rock. It is interesting to note the trend of the geochemical anomaly and the location of this open cut.

#### CONCLUSION

The geophysical and geochemical surveys conducted on the Fuma claims were successful in locating a strong linear anomaly over a strike length of approximately 550 meters. The VLF-EM survey gave low responsis indicating low to a moderately conductive anomaly which is trending in a northerly direction and

dipping to the west. The strong geochemical anomaly is offset down slope from the electromagnetic inhomogeneity but the trend and length corresponds well with that of the latter anomaly.

Due to the positive results obtained from the surveys it is recommended that the property undergo further exploration. This program would initially comprise of a geological and a lithogeochemical survey to aid in the interpretation of the anomalies. Positive results would be followed by some trenching. In addition, the Puma Group should undergo a grass roots exploration program in an attempt to locate additional mineralized areas.

#### ITEMIZED COST STATEMENT

1.	R. Kregosky, Geologist; 9.5 days @ \$200.00/day.....	\$1,900.00
2.	M. Schram, Field Assistant; 9.5 days @ \$100.00/day.....	\$ 950.00
3.	VLF-EM rental; 9.5 days @ \$50.00/day.....	\$ 475.00
4.	Food and Accommodation; 9.5 days @ \$50.00/day/man.....	\$ 950.00
5.	Transportation; 1000 km. @ \$.25/km.....	\$ 250.00
6.	2 assays ; AU @ \$9.25/sample.....	\$ 18.50
	\$2.75/sample preparation.....	\$ 5.50
7.	179 Soil samples; 119 Ag samples @ \$.60/sample prep.....	\$ 71.40
	@\$2.00/sample.....	\$ 238.00
	179 Au samples @\$ .60/sample prep.....	\$ 107.40
	@\$4.00/sample.....	\$ 716.00
8.	3 days report preparation @ \$200.00/day.....	\$ <u>600.00</u>
	TOTAL	\$6,281.80

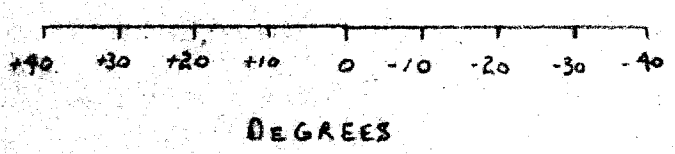
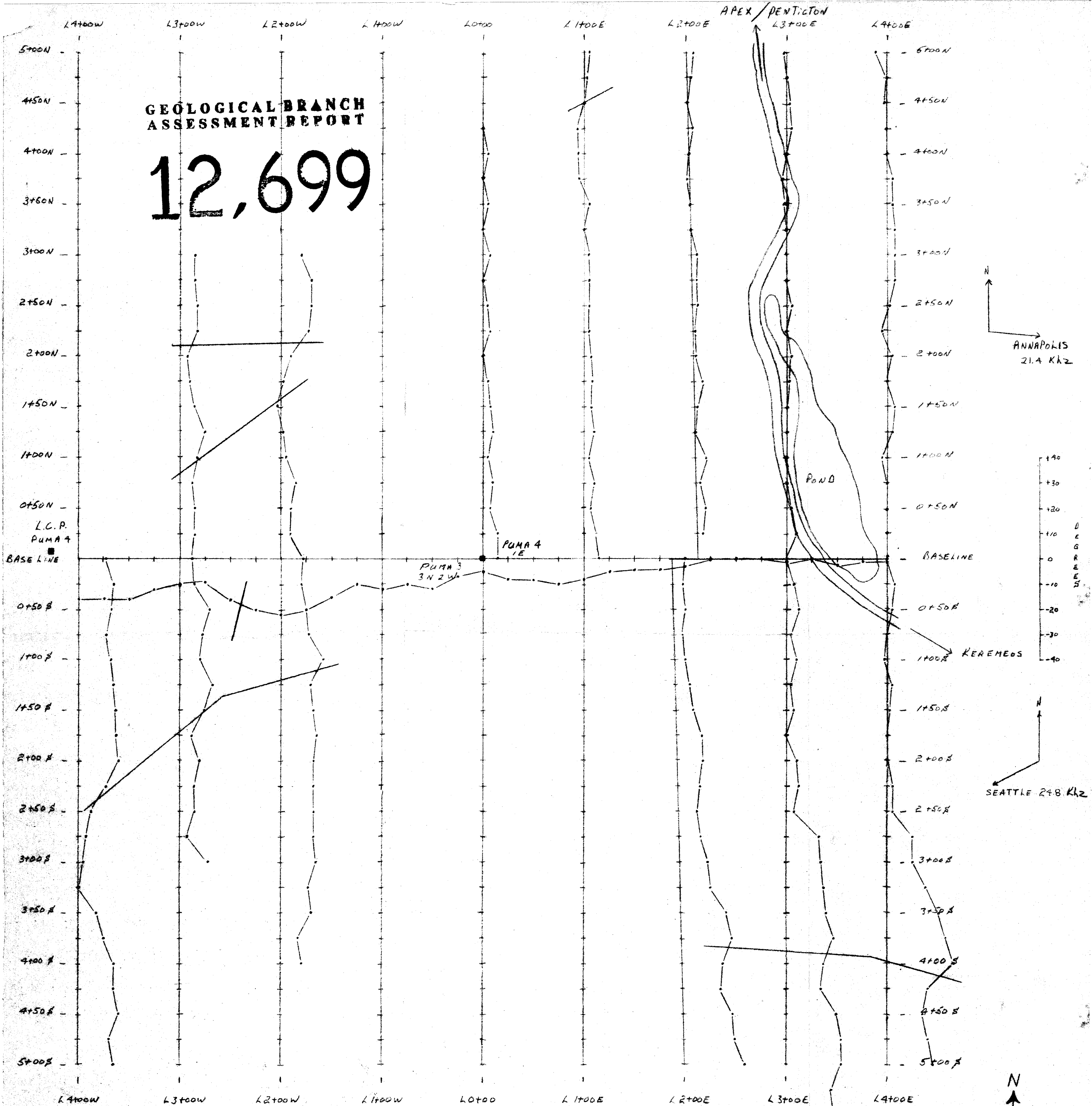
#### AUTHOR'S QUALIFICATIONS

