Assessment Report on Geochemistry

Cleo, Clair and PMR Claims
St. Mary Lake Area

Fort Steele Mining Division
British Columbia

NTS Map 82F/09
49°40' N. Latitude
116°15' W. Longitude

Owner:
Abitibi Mining Corp.
1000-675 W. Hastings Street
Vancouver, B.C., V6B 1N2

Operator:
Abitibi Mining Corp.
Cranbrook Project
3380 Wilks Road
P.O. Box 215
Cranbrook, B.C., V1C 4H7

Report By:
Robert Woodfill, Ph.D.
Cranbrook Project
3380 Wilks Road
P.O. Box 215
Cranbrook, B.C., V1C 4H7

February 18, 1997

WP7 File: Assrpt.8

Table of Contents

List of Illustrations

List of Appendix

1.00 INTRODUCTION

1.10 Location and Access

The Cleo, Clair and PMR mineral claims collectively referred to as the Cleo claim block are located approximately 17 km due west of the town of Kimberley, B.C. See the index map (figure 1) for the location of the claim block. The claims are located near the headwaters of Matthew, Pyramid and Alki Creek and range in elevation of 1036 meters near St. Mary Lake to 2655 meters at Pyramid Peak.

In 1996 access to the property was severely limited because of the bridge out on the west fork of Matthew Creek near (5 500 600 m N., 564 000 m E.). No secondary roads extend into the area from the St. Mary Lake road along the southern border of the area.

1.20 History

Prospecting and mining in the area for high-grade polymetallic veins of Ag-Pb-Zn since 1897 has taken place at the Warren and Wolmer mines where over 25 men worked under Captain Petty (EMPR Annual Report 1897, p. 525, EMPR Annual Report 1898, p. 1187). The reader is referred to Minfile Number: 082FNE064. In 1996 Abitibi Mining Corp. Undertook to re-evaluate the entire area for Sullivan-type deposits.

1.30 Physiography

The property is situated west of the Rocky Mountain Trench within the Purcell Mountains. Topography is extreme with high glaciated peaks and cirques. Within the property area elevations range from 1000 to 2600 meters.

Vegetation cover varies from immature to mature forests of larch, pine, spruce and fir along the lower elevations along the St. Mary River drainage to unforested alpine meadows at the higher elevations. Little or no logging is known in the area.

1.40 Property

The Cleo claim block consisting of 191 claim units and 31 claims (figure 2, in pocket) is a contiguous block of claims owned by Abitibi Mining corp., 1000-675 W. Hastings Street, Vancouver, B.C. with the following subdivisions:

Claim Name	Tenure No.	No. Units	Current Expiry Date
Cleo 1	340446	1	16-Sep-98
Cleo 2	340447	1	16-Sep-98
Cleo 3	340435	1	16-Sep-98

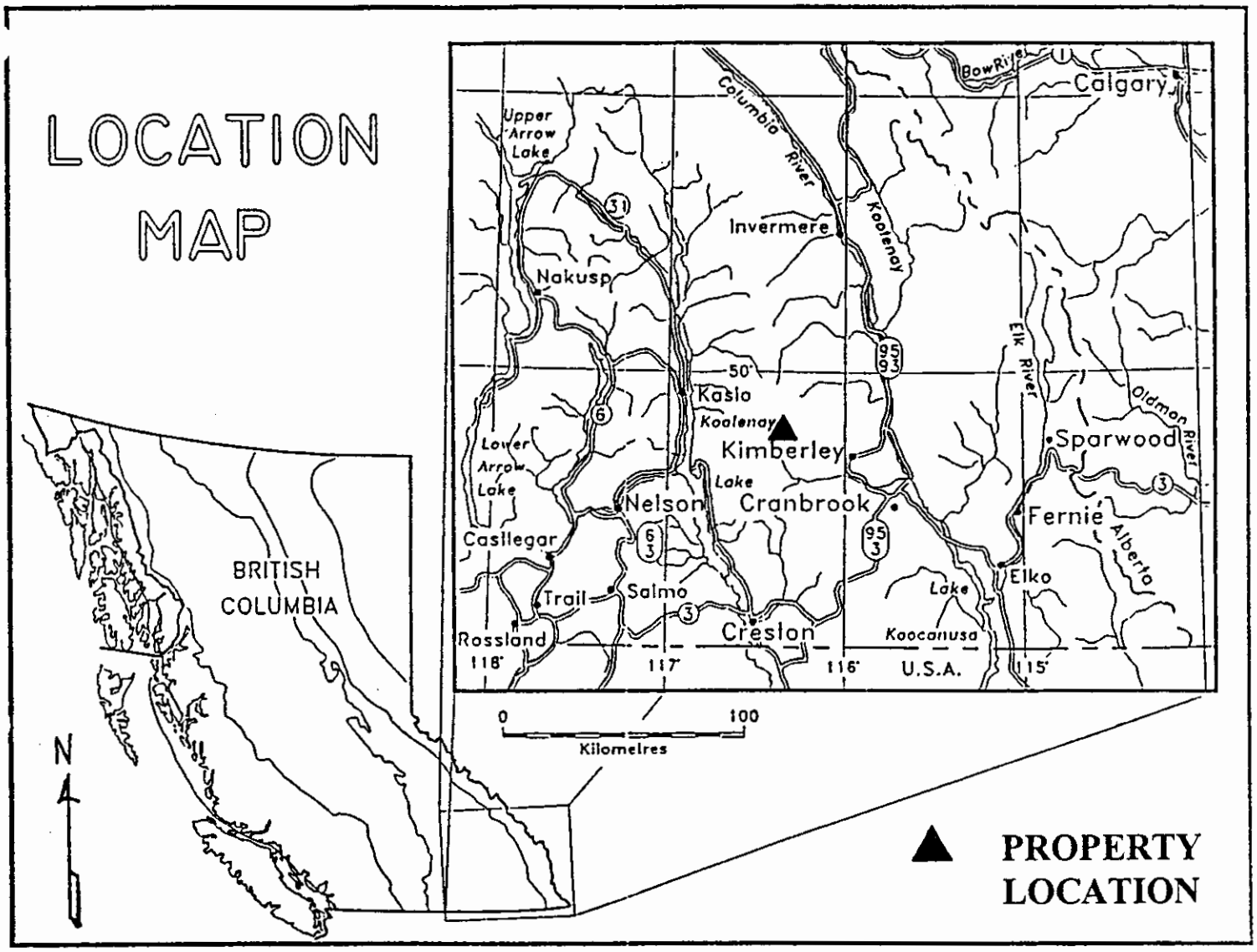


Figure 1.--Location Map.

Claim Name	Tenure No.	No. Units	Current Expiry Date
Cleo 4	340446	1	16-Sep-98
Cleo 5	340437	1	17-Sep-98
Cleo 6	340438	1	17-Sep-98
Cleo 7	340439	1	17-Sep-98
Cleo 8	340440	1	17-Sep-98
Cleo 20	347510	20	27-Jun-98
Cleo 21	347511	20	27-Jun-98
Cleo 22	346539	20	05-Jul-98
Cleo 24	346540	1	28-May-98
Cleo 25	346541	1	28-May-98
Cleo 26	346542	1	28-May-98
Cleo 27	346543	1	28-May-98
Cleo 28	346544	18	31-May-98
Cleo 29	346545	18	04-Jun-98
Clair 6	209770	15	27-Apr-98
PMR 45	348089	16	16-Jul-98
PMR 47	348091	18	10-Jul-98
PMR 49	348093	1	09-Jul-99
PMR 50	348094	1	09-Jul-99
PMR 51	348095	1	09-Jul-99
PMR 52	348096	1	09-Jul-98
PMR 53	348097	1	11-Jul-98
PMR 54	348098	1	11-Jul-98
PMR 55	348099	1	11-Jul-98
PMR 56	348100	1	11-Jul-98
PMR 57	348101	1	11-Jul-98
PMR 58	348102	1	09-Jul-98
PMR 59	348103	1	09-Jul-98

1.50 Scope of Present Program

Because of the remoteness and total lack of roads into the area, it was decided that the 1996 program should consist of a helicopter supported reconnaissance mapping and stream sediment sampling program. For 3-days (September 9-11) four samplers from CJJ Exploration Contracts were helicopter lifted into drainages to collect stream sediment samples. During the same 3-day period two Kennecott geologists and two prospectors were helicopter lifted into the area to preform regional mapping and rock sampling. 133 stream sediment and rock samples were collected and approximately 4 square km were mapped.

2.00 GEOLOGY

2.10 Regional Geology

The area of the Cleo claim block is underlain by Precambrian Purcell Supergroup rocks of the Aldridge Formation (figure 3). These are fine-grained clastics that include impure quartzites, siltstones and argillites. The rocks have been metamorphosed to lower greenschist facies and have been intruded by a series of basaltic composition sills and dikes.

2.20 Property Geology

Except for Leech's (1957) St. Mary Lake, 1:50,000 scale, Geological Survey of Canada, Map 15-1957, no published maps are available for the area. Leech (1957) shows the area to lie south of the east-west-trending Kimberley fault and be underlain by Lower, Middle and Upper Aldridge rocks which have been intruded by Moyie intrusives.

