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**1999 Exploration Program
on the
Spruce Project**

Claim	Spruce, Record Number 355431
Mining Division:	Omineca
NTS Map Sheet:	94 E 7
Latitude:	57°23' N
Longitude:	126°53' W
Owner of Claims:	Electrum Resource Corporation
Project Operator:	Electrum Resource Corporation
Consultant:	New Caledonian Geological Consulting
Report by:	Peter A. Ronning, P.Eng.
Date of Report:	April 2000

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

26,222

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I. Summary and Conclusions

The Spruce Claim is located approximately 290 kilometers due north of Smithers, B.C., centered at latitude 57°23' N, longitude 126°53' W on NTS sheet 94E 7 W. It is in the Omineca Mining Division. Road access is from Windy Point, on the John Hart Highway 164 kilometers north of Prince George, B.C. From Windy Point, a 454 kilometer drive to the northwest on logging and mining roads leads to the Pil campsite on Jock Creek. The Spruce property lies in a rugged area about 10 kilometers north of the Pil campsite and 3 kilometers south of the Toodoggone River. Elevations on the claim range between 1,480 meters and 2,144 meters.

The property comprises 1 claim that includes 20 units, for a nominal area of 500 hectares. It lies at the eastern edge of the Toodoggone District, a base and precious metal camp that has had past production from several epithermal gold-silver deposits. The camp is now notable for the Kemess Mine, a porphyry copper-gold deposit that went in to commercial production in 1998 with reserves of approximately 231.7 million tons at an estimated grade of 0.215% copper and 0.018 ounces of gold per ton.

The Toodoggone District is near the eastern margin of the Intermontane Belt. It is underlain by supracrustal rocks ranging in age from Permian to lower Jurassic, and intruded by early Jurassic calc-alkaline intrusions. The lithologic units of greatest exploration interest are the intermediate volcanics of the upper Triassic Takla Group, calc-alkaline volcanics of the lower Jurassic Toodoggone Formation and the early Jurassic Black Lake Intrusions that may be co-magmatic with the Toodoggone volcanics. The Spruce Property is underlain mainly by pyroclastic rocks that are believed to be equivalent to the Toodoggone Formation.

A one day prospecting and sampling program in 1999 resulted in the collection and geochemical analysis of ten rock chip samples, five soil samples and four stream sediment samples. The results of the sampling suggest that lead-zinc-silver (copper) vein mineralization is present on the Spruce Claim. More prospecting and geological mapping would be required to determine the significance of such mineralization.

II. Introduction

A. Location and Access

The Spruce Claim is located approximately 290 kilometers due north of Smithers, B.C., centered at latitude 57°23' N, longitude 126°53' W on NTS sheet 94E 7 W. It is in the Omineca Mining Division. Road access is via a network of logging roads from Windy Point, on the John Hart Highway 164 kilometers north of Prince George, B.C. From Windy Point, a 433 kilometer drive, generally northwesterly, on logging roads leads to the Sturdee River Airstrip. From the airstrip, the Pil campsite, on Jock Creek, is located 21 kilometres by road to the northeast. The Spruce property lies in a rugged area about 10 kilometers north of the Pil campsite and 3 kilometers south of the Toodoggone River.

B. Physiography

Topography on the property is steep, with elevations ranging from 1,480 to 2,144 meters above sea level. Grasses and buckbrush are typical of valley bottoms with patchy conifer forest

on slopes. Elevations above 1,500 to 1,700 meters are typified by alpine grasses and dwarf conifers.

C. Property Definition

1. Claims

The Spruce Property is the Omineca Mining Division. It consists of one claim, the Spruce, Record Number 355431. At the time of writing, before application of the work described in this report, the claim is in good standing until 30 April, 2001. The claim is illustrated on Figure 3.

2. History

The recorded exploration history of the Toodoggone District began with the discovery of placer gold by prospectors in the 1920's. The district's evolution into a significant base and precious metal exploration and mining camp began with regional geochemical reconnaissance carried out by Kennco Explorations (Western) Limited in 1966 (Diakow et al, 1993). Kennco's work led to the discovery of several porphyry copper and lode gold prospects. From the late 1970's through the early 1990's, there was considerable exploration activity in the district by both junior and major mining companies. Most of the focus during the 1980's was on epithermal gold deposits. A number of significant deposits were explored, and the Lawyer's deposit went in to production in 1989. It had a drill indicated reserve in the Amethyst Gold Breccia Zone of 452,502 tonnes grading 8.33 grams of gold per tonne and 263.65 grams of silver per tonne (Diakow et al, 1993). This mine ceased production in the early 1990's.

In October of 1998 the Kemess Mine, a porphyry copper-gold deposit, began commercial production. The Kemess deposit contains approximately 231.7 million tons at an estimated grade of 0.215% copper and 0.018 ounces of gold per ton (source: Royal Oak Mines, World Wide Web Site, December 1998).

Prior to the staking of the Spruce Claim for Electrum Resource Corporation in 1997, parts of the current property had been included, from time to time, in various other mineral claims centered on adjacent areas. Early stage geochemical and geophysical techniques had been employed in exploring surrounding areas, with some overlaps onto the present property.

Electrum staked the Spruce Claim in 1997, in part because a published regional geochemical survey indicated high (above the 95th percentile) zinc, lead and silver values in a stream draining northward off the property into the Toodoggone River.

In 1997, Electrum did an exploration program on the Spruce Claim that included geochemical stream sediment, soil and rock sampling, as well as magnetometer and VLF geophysical surveys (Zastavnikovich, 1997).

Electrum Resource Corporation Spruce Project Location Map



 Claims Owned by
Electrum Resource Corp.

