NORCEN ENERGY RESOURCES LIMITED

ASSESSMENT REPORT

GEOCHEMICAL PROGRAM

GROUP IV

GOLDEN MINING DISTRICT

BRITISH COLUMBIA

CLAIMS: Pro 9, Cog 12, Cog 13

LOCATION: 45 km south of Golden, British Columbia

LATITUDE: 50° 55' N

LONGITUDE: 116° 59' W

8297
part 3
of 3

L. Smith, P. Geol.
A. Slingsby

TABLE OF CONTENTS

LIST OF MAPS

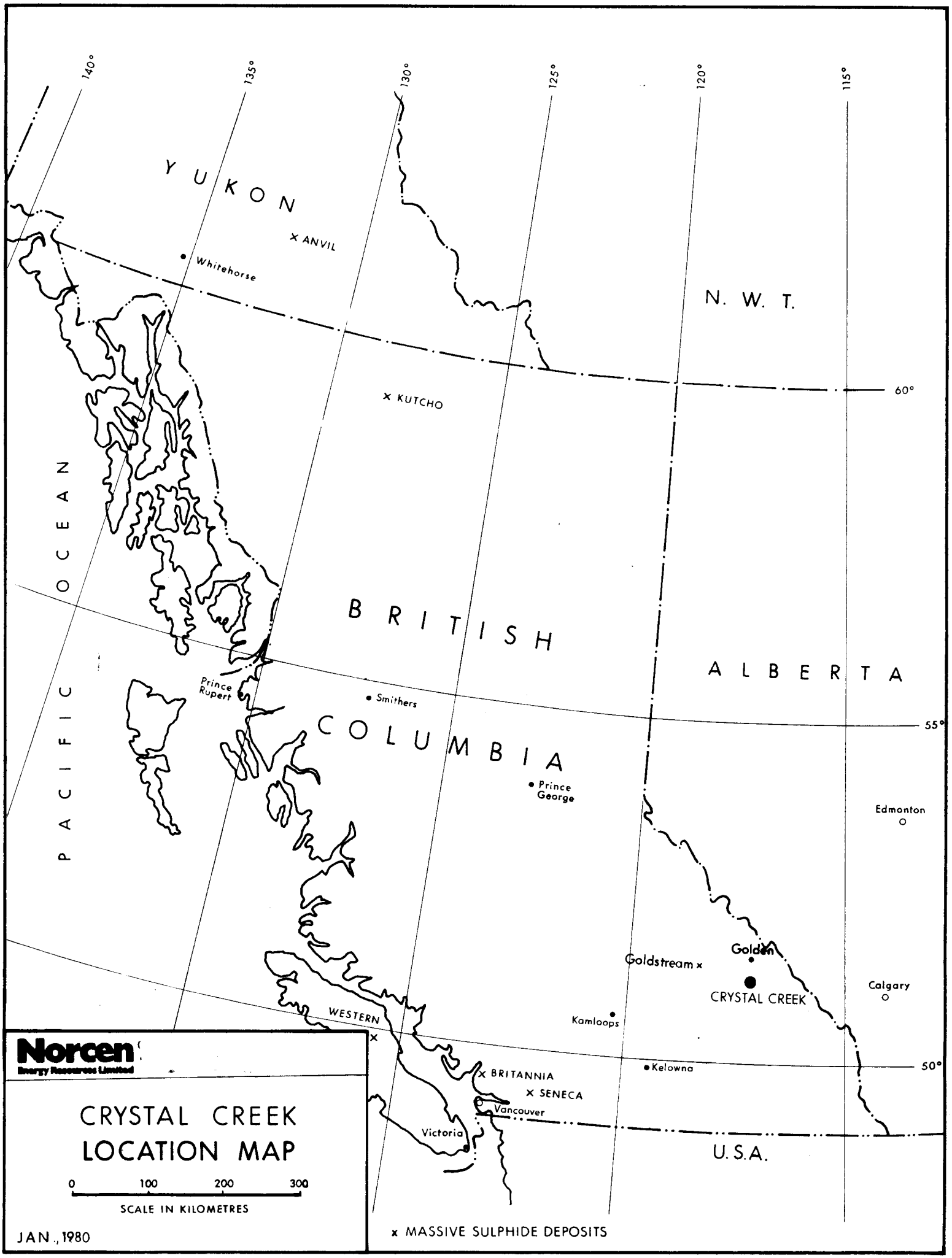
SUMMARY

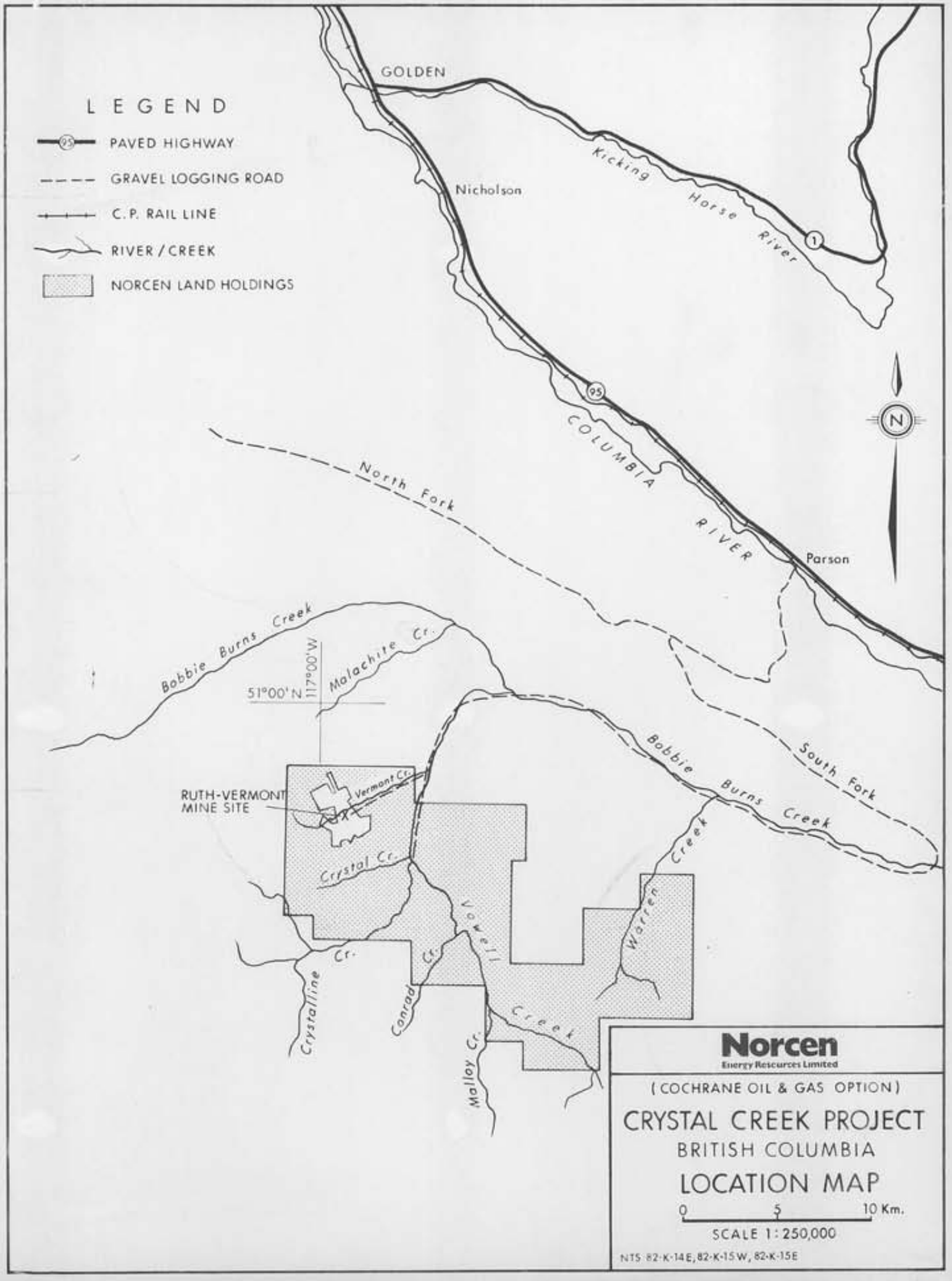
A total of 958 soil samples, 96 stream sediment samples and 26 rock samples were collected during a reconnaissance geochemical survey of the Crystal Creek property. The soil and stream sediments were analyzed for their content of iron, manganese, lead, zinc, copper and silver. Rock samples were analyzed by induction coupled argon plasma spectrometry for nine major oxides and 15 minor and trace elements. Of these samples 38 soil, 1 stream sediment and 1 rock sample were taken within the boundaries of Group IV. 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 10 and 11, 1980.

