

# **GEOLOGICAL INVESTIGATION OF THE ANTLER PROPERTY**

**(ANTLER 1-11, KLT, CM)**

**LIARD MINING DIVISION  
NTS MAP SHEET: 104G/2W  
LATITUDE: 57 07'N  
LONGITUDE: 130 47'W**

**February, 1997**

**PREPARED BY:  
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**V6E 2E9 GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT**

**24,918**

## SUMMARY

During 1996, 5 samples were collected from the Antler property during a brief property visit and 3 of the 1995 samples underwent petrographic thin section analysis. The thin sections revealed the Antler showing to be primarily crackled and corroded pyrite within a felsic volcanic host rock. The float boulder of primary interest contained bands of sphalerite with grains of pyrite and chalcopyrite in a carbonate gangue.

Brief prospecting confirmed the 1995 float sample and located additional boulders containing anomalous copper and zinc values. Of particular interest was sample BA6 which contained 11.9% zinc and 0.3% copper with anomalous cobalt and cadmium values. This sample was found near the previous seasons findings.

A program of prospecting, geological mapping and VLF geophysical surveying is recommended on the Antler property to try to locate the source of the high grade float found in abundance near Rumble Creek.

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## 1.0 INTRODUCTION

The Broken Antler showing was found in 1992 and 1993 by two different groups. Several samples taken from the showing failed to produce any ore grade results but nonetheless the showing was considered significant due to the large amount of pyrite and the geologic setting. The Antler property, consisting of some forty one units was located to cover the Broken Antler showing as well as other prospective ground in the immediate area.

Exploration in 1995 included stream sediment sampling on the property, a small soil geochemical sampling grid over the showing as well as reconnaissance prospecting and rock sampling. This program resulted in one float sample anomalous in copper zinc and cadmium being located.

In 1996 in the course of examining data from the property, Cominco did some thin sections from the Antler samples and took several samples from the property during a brief site visit.

## 2.0 LOCATION AND ACCESS

The Antler property is located, see Figure 1, about 20 kilometres west-northwest of the Bob Quinn Lake air strip and highways yard on highway 37 ( Stewart-Cassiar highway) in northwestern BC. The showing is at about 3800 feet elevation at the tree line and is on the south side of the largest fork of More Creek. Access to the property is by road to Bob Quinn and then by helicopter to the property.

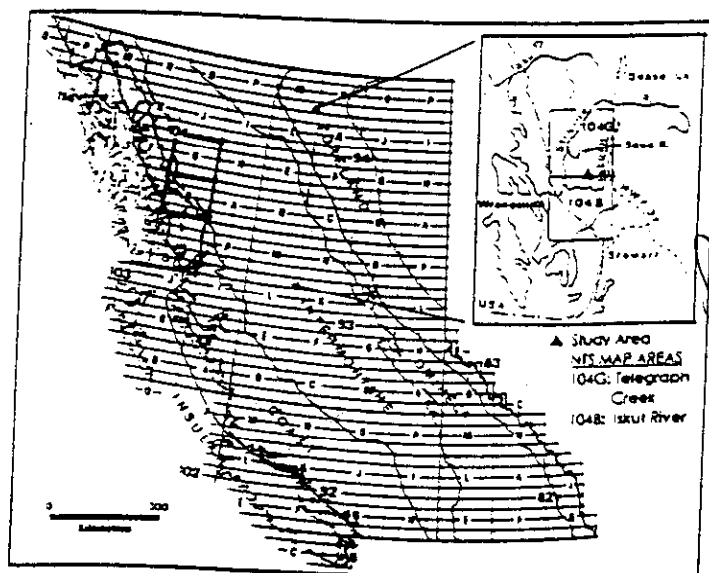


Figure 1. Property Location Map

### 3.0 PHYSIOGRAPHY

The property is located in the Boundary Mountains of the Coast Range. The weather consists of large amounts of precipitation and snow accumulations in the winter. This area has only recently lost its cover of ice, probably the last 200 years. The glacial valleys are generally free from vegetation because there has not been enough time for the soil to develop. Hillsides below the alpine ice or above the scour level can be covered by scrub evergreens, spruce and willow type bushes.