 Roads
(conditions vary)

 Lakes & Streams

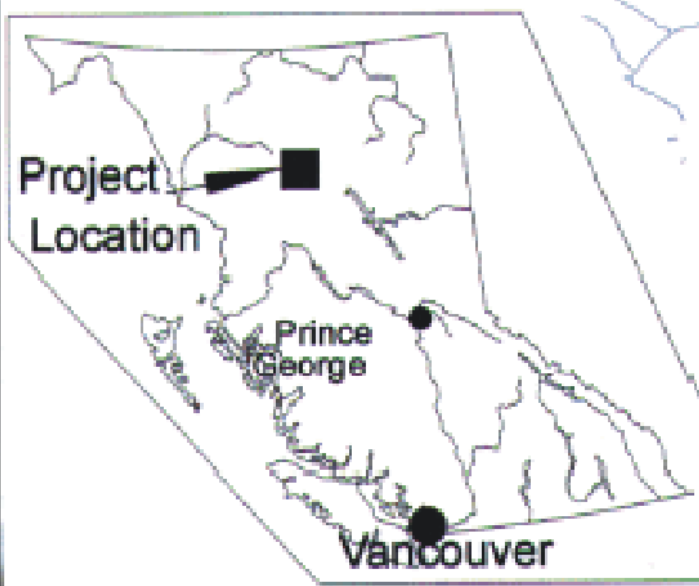
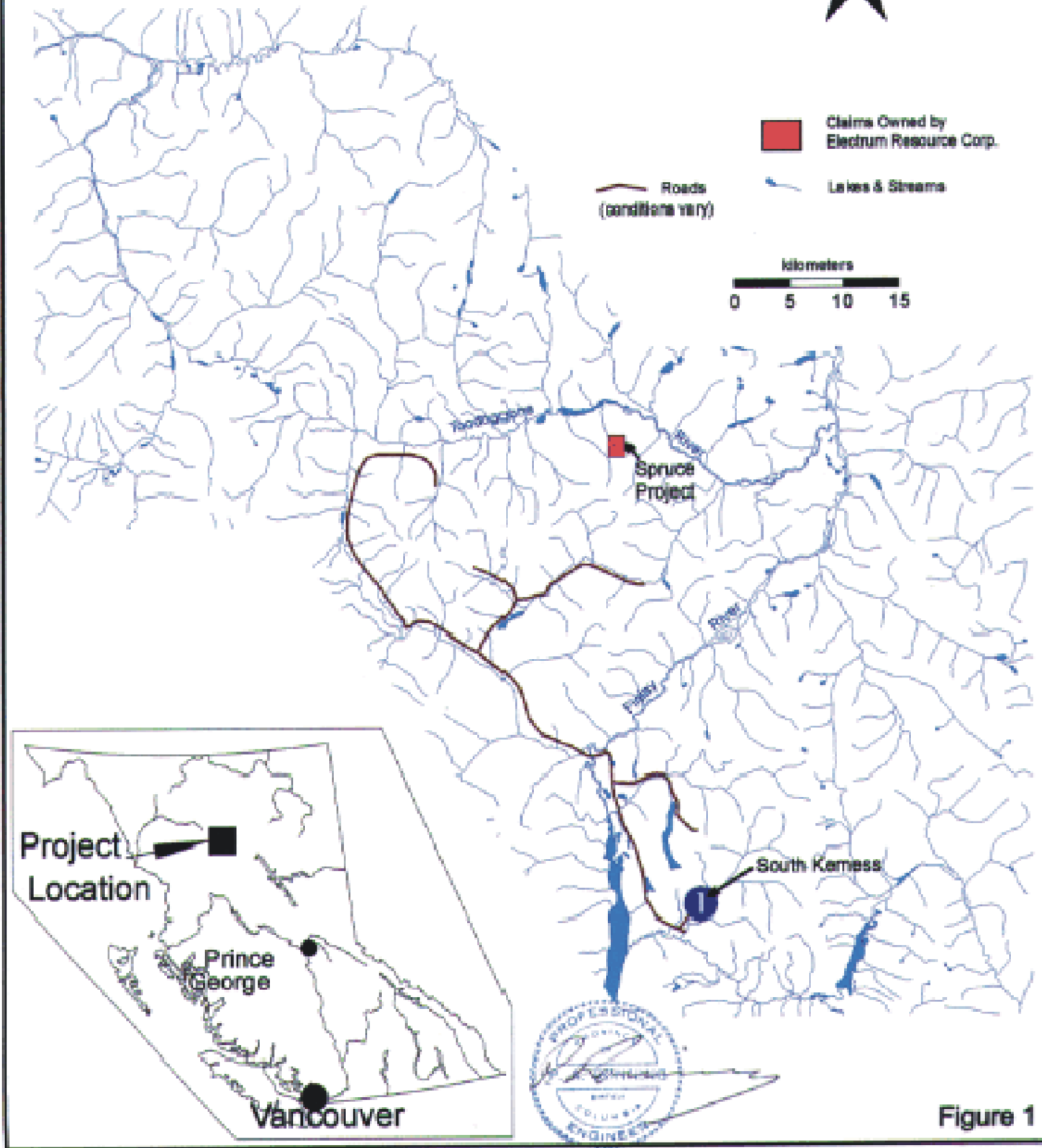


Figure 1

3. Economic Potential

This property is in the very early stages of exploration. Copper, lead, zinc and silver mineralization has been found in float, and some soil and stream sediment indications of mineralization are present. The claim is in a camp known for epithermal precious metal and porphyry copper-gold style mineralization. Further prospecting and reconnaissance geological mapping would be required to determine whether the property has potential that merits more advanced types of exploration work

D. Work Program

On August 25th, 1999, the writer and three other persons spent the day prospecting and doing geochemical rock, soil and stream sediment sampling. One party of two worked in the drainage that flows northwestward from the northwest quadrant of the claim towards the Toodoggone River. The other party worked in the headwaters of a drainage that flows northward from the northeast quadrant of the claim. Ten rock chip samples, five soil samples and four stream sediment samples were collected. All of these were geochemically analyzed at the Vancouver laboratory of TSL Assayers Corp. The laboratory analyzed them for 30 elements using the ICP technique and for gold using a fire assay preparation with an AA finish.