3.00 STREAM SEDIMENT SURVEY

3.10 Sampling Procedure

For 3-days between September 9-11, 1997 Mountain High Helicopters, Marysville, B.C. lifted four CJJ Exploration Contracts samplers (Chris Johansen, Carl Johansen, Todd McLaughlin and Allan Gold) from a base station near St. Mary Lake to selected drainages in the area. The samplers maintained communication with the helicopter and base station using 2-way radios rented from Kootenay Communication, Ltd., Cranbrook, B.C. The samplers collected 10-20 pound stream sediment sample at available sites along the selected drainage. Sometimes previously selected sample sites were unavailable because of talus or forest cover. The samplers and samples were collected by helicopter at the end of the day and returned to the base station.

To adequately sample the claim block some stream sediment samples were collected outside the claim boundary from streams that drain parts of the claim block where no stream sediment samples could be collected.

3.20 Analytical Procedure

All 119 stream sediment samples were shipped to Bondar Clegg in Vancouver, B.C. for analysis. Bondar Clegg dried, sieved to -80, crushed/split and pulverized the samples and preformed a 34 element (Ag, Cu, Pb, Zn, Mo, Ni, Co, Cd, Bi, As, Sb, Fe, Mn, Te, Ba, Cr, V, Sn, W, La, Al, Mg, Ca, Na, K, Sr, Y, Ga, Li, Nb, Sc, Ta, Ti and Zr) ICP-Atomic Emission Spectroscopy and 30 gram fire gold assay on the 119 samples. A copy of all the analytical results and statistical parameters for the 119 stream sediment samples is given as Appendix 7.00.

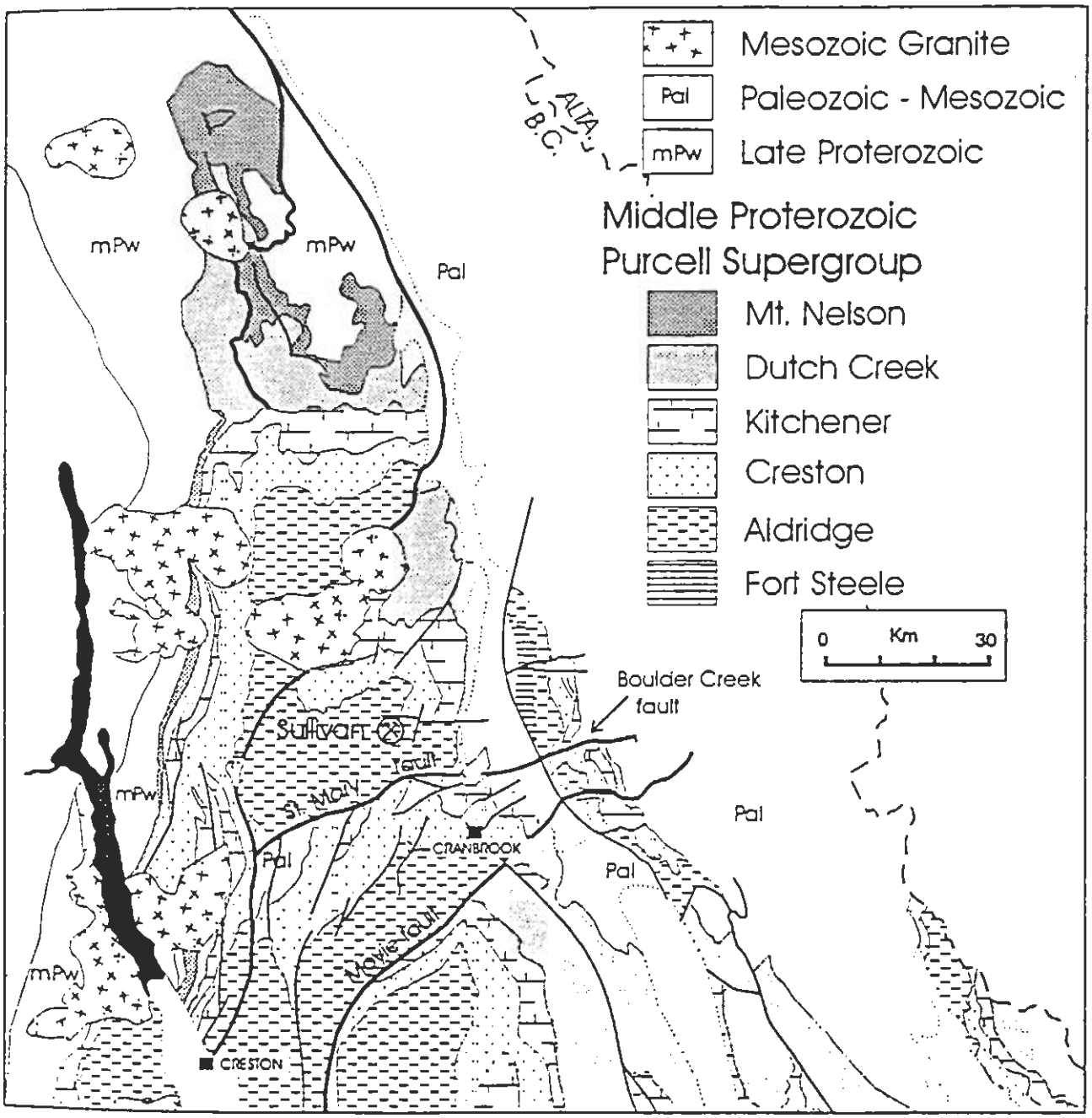


Figure 3.--Regional geology map of the Purcell Supergroup, Southeastern British Columbia.

3.30 Significant Results

A review of all the 4165 data results (119 samples x 34 elements each plus 119 samples x 1 gold assay each), shows only the lead, zinc, copper and gold values to be significant.

Figure 4 (in pocket) is a 1:20,000 scale map showing the major drainages sampled, claim outline, sample locations and assay results for Pb, Zn, Cu and Au.

3.40 Summary of Stream Sediment Results

3.41 Gold Results. Three samples contained IS (Insufficient Sample) for a gold analysis. Of the 116 samples the results ranged from a minimum of 5 ppb to a maximum of 43 ppb. The average was 7.04 ppb and the standard deviation was 7.17 ppb. The highest value of 43 ppb in North Mathew Creek will have to be verified during the 1997 program.

3.42 Silver Results. Of the 119 samples the results ranged from a minimum of 0.2 ppm to a maximum of 0.7 ppm. The average was 0.21 ppm and the standard deviation was 0.05 ppm. These results show no significant anomalies.

3.43 Copper Results. Of the 119 samples the results ranged from a minimum of 5 ppm to a maximum of 212 ppm. The average was 52.2 ppm and the standard deviation was 36.2 ppm. Anomalous areas are in upper Pyramid Creek and Matthew Creek.

3.44 Lead Results. Of the 119 samples the results ranged from a minimum of 7 ppm to a maximum of 106 ppm. The average was 36.7 ppm and the standard deviation was 18.5 ppm. Anomalous areas are in Upper Pyramid and Matthew Creek.

3.45 Zinc Results. Of the 119 samples the results ranged from a minimum of 15 ppm to a maximum of 278 ppm. The average was 113 ppm and the standard deviation was 48.1 ppm. Anomalous areas are in upper Pyramid and Matthew Creek.

4.00 GEOLOGY

Three days were spent by Kennecott geologist, Chris Hemstad, and two prospectors, Tom and Mike Kennedy, mapping, sampling and prospecting in the Pyramid basin area near (5,504,000m N., 552,000m E.) Results of their work is given on Figure 5 (Geologic Map at 1:10,000 scale, in pocket) and a Preliminary Geologic Report by Chris Hemstad (Appendix 7.10).

A rock sample list with hand sample description and reason for analysis is given as Appendix 7.20. A complete listing of rock samples with analytical results is given as Appendix 7.30.

4.10 Summary of Results

Mapping shows a series of Moyie intrusives cutting Middle Aldridge rocks that have been sheared along N-trending fault zones in the area. Faulting has produced a series of N-trending folds. Alteration consists of biotite, muscovite, chlorite, quartz-albite and tourmaline. Mineralization is primarily associated with quartz veins. Economic minerals associated with the veins are arsenopyrite, galena and sphalerite. Further work in the area should concentrate on defining a detailed structural and stratigraphic framework. The origin of the tourmaline alteration should be explored in more detail. Detailed mapping in the area should be conducted at a scale of either 1:10,000 or 1:5,000.

