'80 - #505 - #8387

GEOCHEMISTRY REPORT

FUN AND MASSA CLAIMS

RECORD NUMBERS 1808 (6) AND 1807 (6)

OMINECA MINING DIVISION

NTS 103I/16E

128°9'15"W, 54°59'40"N

OWNER: NORANDA MINES LIMITED

OPERATOR: MATTAGAMI LAKE EXPLORATION LIMITED

AUTHOR: J.N. HELSEN

DATE: JULY 17, 1980

TABLE OF CONTENTS

LIST OF FIGURES

TABLES

ABSTRACT

The FUN and MASSA claims, now grouped into the FUN group, were staked on the east flank of the Seven Sisters Range between Hazelton and Terrace after the release of the B.C. Government Open File RGS-1-1978.

Three mandays were spent on a geochemical survey of the property in which soils and rocks were collected. A few sediments and gravels were collected in the nearby creek for the purpose of establishing background values.

No other work such as linecutting, etc. was done.

The geochemical results in general were well below the accepted threshold values with the exception of a few high values for Mo, As and/or W.

A total of 40 samples including soil, rocks, sediments and gravels were collected.

LOCATION AND ACCESS (Figure 1)

The FUN and MASSA claims are located on the east flank of the Seven Sisters Range (NTS 103I/16E) near Kitwanga halfway between Hazelton and Terrace. Despite the fact that these claims lie only about 8 km in a southeasterly direction from the Yellowhead Highway #16, they are only accessible by helicopter. The terrain is very rugged with jagged peaks and a glacier covering most of the MASSA claim.

The elevation varies between 900 m (in the valley) and approximately 2200 m (on the ridge) above sea level. A peak of 2615 m occurs just south of the property.

The work was carried out by a team of two people based in Terrace for that purpose. A Bell 206B Jetranger from the permanent base of Northern Mountain Helicopters Inc. provided the transportation facilities.

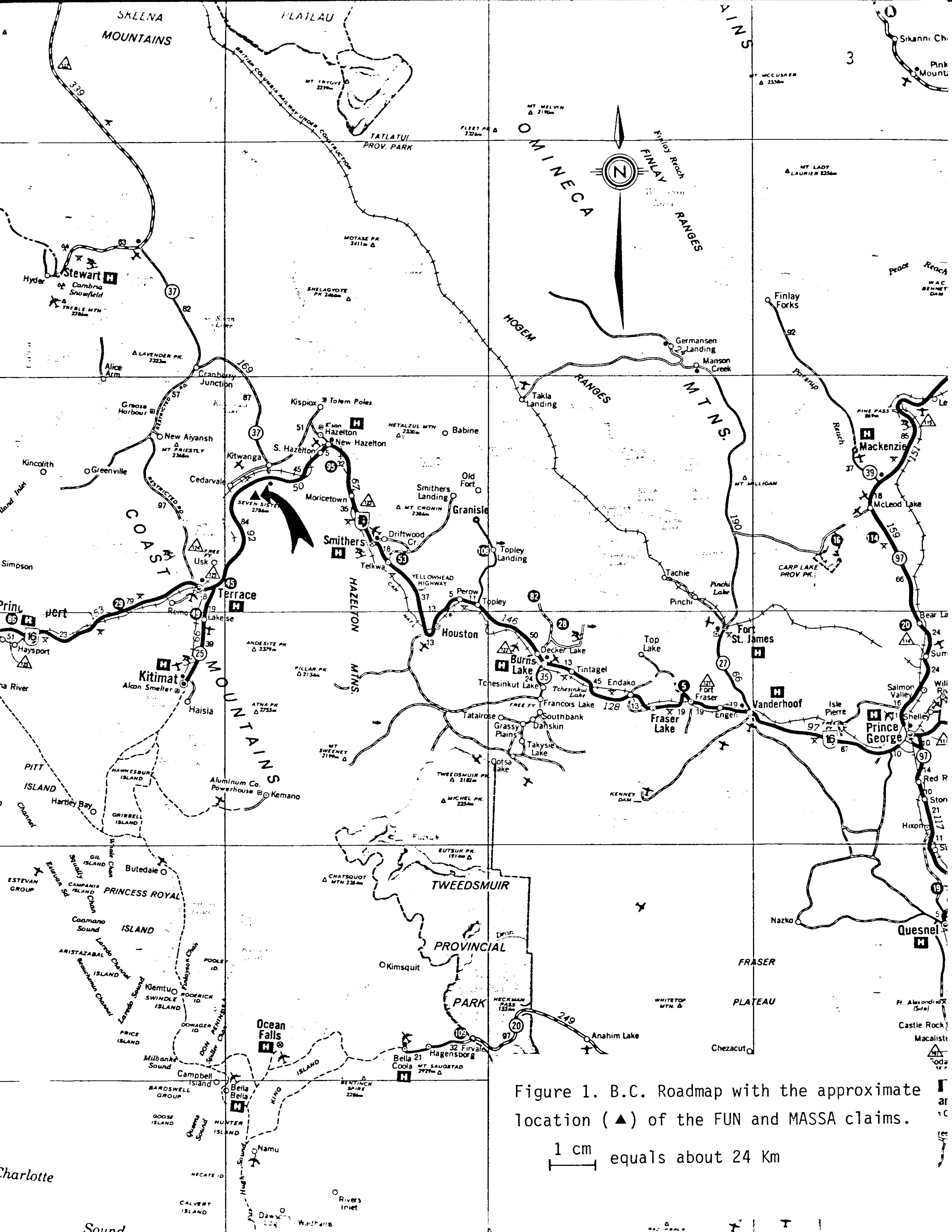


Figure 1. B.C. Roadmap with the approximate location (▲) of the FUN and MASSA claims.

