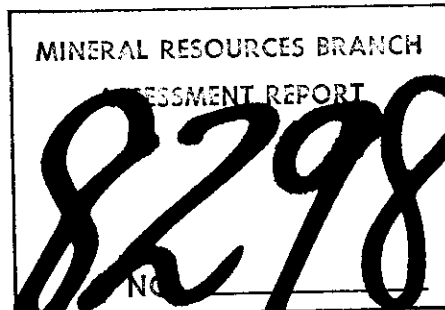


NORCEN ENERGY RESOURCES LIMITED
ASSESSMENT REPORT
GEOCHEMICAL PROGRAM
GROUP XXII
GOLDEN MINING DISTRICT
BRITISH COLUMBIA

CLAIMS: WC2, WC4
LOCATION: 45 km south of Golden, British Columbia
LATITUDE: 50° 54' N
LONGITUDE: 116° 46' W



L. Smith, P. Geol.
A. Slingsby

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Zn Content in Soils (ppm)	Scale 1:20,000
Cu Content in Soils (ppm)	Scale 1:20,000
Fe Content in Soils (%)	Scale 1:20,000
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Rock and Stream Sediment Geochemistry	Scale 1:20,000

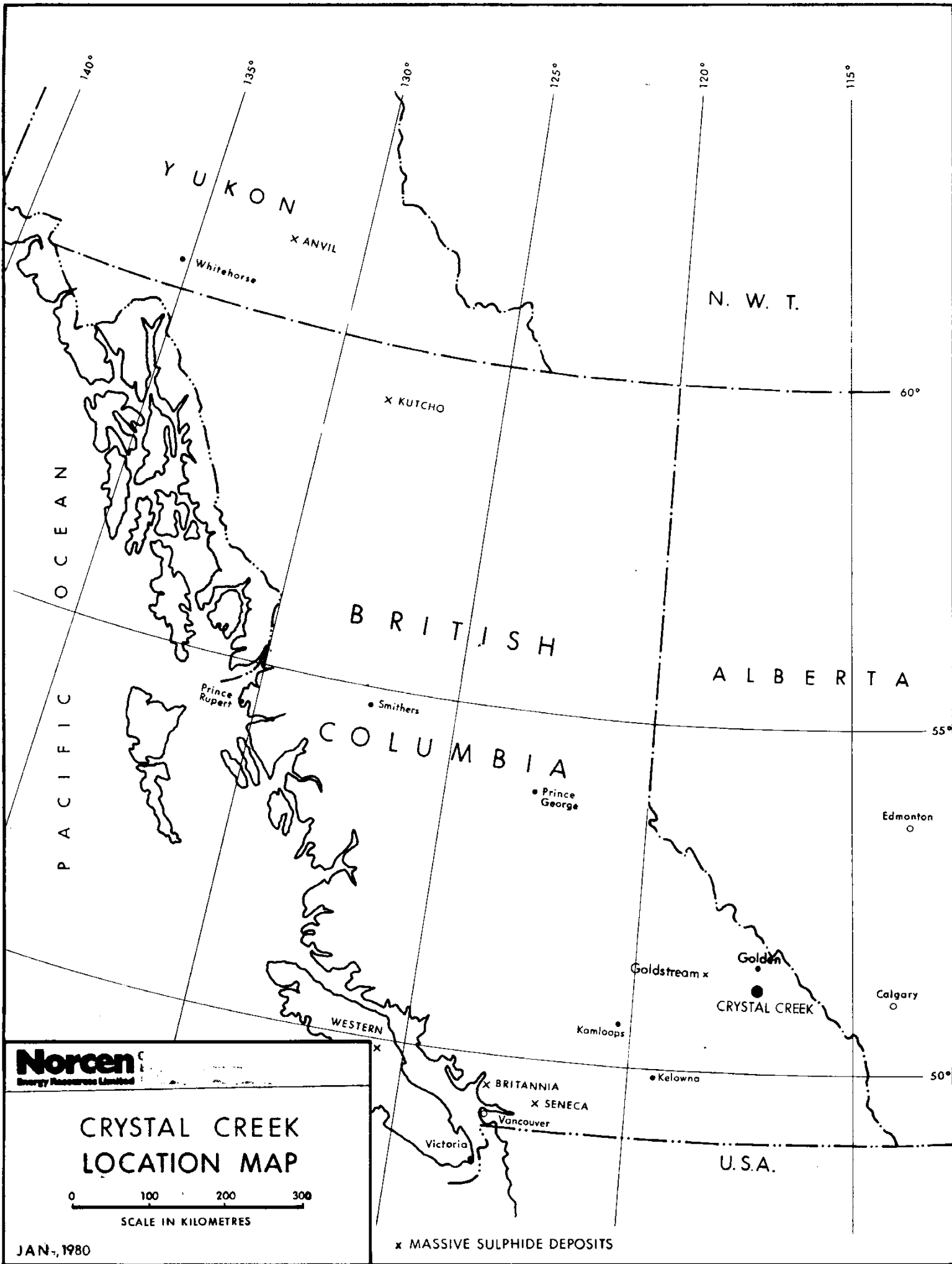
SUMMARY

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 50 soil, 11 stream sediment and 1 rock sample were taken within the boundaries of Group XXII. 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 May 22, June 15 and 16, 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.



YUKON

x ANVIL

• Whitehorse

N. W. T.

60°

x KUTCHO

PACIFIC OCEAN

Prince Rupert

BRITISH COLUMBIA

• Smithers

• Prince George

ALBERTA

55°

Edmonton

Goldstream x

Golden

CRYSTAL CREEK

Calgary

Kamloops

WESTERN

50°

• Kelowna

x BRITANNIA


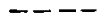
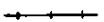