I declare, that I, Roy D. Kregosky am a practicing Geologist having graduated from the University of Calgary in 1971 with a Bachelor of Science degree in Geology.

*Roy Kregosky*

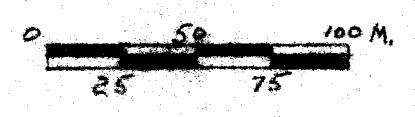
GEOLOGICAL BRANCH  
ASSESSMENT REPORT

12,699



ANOMALOUS TRENDS

GRAND NATIONAL RESOURCES INC.  
PUMA GROUP  
VLF-EM SURVEY  
DIP ANGLE - N/S LINES  
Monashee Geological Services July 10/84



6+00W 5+00W 4+00W 3+00W 2+00W 1+00W 0+00 1+00E 2+00E

L 4+00 N -  
L 3+00 N -  
L 2+00 N -  
L 1+00 N -  
BASELINE -  
L 1+00 S -  
L 2+00 S -  
L 3+00 S -  
L 4+00 S -

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

12,699

DIP ANGLE

+40  
+30  
+20  
+10  
0  
-10  
-20  
-30  
-40

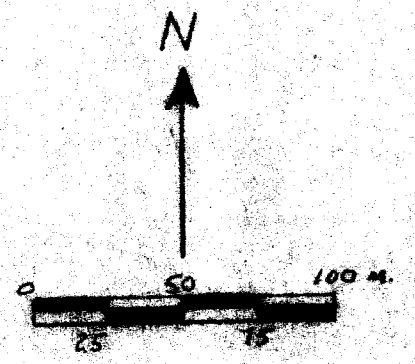
- L 4+00 N  
- L 3+00 N  
- L 2+00 N  
- L 1+00 N  
- BASELINE  
- L 1+00 S  
- L 2+00 S  
- L 3+00 S  
- L 4+00 S

