6/88

REPORT ON GEOLOGICAL & GEOCHEMICAL STUDIES CAT-1 & CAT-2 CLAIMS OF L.G. MORRISON (owner/operator) KASLO, B.C. AREA SLOCAN MINING DIVISION NTS 82F/14E

49° 55' N, 117° 02' 30" W

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,556

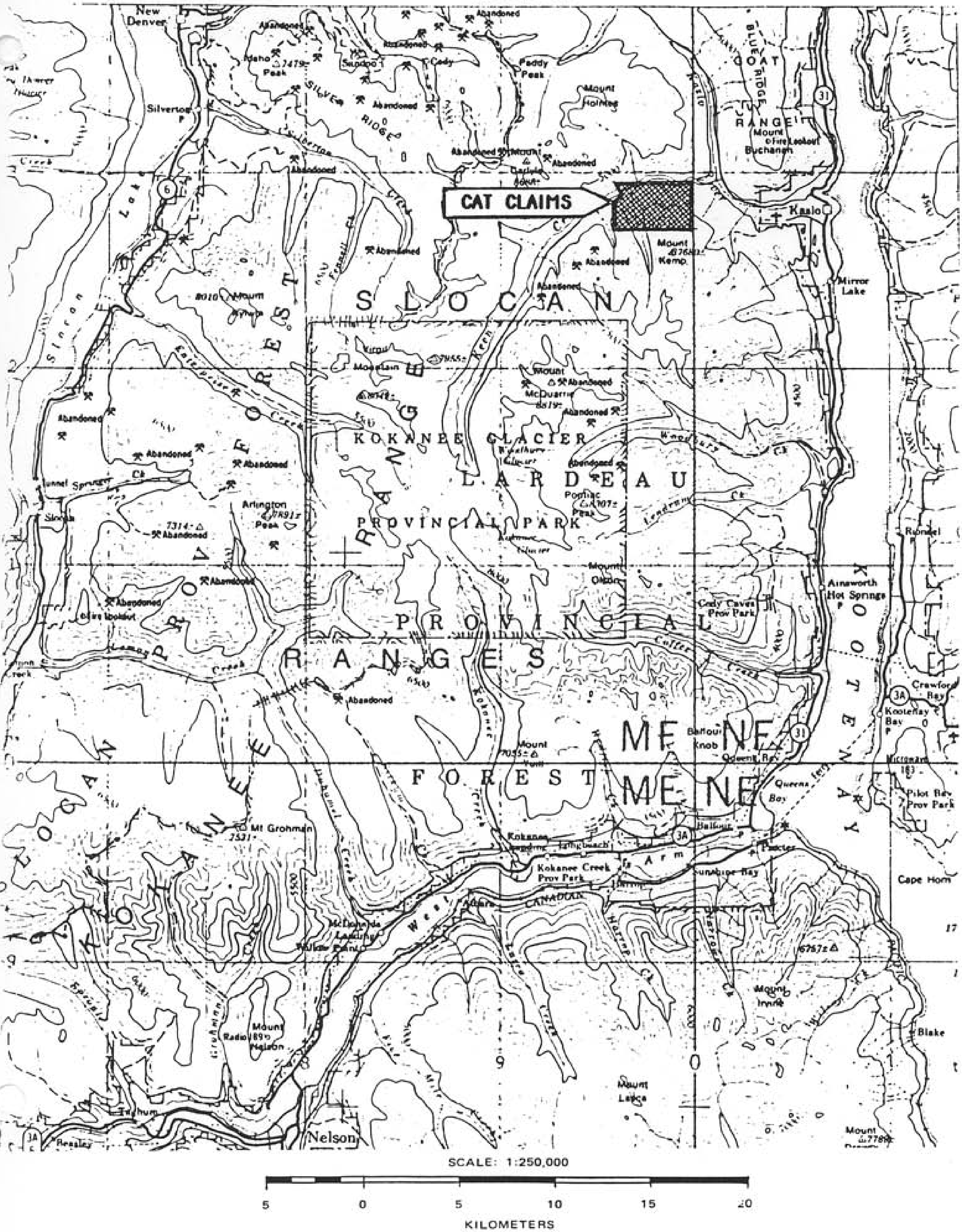
by L.G. Morrison

July 10, 1987

INDEX

CAT PROPERTY

KASLO, B.C.



REPORT ON THE CAT CLAIMS
KASLO AREA
SLOCAN MINING DISTRICT, BRITISH COLUMBIA

INTRODUCTION

The Cat claims, west of Kaslo, British Columbia were staked in August, 1986 to cover the strike extension of some old workings southwest of the property and for proximity to others. The claims are mostly blanketed by deep overburden, and there are no known mineral occurrences on them.

Preliminary geological and geochemical work was done on August 27-28, 1986 and May 28-31, 1987.

Seven kilometers of geological traversing was done, mostly in road cuts and along Keen Creek. Because outcrops are almost non-existent on the north half of the claims, most geological observations were, of necessity, made outside of but close to the property. An attempt, in May, to traverse steep north-flowing creeks on the property was frustrated by bad weather and high water. However, since the general strike of sediments in the area is north-northwest, the east-west traverses made near the north boundary should reasonably reflect stratigraphy on the claims.

One hundred and twenty soil samples were collected at twenty meter intervals on selected portions of an old flagged grid, to confirm anomalous values reported, but never recorded, by a previous locator.

Rock fragments from 20 soil samples were washed and analysed to give some indication as to whether the anomalous soil values are more probably due to mineralization or to high background metal values in pelitic sediments,

Twenty rock specimens collected in conjunction with the geological mapping were geochemically analysed as the initial step in establishing background values for the property. Analyses of many more samples will be required before any statistical evaluation can be made of the results.

LOCATION AND MEANS OF ACCESS

The centre of the property is eight kilometers west of the town of Kalso, British Columbia.

Motor vehicle access from Kaslo is six kilometers west on Highway 31A to Keen Creek, and then 4.8 kilometers west on a dirt road to an abandoned logging road which climbs southeast on the Cat 2 claim.