The glacial ice is receding quickly, since the local airphotos were taken in the 1960's the ice has receded about 350 meters. Grizzly bears are the main inhabitants of this area particularly in August when the red berries ripen and are very abundant on the bushes covering the hillsides. By the end of September snow would be expected to be staying on the ground, not leaving until late May or June. This permits only a very brief field season particularly if one tries to avoid the bears in August.

### 4.0 CLAIM TENURE

The property consists of the first 8 Antler 2 post claims staked in 1994 as well as the 3 Antler 2 post claims staked in July 1995. In addition to the two post claims a 20 unit 4 post claim, the KLT claim and an 18 unit claim, the CM claim were located in July 1995. The record numbers of all of the claims and their expiry dates are listed in the table below.

<u>CLAIM NAME</u>	<u>TYPE</u>	<u>RECORD NUMBER</u>	<u># UNITS</u>	<u>EXPIRY DATE</u>
ANTLER 1-8	2 POST	331085-331092	8	SEPT 28, 2001
ANTLER 9-11	2 POST	338303-338305	3	JULY 19, 1997
KLT	4 POST	338313	20	JULY 18, 1997
CM	4 POST	338314	18	JULY 20, 1997

### 5.0 HISTORY AND PREVIOUS WORK

Very little work is on record for this area of the province. A few showings in the area have been explored and drilled in the last 10 years but prior to that there does not appear to have been a significant amount of work done in this area. This is probably due to the lack of large obvious gossans, the short season and the difficult access. The Fore More, Bam, Windy and Lucifer properties are examples of properties that have had minor exploration and drill programs. In general these showings have produced sporadic narrow intersections of vein type mineralization with occasional ore grades. The Fore More property is the exception where several hundred float boulders were found on a lateral and terminal moraine. The 69 boulders that were sampled averaged 2.7 oz./ton Ag, 0.7% Pb, and 6.8% Zn. Geophysics and drilling through glacial ice failed to find the source of the boulders.

There has been almost no work recorded for the area covered by the Antler claims. The M&M claims located west of the Antler claims, had some prospecting done on them with little success resulting in the claims being dropped. In 1992 the Broken Antler showing was seen from the air, sampled and

staked. These claims were allowed to lapse. In 1993, Mike Gunning encountered the showing while doing a traverse, he sampled the showing and wrote a paper on it which was published in 1994. The first 8 Antler claims were staked to cover the showing in late September, 1994 with the other 41 units staked during the 1995 brief exploration program. This program consisted of soil and stream sediment sampling and prospecting. During this program a float boulder was found which assayed 1.7% copper and 17% zinc.

## **6.0 GEOLOGY**

Since 1986 several groups of geologists have spent time in the More Creek area mapping and checking the mineral occurrences. The result is that there is a much better understanding of the geology in the More Creek area now than there has been in the past. This should only improve the chances of a significant discovery in the More Creek area.

### **6.1 REGIONAL GEOLOGY**

Figure 2 shows the geology in the More Creek area. The More Creek area is located within the Boundary Ranges of mountains within the Coast Mountains. The area is bounded on the east by the Forrest Kerr pluton of late Devonian age (Logan et al., 1992a, 1993) which consists mainly of medium to coarse grained granite, although mafic phases are present near the pluton margins and granite containing diorite clasts are common. The Forrest Kerr fault coincides with the eastern margin of the pluton as well as the north-south orientation of More Creek.

West of the pluton margin is underlain by palaeozoic, upper Triassic, and Jurassic volcano-sedimentary successions and plutons. Recent work by the GSC and BCDM in the More Creek has greatly increased the understanding of the geology in the area although the ice coverage and isolation still make this area relatively unexplored. A bibliography of geology reports in the More Creek area is located in Appendix IV.

