

RANGE GROUP: SOIL GEOCHEMISTRY

LIARD MINING DIVISION

RANGE 1 (20 units)

104I/15E, 16W

58° 47'N 128° 30'W

Owner/Operator

Amoco Canada Petroleum Company Ltd.
300-89 The Queensway West
Mississauga, Ontario
L5B 2V2

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

11,182

Report written by
Paul Miller
April 6, 1983

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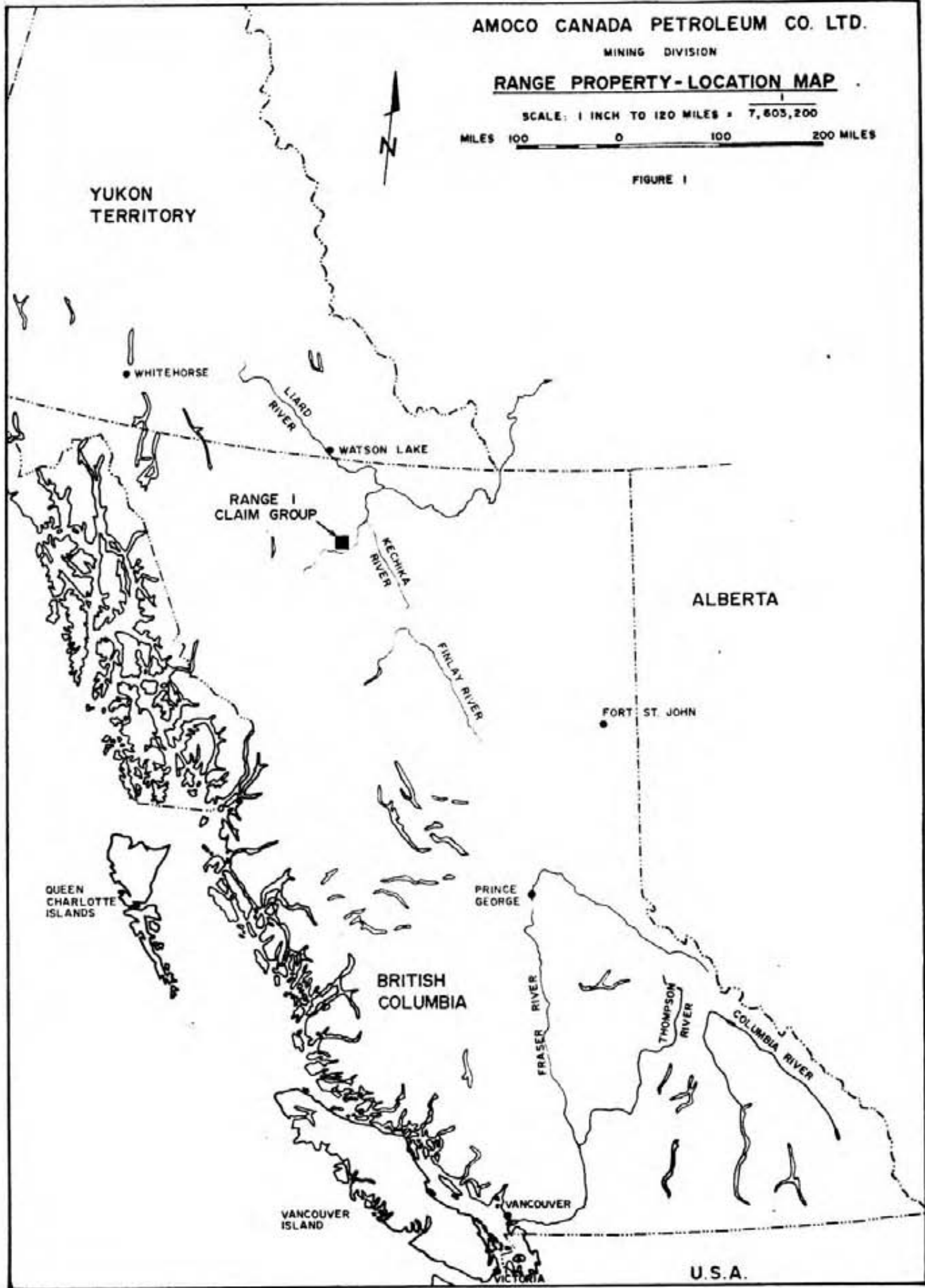
- I. Sample location map (1:5000)
- II. Reconnaissance Geology (1:5000)
- III. Soil-Sediment Geochemistry Au, Cu, Pb, Zn (1:5000)