1 cm equals about 24 Km

PROPERTY DEFINITION

The property consists of two claims which have been grouped into the FUN group.

Claim Name	Record Number	Recording Date	Units
FUN	1808	June 25, 1979	12
MASSA	1807	June 25, 1979	8

The FUN group is owned by Noranda Mines Limited and operated by Mattagami Lake Exploration Limited.

Figure 2 shows the exact location of the FUN group claims in relation to other claims owned by different companies.

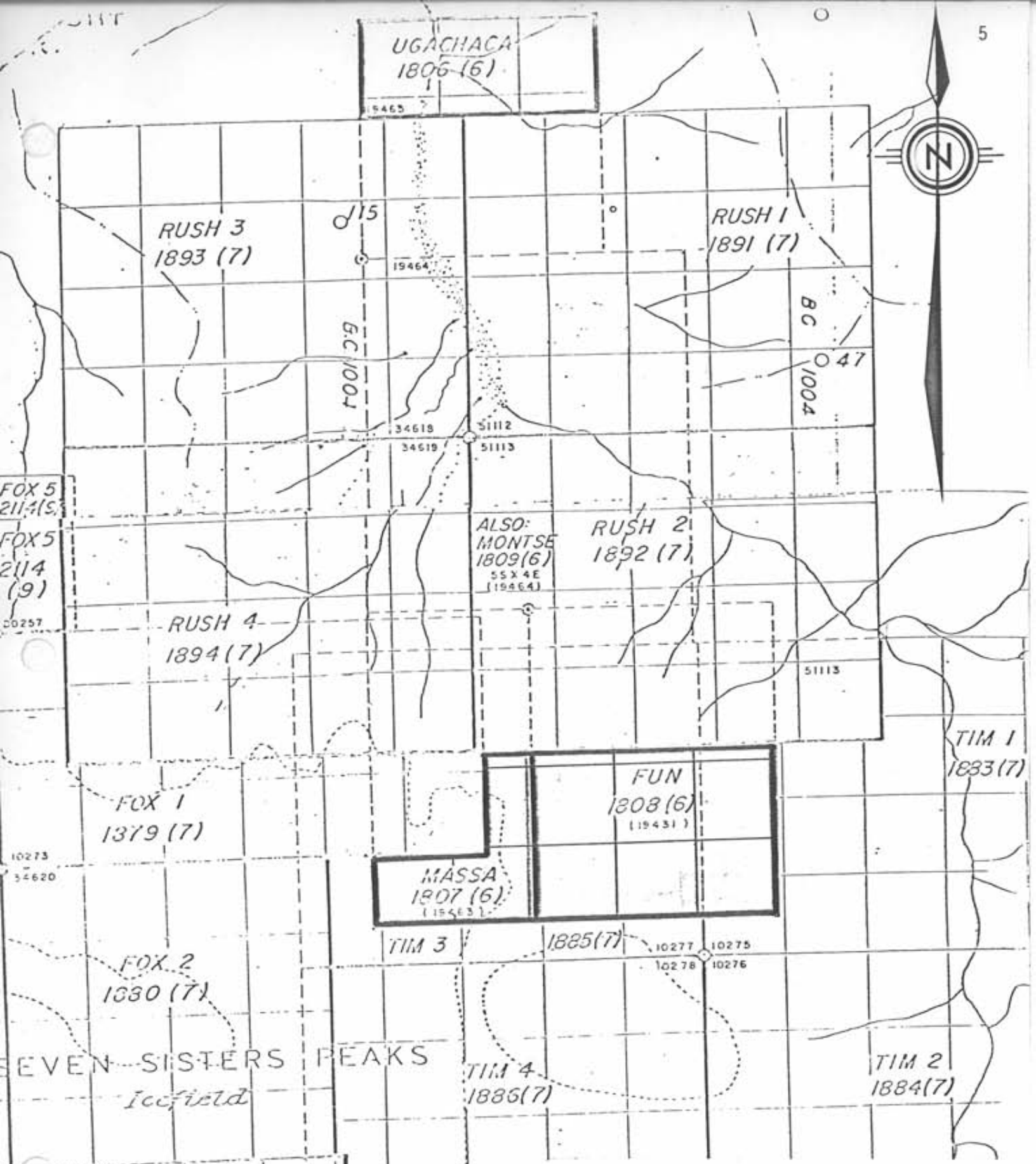
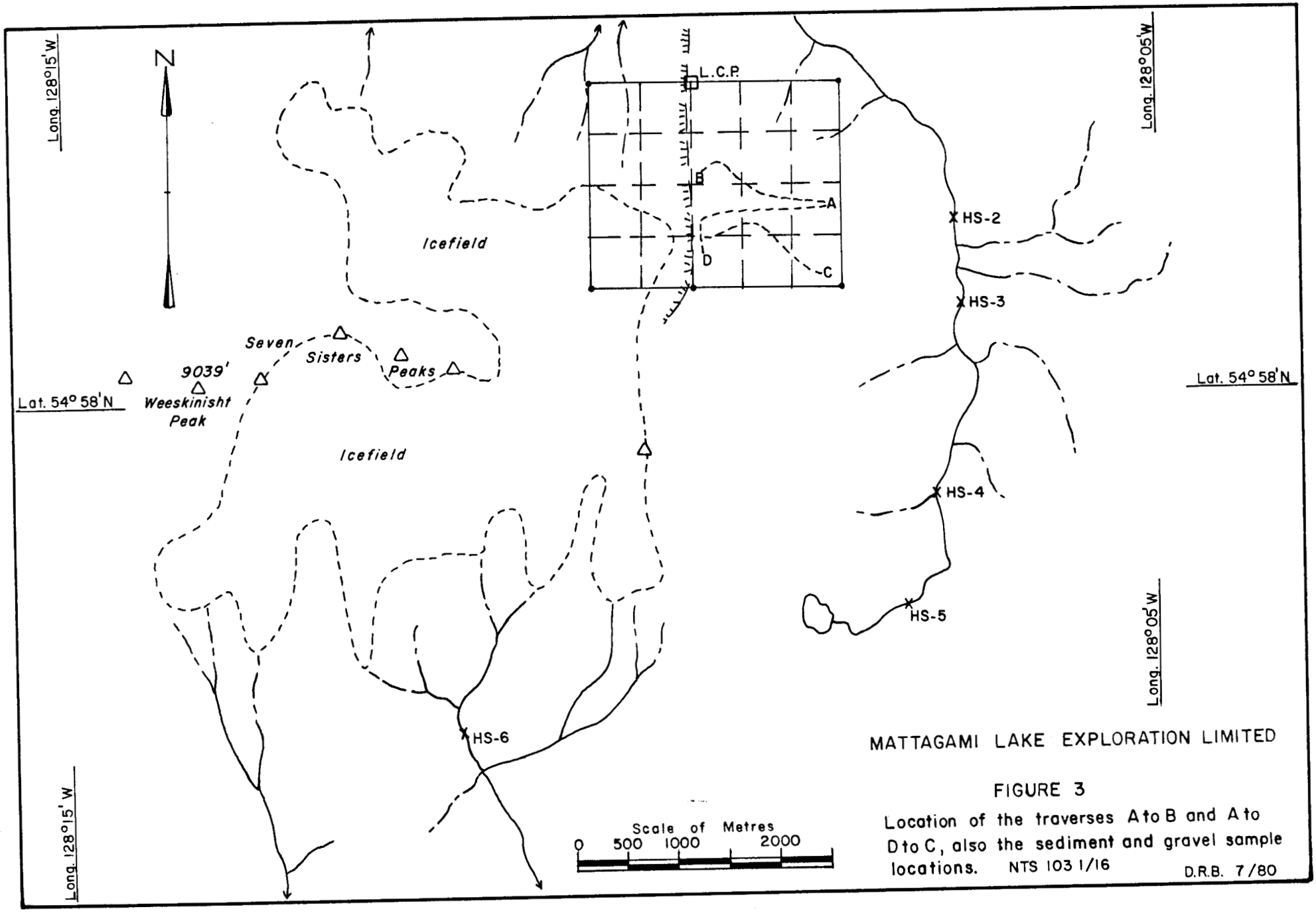