III. Geology and Geochemistry

A. Regional Geological Setting

Staargaard (1994) summarized the regional geology of the Toodoggone Area:

"The Toodoggone area is situated in the Intermontane Belt, near its eastern margin. The oldest rocks in the region are limestones and rhyolitic tuffs of the Permian Asitka Group. These are overlain by mafic to intermediate flows and related fragmental and sedimentary rocks of the Upper Triassic Takla Group. Overlying these in turn are volcanics of the Lower Jurassic Toodoggone Formation, a complexly intercalated pile of largely subaerial, high potassium, calc-alkaline latite and dacite flows, fragmental rocks and related sediments exceeding 2,200 meters in thickness.

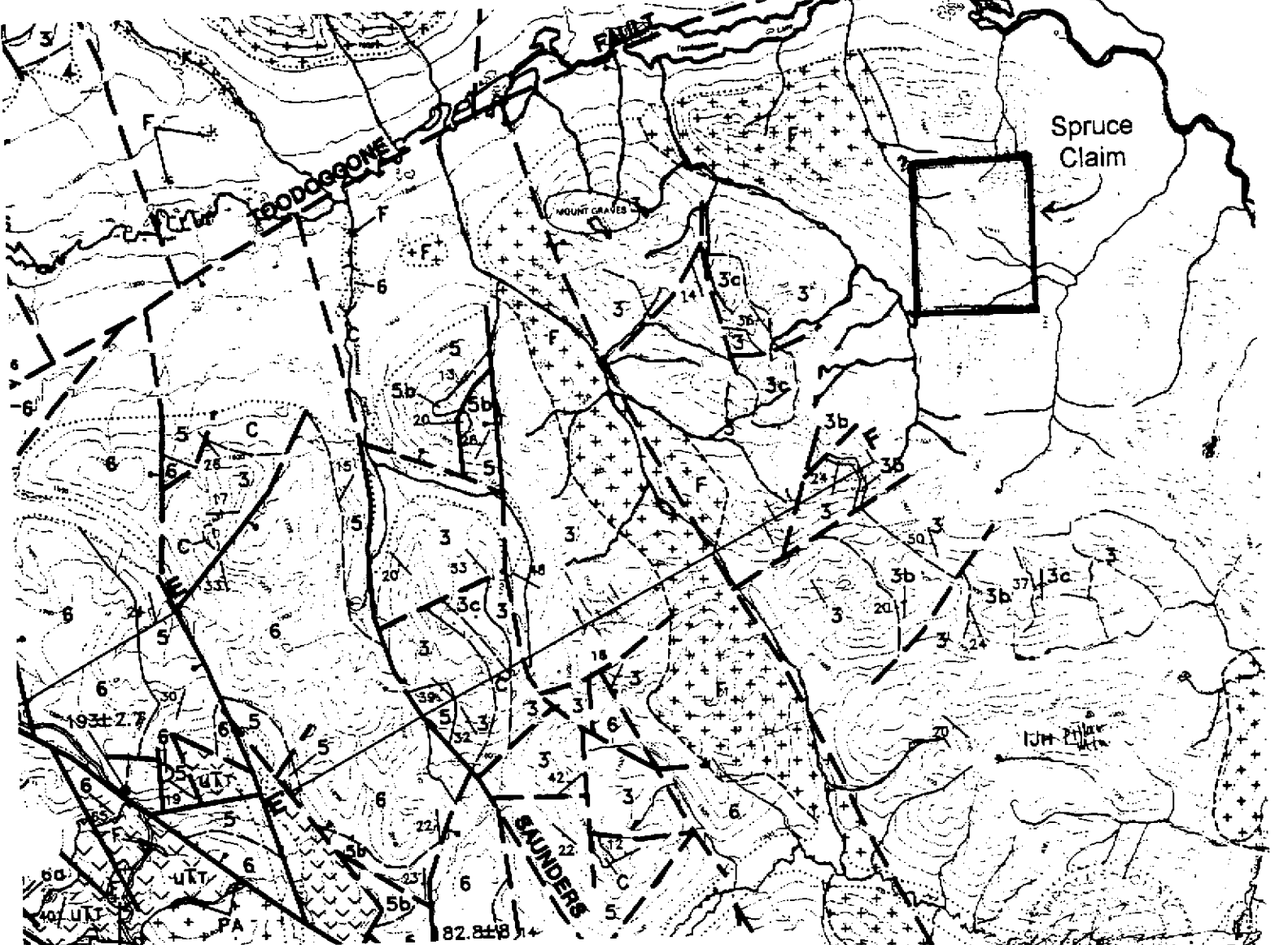
"Two main periods of eruptive activity are evident and the formation is subdivided into six members on the basis of lithology, mineral assemblage, texture and field relationships. A series of comagmatic plutons were emplaced during the lower volcanic cycle and were partly unroofed and eroded during a brief period of uplift before commencement of the upper cycle.

"Extensive and repeated faulting led to the development of an asymmetric collapse feature and served to localize epithermal, vein-type gold-silver mineralization. ... A number of porphyry copper gold deposits and prospects, including the Kemess Mine and the North Kemess deposit, are apparently related to some of the comagmatic (with the Toodoggone Fm - PR) plutons situated in the southern portions of the Toodoggone area."

The regional stratigraphy of the Toodoggone Area is summarized in Table 1, which follows.