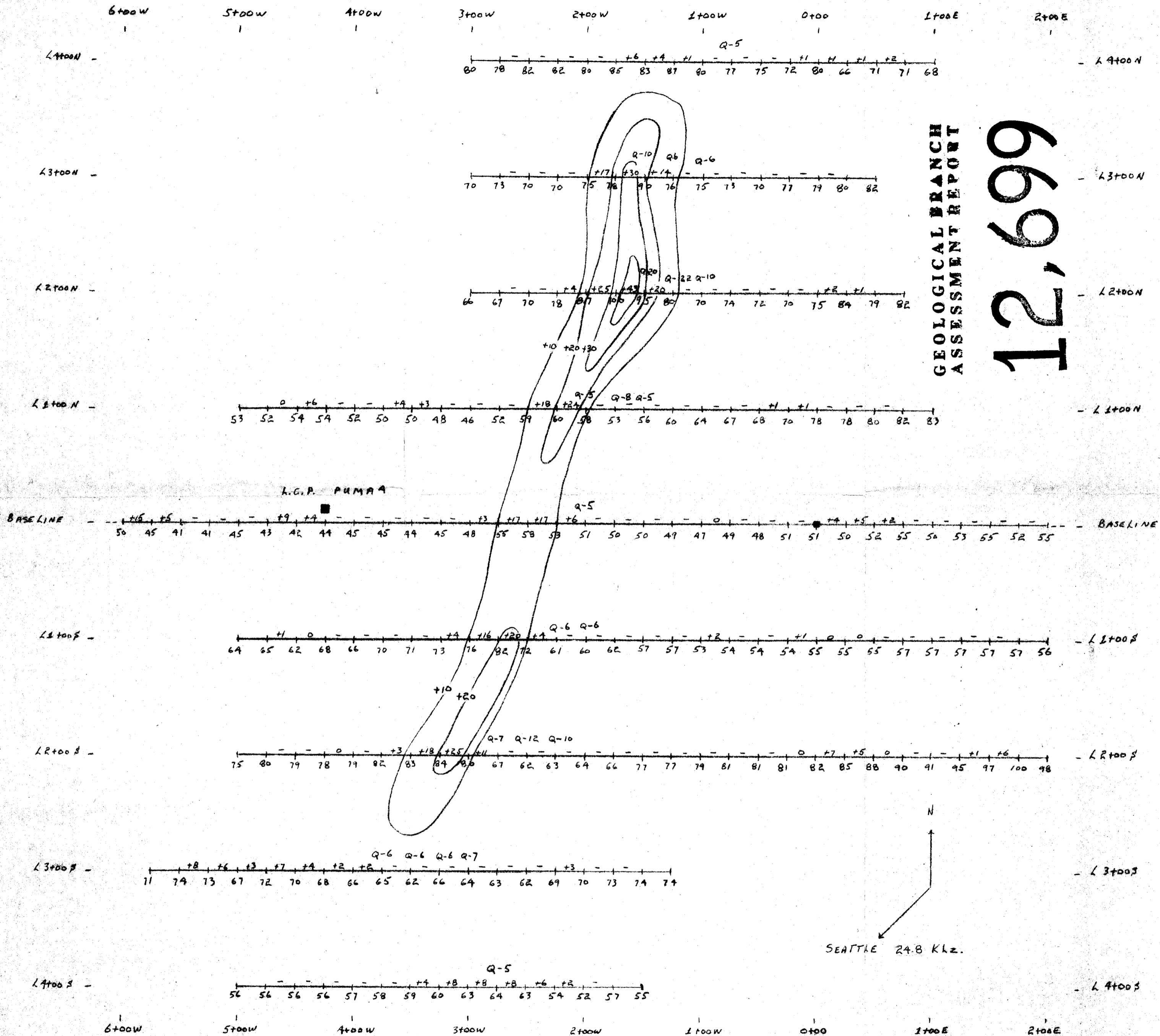
L.C.P. PUMA A

SEATTLE 24.8 Khz

- Anomalous zone

GRAND NATIONAL RESOURCES INC.  
PUMA GROUP  
VLF-EM SURVEY  
DIP ANGLE - E/W LINES  
Monroe Geological Services July 10/84