Figure 2. Location of the FUN and MASSA claim group in relation to surrounding claims.

1 cm equals 312.5 m



MATTAGAMI LAKE EXPLORATION LIMITED

FIGURE 3

Location of the traverses A to B and A to D to C, also the sediment and gravel sample locations. NTS 103 1/16

D.R.B. 7/80

PURPOSE OF THE WORK DONE

The FUN group was staked as a consequence of anomalous values in sediments reported in the B.C. Government Open File RGS-1-1978 which covers the NTS 103I and part of 103J mapsheets.

The work performed consisted mainly of a geochemical soil and rock survey on the property in order to find the source for the anomalous values in the stream sediments. All the work was done on the FUN claim because the MASSA claim is underlain by a glacier.

In order to narrow down the area with regards to potential source of the anomalous values as well as to establish background values necessary for this study sediment and gravel samples (for heavy mineral concentrates) were collected in the creek draining the east flank of the Seven Sisters Range.

WORK DONE, RESULTS, INTERPRETATION

The work done on the FUN group was carried out by a team of two people on the 15th (½ day) and the 16th of June, 1980. A total of three mandays were spent on this property. The work consisted of a geochemical survey in which soils and rocks were collected. A few sediments and gravels were collected along the streams draining that part of the Seven Sisters Range in which the property is situated. A breakdown of the samples collected is given below.

TABLE 1: Samples collected during the geochemical survey

Sample Numbers	Type	Total	Location
FUN-P-1 to 12	Soils	12	Traverse A to B
FUN-R-1 to 4	Rocks	4	Traverse A to B
FUN-P-13 to 22	Soils	10	Traverse A to D to C
FUN-R- 5 to 7	Rocks	4	Traverse A to D to C
FUN-S-1 to 5	Sediments	5	Along north flowing stream
FUN-H-1 to 5	Gravels	5	Along north flowing stream

The location of traverses A to B and A to D to C are indicated in Figure 3, as well as the sample sites for the sediments and gravels.

All samples were sent to Noranda Exploration Co. Ltd. in Vancouver, B.C. for analysis for Cu, Zn, Pb, Mo, Ag, As, W, Sb and Sn. The analytical procedures are given in Appendix I.

The results of the geochemical analyses are given in Figure 4a, b, c in order to avoid overcrowding of data on the small scale of Fig. 3. Fig 4a shows the Cu, Zn, Pb values in ppm; Fig. 4b shows the Mo, Ag, As values in ppm; and Fig. 4c the W, Sb, Sn values, also in ppm.