PHYSICAL FEATURES OF THE AREA

The property lies mostly on a steep north slope traversed by small north-flowing creeks in V-shaped valleys. The north boundary is along Keen Creek, at an elevation of about 850 meters. The maximum elevation at the south edge of the claims is 2,000 meters. Slopes steeper than 30 degrees are common.

The northern three quarters of the property is well timbered with fir, spruce and cedars from 20 centimeters to more than 50 centimeters in diameter. The south boundary is more or less at the timber line.

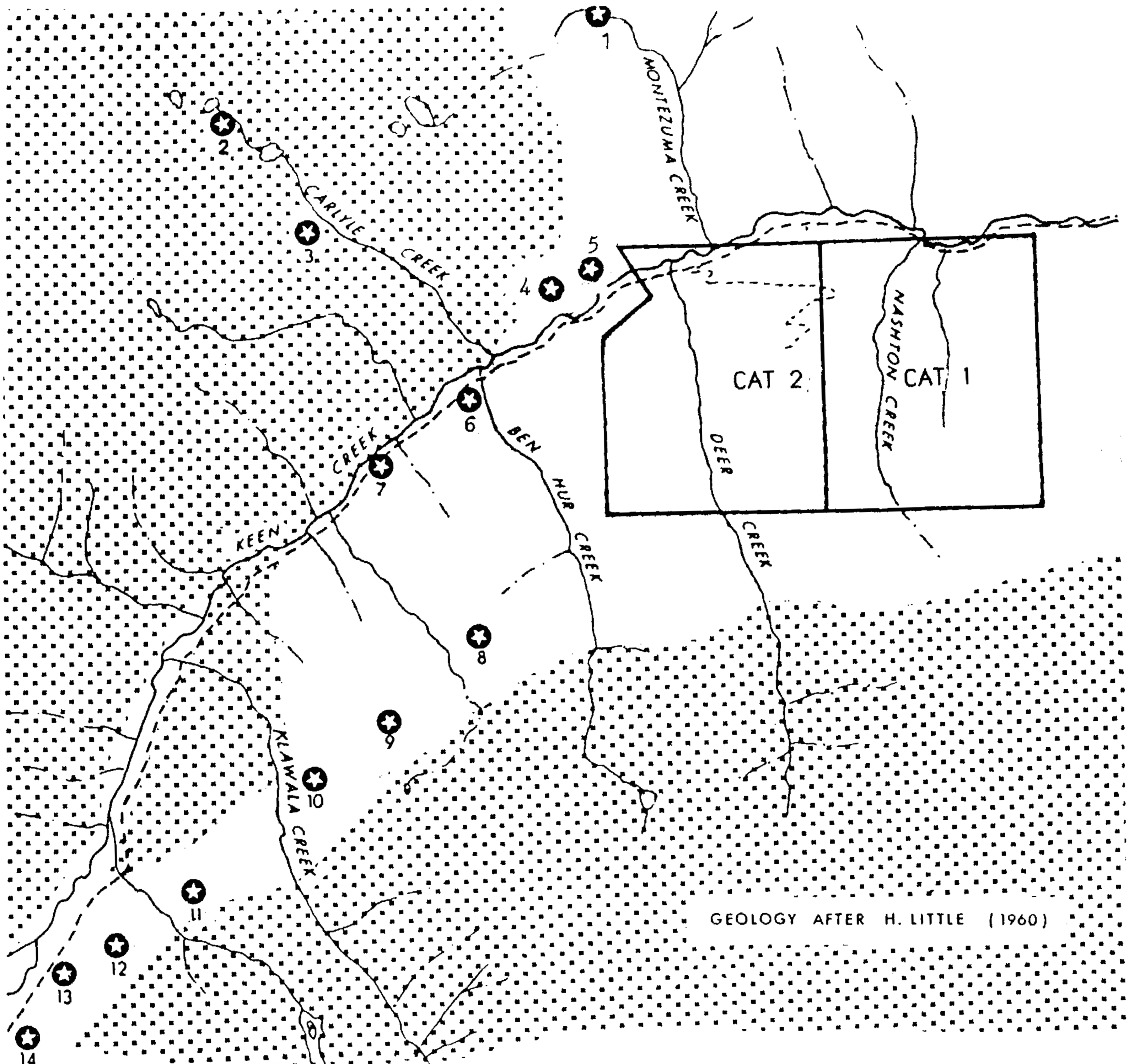
Bedrock outcrops are rare and, except for cliff faces at the south end of the property, are confined to creek beds and road cuts.

PROPERTY AND OWNERSHIP

The property consists of two claims, Cat 1 (Record No. 5062) and Cat 2 (Record No. 5063), with a combined net area of about 970 hectares.

The claims were recorded August 26, 1986. The registered owner is Lee Morrison of Robsart, Saskatchewan..

By virtue of unregistered letters of agreement, undivided working interests, each of ten percent (10%), are held by Barrie G. Dargie, A.H. Pfeffer and Jack Wild, all of Calgary, Alberta.



RECORDED PRODUCTION

		Tons Ore	Ounces Silver	
1	Montezuma	3,362	44,976	
2	Flint	316	10,874	
3	Martin	59	3,268	
4	Last Chance	2,000	4,000	
5	Black Bear	5	60	
6	Cork-Province	210,996	523,348	
7	Black Fox	1,227	2,200	±
8	Bismark	1,063	108,109	
9	Gold Cure	20	2,000	±
10	Gibson-Daybreak	571	27,000	±
11	BNA	78	11,359	
12	Silver Bear	193	25,000	±
13	Silver Bell	499	72,301	
14	Index	11	936	

SCALE: 1:50,000

0 500 1000 2000 3000
METERS

NELSON BATHOLITH

SLOCAN GROUP METASEDIMENTS

ABANDONED MINE WORKINGS

KEEN CREEK AREA

SLOCAN MINING DISTRICT
BRITISH COLUMBIA

MINING HISTORY OF THE AREA

Silver was discovered in the Slocan district in about 1890. The first shipments of high-grade ore were taken out by packhorse in 1891. By 1895, several mines were in operation, and two railways had been built into the district. Mining activity peaked during World War I, declined sharply in the 1930's, revived during World War II and has continued on a modest scale to the present.