### **6.2 PROPERTY GEOLOGY**

Figure 3 shows all of the geology that has been mapped on the property to date. The eastern boundary of the Antler property is located along the western margin of the Forrest Kerr pluton. The remainder of the property consists of Palaeozoic volcanic and sedimentary rocks. The most obvious geologic features on the property are an outcrop of recrystallized limestone north of Basin creek and a large rhyolite dome south of Basin creek and west of Rumble creek. These two features are easily recognizable from the basin creek valley.

Basalt sheet flows and breccias are the most abundant bedding within the stratigraphic sequence underlying the area north of the Alexander Glacier. In addition to the basalts the steep south to southwest dips reveal lithic tuff, compositionally layered rhyolite and rare phyllite, sericite, and quartz-sericite schist and nonfossiliferous grey limestone.

Figure 2

**STRATIFIED ROCKS REGIONAL GEOLOGY**

- recent volcanic rocks
- Lower-Middle Cretaceous conglomerate
- basinal clastics of unknown age (inferred Middle or Upper Jurassic)
- mainly Lower-Middle Jurassic volcanic rocks, including felsite intrusions
- mainly Upper Triassic volcanic rocks
- shallow marine clastics overlain by basalt; Permian (?) - Upper Triassic

**middle-upper Paleozoic  
Stikine Assemblage**

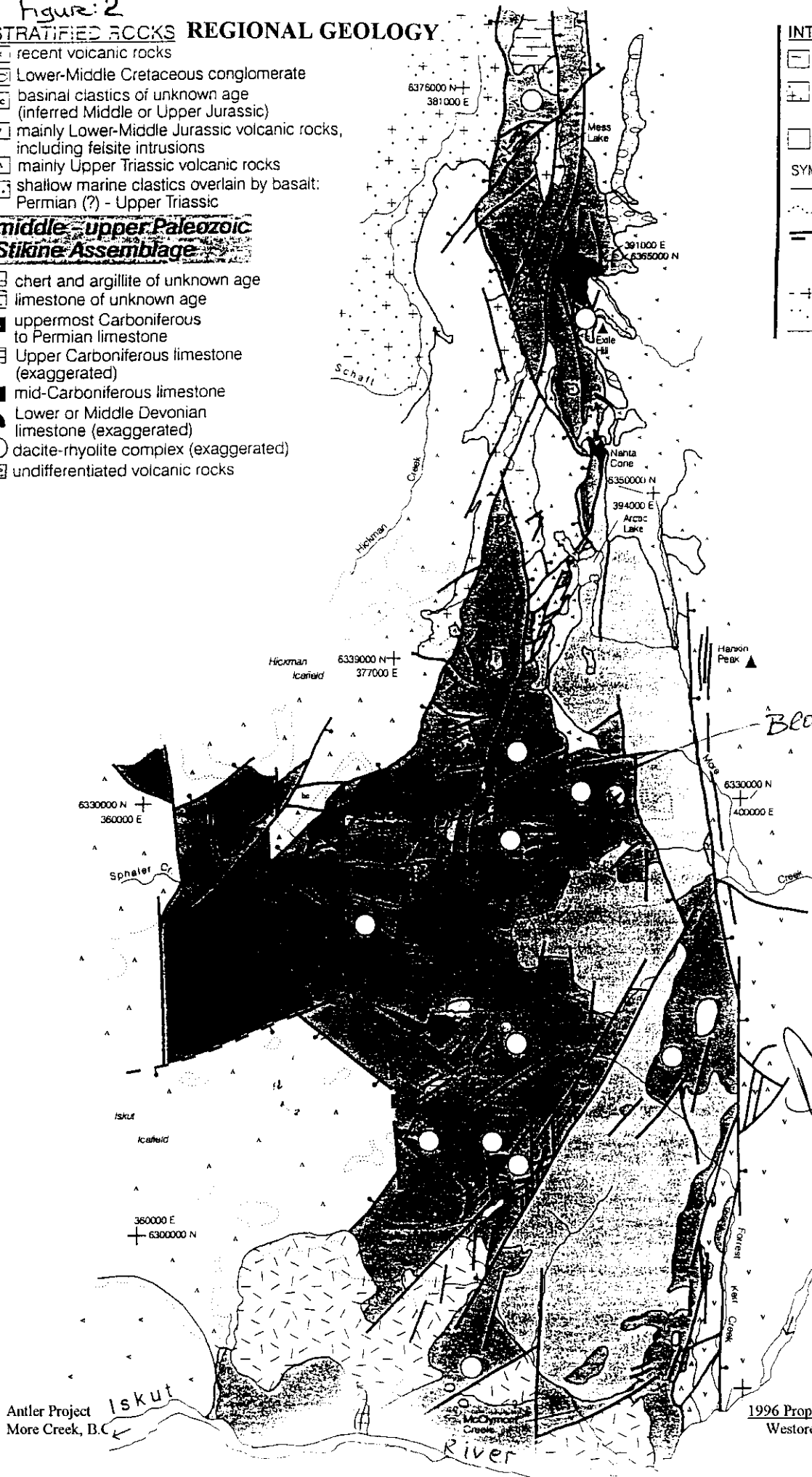
- chert and argillite of unknown age
- limestone of unknown age
- uppermost Carboniferous to Permian limestone
- Upper Carboniferous limestone (exaggerated)
- mid-Carboniferous limestone
- Lower or Middle Devonian limestone (exaggerated)
- dacite-rhyolite complex (exaggerated)
- undifferentiated volcanic rocks