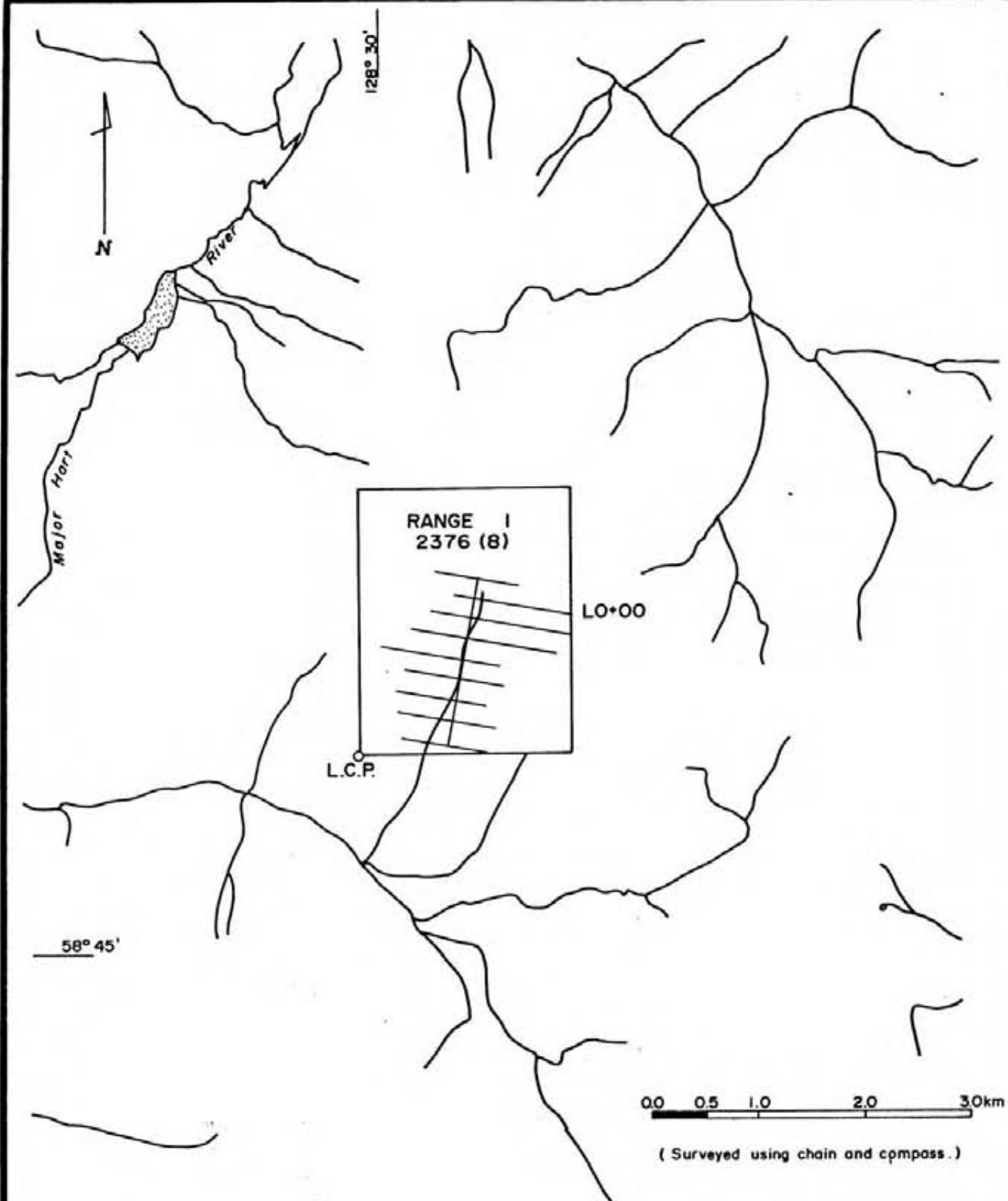
RANGE PROPERTY-LOCATION MAP

SCALE: 1 INCH TO 120 MILES = 7,603,200

MILES 100 0 100 200 MILES

FIGURE 1





AMOCO CANADA PETROLEUM CO. LTD.
MINING DIVISION

**LOCATION MAP
RANGE 1 CLAIM
GROUP**

Drawn By :	W. Noble	Scale :	1:50,000
Date :	May 83	Project No.	

FIG. 2

INTRODUCTION

The Range 1 claim group consists of 20 contiguous units located 26 kilometres southeast of the north end of Cry Lake in NTS quadrangle 104I, Liard Mining Division (See figures 1 and 2). Access onto the property is exclusively via helicopter. Watson Lake, Y.T. is located 150 kilometres north of the claim group.

Amoco is the sole owner and operator of the mineral property which was initially staked in order to investigate a region thought to be favourable for the occurrence of sedimentary hosted Pb-Zn-Ag deposits.

The survey, herein described, involved the simultaneous reconnaissance mapping, soil sampling and limited stream sediment sampling of a 1.6 square kilometre grid area. Work was undertaken by a crew of five on August 18 and 19 and by a crew of two on August 23. Mapping was at a scale of 1:5000 and the geochemical results are presented at a similar scale. In total, 306 samples were collected and subsequently analyzed for Au, Cu, Pb and Zn.

Underlying the grid are Devonian to Permian aged sediments and volcanics belonging to the oceanic terrain of the allochthonous Sylvester Group. No instances of economic mineralization were observed.

The soil sampling survey successfully outlined two areas of highly anomalous lead-zinc geochemistry. Although of limited areal extent, these anomalies have strong geochemical signatures in a geologically favourable region. Additionally, three other areas of

moderately anomalous lead-zinc soil geochemistry were detected.

RANGE 1 CLAIM GROUP

<u>Claim</u>	<u>Units</u>	<u>Tag No.</u>	<u>Date Staked</u>	<u>Anniversary Date</u>	<u>Record No.</u>
Range 1	20	84496	Aug. 4 and 5/82	August 17, 1982	2376

PHYSIOGRAPHY

The claim group occurs in an area of rugged topography which lies within the Cassiar Mountains. Local variations in elevation are up to 750 metres with a maximum elevation of 2300 metres being attained. Lying at the head of a deeply incised north-south trending valley, the grid is almost entirely above tree line. The sides of the valley commonly consist of barren rock faces that slope down into extensive talus slides. Stunted clumps of spruce and balsam occur over the lower elevations, on the south of the grid. A small glacial lake occupies a cirque at the north end of the valley. Flowing in a southerly direction from the lake, is a moderately sized creek which bisects the grid.

GEOLOGY

Owing to the reconnaissance nature of the geological mapping, no attempt has been made to correlate the geology between grid lines.

Underlying the grid are Sylvester Group sediments, volcanics and minor intrusives. Sediments include green-grey cherts and black-grey,

often pyritic, argillites. Volcanics include green-grey fine grained occasionally pyritic tuffs and massive, fine grained light green andesitic flows. Minor amounts of sill-like mafic-ultramafic intrusive bodies of limited width and lateral extent were observed on the central portions of the grid. Thin chert and tuff units are often intercalated, displaying gradational contacts. Overall, there is considerable mixing between the sediments and volcanics, although volcanic flows predominate over the north and tuffs and sediments over the south of the grid.