At least 250 properties have yielded some ore, and a few mines each produced more than 200,000 tonnes. Total metal production from the area to date has been in the order of 2.6 million kilograms of silver, 525,000 tonnes of lead, 442,000 tonnes of zinc, 1,270 tonnes of cadmium and 625 kilograms of gold.

There were two significant producers southeast of Keen Creek. The Cork-Province, about one kilometer west of Cat 2, operated during the periods 1900-1929, 1950-1953 and 1964-1966. Total production was about 191,000 tonnes containing 86 grams of silver per tonne, 3.1% lead, 4.7% zinc and 400 grams of cadmium per tonne. The Bismark mine, two kilometers southwest of Cat 2, was a small high-grade shipper during the period 1900-1910. It produced 966 tonnes of sorted ore containing 3.5 kilograms of silver per ton and 87.5% lead.

North of Keen Creek, near the northwest corner of Cat 2, the Black Bear prospect produced about two kilograms of silver from five tonnes of sorted ore. The Last Chance, 600 meters west of Cat 2, shipped about 1,800 tonnes in 1979-80, with a reported mill-head grade of about 70 grams Ag/tonne, 0.34 grams Au/tonne, 0.8 kg Cd/tonne, 1% Pb and 19% Zn.

DISTRICT GEOLOGY

Rock Types

The mining district is mostly underlain by Triassic metasediments of the Slocan group. The metasediments are intruded by the Nelson batholith and related dykes, sills and stocks. Within the mineralized belt the Nelson intrusive rocks are mostly porphyritic granite.

The Slocan group comprises predominately argillaceous sediments intercalated with limestone and quartzite. There are minor conglomerate beds and rare tuffaceous material.

The dominant metasediments are platey or fissile argillites locally known as "slates". They are distinguished from massive argillites only by their fissility. Slates and argillites are grey, green or black and carbonaceous. They vary compositionally from limey to quartzitic. They are very fine grained and contain microscopic sericite and biotite.

Limestone occurs as well defined beds rarely more than 15 meters wide. The beds vary compositionally from nearly pure limestone to calcareous argillite and calcareous quartzite.

White, grey, brown or black quartzite is mostly thinly interbedded with argillite, but there are some thick beds with no noticeable stratification.

Conglomerate, composed of greenstone fragments in an argillaceous matrix, occurs as a narrow band at the base of the Slocan group. Minor conglomerate lenses containing small granite pebbles have been reported higher in the section.

Rare tuffs are grey to brown massive rocks indistinguishable in the field from quartzites and calcareous argillites.

Structure

The major structure in the area is the north to northwest-trending Slocan syncline with its core of Slocan group metasediments. Within the syncline there are numerous folds which, because of monotonous stratigraphy, are difficult to define. Dips are steep and predominately towards the southwest.

Numerous relatively small faults are mostly parallel or sub-parallel to the the bedding. There are no positively identified major faults, but the district is bounded on the west and east by Slocan Lake and Kootenay Lake, both of which may reflect north-striking fault zones.

Tension fractures and minor breccia bands striking northeast and dipping mostly southeast are the principal depositional sites for ore in the Slocan district.

Mineralization

Silver-lead-zinc orebodies in the Slocan district occur as simple fissure fillings and as chimneys and lenticular masses in brecciated zones. The principal ore minerals are sphalerite and argentiferous galena. Rare but economically important minerals include pyrargyrite, native silver and argentiferous tetrahedrite . Common gangue constituents, listed in decreasing order of abundance, are calcite, siderite, quartz and pyrite. Metal contents are commonly in the order of 350 grams of silver per tonne, 12% combined lead and zinc, 250 grams of cadmium per tonne and a trace of recoverable gold. Many small shipments of sorted ore containing abundant crystalline galena yielded from 3.5 to 10 kilograms of silver per tonne.

Veins are from a few centimeters to more than 15 meters wide, but widths of one to two meters are the norm. Individual ore shoots rarely contain more than a few thousand tons, but they are sufficiently abundant that, with intensive underground exploration, several small mines in the district produced more than 100,000 tonnes, and one produced 680,000 tonnes.

Ore has been found in all facies of the Slocan metasediments, in dykes and sills and (with somewhat different mineralogy) in the Nelson batholith. Veins are sharply defined, and wallrocks other than limestone are almost never mineralized.

The most useful rules to guide exploration in the area are that veins strike mostly northeast and that ore is rare in shear zones containing abundant gouge. High-grade shoots tend to be localized where the strike or dip of a vein changes sharply, at vein intersections and where fissure veins cross limestone.

PROPERTY GEOLOGY

Rock Types

The dominant rock types on the property are Slocan argillites and phyllites. They are mostly limey and are locally interbedded with nearly pure limestone. Four mappable sedimentary units have been identified along Keen Creek. Their relative ages are unknown, and there are no clearly defined contacts between them.

Phyllitic argillite is intermediate grey, very fine grained and very thinly bedded. It is commonly micaceous and fissile. Rare interbeds of white quartzite and quartz-sericite schist are mostly less than one centimeter wide.

Crinkled phyllite occurs marginal to phyllitic argillite and is probably a more intensely metamorphosed facies of the same rock. It is intermediate grey, very fine grained, micaceous and weakly foliated. Fracture planes and clean weathered surfaces have a shiny lustre and a "crinkled" appearance due to closely spaced irregular ridges about 1mm wide.

Calcareous argillite and *argillaceous limestone* are the most abundant rocks on the property. They are light grey to black, very fine grained and are from 20% to 80% soluble in hydrochloric acid. Some beds are thinly laminated, micaceous and fissile with slatey cleavage. Beds sufficiently carbonaceous to soil the fingers are rare, and none greater than 1 cm thick were seen. The thickest beds observed (more than 30 cm wide) were the most calcareous, with solubilities approaching that of pure limestone.