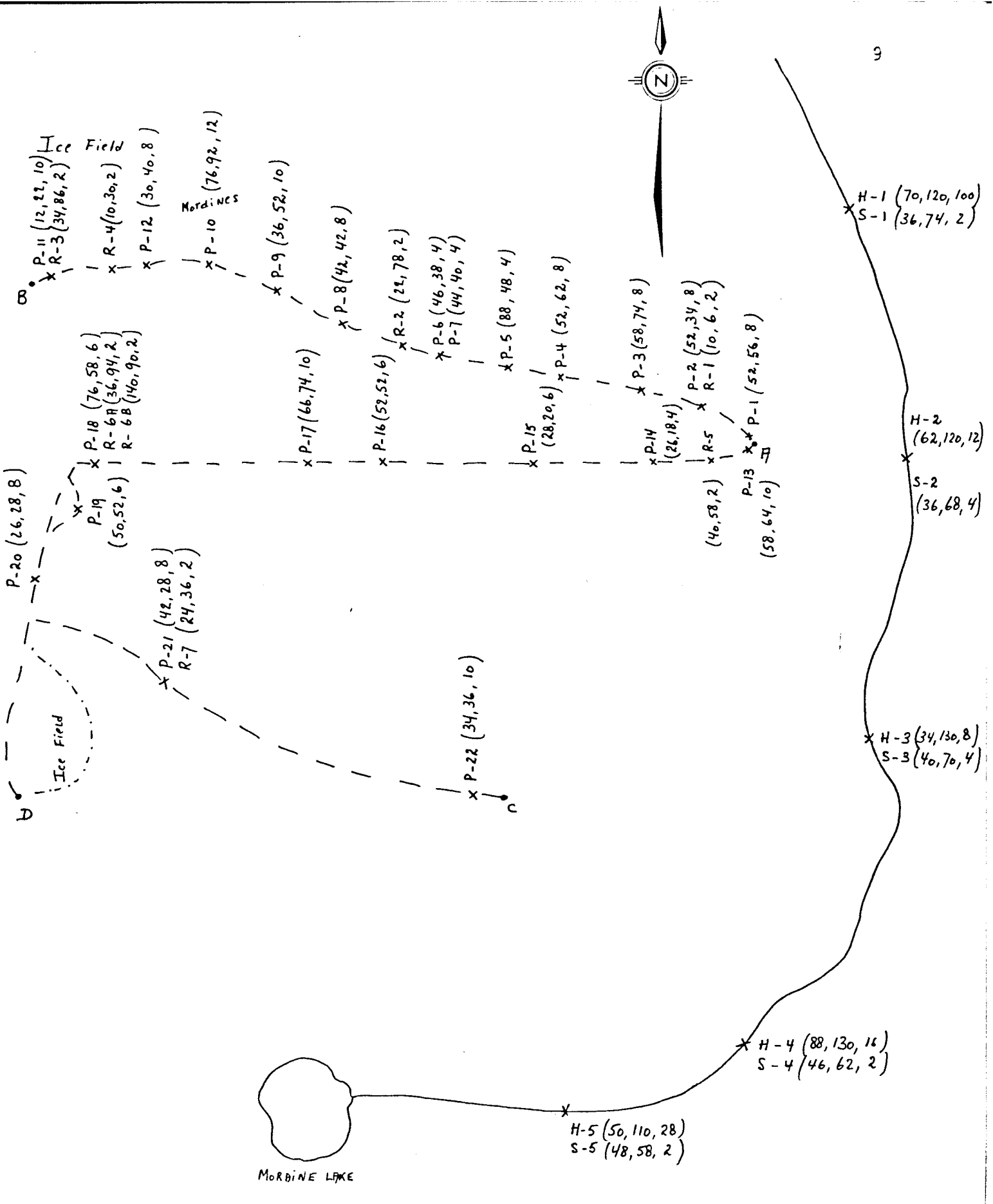


FIGURE 4a: Sketch (not to scale) of the sample sites (x) along traverses A to B, A to D to C, and along the creek as indicated on Fig. 3.

Values are given in ppm for (Cu, Zn, Pb)