**INTRUSIVE ROCKS**

- Early Jurassic quartz monzonite
- Late Triassic and Middle Jurassic Hickman Batholith and related stocks
- earliest Mississippian Forrest Kerr Pluton

**SYMBOLS**

- geologic contact
- gradational volcanic domain boundary
- fault (known, inferred; bar on down-dropped block, open triangle on upthrown block)
- anticline axial trace
- icefield, glacier
- river, lake



Antler Project  
More Creek, B.C.

1996 Property Investigation  
Westore Engineering Ltd

Near the Broken Antler showing the beds are altered and silicified with quartz veinlets and stockworks. From west to east starting at the occurrence the beds are: lapilli tuff, folded quartz-sericite schist, and ash tuff with tractionary sedimentary structures. There are occasional rhyolite fragments with quartz stockwork in the lapilli tuff.

### 6.3 MINERALIZATION AND ALTERATION

The most significant mineralization found to date on the property is the Broken Antler showing which outcrops for more than 100 meters along strike. The showing consists of a zone up to 10 meters wide containing up to 10 centimetre thick bands of pyrite separated by up to one metre of quartz. The outcrops are characterized by a rusty appearance with some manganese staining as well. Outcrops of the footwall and hangingwall rocks are not visible at the contacts and therefore the dip of the structure is difficult to determine. Bedding in the area is steeply dipping to the west.

Numerous float boulders can be found in the valleys of Basin and Rumble creeks which are similar in appearance to the Broken Antler showing. There is also some float near Rumble Creek (MG95-55-2) which has Copper and Zinc mineralization, petrographic analysis revealed bedded sphalerite in a carbonate gangue with pyrite and chalcopyrite grains. Upstream slightly from 55-2 is another boulder which consists of bedded fine grained pyrite (80% of the rock) and is quite different texturally from any of the other samples.

Most of the rocks in the Rumble and Basin Creek valleys are highly silicified. As opposed to the stockwork zones near the Broken Antler showing there is an outcrop on the east side of Rumble Creek which was originally volcanic but appears now to be almost entirely silica. The general appearance of the area is that of a large hydrothermal system which may be related to the rhyolite dome south of Basin Creek.

### 7.0 DISCUSSION OF RESULTS

The following petrographic descriptions were done from samples collected in 1995:

**“Sample R96: 3211** contains about 20% as opaques. The mode is approximately as follows: pyrite- 60%, sphalerite-35% and chalcopyrite-5%. Pyrite occurs as grains to 0.5mm. They are seen to occur in concentrations. the grains are fractured, broken and modified by shearing. Seams of sphalerite are composed of fine grains, elongated in a plane of deformation. These seams may reach 2mm in width. chalcopyrite is as inclusion in sphalerite. Also, fine grains, in clusters are seen to occur associated with pyrite and sphalerite.