Limestone members up to about five meters wide are locally more abundant than the calcareous argillite with which they are intercalated. The limestone is white to dark grey, crystalline and thickly bedded, with thin argillaceous partings on some bedding planes.

Felsic intrusive rocks were not observed on the property, but two dyke exposures were mapped outside of the claim boundary. At the Last Chance mine, light grey, brown-weathering porphyry contains more than 30% 2 mm to 8 mm subhedral phenocrysts of white plagioclase. A fine grained felsic groundmass contains about 20% biotite. Intergranular calcite is common. About 250 meters northwest of the mouth of Nashton Creek, there is a good exposure of tan and aphanitic to light grey, medium grained equigranular felsic material. The most abundant facies is fine grained, allotriomorphic equigranular. It contains about 15% biotite, more than 5% intergranular calcite and about 2% disseminated pyrite.

Structure

Bedding along Keen Creek strikes mostly north-northwest and dips steeply to the northeast. However, a few north-northeast strikes were noted along Deer Creek.

Joints and rare shears strike northeast and dip steeply southeast.

Mineralization

There are no mineral showings on the claims, but there are 14 abandoned workings within a seven kilometer radius southwest, west and northwest of the property. Seven of these are aligned at about N 50° E along a line six kilometers long striking towards the property. The veins in the most north-easterly of the seven workings, the Bismark (cf. page 3), vary in width from a few centimeters to more than a meter and were mined over a vertical range of 100 meters. The general strike of the Bismark veins is N 55° E, and formational dips are about 70° to the northwest.

Six hundred meters from the west boundary, at the Last Chance Mine, a shear zone which is partly coincident to a contact between feldspar porphyry and phyllitic argillite has an average attitude of 040°/80° SE. The zone is pervasively silicified and contains a vein one to three meters wide. The vein comprises bands one to five centimeters wide of the following constituents:

1. Pink to grey dolomite containing highly altered feldspar fragments, pyrite cubes and a few millimetric quartz veinlets;

2. Grey to pale brown, dark-weathering coarsely crystalline siderite containing irregular millimetric wisps of chalcopyrite;

3. White quartz containing blebs of sphalerite and pyrite;

4. Fine grained massive pyrite containing blebs of sphalerite, pyrite and chalcopyrite.

The mineral occurrence nearest to the property, the Black Bear prospect, occurs in siliceous phyllitic argillite near a thin limestone bed. Mineralization in situ is not visible, but a small dump contains finely crystalline galena in gossanous lumps and abundant white quartz.

GEOCHEMISTRY

Overburden

The property is almost entirely covered by colluvium and by soil derived from colluvial material. The average depth of overburden is probably about two meters. The soil is mostly dark grey, argillic material containing abundant angular to sub-angular fragments of argillite and grey limestone plus a few sub-rounded pebbles of Nelson intrusive rocks.

On the north half of Cat 2, soil profiles are partly mature and well developed with a sharply defined yellow to reddish brown "B" horizon 2 to 20 centimeters thick. However, at higher elevations and on steep slopes the humic "A" horizon rests directly on weathered parent material.

Soil Sampling and Interpretation

One hundred and twenty samples were collected at 20 meter intervals on six test lines selected to cross areas reported by a previous claim locator to be geochemically anomalous.

Most samples were taken from the "B" horizon, but where it was absent the "C" horizon was sampled. Sample depths varied from 10 to 40 centimeters depending upon the maturity of the profile.

The minus 80 mesh fractions of the soils were analysed for silver, lead, copper and zinc by standard AAS methods (cf. Appendix 4) by Loring Laboratories Ltd. in Calgary.

Means, upper threshold values (t_{2S}) at two standard deviations from the mean and lower threshold values (t_S) at one standard deviation from the mean were calculated for each metal. For silver, a cumulative frequency distribution was plotted manually to permit the elimination of scatter at the ends of the curve. Values for other metals were computer-derived. The following values were obtained:

	t_{2S} (ppm)	t_S (ppm)	m (ppm)
Ag	2.4	1.0	0.4
Pb	35	29	23
Cu	52	38	24
Zn	452	341	230

The foregoing threshold values are significantly higher than those obtained by the writer on other Slocan projects with much larger sample populations. The results from the 120 samples are probably biased because they were all collected from a broadly anomalous area. This tends to confirm the anomalous areas reported by the previous locator. The anomalous points indicated by the writer's work are therefore probably "perched" on a more extensive anomalous zone.

Rock Geochemistry

Rock fragments from 20 soil samples were washed and analysed separately. Where metal values in soil were below threshold levels, metal values from the fragments were generally slightly higher. Conversely, values from rock were significantly lower than from soil where the soil was anomalous. This suggests that anomalous metal concentrations in the soils may be derived from mineralization rather than from high background values in the bedrock. However, more samples are required to test the hypothesis.

In conjunction with geological mapping, twenty bedrock samples were collected for geochemical analysis. The sample population is too small for statistical evaluation, but no unusual metal concentrations were noted. More bedrock sampling will be required to establish bedrock values for the property.

The forty rock samples analysed are briefly described in Appendix 3, and bedrock sample locations are shown on Plate 1.

DISCUSSION OF EXPLORATION TECHNIQUES

All old workings in the Keen Creek area are either close to creeks or on high spurs, where mineralized outcrops or floats were found at the turn of the century by conventional prospecting. Geochemical and geophysical methods are required to explore the Cat claims.

Orebodies in the Slocan district, although often of great value, tend to be relatively small. They are only moderately conductive. Exploring for such deposits on steep, overburden-covered slopes presents a difficult problem.

The fastest and most economical exploration technique applicable to the property is soil sampling. However, because of the steepness of the terrain, anomalies will be both mechanically and chemically displaced. Test pitting and/or percussion drill sampling at the overburden-bedrock interface up-slope from soil anomalies will be required to determine their sources.