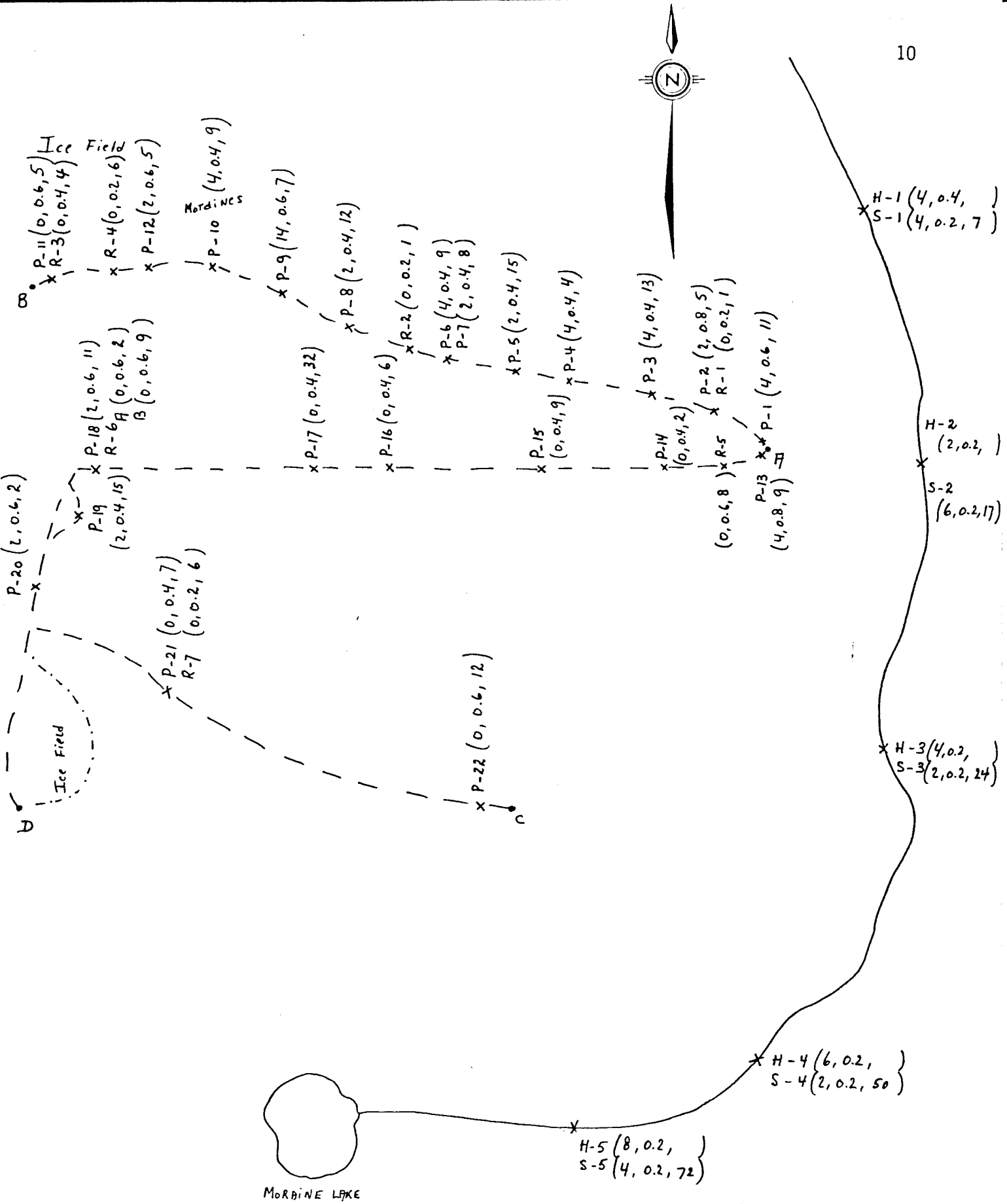


FIGURE 4b: Sketch (not to scale) of the sample sites (x) along traverses A to B, A to D to C, and along the creek as indicated on Fig. 3.

Values are given in ppm for (Mo, Ag, As)