x SENECA

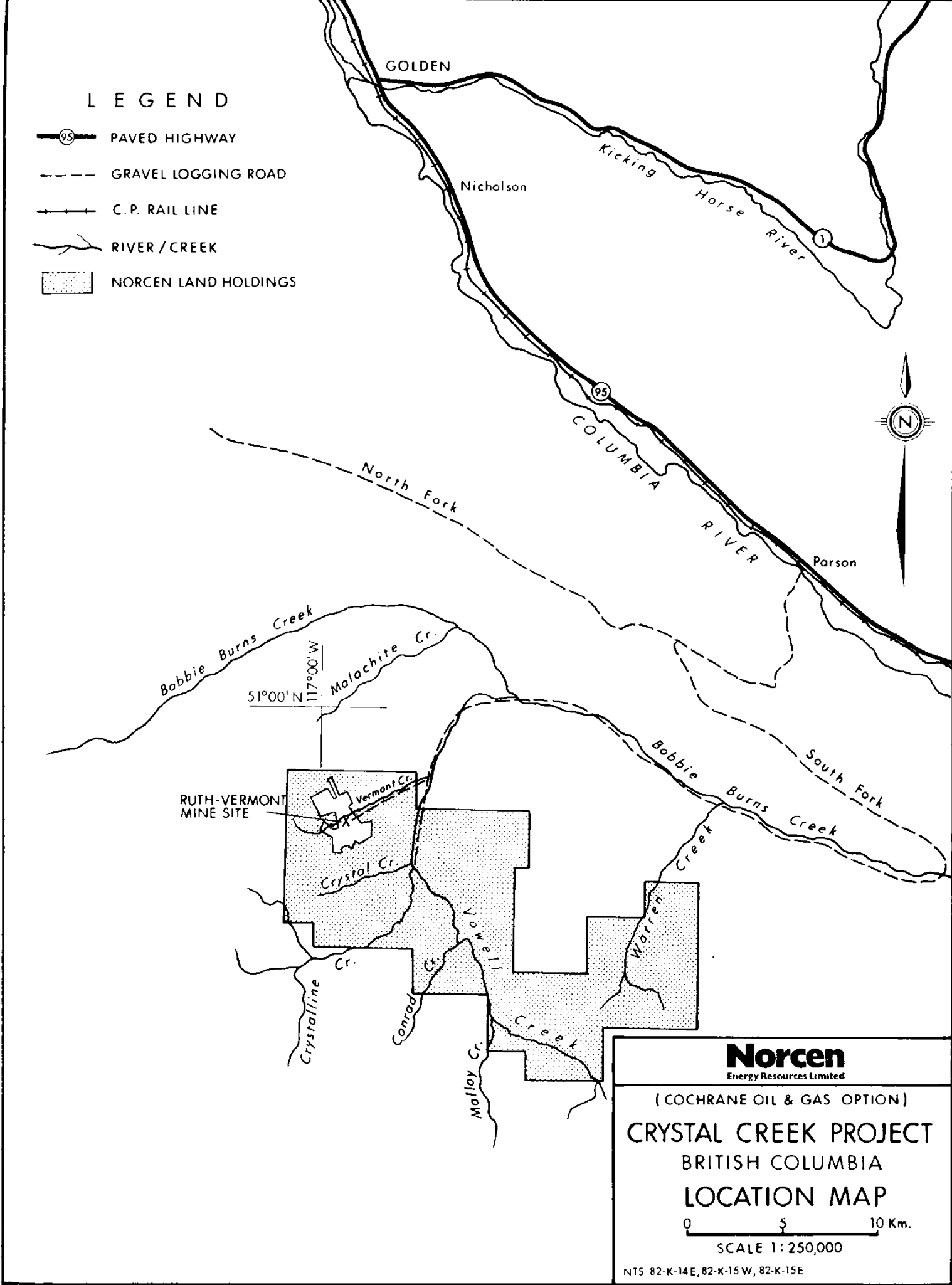
Victoria

Vancouver

U.S.A.

L E G E N D

-  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-15 W, 82-K-15E

CLAIMS STATUS

The WC2 and WC4 claims form part of the Crystal Creek property. They have been grouped together to form Group XXII.

Claim Name	Record Number	Recorded Date	# of Units
WC 2	307	June 18, 1979	20
WC 4	309	June 18, 1979	18

GEOCHEMICAL SAMPLING

A total of 50 soil, 11 stream sediment samples and 1 rock sample were collected on Group XXII. 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 of the soil samples from Group XXII showed that the area was somewhat enriched in metal, particularly iron and manganese. The stream sediment samples average metal contents excepting for zinc which were all above the mean or slightly anomalous.

ITEMIZED STATEMENT OF EXPENDITURES

A. SALARIES

A. Slingsby - Supervision-June 2	\$	125 00
Geochemical Sampling-May 22		125 00
J. Gillian - Project Preparation - April 14		175 00