Interpretation of electromagnetic survey results on very steep terrain is an imperfect science, regardless of the type of equipment used. However, in the writer's opinion, "Shootback" EM is one of the better systems for use in the mountains. It has the added advantages of speed and simplicity of operation, and it does not require high quality traverse lines.

The self-potential (SP) method should also be tried. Sulphides of lead and zinc are not detectable by the SP method, but most Slocan district ores contain pyrite and should therefore give an SP response. The major advantage of the method is that, unlike EM, it does not provide spurious anomalies due to shear zones, ionized clay or overburden-filled valleys. It is possible that SP would fail to detect an orebody with a low pyrite content, but conversely, any significant SP anomaly on the property would be an automatic target for diamond drilling.

CONCLUSIONS

Based on the fieldwork performed, in conjunction with a review of published geological and historical data, the following conclusions were reached:

1. The geological environment on the property is favourable for mineral deposits of the Slocan type;

2. Because of its pervasive blanket of overburden, the property cannot have been effectively prospected in the past;

3. Soil geochemistry is an effective prospecting tool for the property;

4. Previously reported geochemical anomalies on the property are probably valid;

5. Basal overburden sampling and bedrock geochemistry would be valuable tools for locating the source of anomalous metal values in the soil;

6. Electromagnetic methods are applicable, but both surveying and interpretation are difficult in this environment;

7. If silver-lead-zinc ore contains significant quantities of pyrite, it will give a self-potential response. Self-potential surveying should therefore be tried.

On the basis of the foregoing conclusions, specific recommendations for work are presented overleaf. A budget of $ 60,000 is proposed for 1987.

DETAILED RECOMMENDATIONS

The following program is proposed for the 1988 field season:

1. Expand the geological map by limited traversing at the south end of the property. Access to the area is difficult, and the work can be most efficiently accomplished from a fly camp set in by helicopter;

2. Collect about 100 representative rock samples to establish background values in Ag, Pb, Cu and Zn for rock geochemistry;

3. Freshen and re-chain the existing survey grid at the north end of the property and collect soil samples at 20 meter intervals. Analyse for Ag, Pb, Cu and Zn;

4. Collect basal overburden samples with a hand-held percussion drill (Wacker, Pionjar etc.) to determine the up-slope limits of anomalies indicated by soil sampling. Wherever possible, collect a bedrock sample as well. Analyse for Ag, Pb, Cu and Zn;

5. Perform SP and Shootback EM surveys over geochemically selected areas.

The foregoing program should, if successful, be followed by trenching and shallow diamond drilling in 1989.

COST ESTIMATES

Field geologist, 6 weeks @ $2,000	$12,000
Field assistants (2), 6 weeks @ $500	6,000
Food & lodging, 120 man days @ $40	4,800
Overburden drilling, 12 crew days @ $800	9,600
Sample preparation & analysis (500 soils & 200 basal overburden @ $5.50, 300 rocks @ $7.20)	6,010
EM and SP surveying (8 km including mobilization and crew maintenance)	10,000
Casual labour, 10 man days @ $90 including burden	900
Vehicle rental (4x4), 6 weeks @ $150	900
Mileage and fuel, 3,000 km @ $0.40	1,200
Helicopter (mobilization included), 3 hours @ $450	1,350
	52,760
Contingency of 15%	7,914
	$60,674
Proposed budget	$60,000

Respectfully submitted,

Lee Morrison, P. Eng.
July 10, 1987

APPENDIX

CERTIFICATE OF QUALIFICATIONS

I, LEE G. MORRISON, of the Village of Robsart, in the Province of Saskatchewan

HEREBY CERTIFY:

1. THAT, I am a registered Professional Engineer in the provinces of Alberta and British Columbia;

2. THAT, I am a graduate of the University of Saskatchewan with Bachelor's degrees in Arts (1956) and Geological Engineering (1957)

3. THAT, I am a Consulting Mining Geologist;

4. THAT, I have practiced my profession continuously for thirty years;

5. THAT, I am familiar with the geology and ore deposits of the Slocan mining district;

6. THAT, I personally performed the field work which is the basis for this report;

7. THAT, I am the owner of record of the Cat claims, and the beneficial owner of a seventy percent working interest.

Lee G. Morrison, P. Eng.

Appendix 2

STATEMENT OF COSTS

Field Personnel (including payroll burden)			
L.G. Morrison, Consulting Geologist August 27-28, 1986) May 28-31, 1987)	6 days @ $400	$2,400.00	
C. Fleck, Field Assistant August 27-28, 1986	2 days @ $50 + 25%	125.00	
Jeff Tyers, Field Assistant May 28-31, 1987	2 days @ $50 + 25%	250.00	2,775.00
Food and Accommodations 8 man days @ $40.00			320.00
Vehicle 3/4 ton 4x4 , 6 days @ $40			240.00
Laboratory Analyses			
120 soil geochemical (Ag, Pb, Cu, Zn) @ $5.50		660.00	
40 rock geochemical (Ag, Pb, Cu, Zn) @ $7.20		288.00	948.00
Report Preparation			
L. Morrison , 1 1/2 days @ $400		600.00	
Draughting, typing, reproduction		367.50	967.50
Total			$5,250.50