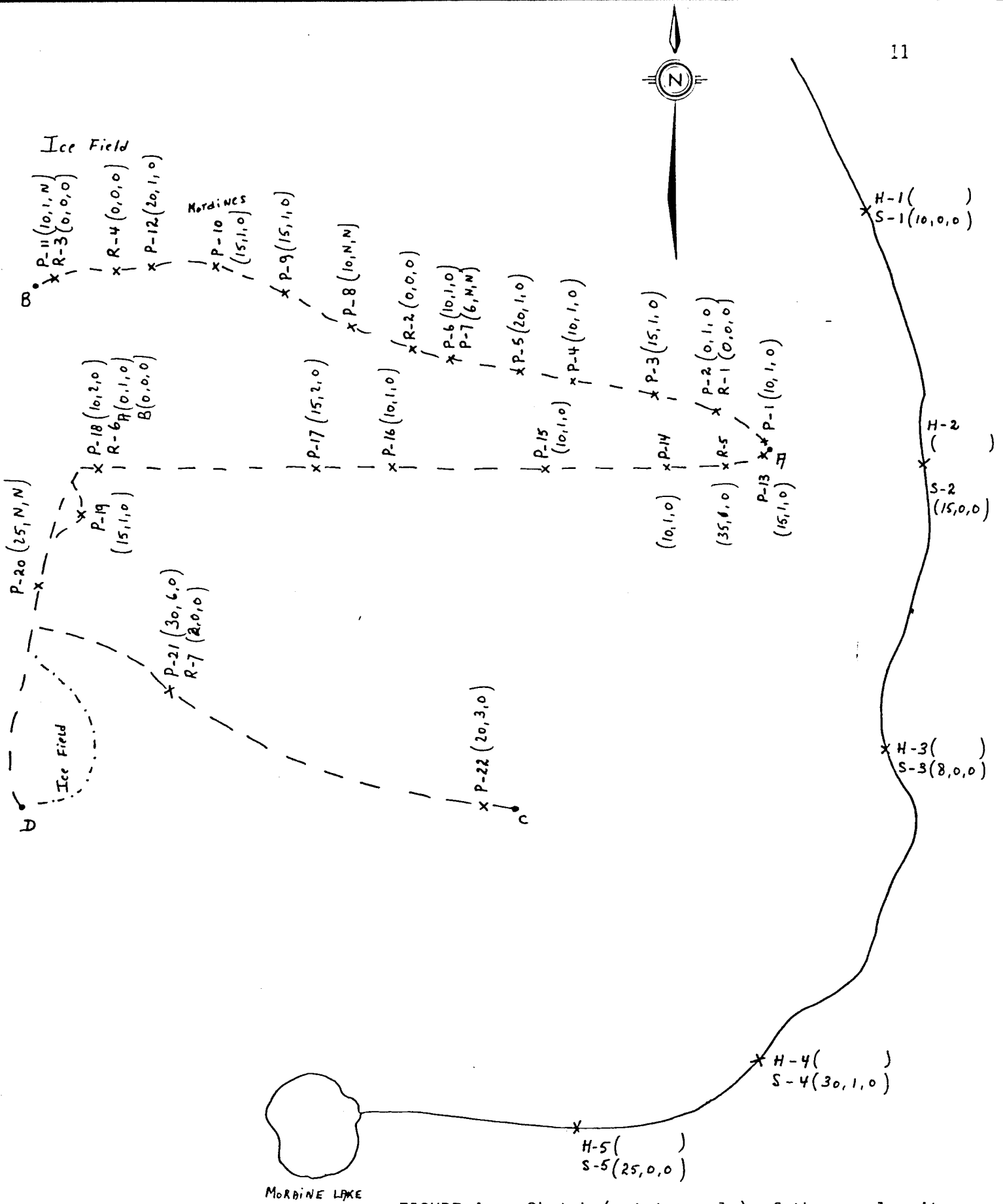


FIGURE 4c: Sketch (not to scale) of the sample sites (x) along traverses A to B, A to D to C, and along the creek as indicated on Fig. 3.

Values are given in ppm for (W, Sb, Sn)

The soils were collected whenever possible because of scarcity of soils on a scree slope. The soils are generally poorly developed and consists mainly of a brownish sandy to silty accumulation behind or below outcrop. They are not truly developed soils.

The following rocks were collected:

FUN-R-1	quartz vein in slatey hornfels
FUN-R-2	spotted hornfels(?) on slate
FUN-R-3	argillite (hornfels) alternatively coarse and fine
FUN-R-4	diorite to granodiorite (small plug)
FUN-R-5	small gossan boulder (very rounded)
FUN-R-6a	spotted slate to argillite
FUN-R-6b	spotted slate to argillite
FUN-R-7	foliated greywacke(?)

All the results are compiled in Table 2. The only results not received yet consist of the As, W, Sb and Sn values for the gravels.

The rocks were analyzed for Au as well.

The following thresholds (in ppm) for soils and sediments in this area, were taken into consideration.

Cu	Zn	Pb	Mo	Ag	As	W	Sb	Sn
100	140	30	6	2	20	20	-*	-*

These thresholds are comparable to the ones established in the Open File RGS-1-1978. According to these thresholds only one soil seems anomalous in Mo (P-9). Sediments S-4 and S-5 have rather high As and W values. Only soils P-20 and P-21 show slightly anomalous values for W.

No thresholds were established for either Sb or Sn because of the overall low values.

This geochemical survey was carried out by two people during 1½ days resulting in a total of 3 mandays.

Five samples (H-6; S & H-7; S & H-8) were not considered for assessment purposes because they occur in another drainage system (south of the Seven Sisters Range).

TABLE 2

FUN GROUP

Results (in ppm)

FUN Rocks

Sample #	Cu	Zn	Pb	Mo	Ag	As	Au*	Sb	Sn	W
FUN-R-1	10	6	2	L2	0.2	1	30	0	0	0
R-2	22	78	2	L2	0.2	1	10	0	0	0
R-3	34	86	2	L2	0.4	4	10	0	0	0
R-4	10	30	2	L2	0.2	6	10	0	0	0
R-5	40	58	2	L2	0.6	8	10	1	0	35
R-6A	36	94	2	L2	0.6	2	10	1	0	0
R-6B	140	90	2	L2	0.6	9	10	0	0	0
R-7	24	36	2	L2	0.2	6	10	0	0	2

* Au in ppb

FUN Heavy Mineral Concentrates

Sample #	Cu	Zn	Pb	Mo	Ag	As	W	Sb	Sn	Weight (grams)
FUN-H-1	70	120	100	4	0.4					33.01
H-2c	62	120	12	2	0.2					94.60
H-3	34	130	8	4	0.2					47.23
H-4	88	130	16	6	0.2					28.32
H-5a	50	110	28	8	0.2					33.62
H-6c	80	190	42	6	0.2					30.47
H-7a	90	180	210	28	2.0					8.72
H-8	30	160	24	2	0.2					25.98

FUN Soils

Sample #	Cu	Zn	Pb	Mo	Ag	As	W	Sb	Sn
FUN-P- 1	52	56	8	4	0.6	11	10	1	0
P- 2	52	34	8	2	0.8	5	0	1	0
P- 3	58	74	8	4	0.4	13	15	1	0
P- 4	52	62	8	4	0.4	4	10	1	0
P- 5	88	48	4	2	0.4	15	20	1	0
P- 6	46	38	4	4	0.4	9	10	1	0
P- 7	44	40	4	2	0.4	8	6	NSS*	NSS
P- 8	42	42	8	2	0.4	12	10	NSS	NSS
P- 9	36	52	10	14	0.6	7	15	1	0
P-10	76	92	12	4	0.4	9	15	1	0
P-11	12	22	10	L2	0.6	5	10	1	NSS
P-12	30	40	8	2	0.6	5	20	1	0
P-13	58	64	10	4	0.8	9	15	1	0
P-14	26	18	4	L2	0.4	2	10	1	0
P-15	28	20	6	L2	0.4	9	10	1	0

FUN Soils (con't)

Sample #	Cu	Zn	Pb	Mo	Ag	As	W	Sb	Sn
FUN-P-16	52	52	6	L2	0.4	6	10	1	0
P-17	66	74	10	L2	0.4	32	15	2	0
P-18	76	58	6	2	0.6	11	10	2	0
P-19	50	52	6	2	0.4	11	15	1	0
P-20	26	28	8	2	0.6	2	25	-	0
P-21	42	28	8	L2	0.4	7	30	6	0
P-22	34	36	10	L2	0.6	12	20	3	0