5.00 STATEMENT OF COSTS

Kennecott Geologist (Chris Hemsted)		
3 days @ $300/day	$900	
Vehicle 3 days @ $50/day	150	
Per Diem 3 days @ $50/day	150	
Prospectors (Tom and Mike Kennedy)		
3 days @ $250/day	750	
Vehicle 3 days @ $50/day	150	
Per Diem 3 days @ $100/day	300	
Geological Mapping		$2400
133 Samples @ $20/sample (shipping, pulp storage	2660	
CJJ Samplers (3-days x 4 people x $250/day/person	3210	
Geochemical 96/133 on claim drainage		4237
Mountain High Helicopters	5814	
Kootenay Communications	171	
Draft Drainage Map	175	
Support		6160
Geological Supervision and Report Preparations		
Robert Woodfill (3 days @400/day)	1200	
3 days Vehicle @50/day	150	
3 days Per Diem @50/day	150	
2 days report writing @ $400/day	800	
Glen Rodgers 1 day @ $250/day	250	
Supervision		2550
Total		$15347

6.00 STATEMENT OF QUALIFICATIONS

I, Glen Rodgers, certify that:

1. I am a graduate of the University of Manitoba School of Geological Engineering and registered with the British Columbia Association of Professional Engineers and Geoscientists as a P. Eng.

2. I have based this report on work done by myself during 1996 on the Cleo claim block including supervision of the project.

3. I do not expect to receive any share consideration as a result of writing this report.

4. I have practiced my profession continuously over the last 20 years as an exploration geologist working in Canada, Alaska and Central America.

Signed: _____

Date: Feb. 20/97

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. M. RODGERS

I, Robert Woodfill, certify that:

1. I am a Ph.D. g raduate of Purdue University in structural geology and a M.S. graduate of the University of Wyoming in geophysics. I am a registered Professional Geologist in the State of Wyoming.

2. I have based this report on work done by myself during 1996 on the Cleo claim block.

3. I do not expect to receive any share consideration as a result of writing this report.

4. I have practiced my profession continuously over the last 24 years as an exploration geologist/geophysicist working in the United States, Alaska, Canada, Mexico, Australia and Africa.

PROFESSIONAL GEOLOGIST
ROBERT D. WOODFILL
PG-0157
WYOMING

Signed: Robert Woodfill

Date: Feb 20, 1997

Appendix 7.00 Listing of Stream Sediment Analytical Results and Statistical Parameters.

	Au	Ag	Cu	Pb	Zn	ZnOL	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te
Sample #	ppb	ppm	ppm	ppm	ppm	pct	ppm	ppm	ppm	ppm	ppm	ppm	ppm	pct	ppm	ppm
SP-25404	5	0.2	29	34	94	-9	4	14	10	0.2	5	146	5	2.64	389	10
SP-25405	5	0.2	20	39	147	-9	3	20	11	0.2	5	53	5	2.16	788	10
SP-34501	5	0.2	27	27	80	-9	3	10	9	0.2	5	5	5	2.25	1033	10
SP-34502	42	0.2	75	31	108	-9	4	24	17	0.2	5	5	5	3.35	554	10
SP-34503	5	0.2	65	23	92	-9	3	20	14	0.2	5	5	5	3.38	462	10
SP-34504	5	0.2	42	48	74	-9	4	16	24	0.2	5	6	5	2.76	962	10
SP-34505	5	0.2	31	31	149	-9	4	17	15	0.2	8	5	5	2.78	801	10
SP-34506	5	0.2	42	32	140	-9	3	17	15	0.2	5	9	5	3.25	1548	10
SP-34507	5	0.2	29	58	124	-9	3	17	12	0.2	5	17	5	2.86	624	10
SP-34508	5	0.2	59	35	108	-9	4	38	32	0.2	5	5	5	3.78	707	10
SP-34509	5	0.2	72	35	112	-9	3	18	13	0.2	5	10	6	2.78	506	10
SP-34510	5	0.2	41	31	113	-9	4	28	18	0.2	5	5	5	3.55	595	10
SP-34511	5	0.2	45	25	100	-9	3	19	14	0.2	5	5	5	3.25	497	10
SP-34512	5	0.2	82	65	176	-9	5	56	24	0.2	5	162	5	4.6	1044	10
SP-34513	5	0.2	83	50	148	-9	5	138	42	0.2	5	200	5	6.41	1754	10
SP-34514	5	0.2	75	35	88	-9	3	66	22	0.2	5	9	5	3.4	498	10
SP-34515	IS	0.2	98	59	176	-9	3	28	17	0.3	5	107	5	2.62	964	10
SP-34516	5	0.2	58	72	160	-9	4	55	21	0.2	5	129	5	4.2	754	10
SP-34517	5	0.2	79	75	162	-9	4	45	20	0.2	5	174	6	3.48	879	10
SP-34518	5	0.2	70	71	129	-9	4	33	17	0.2	5	129	9	2.99	604	11
SP-34519	5	0.2	8	13	24	-9	2	5	4	0.2	8	36	5	0.6	186	10
SP-34520	5	0.2	5	8	20	-9	<1	4	2	0.2	5	27	5	0.43	134	10
SP-34521	5	0.2	5	8	17	-9	<1	3	2	0.2	5	26	5	0.4	123	10
SP-34522	5	0.2	5	7	15	-9	<1	4	2	0.2	5	24	5	0.39	124	10
SP-34523	40	0.2	6	7	17	-9	<1	3	2	0.2	5	24	5	0.38	117	10
SP-34524	5	0.2	34	21	85	-9	2	13	10	0.2	5	7	8	2.47	435	10
SP-34525	12	0.2	25	21	84	-9	2	11	10	0.2	5	7	7	2.12	684	10
SP-34526	5	0.2	40	24	74	-9	2	13	14	0.2	5	5	5	1.9	1386	10
SP-34527	5	0.2	59	27	66	-9	2	14	14	0.2	5	5	7	2.4	771	10
SP-34528	5	0.2	41	24	80	-9	3	16	12	0.2	5	5	9	2.81	392	10
SP-34529	5	0.2	35	19	50	-9	2	10	10	0.2	5	5	6	1.77	406	10
SP-34530	5	0.2	37	34	228	-9	2	29	16	0.2	5	5	8	2.41	872	10
SP-34531	5	0.2	67	21	99	-9	2	15	11	0.2	5	22	6	1.9	416	10
SP-34532	5	0.2	27	20	75	-9	2	14	8	0.2	5	13	5	2.11	347	10
SP-34533	20	0.2	51	20	80	-9	2	23	12	0.2	5	5	5	2.16	376	10
SP-34534	6	0.2	26	39	82	-9	2	20	9	0.2	5	44	8	2.11	795	10
SP-34535	6	0.2	45	26	81	-9	3	19	11	0.2	5	5	8	2.53	459	10
SP-34536	5	0.2	18	62	62	-9	2	12	7	0.2	5	38	5	1.69	334	10
SP-34537	5	0.2	29	22	78	-9	2	14	10	0.2	5	26	5	2.23	394	10
SP-34538	5	0.2	41	21	59	-9	2	16	9	0.2	5	5	7	1.96	306	10
SP-34539	5	0.2	55	87	278	-9	3	45	28	0.2	5	15	9	3.42	2050	10
SP-34540	5	0.2	129	64	256	-9	3	80	43	0.2	5	25	10	4.24	2157	10
SP-34541	5	0.2	44	106	199	-9	3	44	35	1.8	5	23	11	2.76	2181	10
SP-34542	5	0.2	31	19	79	-9	2	14	10	0.2	5	21	6	2.27	424	10
SP-34543	5	0.2	26	27	78	-9	2	15	8	0.2	5	94	5	2.29	550	10