The host rock is a highly sheared, carbonated quartz wacke. It is cross-cut by calcite in veinlets to a mm in width”. This sample was taken from a piece of sample MG95-55-2

**“Sample R96:3212** has about 80% opaques all of which are pyrite. The pyrite occurs as small grains in the 0.05-0.1 mm size range. They are concentrated in layers or bands to several mm's wide. Interstitial carbonate in grains and in fractures, crudely parallels pyrite layers. the carbonate (calcite) is sometimes intergrown with a bit of anhydrite.



This is a banded, carbonated pyrite rock" corresponding to DG95-9.

"Sample R96:3213 has about 10 to 15% opaques and all is seen to be pyrite. Crackled and corroded pyrite grains to 1mm form fracture replacements to 1-2 mm in width and fill pull-apart features up to 1 cm in size.

The rock consists of very fine grained siliceous (potash feldspar) felsite with minor oriented sericite. This has been fractured up and individual fragments of a cm are cut by quartz (minor albite) veinlets. Some of these veinlets are up to 3 mm wide. This rock is a brecciated felsitic volcanic (?) rock" typical of the Broken Antler showing.

During the site visit on August 18, 1996 five samples were taken from the property. The locations of the samples are shown in Figure 3 and the descriptions of the individual samples are as follows:

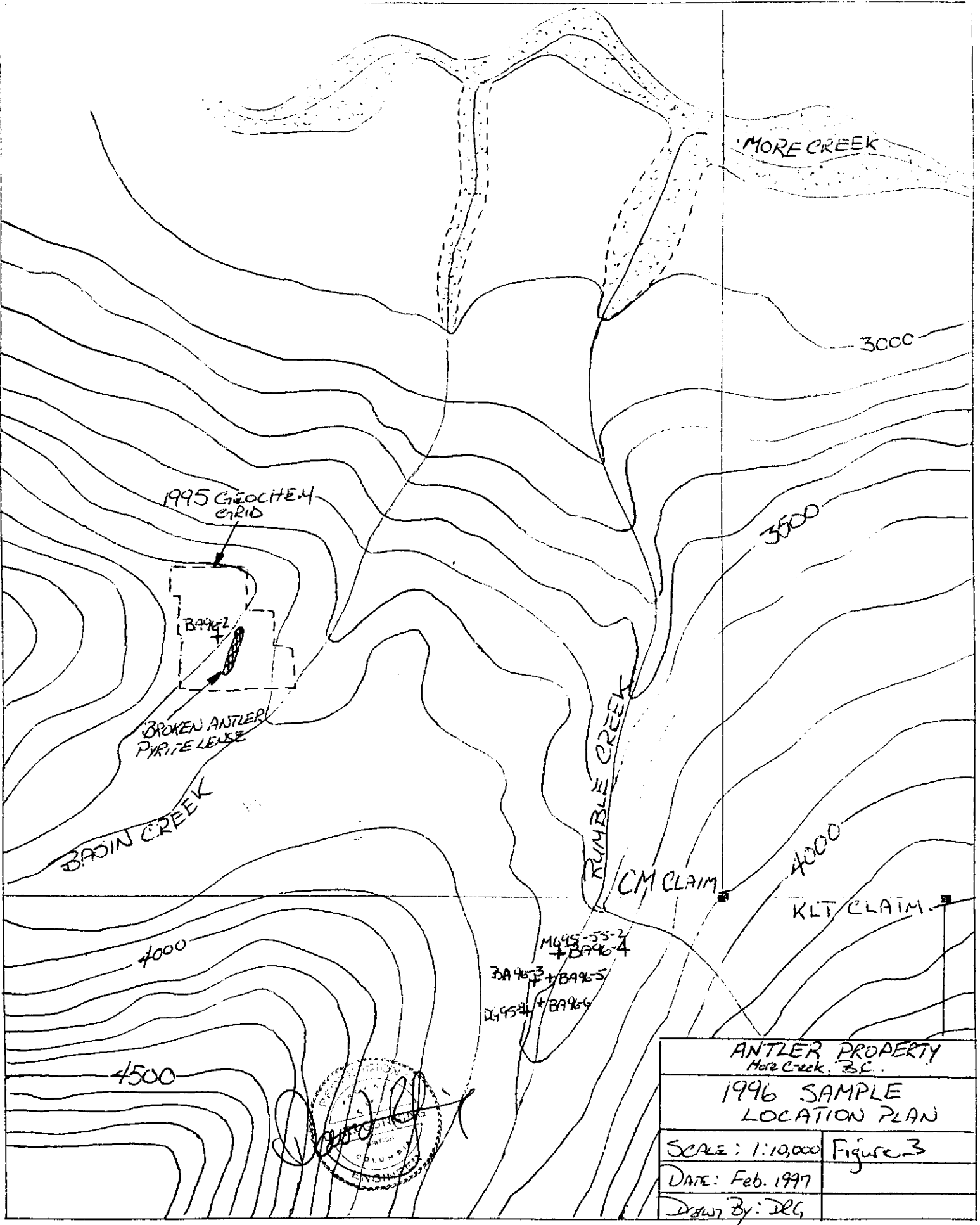
- BA2 is a sample of andesite from the Antler showing area. It is, as anticipated, devoid (actually depleted) of base metals.
- BA3 is a 25 cm, rounded chlorite-altered amphibolite boulder of apparent skarn affinity located approximately half-way between the pyritic boulder and the Zinc rich boulder in Rumble creek. Disseminated chalcopyrite was visible and the results confirm this. The elevated Co value is indicative of skarn-type mineralization.
- BA4 is the zinc-rich boulder (1995). The elevated cadmium is interesting.
- BA5 is from a 30 cm rounded boulder of carbonate-altered amphibolite with strong hematite veining. The elevated zinc value is interesting. This boulder would be similar to a suite of hematitic, Zn-bearing boulders at Foremore.
- BA6 is from the 60cm, strongly manganese-stained boulder found near the helicopter. It contained 5% disseminated specular hematite and very good zinc (11.9%). Zinc occurs as very fine-grained dark grey to black sphalerite. Elevated copper, cobalt and cadmium are again present