FUN Sediments

Sample #	Cu	Zn	Pb	Mo	Ag	As	W	Sb	Sn
FUN-S-1	36	74	2	4	0.2	7	10	0	0
S-2	36	68	4	6	0.2	17	15	0	0
S-3	40	70	4	2	0.2	24	8	0	0
S-4	46	62	2	2	0.2	50	30	1	0
S-5	48	58	2	4	0.2	72	25	0	0
S-7	30	94	6	L2	0.2	7	20	1	0
S-8	30	82	6	L2	0.2	27	18	2	0

*NSS - Not sufficient sample

STATEMENT OF COSTS

Traverse A to B, June 15, ½ day (2 people)	1 manday
Traverse A to D to C, June 16, 1 day (2 people)	2 mandays
TOTAL	3 mandays

Salaries

3 mandays @ $ 1,602.25 per month with payroll burden and bush bonus for junior geologist i.e. at $ 53.41/man/day	$ 160.23	
		$ 160.23

Transportation

June 15, 1.5 hours flying time @ $ 350.00/hour	$ 525.00	
June 16, 2.6 hours flying time @ $ 350.00/hour	910.00	
Total of 4.1 hours @ 23 gallons fuel/hour @ $ 1.50/gallon	141.45	
1.5 days truck rental @ $ 20.00/day	30.00	
		1,606.45

Accomodation and Food

1½ nights, two single rooms @ $ 23.00 each	$ 69.00	
1½ days food @ $ 23.00/day/person (breakfast $ 4.00; lunch $ 4.00; supper $ 15.00)	69.00	
		138.00

Geochemical Analysis

40 samples analysed for Cu, Pb, Zn, Mo, Ag @ $ 1.25 (first element) and 60¢ (each successive element) i.e. $ 3.65/sample	$ 146.00	
35 samples analysed for As, W, Sb, Sn @ $ 2.50/element/sample	350.00	
8 samples analysed for Au @ $ 2.50/sample	20.00	
8 rock preparation @ $ 1.25/sample	10.00	
		526.00

Miscellaneous Costs

Telephone and postage	$ 25.00	
Freight	20.00	
Report Writing, Drafting	250.00	
		295.00

TOTAL COSTS	$ 2,725.68

REFERENCE LIST

Open File - Government of British Columbia, RGS-2-1978, Regional stream sediment and water accelerated geochemical survey, 1978: NTS 103P and Part of 103O, B.C. Department of Mines and Petroleum Resources, Victoria

Open File - Government of British Columia, RGS-1-1978, Regional stream sediment and water accelerated geochemical survey, 1978: NTS 103I and part of 103J, B.C. Department of Mines and Petroleum Resources, Victoria

CERTIFICATE

I, Jan Helsen, of the City of Edmonton, Province of Alberta, do hereby certify that:

1. I am a geologist residing at 11515 - 75 Avenue, Edmonton.
2. I am a graduate of the University of Leuven, Belgium with a "Licenciaat in Geologie".
3. I am a graduate of McMaster University, Ontario, with a M.Sc. (1970) and a Ph.D. (1976) in geology.
4. I have been practicing my profession since 1976 and am at present Exploration Geologist with Mattagami Lake Exploration Limited.
5. I am a fellow of the Geological Association of Canada.
6. I supervised the work that is described in this report.

Dated: July 17, 1980

J. Helsen, Ph.D.

APPENDIX I

ANALYTICAL METHODS FOR GEOCHEMICAL ANALYSES OF ROCK, SOILS AND SEDIMENTS

APPENDIX I

Noranda Exploration Company Limited
(no personal liability)
P.O. Box 2380,
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V6B 3L5
noranda

1050 Davie Street
Phone (604) 684-9246
Telex 04-51321

Effective June 1980

VANCOUVER GEOCHEMICAL LABORATORY

Schedule of Services and Fees

Elemental Analyses of Sediments, Soils and Rocks.

Perchloric - Nitric decomposition by A.A.

Element		Detection Limit
Cadmium	Cd	0.2 PPM
Chromium	Cr	2
Cobalt	Co	1
Copper	Cu	1
Iron	Fe	2
Lead	Pb	1
Manganese	Mn	2
Molybdenum	Mo	1
Nickel	Ni	1
Silver	Ag	0.1
Vanadium	V	10
Zinc	Zn	1

Price

1st. Element - $1.25 each additional $0.60. Soils and Sediments analyses on minus 80 mesh portion - no preparation charges.

Rock Geochem preparation $1.25.

Background correction applied when necessary.

Elements requiring individual decomposition and specific techniques.

Antimony	Sb	1 PPM	Each Element $2.50
Arsenic	As	1	
Bismuth	Bi	1	
Fluorine	F	10	
Gold	Au	0.01 (10PPB)	
Mercury	Hg	0.005 (5PPB)	
Selenium	Se	1	
Tellerium	Te	0.1	
Tin	Sn	1	
Tungsten	W	2	
Uranium	U	0.1	

It should be noted that geochemical techniques are used for trace analysis. For samples with visibly high concentrations (%) of elements, assaying should be requested.

Total dissolution with hydrofluoric - perchloric - nitric acid.

Barium	Ba	Trace or	1st. element $2.50
Calcium	Ca	percent level	each additional $0.60
Magnesium	Mg		
Potassium	K		
Rubidium	Rb		
Sodium	Na		
Strontium	Sr		

Whole rock analysis with lithium metaborate fusion.