	Au	Ag	Cu	Pb	Zn	ZnOL	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te
Sample #	ppb	ppm	ppm	ppm	ppm	pct	ppm	ppm	ppm	ppm	ppm	ppm	ppm	pct	ppm	ppm
SP-34544	IS	0.2	29	21	75	-9	2	13	9	0.2	5	10	5	2.22	362	11
SP-34545	5	0.2	32	71	169	-9	2	12	11	2	5	5	5	1.76	2271	10
SP-34546	5	0.2	22	19	92	-9	3	18	11	0.2	5	6	5	3.08	414	10
SP-34547	5	0.2	33	19	75	-9	2	14	9	0.2	5	15	6	2.06	332	10
SP-34548	5	0.2	19	20	98	-9	3	18	9	0.2	5	5	5	2.92	375	10
SP-34549	5	0.2	24	21	104	-9	4	21	13	0.2	5	16	5	5.66	447	11
SP-34550	12	0.2	23	30	134	-9	4	23	17	0.2	5	5	6	3.44	608	10
SP-34551	15	0.2	22	21	122	-9	4	19	13	0.2	5	44	7	3.78	441	10
SP-34552	6	0.2	135	47	162	-9	4	73	28	0.2	5	34	11	3.97	550	10
SP-34553	5	0.2	74	40	130	-9	4	50	18	0.2	5	37	10	3	409	10
SP-34554	5	0.3	91	35	102	-9	4	21	21	4	5	581	8	4.06	916	10
SP-34555	7	0.2	135	58	248	-9	4	29	32	15	5	1189	8	5.26	1407	10
SP-34556	5	0.2	136	60	188	-9	3	21	21	0.5	5	159	5	3.39	925	10
SP-34557	5	0.2	113	40	140	-9	3	20	18	3.3	6	464	6	3.27	900	10
SP-34558	5	0.2	150	27	111	-9	3	24	20	0.2	5	124	7	3.33	671	10
SP-34559	5	0.2	98	31	102	-9	3	21	16	0.2	5	123	5	3.03	576	10
SP-34560	5	0.2	50	32	104	-9	3	22	15	0.2	5	74	5	2.72	516	10
SP-34561	5	0.2	67	40	105	-9	3	24	16	0.2	5	93	8	2.94	569	10
SP-34562	6	0.2	63	28	90	-9	2	18	11	0.2	5	11	8	2.4	403	10
SP-34563	26	0.2	70	21	64	-9	2	17	12	0.2	5	19	5	2.26	348	10
SP-34564	5	0.2	35	46	121	-9	3	26	15	0.2	5	24	5	2.59	620	10
SP-34565	43	0.7	95	24	83	-9	3	18	15	0.2	5	16	5	2.34	625	10
SP-34566	18	0.2	42	43	115	-9	3	41	19	0.2	5	17	8	2.88	723	10
SP-34567	5	0.2	110	47	137	-9	3	30	28	0.2	5	90	7	3.96	881	10
SP-34568	5	0.2	45	52	90	-9	3	19	13	0.2	5	14	5	2.56	575	10
SP-34569	5	0.2	46	31	89	-9	3	20	13	0.2	5	13	5	2.4	538	10
SP-34570	5	0.2	41	23	89	-9	2	18	12	0.2	5	11	5	2.72	466	10
SP-34571	5	0.2	51	21	77	-9	3	18	12	0.2	5	7	5	3.1	414	10
SP-34572	5	0.2	44	17	55	-9	1	13	10	0.2	5	10	5	2	312	10
SP-34573	5	0.2	48	18	50	-9	1	14	10	0.2	5	15	5	1.95	300	10
SP-34574	5	0.2	38	18	51	-9	1	13	11	0.2	5	16	5	2.3	331	10
SP-34575	5	0.2	28	37	38	-9	3	4	3	0.2	5	13	6	1.8	63	10
SP-34576	12	0.2	47	49	176	-9	4	31	14	1.7	5	239	5	2.15	1045	10
SP-34577	5	0.2	45	32	118	-9	4	26	16	0.2	5	112	5	2.58	563	10
SP-34578	5	0.2	39	24	73	-9	3	18	11	0.2	5	83	5	2.34	512	10
SP-34579	5	0.2	67	40	129	-9	3	30	20	0.2	5	142	7	2.66	700	10
SP-34580	5	0.2	68	43	165	-9	4	39	26	0.2	5	144	6	3.23	860	10
SP-34581	5	0.2	49	42	162	-9	4	35	28	0.2	5	107	5	2.89	766	10
SP-34582	5	0.2	212	69	192	-9	5	56	34	0.2	5	255	5	5.04	1055	10
SP-34583	5	0.2	190	60	192	-9	5	56	32	0.2	5	205	7	4.65	867	10
SP-34584	5	0.2	115	50	173	-9	5	46	29	0.2	5	264	5	3.81	952	10
SP-34585	5	0.2	46	96	140	-9	4	25	26	0.2	5	49	5	3.36	1015	10
SP-34586	5	0.2	90	68	173	-9	5	55	49	0.2	5	5	5	4.36	951	10
SP-34587	5	0.2	41	61	125	-9	5	28	25	0.2	5	25	5	2.75	930	10
SP-34588	5	0.2	28	37	109	-9	4	21	20	0.2	5	5	6	3.1	735	10

	Au	Ag	Cu	Pb	Zn	ZnOL	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te
Sample #	ppb	ppm	ppm	ppm	ppm	pct	ppm	ppm	ppm	ppm	ppm	ppm	ppm	pct	ppm	ppm
SP-34589	5	0.2	56	61	172	-9	5	43	43	0.2	5	44	5	3.8	894	10
SP-34590	5	0.2	27	43	97	-9	4	17	26	0.2	5	5	5	2.64	1578	10
SP-34591	41	0.2	39	25	139	-9	4	22	24	0.2	5	5	5	3.72	687	10
SP-34592	5	0.2	31	21	147	-9	4	25	26	0.2	5	17	5	3.51	627	10
SP-34593	5	0.2	26	23	144	-9	4	24	16	0.2	5	72	5	3.2	521	10
SP-34594	5	0.2	28	27	118	-9	3	22	16	0.2	5	5	5	3.3	565	10
SP-34595	5	0.2	22	31	87	-9	4	17	14	0.2	5	16	5	2.17	818	10
SP-34596	5	0.2	42	38	127	-9	6	30	26	0.2	5	14	5	2.26	655	10
SP-34597	5	0.2	17	18	82	-9	4	16	12	0.2	5	10	5	2.27	484	10
SP-34598	5	0.2	39	38	159	-9	3	61	21	0.2	5	109	5	2.9	888	10
SP-34599	5	0.2	19	26	89	-9	3	21	14	0.2	5	20	5	2.08	704	10
SP-34600	6	0.2	18	22	100	-9	2	21	12	0.2	5	18	5	2.08	692	10
SP-34601	5	0.2	25	31	104	-9	3	28	12	0.2	5	56	5	2.81	590	10
SP-34602	5	0.2	14	45	86	-9	3	15	20	0.2	5	25	5	2.27	1355	10
SP-34603	IS	0.2	23	31	126	-9	2	22	22	0.2	5	94	5	2.78	1618	10
SP-34604	5	0.2	21	12	49	-9	2	16	12	0.2	5	5	5	1.69	328	10
SP-34605	5	0.2	29	24	96	-9	2	28	12	0.2	5	43	5	2.42	715	10
SP-34606	5	0.2	41	41	124	-9	2	16	9	0.2	5	21	5	2.71	573	10
SP-34607	9	0.2	51	43	154	-9	4	45	22	0.2	5	6	5	4.31	634	10
SP-34608	5	0.2	21	25	97	-9	3	24	12	0.2	5	12	5	2.82	469	10
SP-34609	5	0.2	35	26	81	-9	3	15	13	0.2	5	13	5	2.78	503	10
SP-34610	5	0.2	87	44	154	-9	4	51	27	0.2	5	20	5	3.88	911	10
SP-34611	5	0.2	46	48	117	-9	4	24	18	0.2	5	18	5	3.3	811	10
SP-34612	5	0.2	99	59	165	-9	4	48	30	0.2	6	22	5	4	1039	10
SP-34613	5	0.2	49	44	111	-9	4	29	19	0.2	5	20	5	3.66	544	11
SP-34614	5	0.2	110	57	118	-9	4	29	32	0.2	5	49	5	4.55	1094	16
SP-34615	5	0.2	47	42	80	-9	4	14	21	0.2	5	73	5	3.03	895	13
SP-34616	5	0.2	46	37	108	-9	4	21	17	0.2	5	16	5	3.12	724	10
SP-34617	5	0.2	52	35	96	-9	4	18	19	0.2	5	31	5	3.22	697	10
COUNT	116	119	119	119	119	119	115	119	119	119	119	119	119	119	119	119
MAX	43	0.7	212	106	278	-9	6	138	49	15	8	1189	11	6.41	2271	16
MIN	5	0.2	5	7	15	-9	1	3	2	0.2	5	5	5	0.38	63	10
AVE	7.04	0.21	52.2	36.7	113	-9	3.2	25.8	17	0.43	5.1	62.62	5.7	2.871	716.3	10
STD DEV	7.17	0.05	36.2	18.5	48.1	0	1	18	8.9	1.44	0.4	133.7	1.4	0.985	415.6	0.6