P. Callender - Geochemical Sampling - May 22, June 16		250 00
L. Hettinga - Geochemical Sampling - May 22, June 16		180 00
D. Meyer - Geochemical Sampling - May 22		90 00
R. Laird - Geochemical Sampling - June 15		125 00
R. Pryde - Geochemical Sampling-May 22, June 15		180 00
K. Collard - Geochemical Sampling - May 22		90 00

B. ACCOMMODATION AND MEALS

11 man days @ \$41/day		451 00
------------------------	--	--------

C. TRANSPORTATION

Truck rental 3 days @ \$23.50/day		70 50
Helicopter 2.1 hr @ \$408/hr.		856 80

D. ASSAYING AND ORTHOPHOTO

50 soils @ \$6/sample		300 00
11 streams @ \$5/sample		55 00
1 rock @ \$20/sample		20 00
38 units (photo) @ \$10/unit		380 00

TOTAL EXPENDITURES		\$3 473 30
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STATEMENT OF QUALIFICATIONS

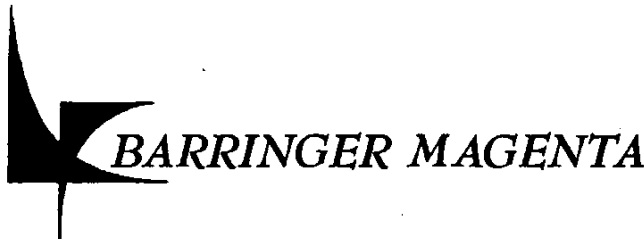
I, Laurie James Smith, of the City of Calgary in the Province of Alberta, do hereby state:

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 XXII.
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