Table 1: Regional Stratigraphy

Period	Group	Formation	Lithology
Upper and Lower Cretaceous	Sustut	Brothers Peak	Nonmarine conglomerate, siltstone, shale, sandstone; minor ash-tuff
		Tango Creek	
Cassiar Intrusions: Quartz monzonite and granodiorite			
Major Unconformity			
Lower Cretaceous to Middle Jurassic	Bowser Lake		Marine and nonmarine shale, siltstone and conglomerate
Conformable Contact			
Middle and Lower Jurassic	Spatsizi	Toodoggone	Marine equivalent of the Hazelton Group; shale, siltstone and conglomerate, subordinate fine tuffs
	Hazelton		Subaerial andesite to dacite flows and tuffs, rare basalt and rhyolite flows; subordinate volcanic siltstone to conglomerate; rare limestone lenses
			Black Lake Intrusive Suite: Granodiorite and quartz monzonite
Unconformity			
Upper Triassic	Takla		Submarine basalt to andesite flows and tuffs, minor limestone and argillite
Unconformity			
Lower Permian	Asitka		Limestone, chert, argillite
Major Terrane Boundary Fault			
Cambrian and Proterozoic			Siltstone, shale, sandstone, limestone; regionally metamorphosed to greenschist and amphibolite grade
from Diakow et al., 1993, after Gabrielse et al., 1977			



LOWER VOLCANIC CYCLE

- 4** McClair Member
 Heterogeneous succession composed of crystal-rich, fine to medium-grained porphyritic andesite lava flows, lapilli tuff, minor breccia; local volcanic conglomerate, sandstone and mudstone with plant debris; interleaved with Unit 3 east of Metsantan Creek
- 3** Metsantan Member
 High-potassium latite (trachyandesite) lava flows, massive with local flow breccia

 - 3a** Lava flows similar to Unit 3 but characterized by sparse orthoclase megacrysts up to 1.5 cm in diameter
 - 3b** Well-bedded volcanic conglomerate with interbeds of graded and cross-laminated sandstone, and mudstone containing plant debris; coarse debris flow deposits (Unit 3bi) are interlayered with Unit 3 east of Deedeeya Creek
 - 3c** Crystal-lithic and lapilli tuffs, minor lahatic breccia; includes rare lenses of sandstone and mudstone with plant debris

DIKES AND SUBVOLCANIC INTRUSIONS CONTEMPORANEOUS WITH VOLCANISM OF THE LOWER VOLCANIC CYCLE

- + F +** Stocks and smaller satellite intrusions of equigranular, biotite-hornblende granodiorite; quartz monzonite and quartz diorite

SYMBOLS

- Main outcrop areas.....
- Geological contact: defined, assumed.....
- Bedding and igneous layering: inclined.....
- Fault: dot on downthrown side, arrows indicate sense of strike-slip movement: defined, approximate.....

This map copied from Diakow et al, 1993. Alterations made to illustrate Spruce Claim

Electrum Resource Corporation
SPRUCE Mineral Claim
GEOLOGY MAP

NTS 94E/7W Omineca M.D.
 Scale: 1:100,000 Figure 2

B. Mineral Deposits in the District

[Most of the material in this section is extracted from Diakow et al (1993).]

Diakow et al (1993) make the following general statement about mineral deposits in the Toodoggone District:

"The study area contains several ore deposits and a variety of metal concentrations that can be broadly categorized according to the nature of their occurrence and mode of origin as volcanic-hosted epithermal gold-silver, porphyry copper-molybdenum, skarn and placer gold occurrences"

The epithermal deposits are genetically related to and for the most part hosted within the early Jurassic Toodoggone Volcanics. A significant exception is the Baker Mine which, though of the same general age as the other deposits, is hosted by older Takla Group rocks.

During the 1980's, epithermal gold and silver deposits were the major economic attraction in the district. At present, however, the most important deposit and the only large-scale producer is the Kemess South porphyry copper-gold deposit, at the southern end of the district.

Of the epithermal deposits, the most significant ones are of the adularia-sericite type. The three most significant past producers of the district, Lawyers, Chappelle¹ (Baker) and Shasta fit this category.

A group of acid-sulphate epithermal deposits exists in the Toodoggone camp, but it hasn't been as important, in economic terms, as the group of adularia-sericite ones.

Porphyry deposits in the district are related to Early Jurassic calc-alkaline intrusions that are probably co-magmatic with the Toodoggone volcanics. They are hosted by their related intrusions, by Takla volcanics, or by Toodoggone Volcanics. Kemess south is the only producing deposit of this type. It was put into production in 1998.

Table 2: Examples of Deposits in the Toodoggone District

Name	Host Rock	Status as of August 1998	Reserves plus Production, Jan 92
<i>Epithermal Gold-Silver</i>			
Lawyers	dacite & latite of Toodoggone Fm	past producer	661,000 tonnes @ 8.4 g Au/t & 192 g Ag/t
Baker Mine	basalt & andesite of Takla Group	small scale producer	87,490 tonnes @ 13.7 g Au/t & 273 g Ag/t
Shasta	dacite & latite of Toodoggone Fm	past producer	106,300 tonnes @ 4.5 g Au/t & 250 g Ag/t
others	Toodoggone Fm	prospects & minor past production	2,628,855 tonnes @ 2.8 g Au/t
<i>Porphyry Copper-Gold</i>			
Kemess North	early Jurassic gd & qt monz intruding Hazelton & Takla groups	defined reserve, decision pending	70,000,000 tonnes @ 0.66 g Au/t & 0.18 % Cu
Kemess South	early Jurassic gd & qt monz intruding Hazelton & Takla groups	in production	231.7 million tonnes @ 0.62 g Au/t & 0.22 % Cu (1998)
<i>data adapted from Diakow et al., 1993, except Kemess reserves, which are from Royal Oak Mines WWW site, 1998</i>			

¹ This deposit continues to be operated seasonally on a small scale.