Strata strike at 120° - 140° with dips of 60° - 75° to the south. Thrust faulting with accompanying silicification and pyritization occurs over the north of the grid. These faults have north-west strikes with southerly dips.

Outcrop exposure on the grid is 10-15%, being mainly confined to steep slopes over the north of the grid.

GEOCHEMISTRY

Soil samples were collected at 50 metre intervals along lines which had a 200 metre spacing. The base line was surveyed using chain and compass at an azimuth of 011° , while the tie line sample locations were determined using pace and compass. Owing to the large amount of talus cover and lack of good, residual soil development, it was not always possible to sample the desired B horizon. In many instances the C horizon or fine colluvium had to be sampled.

Background levels, as determined from the sample populations' modes, are 5 ppb Au, 35 ppm Cu, 42 ppm Pb and 78 ppm Zn. Two principal areas of anomalous Pb-Zn soil geochemistry were detected on the grid.

Anomaly 1, centered on line 12 + 00S at 1+75E, covers an area of 200 by 200 metres, as outlined by the 95th percentile contour, for both lead and zinc. Values of 250-4600 ppm Pb and 400-3320 ppm Zn distinguish this anomaly.

Anomaly 2 is located at the north end of the small glacial lake, at the far north of the grid. Three extremely anomalous Pb-Zn soil samples were taken from the fine fraction of argillaceous talus below a precipitous south facing slope. Anomalous values of 480, 880 and 1200 ppm lead and 750, 1580 and 2010 ppm zinc were encountered.

In addition to the two major Pb-Zn soil anomalies, three other areas of moderately anomalous Pb-Zn soil geochemistry were outlined. These areas, centered on line 2+00S at 2+00E, line 2+00S at 7+50E and line 5+00S at 7+50E, have areas of 100 by 200 metres and values between 150-250 ppm Pb and 150-575 ppm Zn. Numerous, scattered anomalous copper values in the 200-580 ppm range were detected over the northern half of the grid, but are not considered economically significant.

EVALUATION OF WORK

WORK CONDUCTED: Grid soil sampling
 CLAIM: Range 1
 DATES WORK CONDUCTED: August 18, 19 and 23

SALARIES:

Sally Howson	2 man days @ \$59.96/day	\$119.93
Henry Koopman	2 man days @ \$61.84/day	123.68
Paul Miller	3 man days @ \$72.33/day	216.98
Barney Salamanchuk	3 man days @ \$47.18/day	141.53
Trevor Wall	2 man days @ \$63.71/day	<u>127.43</u>
		\$ 729.55

MEALS:	12 man days @ \$15.00/day	180.00
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TRANSPORTATION: Helicopter		
	2.6 hrs. @ \$500.00/hr.	<u>1300.00</u>

TOTAL WORK DONE		<u>\$2209.55</u>
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ASSAY CHARGES:

306 samples analysed		2692.80
(for Au, Cu, Pb, Zn. 306 x \$8.80)		
306 samples prepared		
(306 x \$0.85)		<u>260.10</u>
		\$2952.90

CREDIT TO RANGE 1

Work done		\$2209.55
Assay charges		2952.90
Cost of report preparation		<u>\$ 300.00</u>
		<u>\$5462.45</u>

APPENDIX I

FEE SCHEDULES

Geochemical analyses were done by:

Min-En Laboratories Ltd.
705 West 15th Street
North Vancouver, B.C.
V7M 1T2.

Cost per sample

Copper	\$2.00	(1st element)
Zinc	\$0.90	
Lead	\$0.90	
Gold	\$5.00	
Sample Preparation	<u>\$0.85</u>	
	\$9.65	

APPENDIX II

ANALYTICAL PROCEDURES

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments

Corner 15th Street and Bewicke

705 WEST 15th STREET

NORTH VANCOUVER, B.C.

CANADA

ANALYTICAL PROCEDURE REPORTS FOR ASSESSMENT WORK

PROCEDURES FOR Mo, Cu, Cd, Pb, Mn, Ni, Ag, Zn, As, F

Samples are processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized by ceramic plated pulverizer.

1.0 gram of the samples are digested for 6 hours with HNO_3 and HClO_4 mixture.

After cooling samples are diluted to standard volume. The solutions are analyzed by Atomic Absorption Spectrophotometers.

Copper, Lead, Zinc, Silver, Cadmium, Cobalt, Nickel and Manganese are analysed using the CH_2H_2 -Air flame combination but the Molybdenum determination is carried out by C_2H_2 - N_2O gas mixture directly or indirectly (depending on the sensitivity and detection limit required) on these sample solutions.

For Arsenic analysis a suitable aliquote is taken from the above 1 gram sample solution and the test is carried out by Gutzeit method using $\text{Ag CS}_2\text{N} (\text{C}_2\text{H}_5)_2$ as a reagent. The detection limit obtained is 1.2 ppm.

Fluorine analysis is carried out on a 200 milligram sample. After fusion and suitable dilutions the fluoride ion concentration in rocks or soil samples are measured quantitatively by using fluorine specific ion electrode. Detection limit of this test is 10 ppm F.

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments

Corner 15th Street and Bewicke

705 WEST 15th STREET

NORTH VANCOUVER, B.C.

CANADA

ANALYTICAL PROCEDURE REPORTS FOR ASSESSMENT WORK

PROCEDURE FOR GOLD GEOCHEMICAL ANALYSIS.

Geochemical samples for Gold processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed and pulverized by ceramic plated pulverizer.

A suitable sample weight 5.0 or 10.0 grams are pre-treated with HNO_3 and HClO_4 mixture.