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.


140°
135°
130°
125°
120°
115°
YUKON
ANVIL
Whitehorse
N. W. T.
KUTCHO
60°
OCEAN
PACIFIC
BRITISH
COLUMBIA
ALBERTA
Prince Rupert
Smithers
Prince George
55°
Edmonton
Golden
Goldstream
CRYSTAL CREEK
Calgary
WESTERN
Kamloops
Kelowna
50°
BRITANNIA
SENECA
Vancouver
Victoria
U.S.A.
Norcen
Energy Resources Limited
CRYSTAL CREEK
LOCATION MAP
0 100 200 300
SCALE IN KILOMETRES
JAN., 1980
x MASSIVE SULPHIDE DEPOSITS


LEGEND
PAVED HIGHWAY
GRAVEL LOGGING ROAD
C.P. RAIL LINE
RIVER / CREEK
NORCEN LAND HOLDINGS
GOLDEN
Nicholson
Kicking Horse River
COLUMBIA RIVER
North Fork
Parson
N
Bobbie Burns Creek
Malachite Cr.
51°00'N
117°00'W
RUTH-VERMONT MINE SITE
Vermont Cr.
Crystal Cr.
Bobbie Burns Creek
South Fork
Warren Creek
Vowell Creek
Crystalline Cr.
Conrad Cr.
Malloy Cr.
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 Pro 9, Cog 12 and Cog 13 claims form part of the Crystal Creek property. They have been grouped together to form Group IV.

Claim Name	Record Number	Recorded Date	# of Units
Pro 9	433	June 18, 1979	6
Cog 12	331	June 18, 1979	16
Cog 13	332	June 18, 1979	16

GEOCHEMICAL SAMPLING

A total of 38 soil samples and 1 stream sediment and 1 rock sample were collected on Group IV. 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. The rock samples were analyzed by induction coupled argon plasma spectrometry for nine oxides; TiO_2, Al_2O_3, MnO, CaO, Na_2O, K_2O, P_2O_5, MgO and Fe_2O_3 and fifteen minor and trace elements.

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 showed the stream sediment sample to be around the mean for all elements excepting silver, which was lower. The soil samples showed no strong anomalies excepting one in copper and one in manganese, not coincident. The values for lead and silver were markedly below the statistical mean.

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 BSc 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 IV.

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

ITEMIZED STATEMENT OF EXPENDITURES

A. SALARIES

A. Slingsby - Project Preparation - April 1, May 13 ..	$ 250 00
P. Callender - Geochemical Sampling - June 10, 11	$ 250 00
K. Collard - Geochemical Sampling - June 10, 11	$ 180 00
L. Hettinga - Geochemical Sampling - June 10, 11	$ 180 00
G. Robb - Geochemical Sampling - June 10, 11	$ 180 00

B. ACCOMMODATION AND MEALS

9 man days @ $41/day	$ 369 00

C. TRANSPORTATION

Helicopter - 2.5 hours @ $408/hour	$1 020 00

D. ASSAYING AND ORTHOPHOTO

38 soil x $6/sample	$ 228 00
1 sediment x $5/sample	$ 5 00
1 rock x $20/sample	$ 20 00
38 unit (photo) x $10/unit	$ 380 00
TOTAL EXPENDITURES	$3 062 00