C. Local and Property Geology

No systematic geological mapping of the Spruce Claim has been done. It lies on the eastern edge of the Toodoggone District, and the regional mapping of Diakow et al (1993) did not extend as far east as the Spruce property. Units of the Metsantan member of the Toodoggone Formation dominate the closest mapped area, about a kilometer to the west of the Spruce. Northwest of the claim, the hills on the south bank of the Toodoggone River are underlain by *intrusive rocks correlated to the Black Lake suite*.

Rocks observed by the writer while prospecting and sampling on the Spruce Claim are *various forms of pyroclastics ranging from feldspar crystal ash tuff to volcanic conglomerate*. These rocks are assumed to be equivalent to the Toodoggone Formation, possibly to the Metsantan Member that is mapped nearby.

No details of structural geology are available, other than the observation that brittle fracturing, on an outcrop to a regional scale, is the dominant form of deformation.

Quartz vein material found mainly as float suggests that veins are widespread. The size of vein boulders suggests that most have a thickness of one to a few decimeters. Some of the quartz veins contain mineralization, with galena being the most prominent sulphide, accompanied by locally abundant sphalerite and minor chalcopyrite.

Descriptions of the rock samples collected may be found in Appendix 3.

This sample actually collected 300 m north, just below break in slope in main river valley

628000
627000
626000

6363000
6362000
6361000

Outline of Spruce Claim, Record Number 355431
2009



Topographic Legend

- water course
- 50m line
- minor topographic contour (20 meter interval)
- major topographic contour (100 meter interval)
- trapped soil line (19 years 1992)
- road

The topographic base for this map was a 1:25,000 "TM24" topographic map. The topographic contours are designed to be plotted at 1:25,000.

Sample Codes

- stream sediment sample
- rock chip sample
- rock sample
- soil sample
- sample results
- sample results offset for readability

Number Au ppm Cu ppm

Number Au ppm Cu ppm

Scale in Meters

0 100 200 300 400 500

original plotting scale 1 m = 10000 m
photo-reproduced copies may not be to scale



Electrum Resource Corporation

Spruce Project

Claim Location and Geochemical Results

Drawn by: PWR	Project: 92	Drawing: 49-1-3
Date: March 2000	Report: 49-1	Revision: 2
NTS Reference: 94 E 7W		Figure: 3

LCP

D. Discussion of Sampling Results

1. Rock Chip Sampling

The results of rock chip sampling are tabulated in Table 3. Descriptions and locations of the samples appear in Appendix 3. Their locations are illustrated on Figure 3.

Lead, zinc, silver and copper are found in high concentrations in a few of the samples. S99-004A and S99-006A are prominent for their high metal contents. Both of these are pieces of quartz vein float found in scree near the headwall of a cirque (see Figure 3).

The highest metal contents found in a sample from outcrop are in S99-003A. This was a grab sample from a small, mostly scree-covered outcrop with brown and black oxide stains and traces of malachite/azurite. All fracture surfaces are coated, making identification of the host rock difficult. It is probably an intermediate feldspar crystal ash tuff.

Table 3: Analyses of Rock Chip Samples

Sample Number	Ag ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb
SPS 0+70 N	0.6	100	26	14	46	<5	62	6
SPR 3	0.6	310	47	2	18	<5	14	5
SPR 4	<0.2	80	32	2	14	5	98	4
S99-001A	0.2	130	7	2	6	<5	26	12
S99-002A	0.6	230	11	6	34	5	24	38
S99-003A	1	1210	1234	6	82	5	2051	8
S99-004A	3.8	210	162	4	>10000	5	506	51
S99-005A	0.2	130	11	4	32	<5	60	5
S99-006A	88.8	230	657	30	>10000	15	>10000	14
SPR 2 3+55 N	0.2	60	50	8	112	5	194	6

2. Soil Sampling

The soil sample results are tabulated in Table 4. Coordinates of their locations appear in Appendix 3 and their locations are plotted on Figure 3. They were collected along a pace and compass line run north from the site of SPS 0+00 N. The site for the soil sample line was selected by a prospector because of an abundance of red iron oxide staining in the soils and rocks.

The number of soil samples collected is too small to lead to specific conclusions. The sample results suggest that there is a high background level of zinc and lead in the soils. Silver values in three samples fall in the range 0.8 ppm to 3.2 ppm, also suggesting a relatively high background level.

Table 4: Analyses of Soil Samples

Sample Number	Ag ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb
SPS 0+00 N	3.2	380	28	22	202	5	290	29
SPS 1+00 N	0.8	350	32	8	98	5	124	13
SPS 2+35 N	1	480	59	6	112	5	220	40
SPS 3+55 N	<0.2	230	56	2	60	5	185	10
SPS 5	0.2	340	14	14	20	5	65	22

3. Stream Sediment Sampling

The stream sediment sample results are listed in Table 5. Their locations are listed in Appendix 3 and they are plotted on Figure 3. Samples SPS 6 and SPS 7 are from the drainage originally sampled as part of an RGS survey in which high metal values were found.

The four stream sediment samples collected contain relatively high levels of zinc and lead. Copper is somewhat elevated and sample SPS 7 contains 1.2 ppm silver, a comparatively high value.

Table 5: Analyses of Stream Sediment Samples

Sample Number	Ag ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb
SPS 6	0.4	250	77	6	48	5	210	14
SPS 7	1.2	200	48	4	54	5	257	11
S99-007A	0.6	690	81	2	112	5	373	21
S99-008A	-0.2	390	40	-2	42	5	175	9

4. Summary of Sampling Results

The results of the rock chip, soil and stream sediment sampling suggest that the Spruce area contains vein style lead-zinc-silver mineralization. Further prospecting and geological mapping would be required to determine the probable extent of such mineralization and its economic implications.