After pretreatments the samples are digested with Aqua Regia solution, and after digestion the samples are taken up with 25% HCl to suitable volume.

At this stage of the procedure copper, silver and zinc can be analysed from suitable aliquote by Atomic Absorption Spectrophotometric procedure.

Further oxidation and treatment of at least 75% of the original sample solutions are made suitable for extraction of gold with Methyl Iso-Butyl. Ketone.

With a set of suitable standard solution gold is analysed by Atomic Absorption instruments. The obtained detection limit is 5 ppb.

APPENDIX III

NAMES AND ADDRESSES OF PERSONS CONDUCTING WORK

SALLY HOWSON:	171 Balmoral Avenue Toronto, Ontario
HENRY KOOPMAN:	3523 King Street Regina, Saskatchewan
PAUL MILLER:	448 Eglinton Avenue West Toronto, Ontario
BARNEY SALAMANCHUK:	2070 Reynold Drive Regina, Saskatchewan
TREVOR WALL:	227 Whiteview Bay N.E. Calgary, Alberta.

APPENDIX IV

COST PER HOUR FOR HELICOPTER, 1982

Contract helicopter leased from:

Kenting Helicopters
64 McTavish Place N.E.
Calgary, Alberta
T2E 7H1

Bell 206B at \$400.00/hour

Cost per hour for helicopter fuel


- fuel consumption	20 gals./hr
- cost of JP-4 Fuel, Watson Lake	\$2.47/gal.
- cost of transporting fuel from Watson Lake to base camp at Dall Lake	<u>\$2.53/gal.</u>
Total cost of fuel at Dall Lake is	\$5.00/gal.
Hourly cost of fuel for 206B at Dall Lake is	\$100./hr.
Total helicopter cost per hour	\$400.00
	<u>\$100.00</u>
	\$500.00

APPENDIX V

Qualifications of P. D. Miller

- B.Sc., Geological Engineering, University of Toronto,
Toronto, Ontario, 1980
- Continuously employed as a geologist by Amoco Canada Petroleum
Company Ltd. (Mining Division), since May, 1980.