Appendix 3

ROCK SAMPLE DESCRIPTIONS

FRAGMENTS FROM SOIL SAMPLES

GRID LOCATION	LAB. NO.	
Line 1, 10E	R-17	Calcareous & carbonaceous argillite:black, vy. fn. gr.; 40% acid soluble; 2% pyrite cubes
Line 1, 16E	R-18	Calcareous siltstone: int. grey, vy. fn. gr.; detrital feldspar, qtz. & mica; weakly bonded, granulose; 50% acid soluble
Line 1, 30E	R-19	Calcareous, biotitic argillite: finely laminated but not fissile
Line 2, 44E	R-20	Siliceous argillite: int. grey, rusty weathering; hard; 5-10% Po + Py
112, 00E	R-7	Micaceous argillite: grey with rust specks
112, 12E	R-8	Carbonaceous & calcareous shale; dark grey; calcite wisps
112, 22E	R-9	Carbonaceous shale; dark grey; fissile
112, 32E	R-10	Carbonaceous shale; dark grey; soft
112, 34E	R-11	Argillite; int. grey; moderately hard
112, 46E	R-12	Carbonaceous shale: dark grey; soft
116, 2E	R-13	Carbonaceous shale: dark grey; soft; fissile
116, 4E	R-14	Carbonaceous shale: dark grey, soft
116, 6E	R-15	Carbonaceous shale: dark grey, soft
116, 8E	R-16	Calcareous argillite: int. grey; fissile
116, 26E	R- 1	Silty argillite: int. grey; fissile
116, 28E	R- 2	Phyllitic argillite: int. grey; rusty casts
116, 32E	R- 3	Argillite: int. grey; fissile; little Py
116, 34E	R- 4	Quartzite: lt. grey; vy. fn. gr.; millimetric bedding
116, 36E	R- 5	Phyllitic argillite: micaceous; limonitic
116, 38E	R- 6	Argillite: sericitic; hard; millimetric quartz prisms

BEDROCK SAMPLES (See Plate 1 for locations)

C- 1 Phyllitic argillite: int. grey; vy fn. gr.; micaceous
C- 2 Limestone: lt. grey; crystalline; massive
C- 3 Limestone: lt. grey; crytalline; finely bedded
C- 4 Crinkled argillite: int. grey; vy. fn. grained; micaceous; "crinkled"; shining lustre
C- 5 Phyllitic argillite: micaceous; shining; closely related to C- 4
C- 6 Phyllitic argillite: int. grey; extremely fn. grained; finely bedded
C- 7 Phyllitic argillite: vy. micaceous; brittle; approaching crinkled phyllite
C- 8 Phyllitic argillite: lt. grey, rusty-weathering; sericitic & almost schistose; siliceous; 5% fn. gr. Py
C- 9 Argillaceous limestone: dk. grey; 50% acid soluble; 2% diss. Py
C-10 Calcareous argillite: int. grey; vy. fn. gr.; micaceous & slabby; 20% acid soluble
C-11 Calcareous argillite: int. grey; extrtemely fn. gr.; slatey cleavage; 30% acid soluble
C-12 Calcareous argillite: int. grey; vy. fn. gr.; micaceous & fissile; 50% acid soluble
C-13 Limestone: lt. to dk. grey; finely crystalline; 1 cm bedding
C-14 Calcareous argillite: int. to dk. grey; white calcite veinlets; 1% finely diss. Py
C-15 Siliceous argillite: int. grey, rusty-weathering; hard; weakly foliated; 5-10% Po + Py diss. & on fracture planes
C-16 Felsic intrusive: lt. grey; fn. gr. equi.; 15% biotite; 5% intergranular calcite
C-17 Argillaceous limestone: int. to dk. grey; vy. finely crystalline; massive; 50% acid soluble
C-18 Feldspar porphyry: lt. grey; 30% 2-8mm feld. phenocrysts; 5% intergranular calcite
C-19 Limestone: lt. to dk grey; finely crystalline; massive
C-20 Argillaceous limestone: lt. to dk. grey; crystalline; thinly bedded; 70% acid soluble

APPENDIX 4 Laboratory Procedures

APPENDIX 5 Assay Certificates

LORING LABORATORIES LTD.

629 Beaverdam Rd. N.E.
Calgary, Alberta T2K 4W2

Phone 274-2777

Preparation Procedures for Geochemical Samples

1 - Soil And Silts:

a) The soil sample bags are placed in dryer to dry at 105°C.

b) Each sample is passed through an 80 mesh nylon seive. The +80 mesh material is discarded.

c) The -80 mesh sample is placed into a coin envelope and delivered to the laboratory for analysis.

2 - Lake Sediments:

a) The sediment sample bags are placed into the dryer at 105°c until dry.

b) The dried material is transferred to a ring and puck pulverizer and ground to -200 mesh.

c) The -200 mesh pulp is then rolled for mixing, placed into a coin envelope, and taken to the laboratory for analysis.

3 - Rocks and Cores:

a) The samples are dried in aluminum disposable pans at 105°C.

b) They are then crushed to 1/8" in jaw crusher.

c) the 1/8" material is mixed and split to sample pulp size.

d) The sample is then pulverized to 100 mesh, using a ring and puck pulverizer.

e) The -100 mesh material is rolled on rolling mat and transferred to sample bag. The sample is then sent to the laboratory for analysis.

LORING LABORATORIES LTD.

629 Beaverdam Rd. N.E.
Calgary 67, Alberta

Phone 274-2777

METHODS OF ANALYSIS FOR GEOCHEMS

1. COPPER, LEAD, ZINC, NICKEL, COBALT, SILVER

500 milligrams of -80 mesh material are weighed into coor cups, placed in muffle at 500 °C to remove organics. The oxidized samples are then transfered to test tubes, aqua regia added and digested in water bath at 100 °C for three hours.

The test tubes are then bulked to the 10 ml. level, mixed and allowed to settle overnite.

The samples are then put through the atomic absorption with appropriate standards and reported in PPM.

2. MOLYBDENUM GEOCHEMS

The same sample weight is used; the organics are also removed; aqua regia is also used, but just prior to bulking up to 10 mls. volume, 3 mls. of aluminum chloride solution is added to enhance the molybdenum atom. After standing overnite the samples are put through the atomic absorption using a nitrous oxide and acetylene flame. Reported in PPM Mo.

To: LEE MORRISON
Box 105
Robsart, Saskatchewan
SON 2G0

File No. 29891
Date June 9, 1987
Samples Soil

Certificate of ASSAY
LORING LABORATORIES LTD.