IV. Bibliography

Diakow, L.J., Panteleyev, A. and Schroeter, T.G

1993 Geology of the Early Jurassic Toodoggone Formation and Gold-Silver Deposits in the Toodoggone River Map Area, Northern British Columbia. B.C.M.E.M.P.R. Bulletin 86, Geological Survey Branch - Mineral Resources Division, 72 p.

Staargaard, C.F.

1994 Geochemical Sampling and Reconnaissance Geology of the Pil 1-13 Claims, Toodoggone Area, British Columbia. Consultant's report for Electrum Resource Corporation.

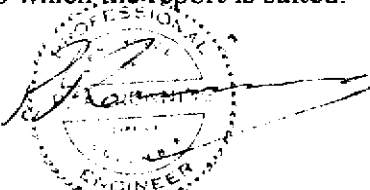
Zastavnikovich, S

1997 Geochemical/Geophysical Assessment Report on the Spruce Mineral Claim. Consultant's report for Electrum Resource Corporation, filed for assessment credit.

V. Statement of Qualifications

I, Peter Arthur Ronning, of 1450 Davidson Road, Langdale, B.C., hereby certify that:

1. I am a consulting geological engineer, doing business under the registered name New Caledonian Geological Consulting. My business address is 912 - 510 West Hastings Street, Vancouver, B.C., V6B 1L8.
2. I am a member in good standing of the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
3. I am a graduate of the University of British Columbia in geological engineering, with the degree of B.A.Sc. granted in 1973.
4. I hold the degree of M.Sc. (applied) in geology from Queen's University in Kingston, Ontario, granted in 1983.
5. I have worked as a geologist, and latterly as a geological engineer, in the field of mineral exploration since 1973.
6. I am the author of the report entitled "1999 Exploration Program on the Spruce Project" and dated April 2000.
7. I participated in the work described in this report.
8. I hold no beneficial interest in the mineral claim that is the subject of this report, nor in any corporation or other entity whose value could reasonably be expected to be affected by the conclusions expressed herein.
9. I authorize Electrum Resource Corporation to use this report, but only in its entire and unabridged form, for any lawful purpose to which the report is suited.



The seal is circular with a double border. The outer border contains the text "ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COLUMBIA" at the top and "PROFESSIONAL ENGINEER" at the bottom. The inner border contains the text "REGISTERED" at the top and "1911" at the bottom. In the center, there is a signature that appears to be "Peter A. Ronning" written in cursive. A horizontal line extends from the right side of the seal.

Peter A. Ronning, P.Eng.

Appendix 1: Statement of Costs

Spruce Project 1999 Expenditures

Consultants and Contractors Fees

Person	Date	Activity	Rate Per Day	GST	Total Cost
P.A. Ronning	25-Aug-99	Geol. Recon. & Sampling	\$375.00	\$26.25	\$401.25
P.A. Ronning	14-Apr-00	Drafting, Report Writing	\$375.00	\$26.25	\$401.25
P.A. Ronning	17-Apr-00	Write & Assemble Report; Calculate Costs	\$375.00	\$26.25	\$401.25
L Warren	25-Aug-99	Prospecting and Sampling	\$350.00	\$24.50	\$374.50
Mr. Warren	25-Aug-99	Prospecting and Sampling	\$260.00	\$18.20	\$278.20
R. Desjardins	25-Aug-99	Prospecting and Sampling	\$260.00	\$18.20	\$278.20

Room and Board

Supplier	Date	Number of man days	Rate per Day	GST	Total Cost
CJL Enterprises	25-Aug-99	3	\$65.00	\$4.55	\$208.65
CJL Enterprises	25-Aug-99	1	\$25.00	\$1.75	\$26.75

Helicopter Charter

Supplier	Date	Number of Hours	Rate per Hour	GST	Total Cost
Canadian	25-Aug-99	0.5	\$800.00	\$56.00	\$428.00

Mobilization and De-Mobilization, Pro-rated

\$500.00

Cost of Purchasing Digital Map Base (TRIM Map), Pro-Rated

\$200.00

Cost of Materials and Supplies, Pro-Rated

\$100.00

Cost of Analyses

Supplier	Quantity	Item	Cost per Unit	GST	Total Cost
TSL Assayers	10	rock sample prep	\$5.25	\$0.37	\$56.18
	9	soil/stream sample prep	\$1.80	\$0.13	\$17.33
	19	ICP Analyses	\$7.30	\$0.51	\$148.41
	19	Geochem Gold Analyses	\$9.00	\$0.63	\$182.97
	1	Copper Assay	\$9.00	\$0.63	\$9.63

Total Cost of Program

\$4,012.57

Appendix 2: Analytical Results

Notes: this appendix contains 2 pages, not including this one.

All analyses are by TSL Assayers Corporation, Vancouver, B.C.

These pages are print-outs of data received electronically. Original certificates of analysis are available for inspection at the offices of Electrum Resource Corporation or TSL Assayers.

