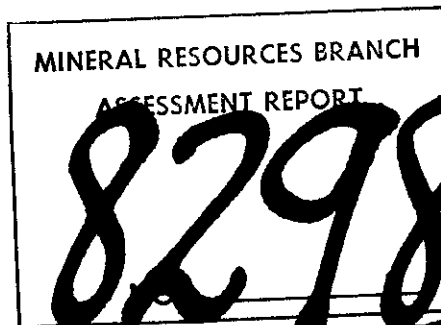


NORCEN ENERGY RESOURCES LIMITED  
ASSESSMENT REPORT  
GEOCHEMICAL PROGRAM  
GROUP XXI  
GOLDEN MINING DISTRICT  
BRITISH COLUMBIA

CLAIMS: WC8, WC10  
LOCATION: 45 km south of Golden, British Columbia  
LATITUDE: 50° 52' N  
LONGITUDE: 116° 46' W



8298  
PART 5  
OF 5

L. Smith, P. Geol.  
A. Slingsby

Two handwritten signatures in black ink. The top signature is "L. Smith" and the bottom signature is "A. Slingsby".

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Mn Content in Soils (ppm) .....	Scale 1:20,000
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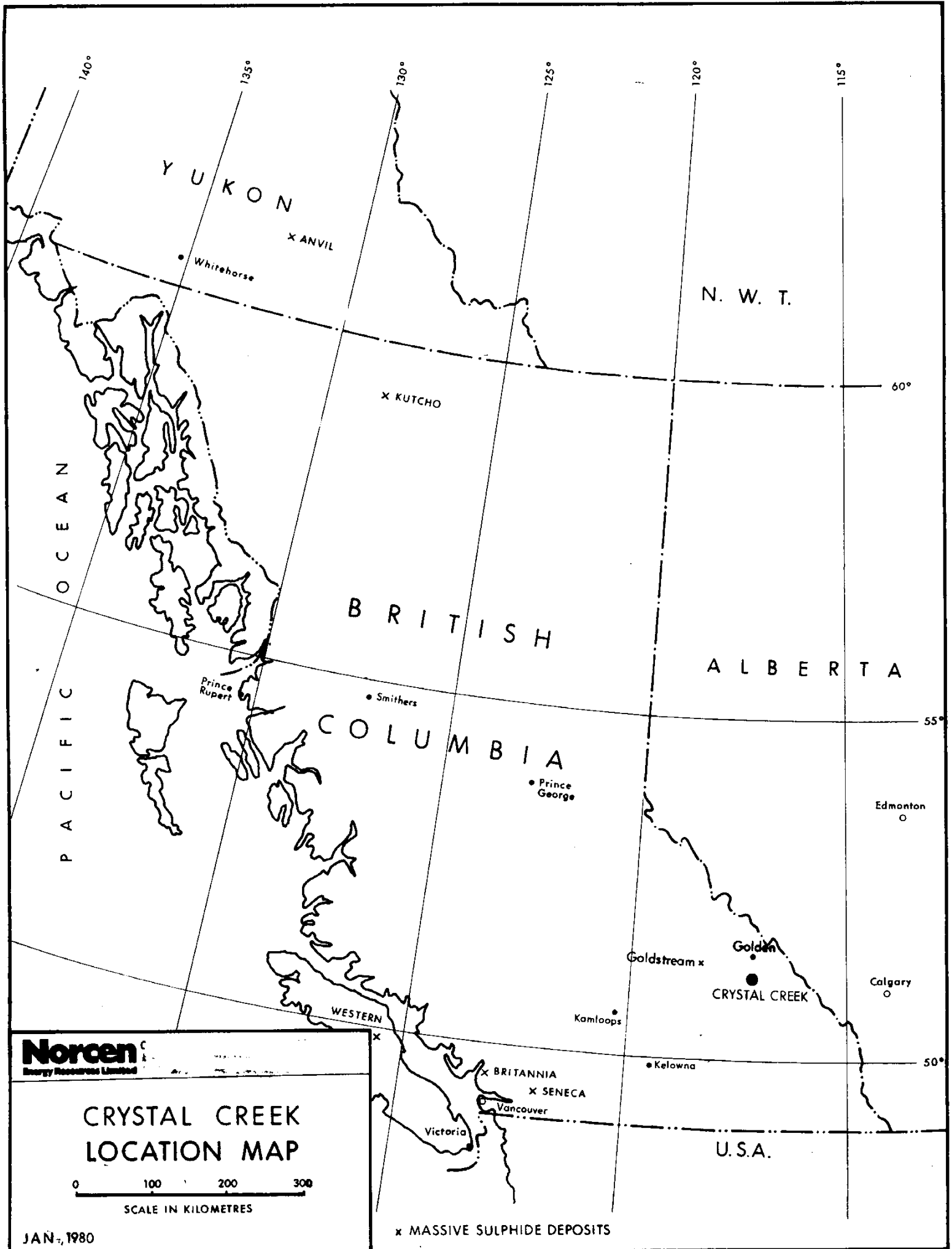
## SUMMARY