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

02/SEP/80
 PAGE 1 OF 6
 WORK ORDER # NORCEN

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

SAMPLE GROUP #22

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
1175	.2	29.	2.15	332.	12.
1176	.1	57.	6.04	282.	18.
1177	.1	43.	3.44	182.	20.
1178	N D	24.	2.96	240.	13.
1179	.1	16.	3.03	187.	10.
1180	.1	26.	3.92	287.	15.
1181	N D	19.	3.68	295.	14.
1182	N D	27.	3.37	227.	16.
1183	.1	26.	3.38	905.	20.
1184	N D	75.	9.16	207.	136.
1185	.1	45.	2.36	2500.	61.
2011	.1	14.	2.4	500.	8.
2012	N D	21.	3.3	380.	9.
2013	.1	18.	3.1	210.	11.
2014	.2	9.	2.8	140.	5.
2015	N D	19.	4.4	250.	1.
2107	.1	24.	3.75	635.	19.
2108	N D	36.	4.15	545.	29.
2109	.4	9.	1.45	77.	5.
2110	.2	29.	3.65	450.	16.
3042	N D	35.	3.9	600.	24.
3043	.2	30.	2.9	1800.	29.
3044	.2	20.	3.5	170.	19.
3045	.2	18.	3.	230.	16.
3046	N D	28.	3.8	230.	11.
3047	N D	50.	4.1	760.	37.
3048	N D	47.	4.1	1900.	37.
3049	.3	31.	3.3	540.	30.
3050	.3	29.	3.9	350.	20.
3051	.3	27.	3.8	230.	19.

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



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

02/SEP/80
 PAGE 2 OF 6
 WORK ORDER # NORCEN

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

SAMPLE GROUP #22

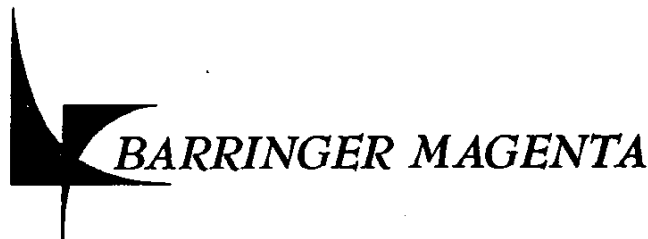
FINAL REPORT

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
3052	.2	28.	3.9	380.	29.
3053	.2	35.	3.9	250.	15.
3054	.2	20.	3.9	250.	13.
5042	.2	40.	2.5	377.	10.
5043	.5	21.	3.35	861.	6.
5085	.3	15.	1.26	185.	4.
5086	.3	20.	1.18	300.	4.
5087	.3	17.	1.65	200.	4.
5088	.2	29.	4.96	780.	8.
5089	.2	28.	3.5	275.	4.
5090	.3	10.	7.54	220.	96.
5091	.1	17.	10.17	315.	26.
5092	.2	24.	5.81	400.	12.
5093	.1	16.	4.42	200.	11.
5094	.1	73.	4.9	375.	23.
5095	N D	42.	3.12	300.	19.
5096	.1	21.	3.7	195.	7.
5097	.1	9.	1.03	70.	7.
5098	.1	18.	2.23	160.	12.
5099	.2	18.	6.08	285.	8.
S					
1033	N D	45.	3.45	335.	24.
1034	N D	35.	2.84	325.	13.
1035	N D	31.	2.38	315.	15.
1036	M S	M S	M S	M S	M S
1037	N D	25.	2.03	217.	10.
1038	N D	38.	3.19	387.	20.
S					
1039	N D	40.	5.05	457.	18.