Certificate Number: 9V0336RJ			Rock Samples																											
Sample	ICP Ag	ICP Al	ICP As	ICP Ba	ICP Be	ICP Bi	ICP Ca	ICP Cd	ICP Co	ICP Cr	ICP Cu	ICP Fe	ICP K	ICP Mg	ICP Mn	ICP Mo	ICP Na	ICP Ni	ICP P	ICP Pb	ICP Sb	ICP Sc	ICP Sn	ICP Sr	ICP Ti	ICP V	ICP W	ICP Y	ICP Zn	ICP Zr
Name	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	%	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
SPS 0+70 N	0.6	0.67	5	100	<0.5	<5	0.1	1	4	104	26	2.83	0.16	0.5	575	14	0.04	3	370	46	<5	2	<10	8	0.12	34	<10	6	62	29
SPR 3	0.6	0.79	5	310	<0.5	<5	0.02	<1	2	75	47	4.06	0.37	0.14	60	2	0.04	2	280	18	<5	3	<10	23	0.09	51	<10	2	14	15
SPR 4	<0.2	2.88	5	80	<0.5	<5	0.76	<1	21	42	32	7.47	0.08	2.95	1315	2	0.09	12	1660	14	5	19	<10	75	0.5	265	<10	10	98	17
S99-001A	0.2	0.81	145	130	<0.5	<5	0.65	<1	5	91	7	2.1	0.07	0.63	375	2	0.04	3	700	6	<5	2	<10	84	0.15	36	<10	9	26	40
S99-002A	0.6	0.31	70	230	<0.5	<5	0.01	<1	1	235	11	0.69	0.16	0.03	55	6	0.02	4	120	34	5	<1	<10	12	0.07	3	<10	2	24	18
S99-003A	1	2.28	15	1210	0.5	<5	1.91	43	16	33	1234	4.25	0.24	1.37	4880	6	0.01	8	990	82	5	7	<10	129	0.03	61	<10	16	2051	11
S99-004A	3.8	0.04	20	210	<0.5	10	0.06	12	1	423	162	0.44	0.02	0.01	75	4	0.01	6	30	>10000	5	<1	<10	4	<0.01	2	<10	<1	506	2
S99-005A	0.2	1.11	20	130	<0.5	<5	0.3	<1	5	106	11	2.47	0.11	0.73	560	4	0.05	6	400	32	<5	3	<10	42	0.15	48	<10	4	60	17
S99-006A	88.8	0.08	5	230	<0.5	170	0.39	>100	2	172	657	0.47	0.01	0.03	580	30	0.01	1	80	>10000	15	<1	<10	15	<0.01	3	110	2	>10000	1
SPR 2 3+55 N	0.2	2.71	10	60	<0.5	<5	1.41	2	25	66	50	6.84	0.06	3.19	1210	8	0.03	18	1460	112	5	16	<10	21	0.4	220	<10	13	194	24
Certificate Number: 9V0336RG			Rock Samples																											
Sample	Geochem Au-fire	Assay Cu																												
Name	PPB	%																												
SPS 0+70 N	6																													
SPR 3	5																													
SPR 4	4																													
S99-001A	12																													
S99-002A	38																													
S99-003A	8	0.1																												
S99-004A	51																													
S99-005A	5																													
S99-006A	14																													
SPR 2 3+55 N	6																													

Certificate 9V0337SJ																														
Sample No.	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sn ppm	Sr ppm	Ti %	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
SPS 0+00 N	3.2	2.19	5	380	0.6	<5	0.02	<1	9	19	28	9.77	0.28	1.12	845	22	0.03	8	2160	202	5	10	<10	39	0.01	141	<10	4	290	6
SPS 1+00 N	0.8	2.73	5	350	<0.6	<5	0.09	1	8	15	32	8.78	0.21	0.88	800	8	0.05	9	2410	98	5	13	<10	59	0.2	232	<10	6	124	8
SPS 2+35 N	1	2.54	70	480	<0.5	<5	0.1	<1	15	125	59	11.9	0.23	1.28	685	6	0.1	12	2930	112	5	27	<10	79	0.48	310	<10	10	220	16
SPS 3+55 N	<0.2	3.88	10	230	1	<5	0.43	2	41	63	56	8.21	0.09	1.6	2815	2	0.02	31	1460	60	5	14	<10	37	0.2	218	<10	11	185	9
SPS 5	0.2	1.13	10	340	<0.5	<5	0.1	<1	10	14	14	5.33	0.38	0.33	555	14	0.08	4	1250	20	5	4	<10	125	0.02	99	<10	6	65	3
SPS 6	0.4	3.29	10	250	0.5	<5	0.54	1	43	14	77	5.66	0.08	0.91	1740	6	0.02	14	1050	48	5	8	<10	77	0.13	120	<10	30	210	6
SPS 7	1.2	2.11	<5	200	<0.5	<5	0.78	2	18	13	48	4.71	0.09	0.9	980	4	0.02	11	1160	54	5	7	<10	78	0.2	125	<10	20	257	5
S99-007A	0.6	2.53	10	690	1	<5	1.25	3	10	15	81	3.93	0.14	0.88	1405	2	0.02	12	1260	112	5	5	<10	100	0.04	76	<10	24	373	3
S99-008A	<0.2	2.07	5	390	0.6	<5	1.05	1	12	15	40	4.9	0.11	0.87	1035	<2	0.02	11	1070	42	5	6	<10	78	0.13	116	<10	15	175	5
Certificate 9V0337SG																														
Geochem																														
Sample Name	Au -fire																													
	PPB	Sample Type																												
SPS 0+00 N	29	soil																												
SPS 1+00 N	13	soil																												
SPS 2+35 N	40	soil																												
SPS 3+55 N	10	soil																												
SPS 5	22	soil																												
SPS 6	14	stream sed.																												
SPS 7	11	stream sed.																												
S99-007A	21	stream sed.																												
S99-008A	9	stream sed.																												

Appendix 3: Descriptions of Samples

Notes: this appendix contains 5 pages, not including this one
only those samples collected in 1999 are listed in this appendix.
authors of sample descriptions are:

S99 series

P. Ronning

All others

L. Warren

Sample Number: S99-001A **UTM Easting:** 628392

Site Name S99-001 **UTM Northing:** 6362261

Field Notes: At base of headwall in cirque. Rusty-looking faces in cliffs above. Large 1m x 1m x 1/2m boulder of garnet-epidote skarn in scree below cliffs. 80% of rock is brownish-pink garnet, anhedral. 10% is epidote. Superficially the epidote looks more abundant because it is found as a fracture coating. 5% dark brown sub-millimetric spots that may be garnet crystals. Minor yellow-orange iron oxides on fracture surfaces.