A total of 958 soil samples, 96 stream sediment samples and 26 rock samples were collected during a reconnaissance geochemical survey of the Crystal Creek property. The soil and stream sediments were analyzed for their content of iron, manganese, lead, zinc, copper and silver. Rock samples were analyzed by induction coupled argon plasma spectrometry for nine major oxides and 15 minor and trace elements. Of these samples 40 soil samples were taken within the boundaries of Group XIX. An 1:20,000 orthophoto produced from 1976 Energy, Mines and Resources aerial photograph by North West Survey Corporation International Ltd. of Edmonton, Alberta, was used for control of sampling points. The samples were taken on June 12 and 16.

Soil samples were taken from B horizon where available. Notes as to topograph, vegetation, drainage, soil types, etc. were taken. Stream samples were taken where available. Rock samples were taken where soil was not available or where the rock appeared to have an anomalous metal content. The samples are generally of shale.

## LOCATION AND ACCESS

The claims are located in the Purcell Mountains approximately 45 kilometres south of Golden, British Columbia. Access to the property is by paved highway 95 to Parson, British Columbia and hence by 52 kilometres of logging road along Bobby Burns and Vowell Creeks.



**Norcen**  
Energy Resources Limited


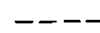
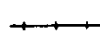


**CRYSTAL CREEK  
LOCATION MAP**

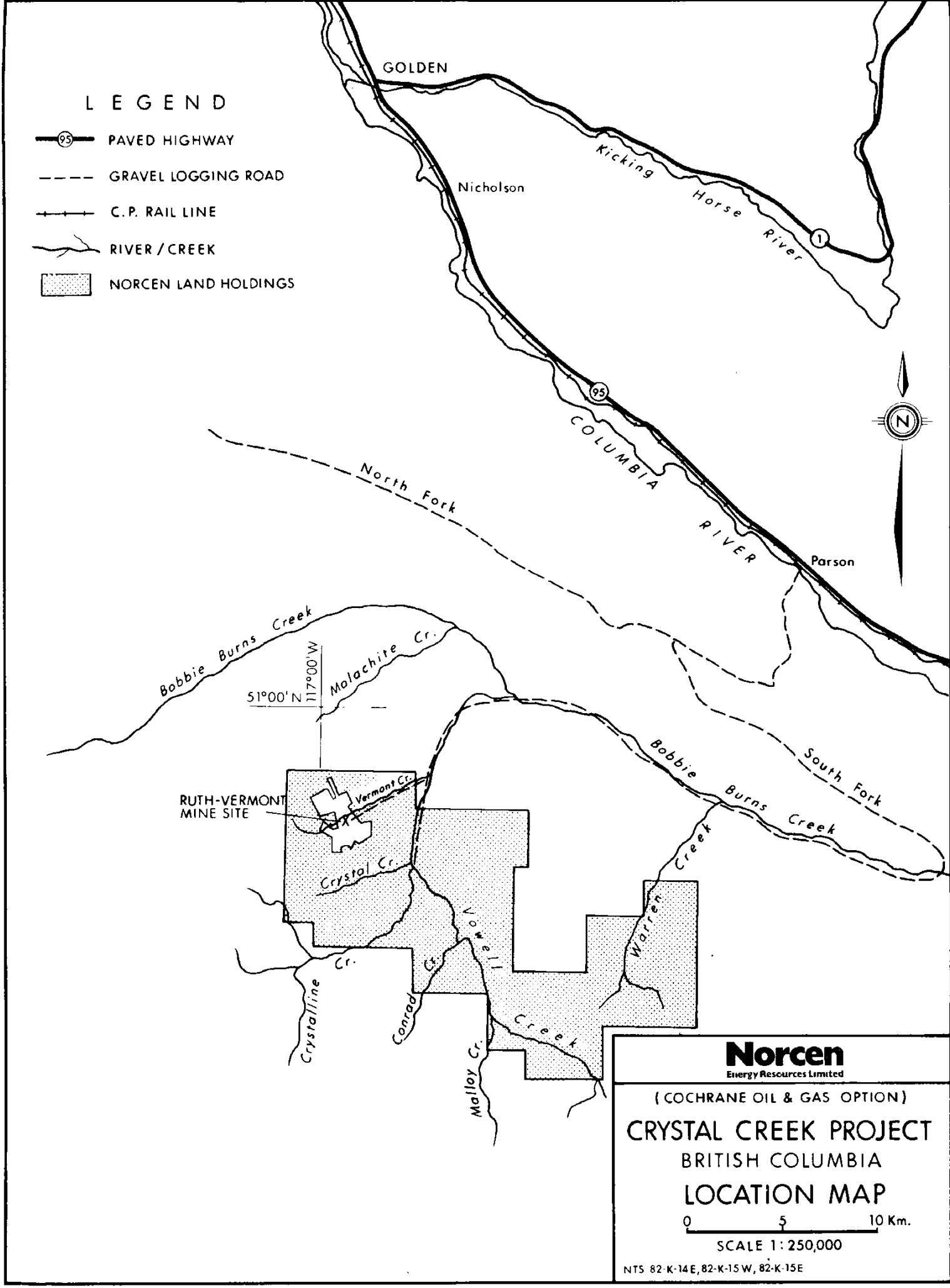


JAN., 1980

x MASSIVE SULPHIDE DEPOSITS

**LEGEND**

-  PAVED HIGHWAY
-  GRAVEL LOGGING ROAD
-  C. P. RAIL LINE
-  RIVER / CREEK
-  NORCEN LAND HOLDINGS



**Norcen**  
Energy Resources Limited

(COCHRANE OIL & GAS OPTION)

**CRYSTAL CREEK PROJECT**  
BRITISH COLUMBIA  
LOCATION MAP

0 5 10 Km.

SCALE 1 : 250,000

NTS 82-K-14E, 82-K-15W, 82-K-15E

CLAIMS STATUS

The WC8 and WC10 claims form part of the Crystal Creek property. They have been grouped together to form Group XIX.

Claim Name	Record Number	Recorded Date	# of Units
WC 8	313	June 18, 1979	18
WC10	315	June 18, 1979	12



## GEOCHEMICAL SAMPLING

A total of 40 soil samples were collected on Group XIX. All samples were sent to Barringer Magenta Limited of No. 105 3750 19th Street N.E., Calgary, Alberta. The soil and sediment samples were analyzed for lead, zinc, silver, copper, iron and manganese by atomic absorption.