PAGE # 1

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
"GEOCHEMICAL ANALYSIS"				
LI-0-E	21	29	191	.9
LI-2-E	8	20	56	.1
LI-4-E	21	20	332	.6
LI-6-E	27	24	441	.3
LI-8-E	71	27	1020	1.1
LI-10-E	65	22	740	.5
LI-12-E	28	20	293	.3
LI-14-E	20	19	128	.1
LI-16-E	28	19	231	.3
LI-18-E	43	20	261	.2
LI-20-E	15	26	353	.3
LI-22-E	22	18	192	.7
LI-24-E	21	21	184	.2
LI-26-E	17	26	168	.4
LI-28-E	19	25	195	.8
LI-30-E	39	28	167	.8
LI-32-E	15	26	198	.3
LI-34-E	14	26	203	.4

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: LEE MORRISON
Box 105
Robsart, Saskatchewan
SON 2GO

File No. 29891
Date June 9, 1987
Samples Soil

Certificate of
ASSAY
LORING LABORATORIES LTD.

PAGE # 2

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
LI-36-E	24	23	216	.5
LI-38-E	20	24	206	.4
LI-40-E	31	24	145	.4
LI-42-E	20	28	279	1.2
LI-44-E	29	25	354	1.7
LI-46-E	23	35	690	6.2
LI-48-E	18	33	226	.6
LI-50-E	20	30	169	1.5
LI-52-E	18	27	211	.3
LI-54-E	19	26	164	.2
LI-56-E	22	30	198	.9
L2-4 -E	28	29	176	.5
L2-6 -E	26	34	199	.5
L2-8 -E	24	35	192	.2
L2-10-E	24	20	144	.3
L2-12-E	19	25	239	.9
L2-16-E	80	36	590	.9
L2-18-E	21	31	196	.5
L2-20-E	27	31	185	.4
L2-22-E	19	32	224	.3

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Robsart, Saskatchewan
SON 2GO

File No. 29891
Date June 9, 1987
Samples Soil

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
L2-24-E	25	35	288	.6
L2-26-E	20	22	309	.5
L2-28-E	20	20	275	.2
L2-30-E	20	20	214	.5
L2-32-E	22	21	349	.7
L2-34-E	22	16	216	.1
L2-36-E	19	20	219	.1
L2-38-E	19	20	326	.1
L2-40-E	18	21	252	1.8
L2-42-E	29	18	168	.1
L2-44-E	25	27	267	8.5
L2-46-E	22	16	241	.4
L2-48-e	21	18	171	.1
L2-50-E	23	17	165	.1
L2-52-E	12	17	80	.1
L3-10-E	20	24	199	.2
L3-12-E	21	20	176	.3
L3-14-E	23	17	177	.2
L3-16-E	20	25	610	.5

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Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: LEE MORRISON
Box 105
Robsart, Saskatchewan
SON 2G0

File No. 29891
Date June 9, 1987
Samples Soil

Certificate of ASSAY

LORING LABORATORIES LTD.

PAGE # 4

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
L3-18-E	14	18	464	.4
L3-20-E	18	17	161	.6
L3-22-E	30	24	350	1.8
L3-24-E	27	19	211	.4
L3-26-E	29	18	187	.2
L3-28-E	26	19	184	1.2

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Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: LEE G. MORRISON
Box 105
Robsart, Saskatchewan SON 2GO

File No. 29646
Date March 13, 1987
Samples Soil

Certificate of
ASSAY
LORING LABORATORIES LTD.

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
"Geochemical Analysis"				
112-00	33	19	175	2.2
-12	41	22	451	1.1
-22	34	25	206	.8
-32	29	22	164	.7
-34	33	29	247	.4
112-46	14	15	97	.4
116- 2	33	27	171	1.0
- 4	56	25	228	1.5
- 6	40	22	323	.4
- 8	43	21	282	1.5
-26	48	48	308	.4
-28	55	21	159	.2
116-30	19	29	256	.1
-32	14	30	147	.2
-34	34	35	158	.3
-36	47	43	247	.4
116-38	23	32	188	1.0

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Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: LEE G. MORRISON
Box 105
Robsart, Saskatchewan SON 2GO

File No. 29646
Date March 13, 1987
Samples Rock

Certificate of ASSAY

LORING LABORATORIES LTD.

Page # 1

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
"Geochemical Analysis"				
R-1	27	33	167	1.0
-2	16	25	218	.8
-3	34	18	84	.7
-4	25	20	74	.7
-5	28	28	128	.4
-6	16	20	114	1.6
-7	46	21	177	1.1
-8	25	24	199	.8
-9	22	23	140	.4
R-10	27	26	142	.4
-11	21	29	169	.3
-12	16	19	78	.6
-13	26	21	112	.5
-14	45	20	164	.4
-15	33	22	177	.3
R-16	18	35	112	.8

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

P. Endes
Assayer

To: CALALCA MINING CONSULTANTS LTD
Box 105
Robsart,Sasktachewan SON 2GO
Attn: Lee Morrison

File No. 29928
Date June 17, 1987
Samples Soil

Certificate of ASSAY
LORING LABORATORIES LTD.

Page # 1

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
"Geochemical Analysis"				
112-02	18	21	175	.7
04	19	18	181	.3
06	38	17	201	.6
08	18	19	185	.6
112-10	24	16	289	.3
14	82	23	540	3.8
16	39	17	288	.9
112-20	20	18	161	.3
24	25	21	169	.4
26	15	16	133	.2
28	13	16	94	.6
112-30	17	20	145	1.0
36	22	19	142	.4
38	23	18	130	.4
112-40	15	16	74	.4
42	28	24	269	.9
44	47	27	92	1.6
48	15	15	101	.4
112-50	16	14	103	.3
52	23	16	179	.3
54	33	21	164	.5
56	22	18	106	.2
58	24	18	152	.1
116-00	25	21	207	.3
10	25	21	204	.4
12	23	19	341	.4
116-14	35	24	352	2.6

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: CALALCA MINING CONSULTANTS LTD
Box 105
Robsart, Saskatchewan SON 2G0
Attn: Lee Morrison

File No. 29928
Date June 17, 1987
Samples Soil

Certificate of ASSAY
LORING LABORATORIES LTD.