APPENDIX I

ASSAY CERTIFICATES

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

BARRINGER MAGENTA

AUTHORITY: ART SLINGSBY

28/AUG/80

WORK ORDER # NORCEN

SAMPLE GROUP #4

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

FINAL REPORT

GEOCHEMICAL LABORATORY REPORT

SAMPLE TYPE:
SOIL

SAMPLE NUMBER	AG PPM	CU PPM	FE %	MN PPM	PB PPM
1137	.2	34.	3.1	230.	11.
1138	.5	20.	3.25	200.	16.
1139	N D	30.	3.65	345.	19.
1140	.3	15.	3.25	185.	9.
1141	.2	18.	2.95	815.	20.
1142	.3	19.	3.2	405.	24.
1143	N D	20.	3.18	200.	11.
1144	.1	47.	3.45	680.	38.
1145	N D	105.	3.75	615.	108.
1147	.2	28.	3.1	195.	19.
1148	.3	25.	3.25	515.	29.
1149	.1	17.	3.35	205.	18.
1150	N D	9.	2.3	105.	11.
3224	N D	58.	3.95	650.	42.
3225	N D	28.	3.4	288.	18.
3226	.4	17.	3.5	196.	17.
3227	N D	30.	3.65	298.	19.
3228	.3	37.	3.85	457.	19.
3229	.4	18.	3.3	422.	9.
3230	.1	19.	3.9	202.	11.
3231	.1	43.	4.	269.	21.
3232	N D	27.	3.15	348.	19.
3233	.3	13.	2.95	212.	13.
3234	N D	32.	3.5	194.	28.
3235	.5	33.	3.75	339.	26.
3236	N D	42.	3.4	2151.	101.
3237	N D	28.	3.75	214.	11.
3238	N D	25.	3.65	253.	14.
3239	N D	37.	3.85	367.	21.
3240	N D	16.	3.1	749.	25.

*P=QUESTIONABLE PRECISION; *I=INTERFERENCE; IS=INSUFFICIENT SAMPLE
NA=NOT ANALYZED; ND=NOT DETECTED; MS=MISSING SAMPLE; T=TRACE

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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	AG PPM	CU PPM	FE %	MN PPM	PB PPM
3241	.3	28.	3.85	129.	35.
3242	.7	17.	2.1	105.	18.
3243	.8	15.	1.5	196.	10.
3244	.4	35.	3.65	304.	18.
3245	.3	21.	4.25	163.	11.
3246	.2	50.	3.95	447.	30.
3247	N D	83.	4.25	461.	34.
3248	N D	74.	3.85	441.	42.

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GEOCHEMICAL LABORATORY REPORT

SAMPLE TYPE:
SOIL

SAMPLE NUMBER	ZN PPM
1137	55.
1138	61.
1139	72.
1140	57.
1141	88.
1142	140.
1143	74.
1144	73.
1145	79.
1147	65.
1148	65.
1149	62.
1150	41.
3224	85.
3225	58.
3226	72.
3227	71.
3228	67.
3229	62.
3230	71.
3231	78.
3232	60.
3233	48.
3234	51.
3235	75.
3236	87.
3237	62.
3238	68.
3239	85.
3240	50.

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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
3241	47.
3242	34.
3243	22.
3244	75.
3245	47.
3246	86.
3247	94.
3248	88.

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GEOCHEMICAL LABORATORY REPORT

SAMPLE TYPE:
STREAM SEDIMENT

SAMPLE NUMBER	AG PPM	CU PPM	FE %	MN PPM	PB PPM
S 1028	N D	30.	3.96	375.	18.

*P=QUESTIONABLE PRECISION; *I=INTERFERENCE; IS=INSUFFICIENT SAMPLE
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FINAL REPORT

GEOCHEMICAL LABORATORY REPORT

SAMPLE TYPE:
STREAM SEDIMENT

SAMPLE NUMBER	ZN PPM
S	
1028	64.

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

SAMPLE ID	SR PPM	TH PPM	ZR PPM	V PPM	ZN PPM	MO PPM
1146-R	68.3	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	28	94	114	116	30
5001-R	110	22	97	118	112	<30
5002-R	83.3	19	119	120	114	<30
5003-R	115	25	94	113	102	<30
5004-R	44.2	12	22	73.9	33	<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	83.0	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	97.5	<6	10	77.9	86	<30
5005-R	19.2	<6	14	69.1	33	<30
5006-R	80.9	17	75	106	87	<30
5007-R	38.2	12	21	99.9	53	<30
5008-R	139	17	91	97.6	113	<30

NORCEN BML CALGARY 138C-80,173C-80 BARRINGER MAGENTA LTD. PAGE: 2

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

SAMPLE ID	BE PPM	CD PPM	CR PPM	CO PPM	CU PPM	PB 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	29	33.9	<5	73	<5
5004-R	.7	7	1090	26	23.2	<5	36	<5
1187-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	<3	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	1480	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	2.9	75	39	<5
5008-R	2.5	<7	224	22	32.2	115	58	<5

NORCEN BML CALGARY 138C-80,173C-80 BARRINGER MAGENTA LTD. PAGE: 1

WO NO:80-0457 ANALYSIS DATE: 09/07/80 MATRIX: HF FILE:TO-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	.313	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