Statistical analysis of the data for the entire property produced the following means and standard deviations:

Soils	Mean	Standard Deviation
Ag (ppm)	.319	.25
Cu (ppm)	27.1	24.4
Pb (ppm)	22.4	54.3
Zn (ppm)	65.0	43.4
Mn (ppm)	344	478
Fe (%)	3.41	1.19

## Stream Sediments

	Mean	Standard Deviation
Ag (ppm)	.206	.132
Cu (ppm)	33.0	22.8
Pb (ppm)	13.5	8.7
Zn (ppm)	52.0	31.3
Mn (ppm)	372	192
Fe (ppm)	4.15	1.28

Analysis of the soil samples from Group XIX showed that the area is slightly lower than average in metal content but does contain samples of anomalous lead, manganese, copper and iron and a sample of highly anomalous copper content (3271).

ITEMIZED STATEMENT OF EXPENDITURES

A. SALARIES

A. Slingsby-Project Planning-April 17	\$ 125 00
-Supervision-June 16	125 00
-Geochemical Sampling-June 12	125 00
R. Laird - Geochemical Sampling -June 16	125 00
B. Wasybyshyn - Geochemical Sampling - June 12	90 00
R. Pryde - Geochemical Sampling - June 16	90 00
G. Robb - Geochemical Sampling - June 16	90 00
K. Collard - Geochemical Sampling - June 16	90 00

B. ACCOMMODATION AND MEALS

7 man days @ \$41/day	287 00
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C. TRANSPORTATION

Helicopter 2.2 hr @ \$408/hr	856 80
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D. ASSAYING AND ORTHOPHOTO

40 soils @ \$6/sample	240 00
30 units (photo) @ \$10/unit	<u>300 00</u>

TOTAL EXPENDITURES	<u>\$2 543.80</u>
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STATEMENT OF QUALIFICATIONS

I, Laurie James Smith, of the City of Calgary in the Province of Alberta, do hereby state:

1. I am a graduate of the University of Calgary with a B Sc degree in Geology.
2. I have been involved in all phases of geological exploration in many areas of Canada (British Columbia, Alberta, Saskatchewan, Northwest Territories, Ontario, Quebec, Nova Scotia and New Brunswick) since graduation.
3. I supervised the geochemical soil sampling on Group XIX.
4. I am a member of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.
5. I am the holder of valid Free Miners License Number 197331.

Laurie J. Smith

APPENDIX I  
ASSAY CERTIFICATES



AUTHORITY: ART SLINGSBY

BARRINGER MAGENTA LIMITED  
OFFICES & MINERALS  
LABORATORY:  
3750 - 19th ST., N.E., SUITE 105  
CALGARY, ALBERTA T2E 6V2  
PHONE: (403) 276-9701  
TELEX: 03-827584

29/AUG/80  
PAGE 3 OF 4  
WORK ORDER # NORCEN

NORCEN ENERGY RESOURCES  
715-5TH AVE.S.W.  
CALGARY, ALBERTA  
T2P 2X7

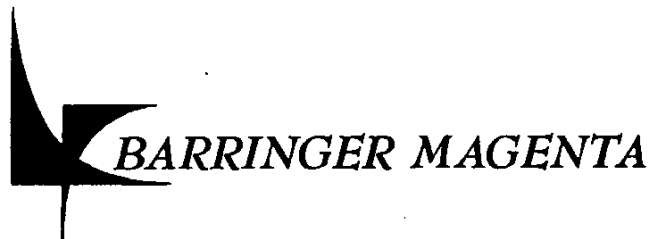
SAMPLE GROUP #21

\*\*\*FINAL REPORT\*\*\*

G E O C H E M I C A L L A B O R A T O R Y R E P O R T

SAMPLE TYPE:  
SOIL

SAMPLE NUMBER	ZN PPM
1173	83.
1174	91.
2119	59.
2120	59.
2121	83.
2122	85.
2123	81.
2124	73.
2125	70.
2126	12.
2127	20.
2128	77.
2129	85.
2130	76.
2131	69.
3270	100.
3271	124.
3272	101.
3273	12.
3274	74.
3275	66.
3276	90.
3277	47.
3278	76.
3279	79.
3280	94.
3281	86.
3282	50.
3283	50.
3284	89.