The sample results are very interesting in that multiple float boulders have been found with a very limited amount of work. Their location is somewhat along strike with the main Broken Antler showing. The boulders are also closer to the rhyolite dome than the pyrite showing and therefore further prospecting in this area may locate a VMS style deposit.

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

The Antler property has all of the geology capable of hosting a VMS deposit. It has a massive sulfide horizon peripheral to a felsic center with float boulders near the trend of the sulfides. The float contains ore grade concentrations of copper and zinc with increased silver cobalt and cadmium. Very little work has been done on this prospect to date.

Further work is recommended to map in detail the Rumble creek valley including the felsic dome structure mentioned by M.Gunning. Further prospecting near the site of the float boulders along with gossans near the Broken Antler showing. VLF may be useful in tracing the Antler structure toward Rumble creek and should be tested.



**APPENDIX I**

**STATEMENT OF COSTS**

Petrographic Analysis By Cominco Exploration Ltd. (May, 1996)	370.50
Site Visit August 18, 1996 (D.Wagner, A. Mainville, & D. Gunning)	
Salaries: 1.5 days @ 400\$/day	600.00
Helicopter: 2.7 Hours @\$650/hour	1,755.00
Analysis: 5 samples @17.50/sample	87.50
1 sample @ 25/sample	25.00
Shipping	80.00
Report Writing: 2 days @ \$400/day	<u>800.00</u>
<b>Total</b>	<b>\$3,318.00</b>