	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li
Sample #	ppm	ppm	ppm	ppm	ppm	ppm	pct	pct	pct	pct	pct	ppm	ppm	ppm	ppm
SP-25404	43	17	18	20	20	35	1.59	0.74	0.27	0.02	0.26	10	15	6	27
SP-25405	67	24	18	20	20	38	1.46	0.79	0.4	0.01	0.25	20	16	2	25
SP-34501	50	12	20	20	20	10	3.06	0.3	0.08	0.02	0.09	8	6	2	9
SP-34502	79	23	37	20	20	19	1.54	1.05	0.4	0.02	0.28	15	16	3	22
SP-34503	73	19	40	20	20	9	1.55	1.13	0.35	0.02	0.34	11	11	6	22
SP-34504	67	20	31	20	20	83	1.63	0.74	0.38	0.01	0.21	17	44	2	17
SP-34505	130	11	23	20	22	11	3.04	0.46	0.15	0.01	0.11	17	6	7	19
SP-34506	92	14	31	20	20	32	1.56	0.62	0.81	0.02	0.22	32	24	2	22
SP-34507	45	16	34	20	20	22	1.49	0.91	0.42	0.01	0.14	16	13	2	16
SP-34508	76	31	20	20	20	48	1.85	1.06	0.26	0.01	0.16	20	34	2	27
SP-34509	75	18	47	20	20	31	1.66	0.84	0.64	0.02	0.25	21	17	5	40
SP-34510	64	22	27	20	20	29	1.63	1.05	0.23	0.01	0.18	14	19	3	26
SP-34511	66	19	36	20	20	15	1.58	1.14	0.3	0.02	0.31	12	11	4	25
SP-34512	169	89	87	20	20	16	2.62	1.94	0.87	0.03	0.4	65	11	6	49
SP-34513	132	194	105	20	20	23	3.14	2.6	0.79	0.02	0.27	45	17	2	62
SP-34514	167	128	60	20	20	13	1.9	1.86	0.79	0.04	0.37	50	7	9	32
SP-34515	69	25	36	20	21	41	2.4	0.75	0.57	0.02	0.15	21	16	2	24
SP-34516	112	103	65	20	20	14	2.19	1.94	0.77	0.03	0.28	44	9	5	46
SP-34517	103	75	55	20	20	22	2.31	1.57	0.79	0.02	0.22	40	13	2	40
SP-34518	80	59	46	20	20	31	2.26	1.3	0.54	0.02	0.15	27	14	4	35
SP-34519	18	7	7	20	20	7	0.4	0.14	0.25	< 0.01	0.07	9	2	3	10
SP-34520	13	4	5	20	20	5	0.29	0.09	0.18	< 0.01	0.05	6	2	2	7
SP-34521	12	4	5	20	20	5	0.27	0.09	0.17	< 0.01	0.05	6	2	2	7
SP-34522	12	5	5	20	20	3	0.26	0.09	0.17	< 0.01	0.04	5	2	2	6
SP-34523	11	5	5	20	20	3	0.25	0.09	0.16	< 0.01	0.04	5	1	2	5
SP-34524	68	14	35	20	20	15	1.38	0.94	0.31	0.02	0.24	10	9	8	19
SP-34525	69	15	30	20	20	17	1.34	0.84	0.36	0.02	0.26	12	9	5	20
SP-34526	102	14	26	20	20	23	1.31	0.65	0.34	0.02	0.26	16	10	2	14
SP-34527	76	16	33	20	20	18	1.5	0.91	0.31	0.02	0.29	12	9	4	19
SP-34528	56	15	33	20	20	17	1.35	0.97	0.34	0.02	0.21	12	10	8	20
SP-34529	49	13	30	20	20	17	1.18	0.62	0.3	0.02	0.16	9	8	4	12
SP-34530	181	14	34	20	20	8	2.15	0.57	0.27	0.03	0.23	26	6	5	24
SP-34531	51	16	36	20	20	8	1.15	0.71	0.36	0.02	0.2	12	8	4	17
SP-34532	55	17	25	20	20	11	1.1	0.75	0.29	0.02	0.22	10	9	3	17
SP-34533	64	14	31	20	20	30	1.39	0.68	0.67	0.02	0.17	24	25	4	14
SP-34534	96	27	20	20	20	50	1.7	0.6	0.82	0.02	0.35	61	27	2	25
SP-34535	62	17	31	20	20	25	1.51	0.82	0.44	0.02	0.23	17	17	7	22
SP-34536	47	14	15	20	20	23	1.07	0.62	0.25	< 0.01	0.33	15	12	5	18
SP-34537	54	17	27	20	20	23	1.2	0.78	0.31	0.02	0.25	12	9	6	20
SP-34538	48	15	28	20	20	29	1.26	0.64	0.5	0.02	0.16	18	19	6	19
SP-34539	347	24	27	20	20	44	2.14	0.81	0.54	0.01	0.27	57	15	2	31
SP-34540	310	34	53	20	20	14	3.14	1.22	0.45	0.02	0.39	40	6	2	33
SP-34541	163	13	16	20	20	106	1.9	0.6	0.92	0.01	0.24	57	42	2	26
SP-34542	56	15	30	20	20	19	1.17	0.78	0.33	0.02	0.22	11	9	4	18
SP-34543	51	16	24	20	20	18	1.3	0.78	0.37	0.01	0.31	11	9	3	33

	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li
Sample #	ppm	ppm	ppm	ppm	ppm	ppm	pct	pct	pct	pct	pct	ppm	ppm	ppm	ppm
SP-34544	51	15	26	20	20	8	1.1	0.79	0.28	0.02	0.23	9	7	4	18
SP-34545	217	12	23	20	20	6	1	0.49	0.71	0.01	0.24	36	3	2	12
SP-34546	35	15	21	20	20	27	1.21	0.9	0.22	0.01	0.19	12	15	5	23
SP-34547	48	14	29	20	20	22	1.08	0.73	0.33	0.02	0.23	11	9	9	16
SP-34548	42	15	13	20	20	29	1.22	0.83	0.19	0.01	0.21	15	13	6	26
SP-34549	41	18	38	20	20	17	1.19	0.88	0.22	0.01	0.18	12	16	3	23
SP-34550	43	16	12	20	20	36	1.34	0.96	0.21	0.01	0.23	16	22	3	28
SP-34551	38	16	33	20	20	26	1.44	0.97	0.18	< 0.01	0.16	11	17	4	30
SP-34552	130	119	76	20	20	38	2.94	2.23	0.73	0.03	0.18	70	16	11	40
SP-34553	99	83	51	20	20	33	2.45	1.8	0.5	0.02	0.17	44	13	11	34
SP-34554	52	24	71	20	20	27	2.68	1	0.78	0.02	0.16	18	21	7	31
SP-34555	49	21	123	20	20	8	2.66	1.48	0.88	0.01	0.18	21	11	2	31
SP-34556	58	17	75	20	20	8	2.13	1.14	0.52	0.03	0.16	19	9	2	19
SP-34557	52	20	64	20	20	13	2.03	1.04	0.84	0.02	0.12	19	10	3	21
SP-34558	75	18	65	20	20	7	1.85	1.32	0.61	0.02	0.25	15	8	4	20
SP-34559	66	20	54	20	20	9	1.6	1.1	0.65	0.02	0.2	16	10	4	20
SP-34560	78	23	32	20	20	31	1.46	0.85	0.37	0.01	0.27	17	14	5	25
SP-34561	83	22	42	20	20	31	1.57	0.98	0.47	0.02	0.28	19	15	6	25
SP-34562	60	19	30	20	20	28	1.37	1.01	0.47	0.02	0.31	12	14	8	23
SP-34563	49	14	38	20	20	18	1.17	0.85	0.44	0.02	0.34	11	11	9	17
SP-34564	58	30	27	20	20	22	1.59	1.14	0.38	0.01	0.24	20	15	5	21
SP-34565	88	28	46	20	20	80	1.41	0.81	0.77	0.02	0.18	28	55	5	17
SP-34566	115	80	53	20	20	33	1.85	1.74	1.18	0.02	0.29	103	16	6	29
SP-34567	64	20	46	20	20	33	1.84	1.22	0.4	0.01	0.3	14	21	4	22
SP-34568	78	22	40	20	20	22	1.43	0.98	0.58	0.01	0.22	23	12	6	17
SP-34569	79	26	36	20	20	30	1.45	0.95	0.65	0.02	0.21	27	16	6	18
SP-34570	79	22	42	20	20	19	1.51	1.11	0.43	0.01	0.28	19	11	8	20
SP-34571	66	16	47	20	20	11	1.36	1.07	0.39	0.02	0.35	12	9	8	17
SP-34572	45	13	30	20	20	16	0.96	0.74	0.32	0.02	0.23	10	9	3	12
SP-34573	44	13	30	20	20	16	0.96	0.73	0.37	0.02	0.24	10	9	3	11
SP-34574	44	14	33	20	20	10	0.98	0.72	0.33	0.02	0.22	8	8	4	12
SP-34575	34	9	25	20	20	8	3.02	0.07	0.04	0.02	0.04	5	7	13	12
SP-34576	94	40	24	20	20	66	2.23	0.83	0.95	0.02	0.1	47	33	2	31
SP-34577	86	30	26	20	20	34	1.59	0.87	0.36	0.01	0.24	20	15	4	32
SP-34578	90	24	29	20	20	28	1.44	0.72	0.33	0.02	0.26	19	12	3	23
SP-34579	91	33	30	20	20	56	1.74	0.92	0.52	0.02	0.22	29	22	4	29
SP-34580	97	42	33	20	20	62	1.96	1.13	0.44	0.02	0.3	29	22	5	37
SP-34581	87	21	20	20	20	72	1.72	0.78	0.27	0.02	0.36	19	21	5	34
SP-34582	130	95	83	20	20	48	2.8	2.01	0.85	0.03	0.29	55	25	7	41
SP-34583	111	94	78	20	20	50	2.72	1.95	0.81	0.03	0.25	57	24	8	41
SP-34584	100	73	56	20	20	56	2.44	1.57	0.65	0.02	0.2	46	23	4	45
SP-34585	57	19	18	20	20	36	2.17	0.7	0.1	0.01	0.1	12	15	2	22
SP-34586	112	54	28	20	20	50	1.9	1.61	0.24	< 0.01	0.3	35	18	2	36
SP-34587	79	41	26	20	20	34	2.33	1.01	0.19	0.02	0.14	22	18	2	25
SP-34588	69	25	15	20	20	44	1.77	0.97	0.16	0.01	0.16	17	22	2	24