GEOLOGICAL BRANCH  
ASSESSMENT REPORT

12,699

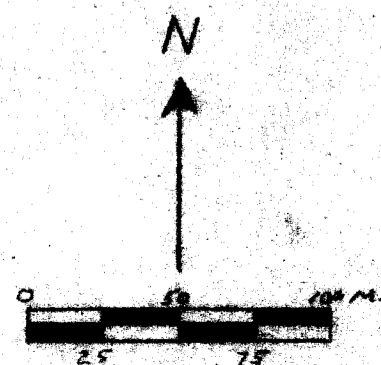
ANOMOLY CONTOUR INTERVAL +10

QUADRATURE - Q-20 Q-22  
 FILTERED DATA - +25 +13 +20  
 FIELD STRENGTH - 87 100 95 80

GRAND NATIONAL RESOURCES INC.  
 PUMA GROUP  
 VLF-EM SURVEY  
 FILTERED DIP ANGLE

---

Monashee Geological Services July 10/84





6+00W

5+00W

4+00W

3+00W

2+00W

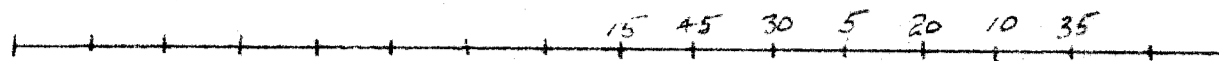
1+00W

0+00

1+00E

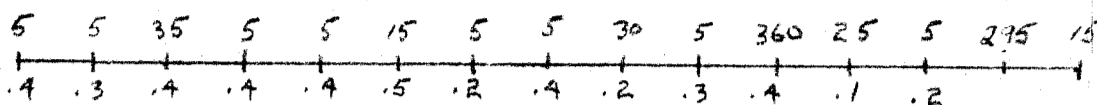
2+00E

L4+00W -



- L4+00E

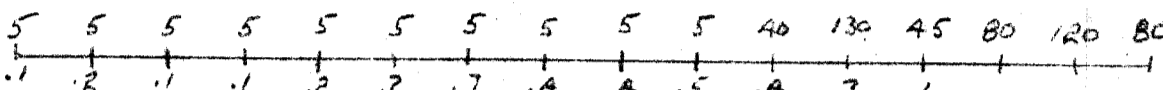
L3+00W - GEOLOGICAL BRANCH ASSESSMENT REPORT



- L3+00E

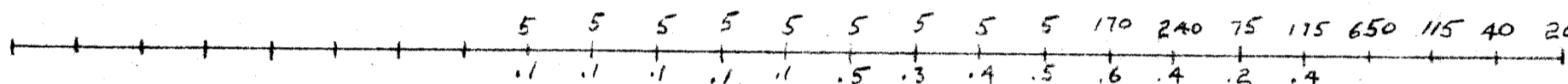
L2+00W -

# 12,699



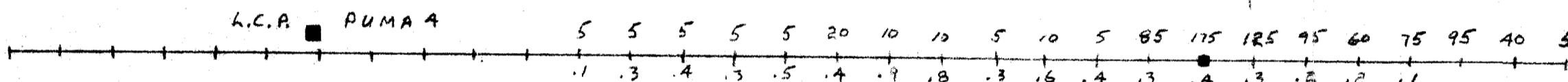
- L2+00E

L1+00W -



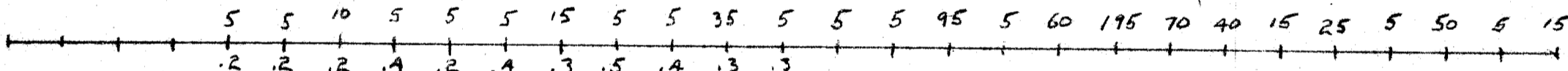
- L1+00E

BASELINE -



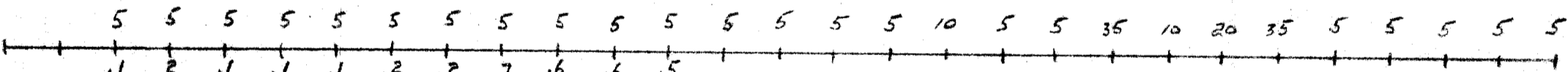
- BASELINE

L1+00S -



- L1+00E

L2+00S -



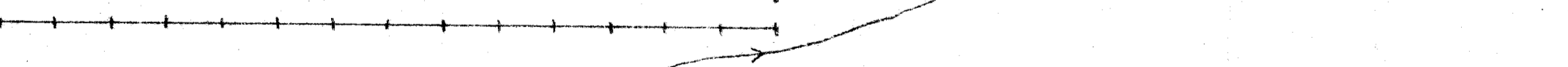
- L2+00E

L3+00S -



- L3+00E

L4+00S -



- L4+00E

6+00W

5+00W

4+00W

3+00W

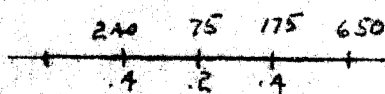
2+00W

1+00W

0+00

1+00E

2+00E



— Au P.P.B.  
— Au P.P.M.

— DRAINAGE

— Au. ANOMALY

GRAND NATIONAL RESOURCES INC.  
PUMA GROUP  
GEOCHEMICAL SURVEY  
Monashee Geological Services | July 10/84