Mississauga, Ontario
April 7, 1983

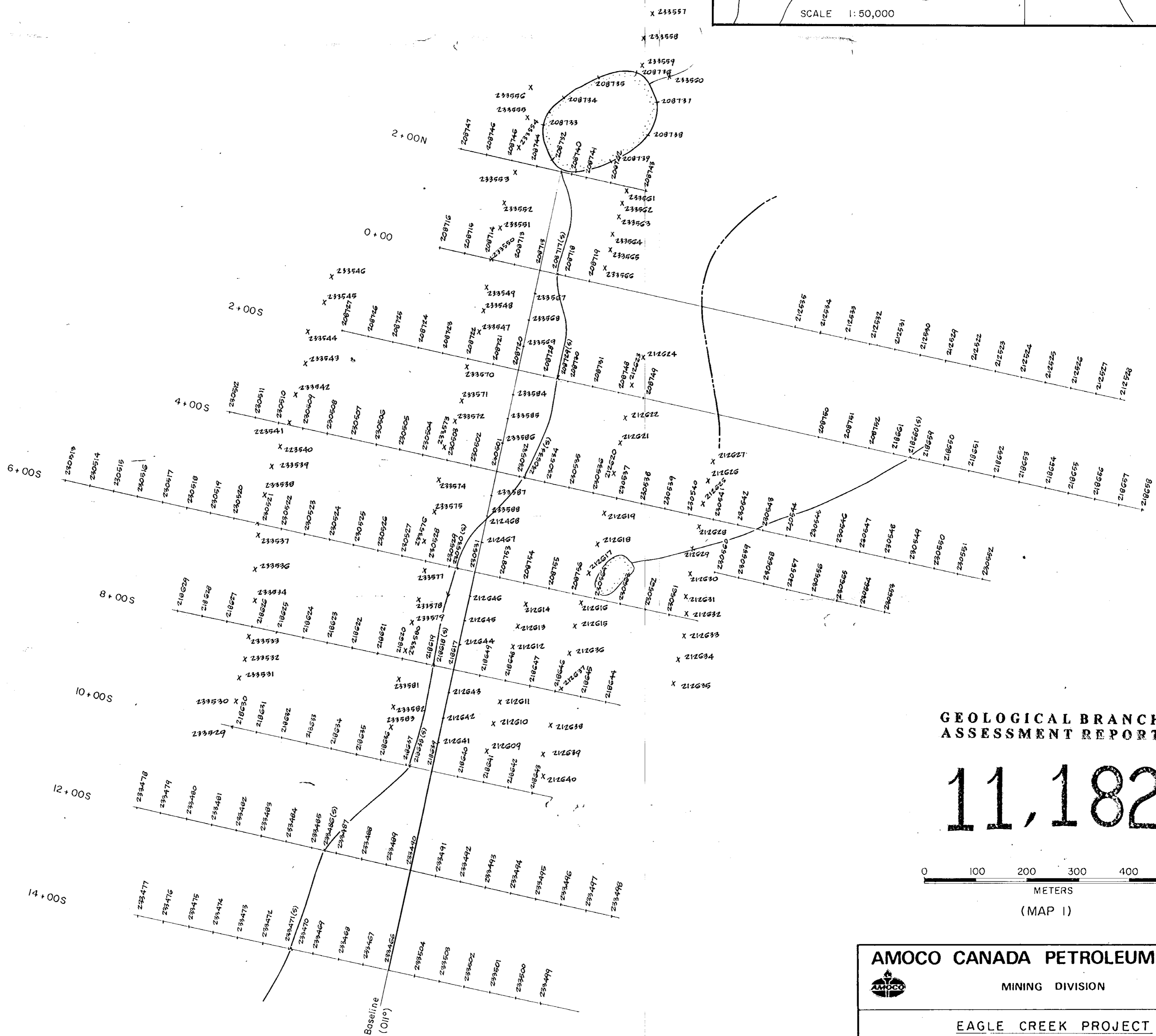
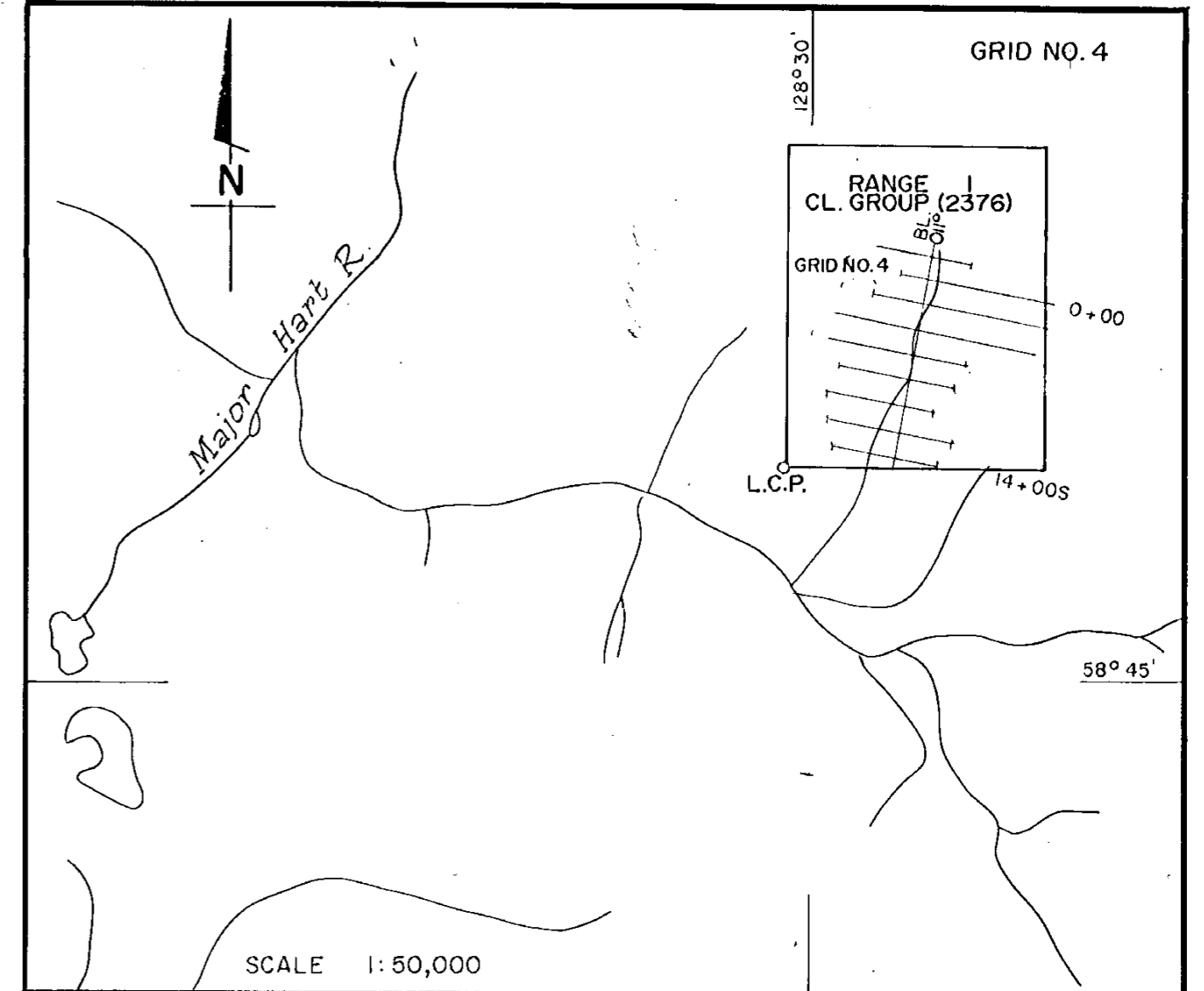

P. D. Miller



LEGEND

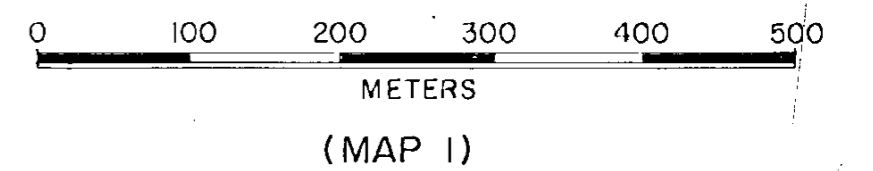
- x 233556 (S) STREAM SEDIMENT SAMPLE
- x 233556 SOIL SAMPLE
- STREAM AND FLOW DIRECTION

LOCATION MAP



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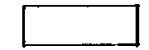
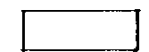
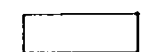
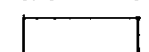
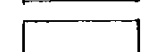
AMOCO CANADA PETROLEUM CO. LTD.			
MINING DIVISION			
EAGLE CREEK PROJECT			
ANOMALY No. 2 - GRID No. 4			
SAMPLE LOCATIONS			
Drawn By	d.o's	Scale	1: 5000
Date	AUG. 1982	Project No.	82C - 002