	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li
Sample #	ppm	ppm	ppm	ppm	ppm	ppm	pct	pct	pct	pct	pct	ppm	ppm	ppm	ppm
SP-34589	64	27	16	20	20	104	1.95	0.92	0.25	0.01	0.13	27	51	2	29
SP-34590	88	17	13	20	20	35	1.49	0.7	0.24	0.01	0.11	28	19	2	20
SP-34591	40	20	12	20	20	52	1.66	1.02	0.17	< 0.01	0.14	9	32	3	30
SP-34592	40	19	12	20	20	44	1.6	1.03	0.09	< 0.01	0.16	6	25	4	33
SP-34593	41	18	15	20	20	36	1.5	0.94	0.19	< 0.01	0.15	12	21	5	32
SP-34594	57	16	12	20	20	39	1.69	0.96	0.19	0.01	0.19	21	22	4	34
SP-34595	72	15	17	20	20	35	1.48	0.56	0.15	0.01	0.31	11	13	2	21
SP-34596	60	22	24	20	20	88	1.94	0.69	0.18	0.02	0.22	12	34	6	26
SP-34597	51	20	20	20	20	33	1.45	0.74	0.15	0.01	0.26	7	13	7	21
SP-34598	165	81	35	20	20	49	2.34	1.52	0.71	0.03	0.32	51	19	5	58
SP-34599	88	26	19	20	20	38	1.41	0.73	0.28	0.01	0.3	17	14	4	25
SP-34600	93	23	18	20	20	34	1.29	0.72	0.33	0.01	0.34	20	13	2	26
SP-34601	72	39	24	20	20	18	1.51	1.19	0.29	0.01	0.45	12	11	6	23
SP-34602	71	25	19	20	20	35	1.53	0.97	0.2	0.01	0.37	9	17	2	21
SP-34603	101	21	18	20	20	16	1.36	0.8	0.19	< 0.01	0.48	10	8	2	29
SP-34604	62	19	15	20	20	109	1.05	0.48	0.22	0.01	0.25	9	39	4	13
SP-34605	65	35	28	20	20	25	1.37	0.95	0.37	0.01	0.3	16	11	5	22
SP-34606	74	21	21	20	20	23	1.44	0.98	0.31	0.01	0.51	14	12	7	22
SP-34607	81	46	26	20	20	36	1.6	1.34	0.52	0.01	0.18	47	15	4	21
SP-34608	56	25	28	20	20	22	1.43	1.25	0.31	< 0.01	0.12	16	11	5	16
SP-34609	49	10	45	20	20	19	1.24	0.92	0.28	0.01	0.21	9	9	8	11
SP-34610	137	71	72	20	20	31	2.28	1.91	0.84	0.03	0.3	76	13	5	29
SP-34611	67	24	76	20	20	72	2	1.15	0.56	0.01	0.18	19	27	7	15
SP-34612	120	64	72	20	20	30	2.38	1.82	0.75	0.02	0.24	61	15	5	30
SP-34613	70	42	61	20	20	12	1.89	1.68	0.45	0.01	0.14	28	11	7	21
SP-34614	93	17	88	20	20	7	1.8	1.27	0.47	0.01	0.26	15	13	2	14
SP-34615	50	11	34	20	20	10	1.14	0.77	0.33	< 0.01	0.17	10	9	2	11
SP-34616	59	12	46	20	20	24	1.42	1.07	0.46	0.01	0.19	18	11	5	12
SP-34617	61	12	51	20	20	24	1.4	0.95	0.37	0.01	0.22	14	10	5	12
COUNT	119	119	119	119	119	119	119	119	119	105	119	119	119	119	119
MAX	347	194	123	20	22	109	3.14	2.6	1.18	0.04	0.51	103	55	13	62
MIN	11	4	5	20	20	3	0.25	0.07	0.04	0.01	0.04	5	1	2	5
AVE	78.5	29.3	35.5	20	20	29.7	1.659	0.977	0.423	0.017	0.228	22.4	15	4.4	24
STD DEV	48	28.3	21.4	0	0.2	21.2	0.59	0.444	0.231	0.007	0.088	17.3	9.3	2.3	10

	Nb	Sc	Ta	Ti	Zr
Sample #	ppm	ppm	ppm	pct	ppm
SP-25404	13	5	10	0.11	2
SP-25405	14	5	10	0.07	1
SP-34501	7	5	10	0.06	7
SP-34502	16	5	10	0.1	1
SP-34503	13	5	10	0.13	1
SP-34504	60	5	10	0.06	1
SP-34505	6	5	10	0.06	7
SP-34506	15	5	10	0.06	1
SP-34507	14	5	10	0.05	1
SP-34508	34	5	10	0.06	1
SP-34509	17	5	10	0.08	1
SP-34510	17	5	10	0.08	1
SP-34511	10	5	10	0.11	1
SP-34512	9	6	10	0.12	2
SP-34513	13	13	10	0.07	1
SP-34514	6	5	10	0.14	2
SP-34515	16	5	10	0.07	3
SP-34516	10	5	10	0.1	1
SP-34517	17	5	10	0.08	2
SP-34518	22	5	10	0.08	2
SP-34519	2	5	10	0.02	1
SP-34520	1	5	10	0.02	1
SP-34521	1	5	10	0.01	1
SP-34522	2	5	10	0.01	1
SP-34523	1	5	10	0.01	1
SP-34524	9	5	10	0.11	1
SP-34525	9	5	10	0.11	1
SP-34526	9	5	10	0.08	1
SP-34527	8	5	10	0.11	1
SP-34528	11	5	10	0.1	1
SP-34529	10	5	10	0.1	1
SP-34530	8	5	10	0.1	6
SP-34531	12	5	10	0.09	1
SP-34532	14	5	10	0.09	1
SP-34533	20	5	10	0.07	1
SP-34534	20	5	10	0.05	1
SP-34535	15	5	10	0.09	1
SP-34536	11	5	10	0.08	1
SP-34537	8	5	10	0.11	1
SP-34538	16	5	10	0.07	1
SP-34539	12	5	10	0.08	2
SP-34540	6	5	10	0.13	4
SP-34541	44	5	10	0.06	2
SP-34542	11	5	10	0.11	1
SP-34543	13	5	10	0.1	1

	Nb	Sc	Ta	Ti	Zr
Sample #	ppm	ppm	ppm	pct	ppm
SP-34544	11	5	10	0.1	1
SP-34545	4	5	10	0.04	1
SP-34546	13	5	10	0.09	1
SP-34547	7	5	10	0.1	1
SP-34548	8	5	10	0.07	1
SP-34549	17	5	10	0.1	1
SP-34550	21	5	10	0.08	1
SP-34551	16	5	10	0.09	1
SP-34552	15	6	10	0.12	3
SP-34553	13	5	10	0.1	3
SP-34554	17	5	10	0.11	4
SP-34555	9	6	10	0.06	2
SP-34556	7	5	10	0.08	2
SP-34557	9	5	10	0.06	2
SP-34558	8	5	10	0.09	1
SP-34559	11	5	10	0.08	1
SP-34560	14	5	10	0.09	1
SP-34561	13	5	10	0.09	1
SP-34562	11	5	10	0.09	1
SP-34563	7	5	10	0.1	1
SP-34564	16	5	10	0.11	1
SP-34565	57	5	10	0.09	1
SP-34566	17	5	10	0.1	2
SP-34567	19	5	10	0.1	1
SP-34568	11	5	10	0.09	1
SP-34569	13	5	10	0.09	1
SP-34570	9	5	10	0.12	1
SP-34571	8	5	10	0.14	1
SP-34572	9	5	10	0.1	1
SP-34573	11	5	10	0.09	1
SP-34574	11	5	10	0.11	1
SP-34575	13	5	10	0.11	28
SP-34576	25	5	10	0.05	5
SP-34577	15	5	10	0.09	1
SP-34578	11	5	10	0.09	1
SP-34579	20	5	10	0.08	1
SP-34580	19	5	10	0.1	2
SP-34581	18	5	10	0.11	2
SP-34582	19	8	10	0.11	2
SP-34583	19	7	10	0.1	2
SP-34584	17	5	10	0.09	2
SP-34585	11	5	10	0.05	2
SP-34586	14	5	10	0.08	4
SP-34587	13	5	10	0.06	2
SP-34588	17	5	10	0.06	1

	Nb	Sc	Ta	Ti	Zr
Sample #	ppm	ppm	ppm	pct	ppm
SP-34589	44	5	10	0.06	1
SP-34590	22	5	10	0.04	1
SP-34591	34	5	10	0.09	1
SP-34592	23	5	10	0.1	1
SP-34593	18	5	10	0.08	1
SP-34594	19	5	10	0.07	1
SP-34595	11	5	10	0.1	1
SP-34596	27	5	10	0.1	2
SP-34597	10	5	10	0.12	1
SP-34598	16	5	10	0.12	3
SP-34599	12	5	10	0.1	1
SP-34600	12	5	10	0.1	1
SP-34601	12	5	10	0.14	1
SP-34602	20	5	10	0.12	1
SP-34603	11	5	10	0.14	1
SP-34604	61	5	10	0.09	1
SP-34605	9	5	10	0.11	1
SP-34606	8	5	10	0.12	1
SP-34607	14	5	10	0.08	1
SP-34608	10	5	10	0.07	1
SP-34609	8	5	10	0.11	1
SP-34610	10	5	10	0.1	1
SP-34611	22	5	10	0.14	1
SP-34612	12	5	10	0.09	1
SP-34613	14	5	10	0.07	1
SP-34614	17	5	10	0.09	1
SP-34615	14	5	10	0.08	1
SP-34616	9	5	10	0.08	1
SP-34617	7	5	10	0.09	1
COUNT	119	119	119	119	119
MAX	61	13	10	0.14	28
MIN	1	5	10	0.01	1
AVE	15	5.1	10	0.088	1.7
STD DEV	10	0.8	0	0.027	2.7

Appendix 7.10 Preliminary Geologic Report (Chris Hemstad).