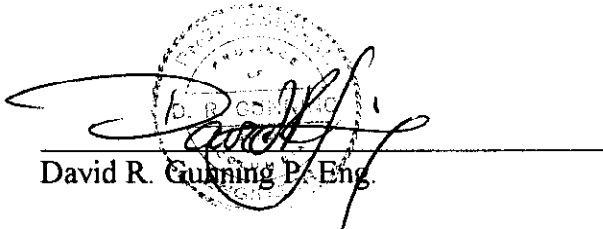
## APPENDIX II

### STATEMENT OF QUALIFICATIONS

I, David R. Gunning of 20356 42A Avenue, Langley, BC, V3A 3B4, declare:

1. I am presently self-employed as a mining engineer.
2. I graduated from the University of British Columbia with a Bachelor of Applied Science (Mining and Mineral Processing option) degree in 1983.
3. I have been practising my profession as a mining engineer continuously for the past 13 years.
4. I am a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.
5. This report is based on my personal field examination of the Antler Property July 14 through 24, 1995 and August 18, 1996 in addition to the reference material listed in Appendix IV.

Dated at Vancouver, British Columbia,  
this 25<sup>th</sup> day of February, 1997.

A circular professional seal for the Association of Professional Engineers and Geoscientists of British Columbia is partially obscured by a handwritten signature in black ink. The signature is written over a horizontal line.  
David R. Gunning P. Eng.

**APPENDIX III**  
**ASSAY RESULTS**

EXAMS-WD

Job V 96-0554R

OLYMPIC/BROKEN ANTLER

NO	FIELD NUMBER	Cu ppm	Pb ppm	Zn ppm	Ag ppm	As ppm	Ba ppm	Cd ppm	Co ppm	Ni ppm	Fe %	Mo ppm	Cr ppm	Bi ppm	Sb ppm	V ppm	...
5670	BA2	2	<4	12	<.4	<2	424	<1	1	2	.62	<2	88	<5	<5	<2	
5671	BA3	2335	<4	78	3.7	71	65	<1	211	10822.40		3	15	<5	10	<2	
5672	BA4	5690	27852000		2.2	121	73	234	51	5	5.68	9	10	8	<5	7	
5673	BA5	264	23	4956	<.4	23	78	15	4	2	4.78	8	17	<5	<5	<2	
5674	BA6	3109	14119000		1.1	<2	47	475	161	1	5.79	<2	11	<5	<5	<2	

insufficient sample X=small sample E=exceeds calibration C=being checked R=revised  
 requested analyses are not shown, results are to follow

## ANALYTICAL METHODS

ICP PACKAGE :0.5 gram sample digested in hot reverse aqua regia (soil,silt) or hot Aqua Regia (rocks).

Report date 17 OCT 1996

Sb ppm	V ppm	Sn ppm	W ppm	Br ppm	Y ppm	La ppm	Mn ppm	Mg %	Ti %	Al %	Ca %	Na %	K %
<5	<2	<2	<2	10	2	9	200	.01	<.01	.16	.01	.01	.22
10	<2	<2	<2	44	<2	<2	3512	.74	<.01	.53	.51	.02	.19
<5	7	<2	<2	166	3	3	17550	.63	<.01	.59E20.11	.02	.02	.25
<5	<2	<2	<2	34	<2	<2	23480	.14	<.01	.09	6.51	<.01	.01
<5	<2	<2	<2	5	<2	<2	11376	.08	<.01	.02	1.49	<.01	<.01

DP. EKAMS-WD

Job V 96-0554R

OLYMPIC/BROKEN ANTLER

Re:

LAB NO	FIELD NUMBER	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Ba	LOI	Total
615670	BA2	78.96	0.12	10.43	1.87	0.04	0.30	0.13	0.99	5.88	0.05	0.10	0.97	99.84	

insufficient sample X-small sample E-exceeds calibration C-being checked R-revised  
 requested analyses are not shown , results are to follow

ANALYTICAL METHODS

FeO determined by acid digestion /volumetric. LOI determined gravimetrically  
 Other elements by Li borate fusion/XRF .Where no FeO value shown 'Fe2O3' is total Fe as Fe2O3



## APPENDIX V

### REFERENCES

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