LEGEND

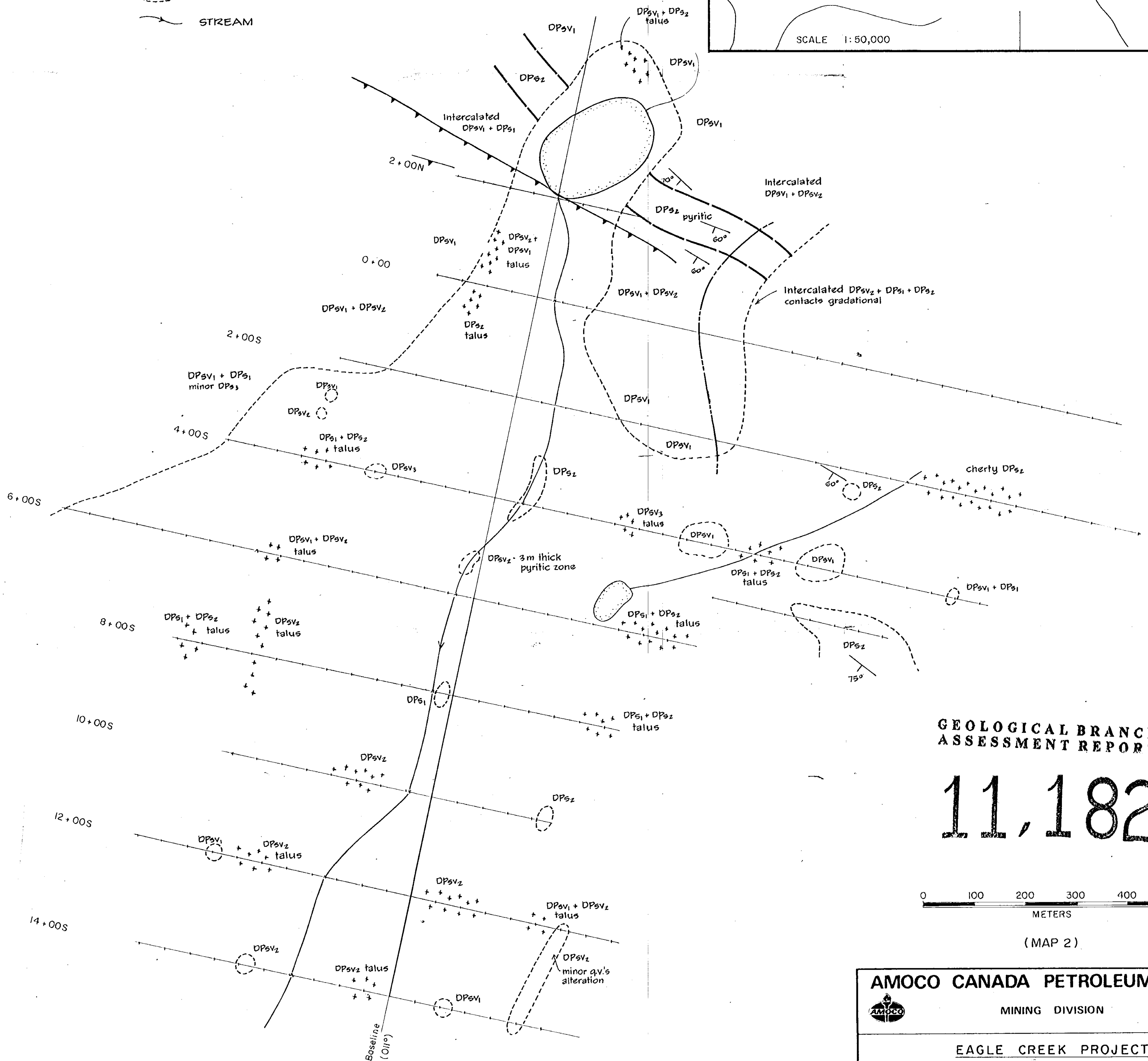
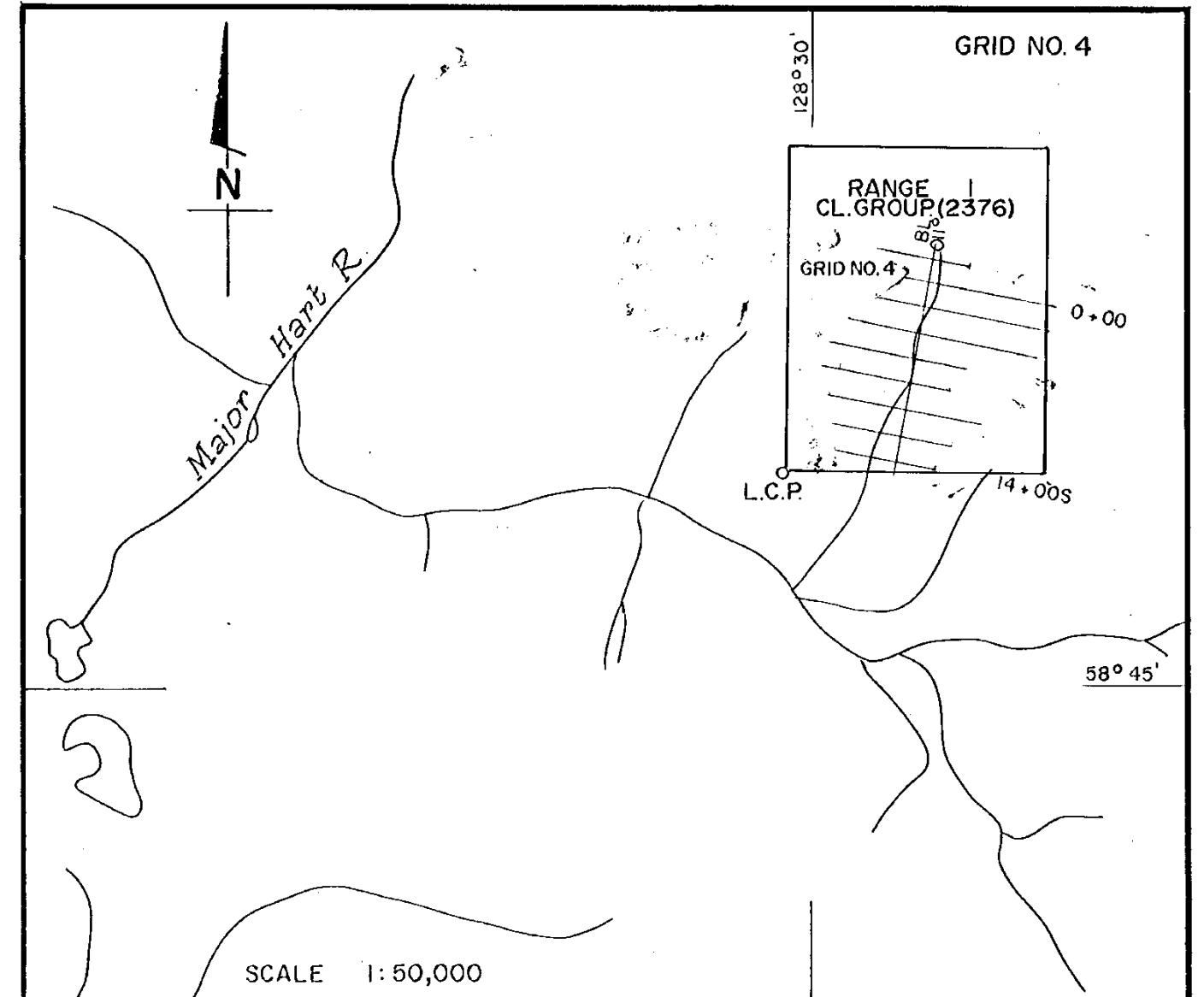
UPPER DEVONIAN - PERMIAN