Cleo Claims
Preliminary Geologic Report--pending analysis of rock samples--
Chris Hemstad

Cleo Claims

Introduction

This report is based on two days of reconnaissance geologic mapping and rock sampling at 1:20,000 scale. The area of interest is located between northings 5504000N and 5506000N and eastings 551000E and 553500E (see geologic map).

Stratigraphy

All of the sedimentary rocks in the study area are Middle Aldridge Formation, and composed of interbedded quartzites, quartz wackites, turbidites and siltites. The sedimentary rocks have been intruded by gabbroic sills and two lamprophyre dikes. The contacts between the gabbroic sills and the sediments are quite irregular. Slivers (possibly large xenoliths) of Middle Aldridge sediments are common in the gabbro sills. Although the sills locally cut up and down section no true gabbro dikes were found. The sediments along both the upper and lower sill contacts are commonly disrupted, silicified, and albitized. This suggests the gabbro was emplaced into wet sediments soon after deposition.

Two 1-3 meter wide Lamprophyre dikes have been intruded along north trending structures in the eastern part of the study area. These dikes cut all of the rocks and resemble Cretaceous age dikes and sills found further south in Montana.

Structure

Structural deformation in the study area consists of folding and faulting and a very noticeable north-northeast cleavage. Five north-south striking faults were mapped, in addition to, one large northwest trending fault, and a small east-west trending fault. Movement along these faults appears to consist of right-lateral oblique slip down to the east. In addition, these structures probably produced the steep to gently-northeast plunging folds found between them The large northwest trending shear is about 25-30 meters wide, dips 50 degrees to the southwest, and consisted of right-lateral shear. This structure seems to control mineralization in the area.

Alteration

The alteration minerals in the area consist, in order of abundance, of biotite, muscovite, chlorite, quartz-albite, and tourmaline. The biotite alteration in the study area appears to be associated with emplacement of the gabbro sills. Biotite alteration is found throughout the study area but is most pervasive near the sill-sediment contacts. Near the sill-sediment contacts the biotite alteration locally grades into quartz-albite alteration adjacent to the sill contact. Chlorite and muscovite alteration are common near cleavage parallel quartz veins. Tourmaline alteration occurs as disseminated to densely packed crystals locally found in disrupted bedding, disseminated along certain beds, and associated with arsenopyrite-rich bedding parallel and stockwork quartz veins.

Mineralization

Mineralization in the study area is primarily associated with quartz veins. The most intensely mineralized quartz vein has been exposed by previous workings. These include a short vertical shaft and associated adit and a small prospect pit just to the east (see geologic map). The quartz vein is 1-2 meters wide and occurs in the footwall of the large northwest trending structure. The economic minerals associated with the vein are, in order of abundance, arsenopyrite, galena, and sphalerite. A green mineral, possibly malachite, is locally quite abundant in the quartz vein. In addition arsenopyrite is strongly associated with tourmaline alteration and the stockwork of quartz veins and veinlets at the two tourmaline occurrences on the property. Pyrrhotite is locally common along Fe-stained siltite beds throughout the area.

Conclusion

Further work in the area should concentrate on defining a detailed structural and stratigraphic framework. In addition the origin of the tourmaline alteration should be explored in more detail. Detailed mapping in the area should be conducted at a scale of either 1:10000 or 1:5000.

Appendix 7.20 Rock Sample and Hand Specimen Description List.

Sample List

Sample Number	Hand Sample Description	Reason for Analysis
SP25461	Quartz vein along shear. Strong arsenopyrite, galena, sphalerite mineralization	Test vein mineralization.
SP25462	Strongly disrupted biotite and tourmaline altered phyllite and quartzite beds with stockwork of quartz-tourmaline-arsenopyrite veins and veinlets parallel to cleavage.	Investigate geochemical signature of toumaline altered disrupted beds.
SP25463	Silicified and chlorite altered quartzite with strong stockwork of quartz-limonite veinlets parallel to cleavage near fault.	Test mineralization in cleavage-parallel stockwork-veinlets.
SP25400	Pervasively Fe-stained and Po-rich, thin, siltite beds; underlying gray quartzite (poss. LMC).	Test for Pb-Zn and gain geochemical signature of LMC.
SP25401	Pervasively Fe-stained and Po-rich quartzite w/moderate muscovite alteration.	Same as SP25400.
SP25402	Pervasively Fe-stained and Po-Py-rich, thinly bedded (1-25 cm), quartzites and siltites w/weak-moderate biotite and muscovite alteration.	Same as SP25400

Sample List

SP25403	Silicified quartzite w/strong disseminated, fine grained po and py. Pervasive Fe-staining and yellow sulfide alteration on weathering surface.	Same as SP25400
SP25406	Stockwork of quartz-toumaline veins, pervasively Fe-stained, with strong asenopyrite and local galena and sphalerite.	Test difference between toumaline and non-tourmaline altered, stockwork veins and veinlets.
SP25407	1 meter wide quartz vein with strong arsenopyrite, galena, and sphalerite disseminated throughout.	Same as SP25461.
SP25408	Same as SP25407.	Same as SP25461.
SP25409	Same as SP25407.	Same as SP25461.
SP25410	Same as SP25407.	Same as SP25461.
SP25411	Galena along quartz-limonite, carbonate altered veinlets in silicified and weakly chlorite altered quartzite.	Test for lead-zinc mineralization.
SP25412	Strong galena along small quartz-limonite veinlets and weakly disseminated in silicified and yellow sulfied altered quartzite.	Test for lead-zinc mineralization.
CGal-1	Large euhedral galena crystals in	Provide model age date for Pb-Zn

Sample List

	same quartz vein as SP25461	mineralization in vein.
CGAB-1	Sheared gabbro sill with phyllitic fabric.	Petrographic analysis of thin-section to ascertain direction of shearing.

Appendix 7.30 Listing of Rock Samples and Analytical Results.

Appendix:	Listing of Cleo Rock Samples and Anaylitical Results																		
Sample #	Au	Ag	Cu	Pb	Zn	ZnOL	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn
SP-25400	5	0.2	15	15	53	-9	2	9	4	0.2	5	5	5	1.96	226	10	101	34	9	20
SP-25401	5	0.2	30	146	154	-9	3	7	5	0.2	5	5	5	3.4	429	10	80	58	22	20
SP-25402	5	0.2	28	17	80	-9	3	17	10	0.2	5	5	5	3.02	461	10	117	68	30	20
SP-25403	5	0.2	26	13	100	-9	5	16	9	0.2	5	5	5	2.76	595	10	127	106	34	20
SP-25406	5	0.2	206	433	29	-9	4	< 1	6	55	5	6792	5	4.54	49	10	71	109	16	20
SP-25407	62	15	37	>10000	92	-9	4	4	2	561	10	10000	40	4.81	18	10	3	177	< 1	20
SP-25408	153	2.5	11	1125	62	-9	10	7	56	1999	5	10000	100	>10.00	<1	11	<1	46	< 1	20
SP-25409	18	112	94	>10000	>10000	3.2	4	2	10	1744.4	102	10000	76	2.72	32	10	1	150	< 1	20
SP-25410	5	20	116	>10000	>10000	2.9	4	4	11	1408.7	25	6127	6	1.26	37	10	< 1	234	< 1	20
SP-25411	5	6.3	11	2369	6646	-9	2	11	11	40.6	19	130	5	1.01	267	10	28	132	5	20
SP-25412	79	66.3	101	>10000	203	-9	1	2	1	35.4	5	5780	61	1.15	28	10	34	135	< 1	20
SP-25461	51	60.2	16	>10000	1871	-9	5	5	5	389.5	18	10000	80	5.97	16	10	3	143	< 1	20
SP-25462	29	8	3	523	39	-9	6	7	3	0.2	29	988	5	0.34	87	10	85	40	3	20
SP-25463	5	0.2	3	255	38	-9	2	13	8	0.2	5	148	5	1.82	331	10	41	112	4	20
Sample #	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta	Ti	Zr					
SP-25400	25	1.07	0.56	0.06	0.02	0.68	4	3	7	15	2	5	10	0.08	1					
SP-25401	12	1.3	1.25	0.16	0.05	0.88	7	10	8	18	10	5	10	0.16	3					
SP-25402	12	1.48	1.28	0.18	0.07	1.12	10	11	13	30	10	5	10	0.19	2					
SP-25403	27	1.42	1.11	0.36	0.12	1	12	20	13	25	16	5	10	0.18	2					
SP-25406	< 1	0.43	0.04	0.02	0.01	0.29	1	2	2	3	2	5	10	< 0.01	1					
SP-25407	< 1	< 0.01	< 0.0	< 0.01	< 0.01	0.01	<1	<1	2	<1	<1	5	10	< 0.01	1					
SP-25408	< 1	< 0.01	< 0.0	< 0.01	< 0.01	< 0.0	<1	<1	3	<1	2	5	10	< 0.01	1					
SP-25409	< 1	< 0.01	< 0.0	< 0.01	< 0.01	< 0.0	<1	<1	2	<1	<1	5	10	< 0.01	1					
SP-25410	< 1	< 0.01	< 0.0	< 0.01	< 0.01	< 0.0	<1	<1	2	<1	<1	5	10	< 0.01	1					
SP-25411	9	0.61	0.2	0.5	0.03	0.22	8	9	3	5	7	5	10	0.08	1					
SP-25412	7	0.26	< 0.0	< 0.01	< 0.01	0.19	7	1	2	1	<1	5	10	< 0.01	1					
SP-25461	< 1	< 0.01	< 0.0	0.01	< 0.01	0.01	1	<1	2	<1	<1	5	10	< 0.01	1					
SP-25462	29	0.54	0.01	0.04	0.01	0.37	2	4	2	2	5	5	10	< 0.01	1					
SP-25463	< 1	1.11	1.21	0.19	0.01	0.14	4	3	2	10	3	5	10	< 0.01	1					