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BARRINGER MAGENTA LIMITED
 OFFICES & MINERALS
 LABORATORY:
 3750 - 19th ST., N.E., SUITE 105
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AUTHORITY: ART SLINGSBY

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 PAGE 3 OF 6
 WORK ORDER # NORCEN

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

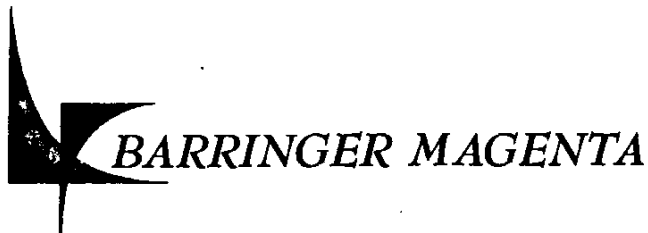
SAMPLE GROUP #22

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
1175	83.
1176	96.
1177	69.
1178	63.
1179	55.
1180	87.
1181	74.
1182	79.
1183	66.
1184	70.
1185	84.
2011	55.
2012	74.
2013	57.
2014	59.
2015	79.
2107	66.
2108	79.
2109	27.
2110	68.
3042	85.
3043	61.
3044	58.
3045	55.
3046	73.
3047	88.
3048	91.
3049	68.
3050	75.
3051	68.



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AUTHORITY: ART SLINGSBY

02/SEP/80
 PAGE 4 OF 6
 WORK ORDER ↓ NORCEN

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

SAMPLE GROUP #22

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
3052	63.
3053	62.
3054	82.
5042	56.
5043	71.
5085	13.
5086	17.
5087	20.
5088	60.
5089	48.
5090	42.
5091	68.
5092	60.
5093	67.
5094	75.
5095	43.
5096	51.
5097	19.
5098	55.
5099	97.

S

1033	104.
1034	73.
1035	79.
1036	M S

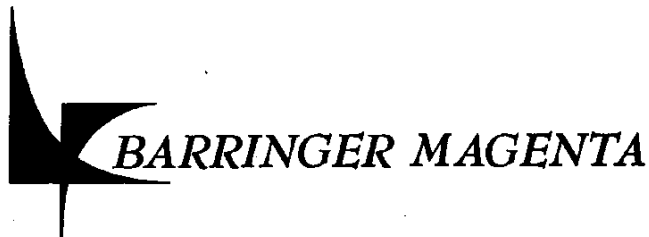
S

1037	56.
1038	90.

S

1039	88.
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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

02/SEP/80
PAGE 3 OF 6
WORK ORDER # NORCEN

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

SAMPLE GROUP #22

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:
STREAM SEDIMENT

SAMPLE NUMBER	AG PPM	CU PPM	FE %	MN PPM	PB PPM
S 1007	N D	20.	3.69	350.	8.
1008	.3	28.	3.71	340.	9.
1009	N D	38.	3.46	435.	15.
1010	.2	27.	4.12	385.	12.
2025	N D	33.	5.07	400.	10.

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



BARRINGER MAGENTA

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

02/SFP/80
PAGE 6 OF 6
WORK ORDER # NORCEN

NORCEN ENERGY RESOURCES
715-5TH AVE. S.W.
CALGARY, ALBERTA
T2E 2X7

SAMPLE GROUP #22

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:
STREAM SEDIMENT

SAMPLE NUMBER	ZN PPM
S	
1007	64.
1008	66.
1009	86.
1010	82.
2025	81.

WO NO: A0-0457 ANALYSIS DATE: 09/07/80 MATRIX: HF

FILE: 10-0457

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	.969	.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	1.05	2.19	.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	7.00	.090	2.08	.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

WO NO180-0457 ANALYSIS DATE: 09/07/80 MATRIX: HF

FILE: T0-0457

SAMPLE ID	HF PPM	CO PPM	CR PPM	CG PPM	CU PPM	PH PPM	NI PPM	AG PPM
1146-R	2.0	<7	345	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	2.0	<7	178	30	35.7	<5	78	<5
5002-R	2.0	<7	414	25	30.1	500	71	<5
5003-R	2.0	<7	341	24	45.9	<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
1190-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	.8	<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	83	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

WO M0280-0457 ANALYSIS DATE: 09/07/80 MATRIX: HF

FILE:T0-0457

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	125	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	34	<30
1187-R	67.8	8	45	104	39	<30
1189-R	45.4	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	278	11	37	45.4	41	<30
2008-R	140	14	94	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	80.9	17	75	106	87	<30
5007-R	34.2	12	21	99.9	53	<30
5008-R	139	17	91	97.6	113	<30