SYLVESTER GROUP

-  DPsv1 MAFIC-INTERMEDIATE FLOWS
-  DPsv2 MAFIC-INTERMEDIATE TUFFS
-  DPsv3 MAFIC-ULTRAMAFIC INTRUSIVES
-  DPp1 CHERT
-  DPp2 ARGILLITE

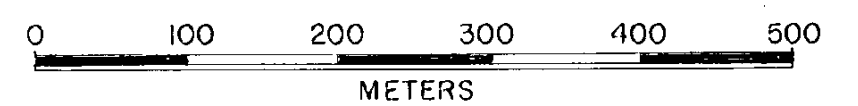
-  SCHISTOSITY
-  BEDDING (INCLINED, DIP UNKNOWN)
-  THRUST FAULT (TEETH MARK UPTHURST SIDE)
-  GEOLOGICAL CONTACT (APPROX.)
-  TALUS
-  AREA OF OUTCROP EXPOSURE
-  STREAM

LOCATION MAP



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(MAP 2)

AMOCO CANADA PETROLEUM CO. LTD.



MINING DIVISION

EAGLE CREEK PROJECT
ANOMALY No. 2 - GRID No. 4

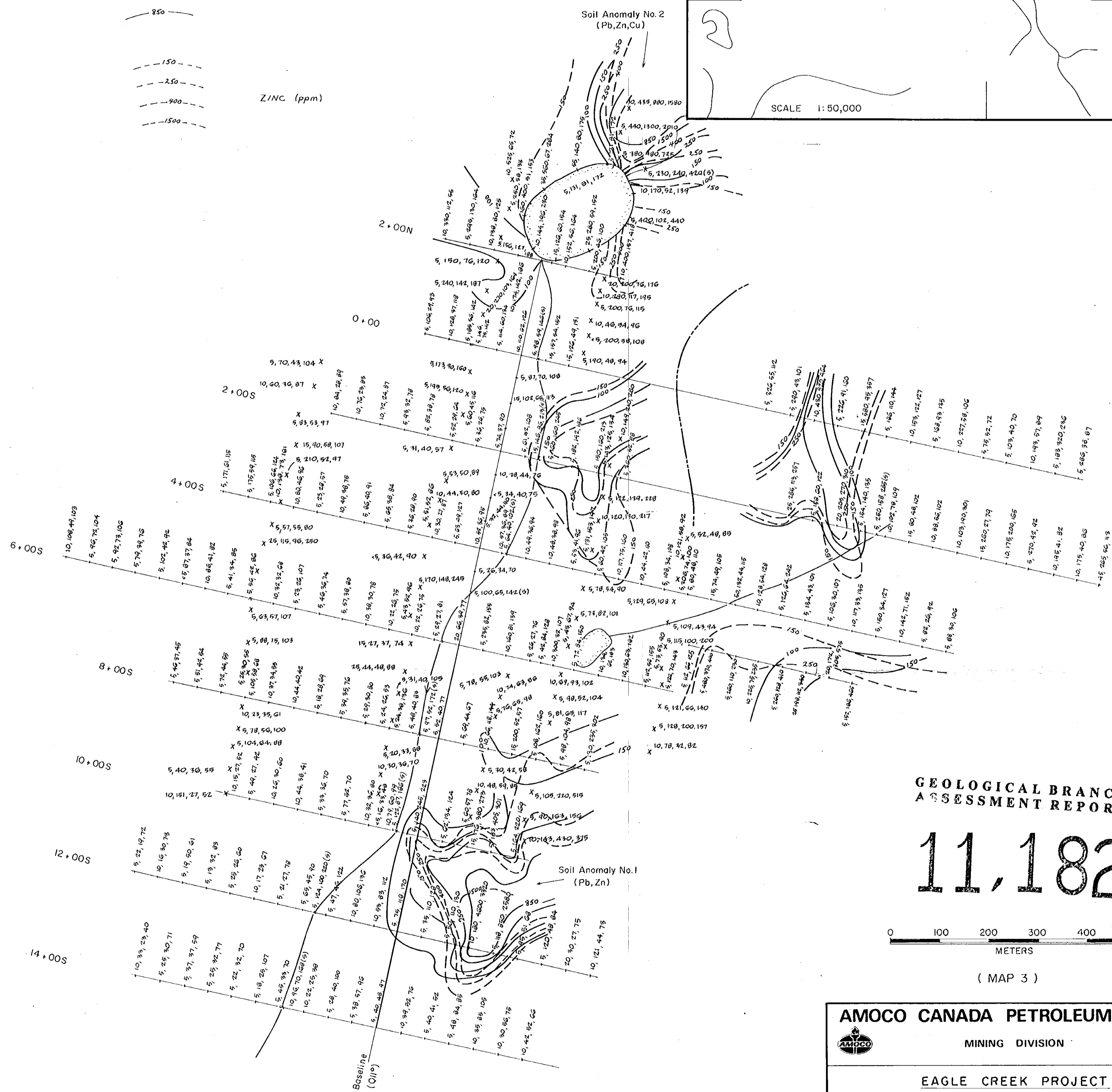
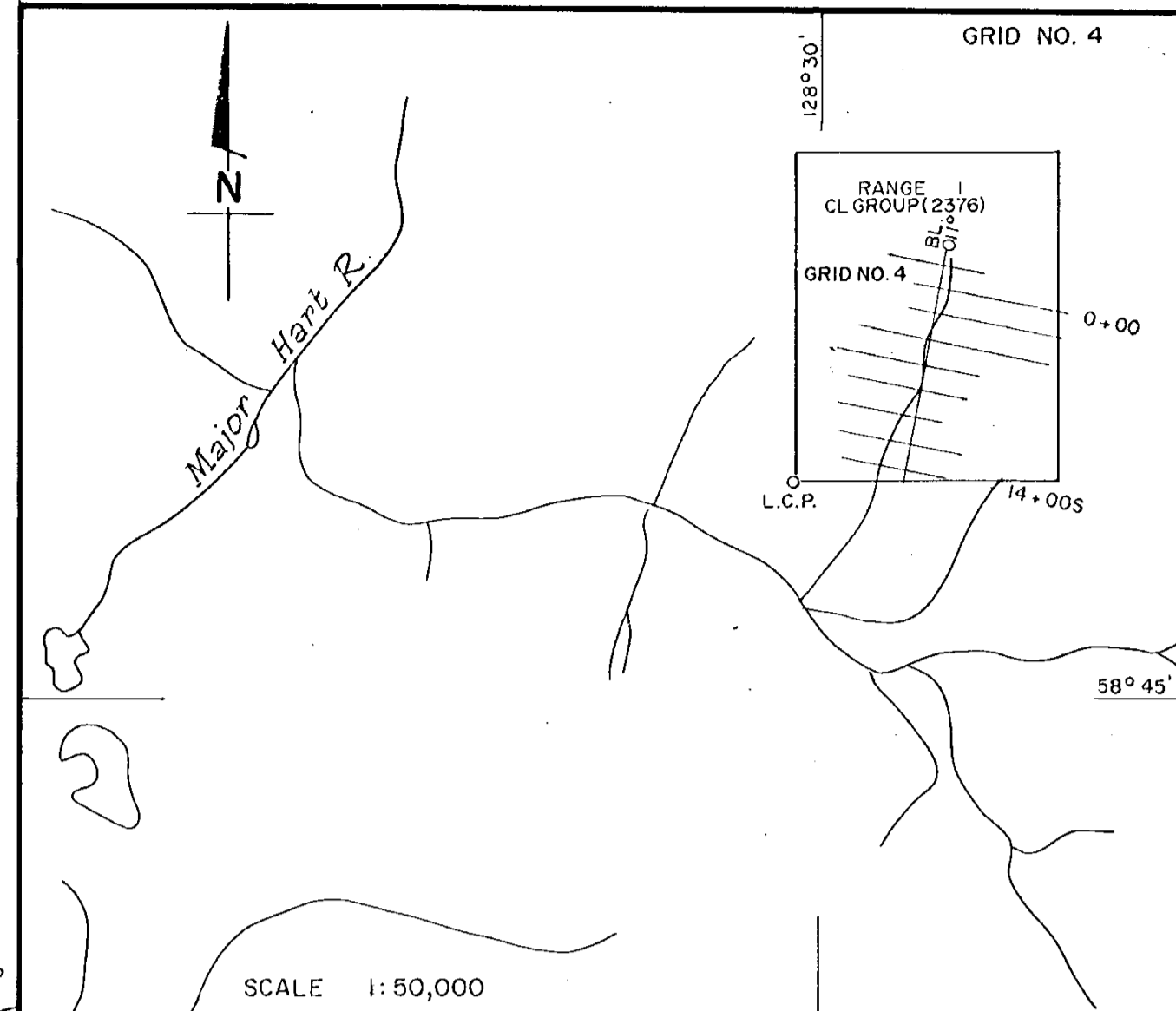
RECONNAISSANCE GEOLOGY

Drawn By	d.o's	Scale	1: 5000
Date	AUG. 1982	Project No.	82C - 002



- LEGEND**
- x 5, 22, 50, 102 (s) STREAM SEDIMENT SAMPLE
(Au ppb, Cu ppm, Pb ppm, Zn ppm)
 - x 5, 22, 55, 180 SOIL SAMPLE
(Au ppb, Cu ppm, Pb ppm, Zn ppm)
 - STREAM AND FLOW DIRECTION
 - 100
150
250
350 LEAD (ppm)
 - 150
250
400
1500 ZINC (ppm)

LOCATION MAP



**GEOLOGICAL BRANCH
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(MAP 3)

AMOCO CANADA PETROLEUM CO. LTD.			
MINING DIVISION			
EAGLE CREEK PROJECT ANOMALY No. 2 - GRID No. 4 GEOCHEMICAL RESULTS (Au, Cu, Pb, Zn)			
Drawn By	d.o's	Scale	1: 5000
Date	AUG. 1982	Project No.	82C - 002