551232

116°15'00"

557568

HIGGINS PK.

CLAIM OUTLINE

CLAIR 27
210174
•2524•
3NX4W
95036

Cleo 29
346545

Cleo 22
346539

Cleo 28
346544

Cleo 21
347511
5NX4W

Cleo 20
347510
55X4W

232877

CLEO 27 346543 | CLEO 26 346542 | CLEO 25 346541

PMR 53 348097 | PMR 54 348098 | PMR 55 348099 | PMR 56 348100 | PMR 57 348101

CLEO 8 340440 | CLEO 7 340439 | CLEO 5 340437 | CLEO 3 340435 | CLEO 2 340447 | PMR 58 348102 | PMR 52 348096

PYRAMID MTN.

CLEO 6 340436 | CLEO 4 340436 | PMR 2 348094 | PMR 51 348095

Cleo 31
351732
35X4W

LCP 232979

LCP 232978

Cleo 30
351731
35X5E

CLAIR 13
209778
•697•
25X6E

PMR 46
348090
4NX5W

PMR 47
348091
3NX6E

232943

232944

232941

232942

PMR 45
348089
45X4E

PMR 43
347514

PMR 42
347513

Pyramid

PMR 41
5NX4E
347512

PMR 44
348088
55X4W

CLAIR 10
209775

CLAIR 12
209777
•696•
2NX6E

•694•
4NX3E

PMR 14 336376
PMR 13 336375

PMR 10
338370
25X4E

CLAIR 9
209774
•693•
1NX4E

PMR 9
338369

PMR 63
351441
5NX4E

CLAIR 6
209770
•605•
55X3W
5951

CLAIR 7
209771
•606•

PMR 12 336374
PMR 11 336373

PMR 45
348089
45X4E

PMR 40
348092

232940

214379

PMR 15
339229

PMR 40
211582
4NX5E

CLAIR 3
209759
•556•

PMR 62
351440
3NX6E

PMR 8
338368
3NX3W

CLAIR 15

CLAIR 14
209798

CLAIR 8
209875
209878
•1402•
56X2W

PMR 17
339231

•950•

•1399•
5NX2W

6NX3E

211630

324649

CLAIR 17
209877
•1401•
25X2W

CLAIR 16
209876
•1400•
15X3E

CLAIR 19
209679
•1103•

ROAD 76 321158 | ROAD 77 321159 | ROAD 78 321160 | ROAD 79 321161 | ROAD 80 321162

ZN-5 321270 | ZN-6 321271 | ZN-7 321272 | ZN-8 321273 | ZN-9 321274 | ZN-10 321275

HORN 23
300327
6NX3W

300326

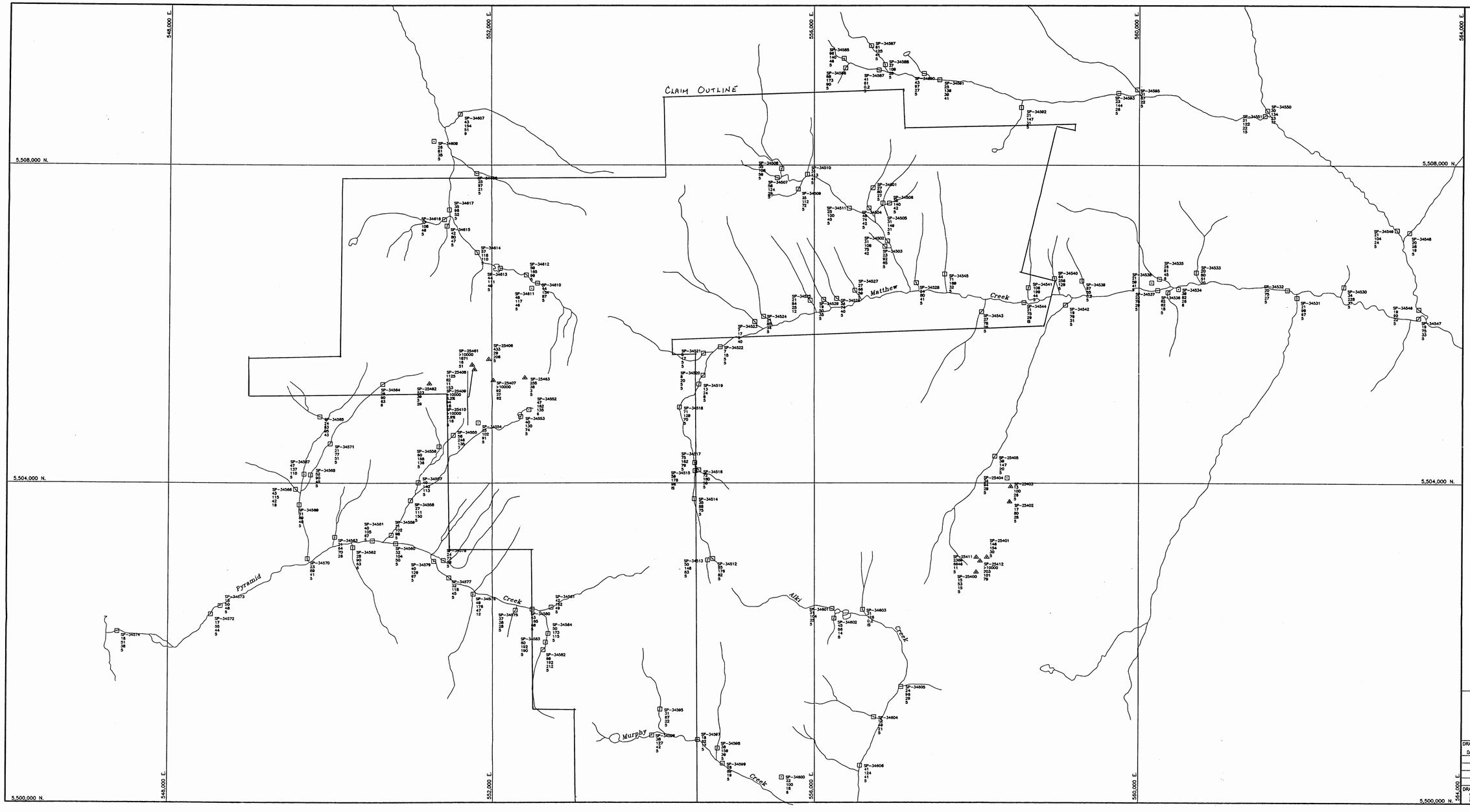
5NX4E

N

SCALE 1:31,680

0 500 1000 1500 2000 M

FIG. 2 - CLAIM MAP



EXPLANATION

△ Rock chip sample site

□ Stream sediment sample site

Assay order
Sample number
Lead in ppm
Zinc in ppm or % as noted
Copper in ppm
Gold in ppb

SCALE 1 : 20,000

200 0 200 400 600 800 1000

METERS

PYRAMID MOUNTAIN

BRITISH COLUMBIA, CANADA

1969 STREAM SEDIMENT SAMPLING PROGRAM

DRAWING RECORD		
DATE	DESCRIPTION	BY

DRAWING NO. FIGURE 4. PLATE 4

552000

5504000

Pmi - Moyie Intrusive

mPa - Middle Aldridge

⊡ - Stream Sediment

△ - Rock Sample

- Fault Zone / Shear Zone

Anticline

Syncline

40/ Strike, Dip

N

0 500 1000 m

SCALE 1:10,000

FIG. 5 - GEOLOGY MAP