BARRINGER MAGENTA LIMITED  
 OFFICES & MINERALS  
 LABORATORY:  
 3750 - 19th ST., N.E., SUITE 105  
 CALGARY, ALBERTA T2E 6V2  
 PHONE: (403) 276-9701  
 TELEX: 03-827584

AUTHORITY: ART SLINGSBY

29/AUG/80  
 PAGE 4 OF 4  
 WORK ORDER # NORCEN

NORCEN ENERGY RESOURCES  
 715-5TH AVE. S.W.  
 CALGARY, ALBERTA  
 T2P 2X7

SAMPLE GROUP #21

\*\*\*FINAL REPORT\*\*\*

G E O C H E M I C A L L A B O R A T O R Y R E P O R T

SAMPLE TYPE:  
 SOIL

SAMPLE NUMBER	ZN PPM
3321	51.
3322	30.

NO NO:80-0457 ANALYSIS DATE: 09/07/80 MATRIX: HF

FILE: T0-0457

SAMPLE ID	AL2O3 %	FE2O3 %	CaO %	MgO %	TiO2 %	MnO2 %	Na2O %	K2O %	P2O5 %
1146-R	22.8	8.76	.277	2.87	.402	.0821	.771	4.13	.13
2001-R	10.9	7.35	.124	.989	.282	.0243	.315	2.93	.14
2002-R	5.73	5.09	.512	.570	.0590	.110	.623	.932	.03
2003-R	11.3	7.19	1.65	2.14	.243	.229	.464	1.41	.06
2004-R	22.3	10.6	1.45	3.03	.533	.374	1.25	3.23	.11
5001-R	24.8	11.1	.213	3.34	.598	.119	1.06	3.58	.15
5002-R	21.8	9.24	.114	2.81	.571	.0673	.900	4.07	.09
5003-R	23.6	10.3	.084	2.19	.460	.118	1.05	3.17	.13
5004-R	7.84	4.76	1.37	.407	.103	.0871	1.40	.722	.02
1187-R	14.1	5.13	.119	2.97	.385	.0313	1.97	2.14	.05
1189-R	10.6	7.40	.090	2.48	.394	.0522	1.85	1.23	.05
1194-R	13.1	4.79	.078	1.58	.693	.0385	1.19	2.04	.03
2005-R	14.3	13.3	3.29	3.19	.422	.695	.755	1.63	.02
2006-R	15.6	10.7	3.19	3.18	.420	.761	.750	2.33	.06
2007-R	9.16	8.74	20.4	9.52	.166	2.12	.336	2.40	.18
2008-R	26.1	6.31	.169	1.98	.547	.0514	1.24	4.53	<.01
2009-R	24.1	8.77	.061	3.14	.565	.0513	1.12	3.58	.05
2010-R	24.5	12.8	.584	2.46	.314	2.28	1.02	3.83	.20
3001-R	8.61	4.03	.081	1.34	.126	.0574	2.82	.647	.03
3002-R	.625	1.12	.022	.0355	.0034	.0188	<.003	.102	<.01
3003-R	.592	2.82	.865	.0804	.0029	.0150	<.003	.118	.52
3004-R	.464	3.98	.048	.0277	.0033	.0536	<.003	.075	<.01
3005-R	1.95	38.5	.003	.0325	.0232	.0091	.019	.465	<.01
3006-R	4.60	6.28	2.16	1.07	.0545	.124	.185	.903	.07
5005-R	4.71	1.96	.774	.216	.0435	.0813	1.72	.405	.01
5006-R	19.3	8.64	.102	2.42	.416	.142	1.30	3.11	.09
5007-R	9.56	4.65	.470	1.24	.356	.0610	2.09	1.05	.04
5008-R	22.7	8.03	.168	2.38	.423	.105	1.21	3.66	.15