SiO_2, Al_2O_3, Fe_2O_3, CaO, MgO, K_2O, Na_2O, MnO, Cr_2O_3, SrO, & P_2O_5:
1st. element - $5.00, each additional element $1.50

Miscellaneous Services

Assaying services are available:

Ag, Au, Co, Cu, Mo, Ni, Pb, Zn		$5.00 per element
Conductivity (waters) umho. cm^{-1}		$1.00 per sample
Hydro-chemical analysis:		
Direct aspiration		$0.60 per element
Solvent Extraction (APDC)		$1.25 per element
Field Indicator for Zinc		$10.00 per litre
Loss on Ignition	550°C ca.4 h.	$2.00 per sample
pH		$1.00 per sample

Partial extractions, ie. 0.5M HCl, EDTA, Sulphide selective and others are available on request.

All other analyses not listed, eg. semi-quantitative spectrographic, plasma emission and neutron activation analysis can be done locally at commercial laboratories.

Methodology of the Geochemical Laboratory

Physical methods of sample treatment.
Rock and core samples involve crushing and pulverizing with a rotary plate or a ring and puck pulverizer, whichever is appropriate. Subsequently, the -200 mesh sample is rolled to insure uniformity.

For sediment and soil samples, these are dryed at ca.80°C for 24 to 48 hours.

The samples are then sieved to -80 mesh with nylon screen; the +80 mesh (reject) material is discarded.

The panned - heavy mineral samples are analyzed as received without further sample preparation, except where the material is too coarse; this material is passed through a -40 mesh screen.

Perchloric - nitric acid decomposition ($HClO_4$-HNO_3)

The analysis of soil, sediment and rock geochem to determine the lighter transition elements, is carried out by decomposition with a perchloric plus nitric acid mixture. The procedure for preparing geological samples for trace analysis by atomic absorption is as follows:

Weigh 0.400g of sample and digest with 4ml perchloric acid (70%) plus nitric acid (4+1) for 4 hours at reflux temperature.

After digestion, each sample is diluted to 10ml with water. This solution is used for the determination of Cd, Cr, Co, Cu, Fe, Pb, Mn, Mo, Ni, Ag, V and Zn with a Varian AA - 475 complete with background correction.

Complete dissolution of such elements as Cr, Fe, Mn and V is not always achieved, and may be of little significance for geochemical exploration purposes.

A brief description of elements requiring specific techniques

Determination of mercury and the elements that form volatile hydrides ie. As, Bi, Sb, Se and Te are carried out with a hydride vapour generation accessary (Varian M-65). The hydride is formed by sodium borohydride reaction with an acidified solution of the sample. This enables measurement of trace quantities by atomic absorption.

Fluorine: 0.25g sample is sintered with sodium carbonate-potassium nitrate flux and dissolved in water. The fluoride content is compared to standards on a specific ion electrode meter. (*U.S. G.S. Paper 700-C*)

Gold: 10.0g sample is digested with aqua regia. Gold is extracted into MIBK from the aqueous HCl solution. Atomic absorption is used to determine gold, and a sensitivity of 10ppb is attained. (*At. Absorpt. Newsl. 6, 126, 1979*)

Tin: 0.5g sample is heated with ammonium iodide: tin present as cassiterite is converted into stannic iodide, which sublimates. The sublimate is dissolved in 1M HCl. A pink tin complex is formed with gallein. This allows colorimetric comparison with standards to determine tin to as low as 2ppm. (R.E. Stanton 1962).

Tungsten: 1.0g sample is sintered with carbonate flux and is leached with water. The leachate is treated with KSCN. This forms a yellow tungsten thio-cyanate which is extracted into tri-n-butyl phosphate. This permits colorimetric comparison with a standard series to ca. 4ppm (F.N. Ward 1963)

Uranium: Sample digestion will depend on the extraction requested, however, if not specified, an aliquot is taken from the perchloric-nitric decomposition. The aliquot is taken diluted with water and buffer, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex). Sensitivity of 0.1ppm in geological samples is easily obtained.

Hydrofluoric - perchloric - nitric decomposition ($HF/HClO_4$-HNO_3)

The analysis of silcate rock for major elements, ie. alkaline and earth alkaline metals, is performed by decomposition with hydrofluoric - perloric - nitric acid, with subsequent removal of the fluoride ion. Total dissolution of the major constituents is accomplished and this method is suitable for determination of Na, K, Mg, Ca, Mn, Fe, Rb, Sr, and Ba. Silicon is not determined since it volatilizes during dissolution.

This method is not intended to replace the elaborate fusion techniques (eg. $LiBO_2$ fusion) for major oxide analysis, and should be used as a supplementary method for geochemical exploration where quick results are necessary. (Anal. Chim. Acta 32, 1, 1965)

Whole roch analysis employing lithiumborate fusion.

A atomic absorption procedure is used for the analysis of rock to determine Si, Al, Fe, Mg, Ca, K, Na, Mn, Cr, Sr, and Ti. The method employs a lithium metaborate ($LiBO_2$) fusion and dissolution in diluted nitric acid. This is recommended for whole rock analysis of rocks and core of widely ranging major element composition. (Atomic Absorpt. Newsl. 2, 25, 1969).

The lab intends to implement the Bernas Type teflon - lined bomb for decomposition of ores and minerals at a later date.

The lab will continue the policy that after operating costs of the lab have been covered, any surplus will be rebated on a pro-rated basis.

There is considerable difference of opinion regarding what geochemical methods to use in exploration. Since there is no universally suitable method for any geochem analysis which is mainly due to varying sample material, in order to maintain quality control and consistent data, it is important to request the same decomposition and analytical methods, when various labs are contracted.

For further information please contact the Noranda Vancouver Laboratory at the following number: (604) 684-9246 E.J. van Leeuwen