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
"Geochemical Analysis"				
116-18	31	20	155	.3
20	34	22	203	.9
22	10	14	114	.3
24	24	18	127	.3
116-40	15	23	289	.2
120-16	32	24	175	.4
18	29	17	119	.5
20	23	23	342	.2
22	32	21	331	.2
120-24	43	29	326	.3
26	29	19	139	.4
28	22	18	116	.3
120-30	20	20	92	.4

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Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: CALALCA MINING CONSULTANTS LTD
Box 105
Robsart,Saskatchewan SON 2GO
Attn: Lee Morrison

File No. 29928
Date June 17, 1987
Samples Rock

Certificate of ASSAY
LORING LABORATORIES LTD.

Page # 3

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
"Geochemical Analysis"				
C- 1	15	10	18	.1
2	4	35	10	.3
3	4	33	8	.1
4	18	11	66	.1
5	27	14	26	.3
6	14	16	80	.3
7	24	11	7	.1
8	34	26	131	.5
9	30	35	393	.4
C-10	37	31	55	.5
11	18	32	88	.4
12	13	24	46	.4
13	4	37	9	.2
14	6	36	11	.2
15	42	21	31	.7
16	3	22	97	Nil
17	25	29	203	.6
18	10	15	96	Nil
19	5	38	18	.1
C-20	7	38	34	.1
R-17	26	36	141	.9
18	6	25	27	.2
19	32	34	87	.6
R-20	25	22	106	.4

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Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

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N
Keen Creek
MAIN ROAD
Montezuma Creek
Swiss Creek
Deer Creek
Carlyle Creek
Nashton Creek
MINE ROAD
LOGGING ROAD
BLACK BEAR
LAST CHANCE
CABIN
C-1
C-2
C-4
C-5
C-6
C-7
C-8
C-9
C-10
C-11
C-12
C-13
C-14
C-15
C-16
C-17
C-18
C-19
C-20
Scree
96500
96499
LINE 1
LINE 2
LINE 3
CAT 2
CAT 1
West Test Grid
East Test Grid
112
116
120
CORK-PROVINCE
MILL & SHOPS
LEGEND
FELSIC INTRUSIVE ROCKS
LIMESTONE
CALCAREOUS ARGILLITE & ARGILLACEOUS LIMESTONE
CRINKLED PHYLLITE
PHYLLITIC ARGILLITE
OUTCROP
BEDDING (INCLINED, VERTICAL)
SHEARING (INCLINED, VERTICAL)
JOINTING (INCLINED, VERTICAL)
C-0 ROCK GEOCHEMICAL SAMPLE
SOIL SAMPLE ANOMALOUS IN THREE METALS
SCALE 1:5,000
100 50 0 100 200 300 400 500
METERS
CONTROL BY COMPASS & TOPOFIL
GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,556
GEOLOGY &
GEOCHEMICAL TEST GRID LOCATIONS
KEEN CREEK AREA
CAT CLAIMS
KASLO, B.C.
L.Morrison
June, 1987
PROFESSIONAL ENGINEER
L. G. MORRISON
Plate 1

LINE 1
LINE 2
LINE 3
Logging road
Boggy with intermittent springs
WEST GRID
N
112
116
120
Small creek
EAST GRID
GEOLOGICAL BRANCH ASSESSMENT REPORT
16,556
LEGEND
Soil sample anomalous in Cu (>t_S ; >t_2S)
Soil sample anomalous in Pb (>t_S ; >t_2S)
Soil sample anomalous in Zn (>t_S ; >t_2S)
Soil sample anomalous in Ag (>t_S ; >t_2S)
ppm in soil / in rock fragments
SCALE 1:1,000
0 20 40 60 80 100
METERS
CONTROL BY COMPASS & TOPOFIL
GEOCHEMICAL TEST LINES
ppm Ag , B HORIZON
CAT CLAIMS
KASLO, B.C.
L. Morrison
June, 1987
Plate 2


LINE 1
LINE 2
LINE 3
Logging road
Boggy with
intermittent
springs
WEST GRID
N
Small creek
EAST GRID
112
116
120
GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,556
LEGEND
Soil sample anomalous in Cu
Soil sample anomalous in Pb
Soil sample anomalous in Zn
Soil sample anomalous in Ag
ppm in soil
in rock fragments
SCALE 1:1,000
METERS
CONTROL BY COMPASS & TOPOFIL
GEOCHEMICAL TEST LINES
ppm Pb, B HORIZON
CAT CLAIMS
KASLO, B.C.
L. Morrison
June, 1987
Plate 3

SCALE 1:1,000

0 20 40 60 80 100 METERS

CONTROL BY COMPASS & TOPOFIL

LEGEND

- ○ ● Soil sample anomalous in Cu ($>t_5$; $>t_{25}$)
- □ ■ Soil sample anomalous in Pb ($>t_5$; $>t_{25}$)
- △ ▲ Soil sample anomalous in Zn ($>t_5$; $>t_{25}$)
- ⋆ ★ Soil sample anomalous in Ag ($>t_5$; $>t_{25}$)

ppm — 00 in soil / 11 in rock fragments

GEOCHEMICAL TEST LINES
ppm Cu, B HORIZON
CAT CLAIMS
KASLO, B.C.

L. Morrison — June, 1987

Plate 4


LINE 1
LINE 2
LINE 3
Logging road
Boggy with intermittent springs
WEST GRID
N
112
116
120
Small creek
EAST GRID
GEOLOGICAL BRANCH ASSESSMENT REPORT
16,556
SCALE 1:1,000
METERS
CONTROL BY COMPASS & TOPOFIL
LEGEND
Soil sample anomalous in Cu (>ts ; >t2s)
Soil sample anomalous in Pb (>ts ; >t2s)
Soil sample anomalous in Zn (>ts ; >t2s)
Soil sample anomalous in Ag (>ts ; >t2s)
ppm 00 in soil
11 in rock fragments
GEOCHEMICAL TEST LINES
ppm Zn , B HORIZON
CAT CLAIMS
KASLO, B.C.
L. Morrison
June, 1987
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA L. G. MORRISON
Plate 5