WO NO:80-0457 ANALYSTS DATE: 09/07/80 MATRIX: HF

FILE:T0-0457

SAMPLE ID	HF PPM	CD PPM	CR PPM	CO PPM	CU PPM	PH PPM	NI PPM	AG PPM
1146-R	2.0	<7	385	31	14.9	<5	68	<5
2001-R	1.2	<7	2240	40	27.4	35	26	<5
2002-R	.7	<7	1890	57	27.7	30	44	<5
2003-R	.9	<7	1180	46	68.1	<5	57	<5
2004-R	2.1	<7	322	46	45.5	15	95	<5
5001-R	2.4	<7	178	30	35.7	<5	78	<5
5002-R	2.0	<7	414	25	30.1	500	71	<5
5003-R	2.4	<7	341	24	33.9	<5	73	<5
5004-R	.7	7	1090	26	23.2	<5	36	<5
1107-R	1.3	<7	1120	28	7.1	<5	53	<5
1189-R	.6	<7	1700	36	23.1	15	60	<5
1194-R	1.5	<7	1130	29	9.1	<5	41	<5
2005-R	1.2	<7	502	38	47.6	10	88	<5
2006-R	1.6	<7	576	33	82.0	20	77	<5
2007-R	.9	10	84.9	17	5.1	70	32	<5
2008-R	3.5	<7	369	<4	8.1	10	40	<5
2009-R	2.5	<7	189	18	25.1	<5	58	<5
2010-R	2.9	<7	82.7	67	57.9	5	118	<5
3001-R	.4	<7	1120	23	9.5	25	37	<5
3002-R	.1	36	1080	23	833	41000	13	462
3003-R	.1	442	887	17	2000	10000	15	493
3004-R	.2	43	4560	64	9560	17200	47	263
3005-R	.4	<7	1100	152	94.3	1450	152	12
3006-R	.7	<7	1250	25	37.6	430	39	<5
5005-R	.2	<7	1580	24	8.9	165	17	<5
5006-R	2.1	<7	455	31	25.8	40	64	<5
5007-R	.6	<7	1240	31	2.4	75	39	<5
5008-R	2.5	<7	224	22	32.2	115	58	<5

WD NO: 80-0457 ANALYSIS DATE: 09/07/80 MAINIX: HF

FILE: T0-0457

SAMPLE ID	SR PPM	TH PPM	ZR PPM	V PPM	70 PPM	NO PPM
1146-R	64.3	23	80	100	93	<30
2001-R	41.8	20	56	124	27	40
2002-R	28.4	14	13	99.7	28	30
2003-R	48.9	18	49	103	72	40
2004-R	123	24	94	114	116	30
5001-R	110	22	97	118	112	<30
5002-R	43.3	19	119	120	114	<30
5003-R	115	25	94	113	102	<30
5004-R	44.2	12	22	73.9	34	<30
1187-R	67.8	8	45	104	39	<30
1189-R	43.3	9	33	113	52	<30
1194-R	43.3	28	42	153	36	<30
2005-R	43.0	13	46	111	132	<30
2006-R	121	15	90	106	87	<30
2007-R	274	11	37	45.4	41	<30
2008-R	149	14	99	122	77	<30
2009-R	114	18	93	118	95	<30
2010-R	137	15	81	100	184	30
3001-R	56.7	9	23	75.5	34	<30
3002-R	17.8	<6	<3	72.9	5090	<30
3003-R	64.0	<6	<3	36.3	86800	<30
3004-R	6.2	<6	<3	205	3990	<30
3005-R	13.8	<6	10	48.2	217	<30
3006-R	47.5	<6	10	77.9	86	<30
5005-R	19.2	<6	14	69.1	33	<30
5006-R	40.9	17	75	106	87	<30
5007-R	34.2	12	21	99.9	53	<30
5008-R	139	17	91	97.6	113	<30