On examining the skarn in situ, it is found to be a tabular zone 5m to 7m wide, trending roughly 330/85. Weathers pinkish brown. The grey weathering wall rocks are variably epidotized to about 10% and contain minor brown garnet. The protolith is a feldspar crystal tuff.

Sample Description: grab sample from boulder

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
7	12	0.2	26	2	6

Sample Number: S99-002A **UTM Easting:** 628401

Site Name S99-002 **UTM Northing:** 6362331

Field Notes: Boulder in scree below headwall, 20 cm x 10 cm x 10 cm. Crypto-crystalline silica; cherty. Mainly creamy buff but in the least exposed cores of hand specimens the rock is grey, possibly coloured by finely disseminated sulphides. Fracture surfaces are coated with orange-brown iron oxides. The rock is very hard, breaking into shards and sharp fragments.

Sample Description: grab from boulder

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
11	38	0.6	24	6	34

Sample Number: S99-003A **UTM Easting:** 628401

Site Name S99-003 **UTM Northing:** 6362311

Field Notes: About 20 meters directly up the fall line from S99-002. Outcrop with brown and black oxide stains plus blue-green azurite/malachite stain. All fracture surfaces are coated, making identification of the host rock difficult. Probably an intermediate feldspar crystal ash tuff. Traces of yellow sulphide are visible. Specks are too small to accurately identify, but they may be chalcopyrite.

Sample Description: grab sample from outcrop

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
1234	8	1	2051	6	82

Sample Number: S99-004A **UTM Easting:** 628430

Site Name S99-004 **UTM Northing:** 6362161

Field Notes: A piece of quartz vein float about 200 grams. Weathers buff to white. About 3% galena as coarse euhedral crystals. Trace of fine chalcopyrite.

The sample is the entire piece of rock

Sample Description: entire piece of rock, about 200 g.

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
162	51	3.8	506	4	10000

Sample Number: S99-005A **UTM Easting:** 628430

Site Name S99-005 **UTM Northing:** 6362141

Field Notes: Boulder of volcanic conglomerate. Contains about 1% pyrite, finely disseminated.

This site is about 20 meters upslope from 004, at about the level of the saddle but 50 meters west of the lowest point of the saddle.

Sample Description: grab sample from boulder

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
11	5	0.2	60	4	32

Sample Number: S99-006A **UTM Easting:** 628441

Site Name S99-006 **UTM Northing:** 6362209

Field Notes: About 50 meters northeast of the saddle.

Boulder of vein quartz, about 70 cm x 40 cm x 15 cm. Probably from a vein about 15 cm to 20 cm wide. White quartz weathers grey-brown. About 10% galena as coarse crystals. Minor malachite. 15% angular vugs where some mineral has weathered out.

Sample Description: grab sample from boulder

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
657	14	88.8	10000	30	10000

Sample Number: S99-007A **UTM Easting:** 628020

Site Name S99-007 **UTM Northing:** 6363759

Field Notes: Stream sediment sample site. Main creek draining north out of cirque.

 About 2 m wide, 15 cm deep. Moderate flow to north. Bed mainly angular boulders and cobbles of volcanic rock.

Sample Description: stream sediment; from pocket of fine grey-brown silt, LH bank, just awash.

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
81	21	0.6	373	2	112

Sample Number: S99-008A **UTM Easting:** 628036

Site Name S99-008 **UTM Northing:** 6363903

Field Notes: Stream sediment sample site. Main creek draining north out of cirque; same one as 007.

 Below the point where the creek debouches into the valley of the Toodoggone River.

 1m to 2 m wide, 0.2 meters deep. Moderate flow on a 5 degree slope. Mainly boulders and cobbles in creek bed. Banks are timbered.

Sample Description: stream sediment; fine sand to fine gravel from a small pocket of sediment just awash on the RH bank.

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
40	9	-0.2	175	-2	42

Sample Number: SPR 2 3+55 N **UTM Easting:** 627441

Site Name SPR 2 3+55 **UTM Northing:** 6361650

Field Notes:

Sample Description: grab sample of rock

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
50	6	0.2	194	8	112

Sample Number: SPR 3 **UTM Easting:** 627352

Site Name SPR 3x **UTM Northing:** 6361737

Field Notes: Very weathered, limonitic rock.

Sample Description: grab sample of rock

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
47	5	0.6	14	2	18

Sample Number: SPS 3+55 N UTM Easting: 627496

Site Name SPS 3+55 Nx UTM Northing: 6361650

Field Notes:

Sample Description: soil sample

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
56	10	-0.2	185	2	60

Sample Number: SPS 5 UTM Easting: 627171

Site Name SPS 5x UTM Northing: 6360992

Field Notes: soil sample in zone of quartz silicification on a topographic hump.

Sample Description: soil sample

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
14	22	0.2	65	14	20

Sample Number: SPS 6 UTM Easting: 626476

Site Name SPS 6x UTM Northing: 6362170

Field Notes: Silt sample on main creek.

Sample Description: stream sediment

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
77	14	0.4	210	6	48

Sample Number: SPS 7 UTM Easting: 625971

Site Name SPS 7x UTM Northing: 6363022

Field Notes: silt sample on main creek 750 meters north of SPS 6.

Sample Description: stream sediment

Cu ppm	Au ppb	Ag ppm	Zn ppm	Mo ppm	Pb ppm
48	11	1.2	257	4	54