# REPORT ON
# GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL WORK ON THE CAT CLAIMS OF L.G. MORRISON ET. AL.
# KASLO, B.C. AREA
# SLOCAN MINING DIVISION
# NTS 82F/14E

GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,256

L.G. Morrison

October, 1989

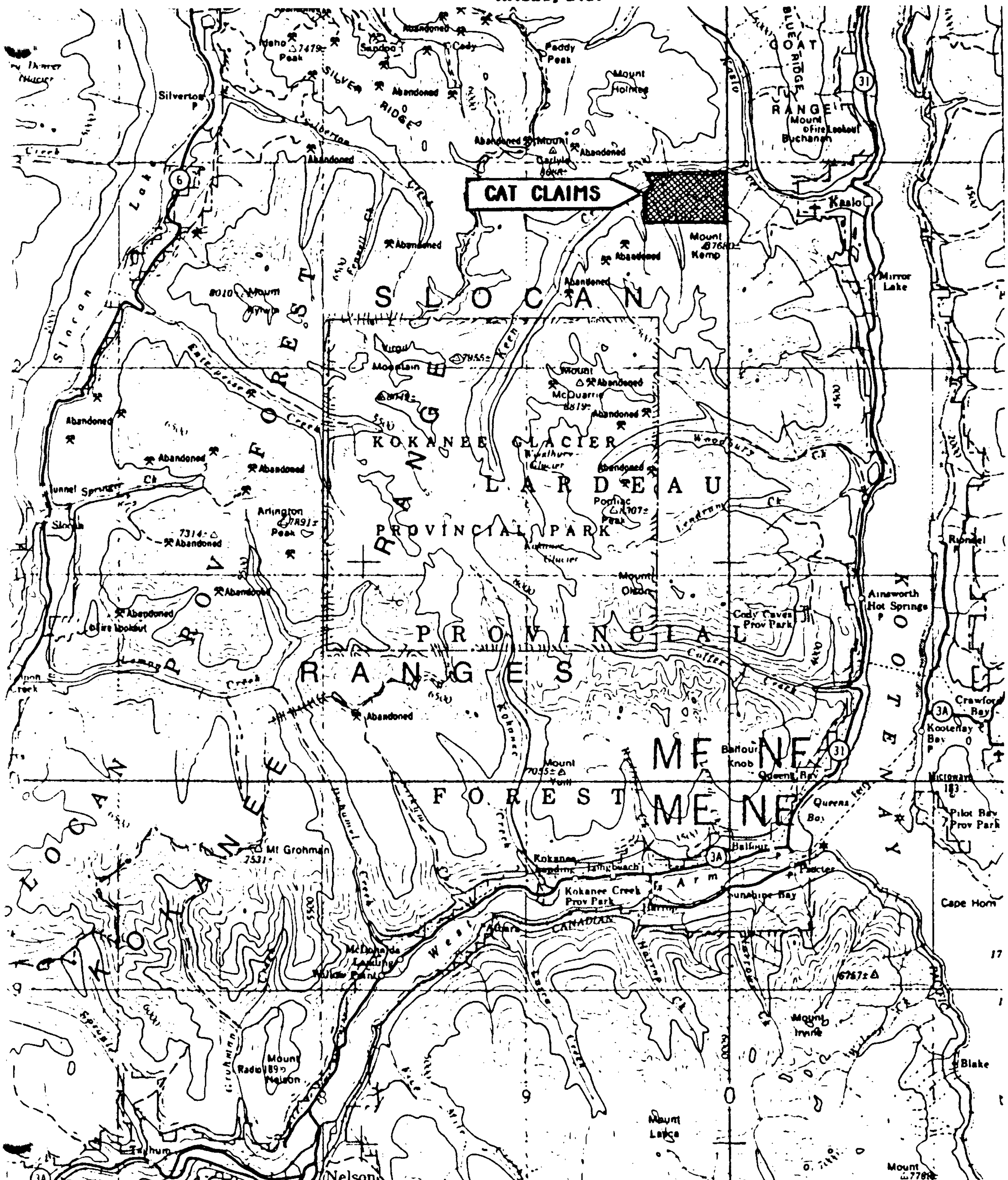
INDEX

## ILLUSTRATIONS

# LOCATION MAP

# CAT PROPERTY

# KASLO, B.C.




SCALE: 1:250,000

5 0 5 10 15 20

KILOMETERS

# 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.

Geological mapping and soil sampling were done on the property each summer from 1986 to 1989.

In July and August, 1989, geological mapping and prospecting were done on the north half of Cat 1 and the east half of Cat 2. In 13 field days, the writer and an assistant mapped about 130 hectares at a scale of 1:5,000 and 45 hectares (Plate 2) at a scale of 1:2,500.

Concurrent with the 1989 mapping, 352 soil samples were taken, 200 of them at intervals of 50 meters along lines 200 meters apart, and most of the balance at intervals of 25 and 50 meters along lines 100 meters apart in the area mapped at 1:2,500. Samples were analysed for silver, lead, zinc and copper, and the results were presented on plans at a scale of 1:5,000.

A composite plan (Plate 1) was prepared incorporating all geological and geochemical data collected by the writer since 1986.

Within the area mapped at 1:2,500, 1,100 meters of magnetometer traversing was done, with station intervals of 12.5 meters.

A mineralized quartz lens at 13E, 16N (the 13E showing) is surrounded by a geochemically anomalous halo with a radius of about 100 meters.

Twenty meters from the 13E showing, its strike projects under overburden into a band of tightly folded crystalline limestone 200 meters wide. This type of limestone is considered to be a very favourable host for silver-lead-zinc deposits in the Slocan district.

From 50 to 100 meters southwest of the 13E showing, in a flat, overburden-covered area assumed to be underlain by crystalline limestone, a small, sharply defined magnetic anomaly suggests the presence of pyrrhotite or magnetite, neither of which was observed on nearby outcrops.

A broad geochemical anomaly in soil on lines 16E to 20E is centred about 800 meters S 75°W of the I.P. (the NE corner) of Cat 2. An anomalous area straddling a small creek between lines 30E and 36E is centred about 1,200 meters S 60°E of the I.P. (the NW corner) of Cat 1.

Geophysical evaluation of the two geochemically anomalous areas and shallow diamond drilling with a light machine in the 13E showing area are recommended in this report. The proposed budget is $95,000 .

## 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. It extends to within 150 meters of the 13E showing.

A branch logging road follows the west side of Deer Creek almost to the south end of the property. It is heavily overgrown, but aside from brush clearing and the repair of a bridge across Deer Creek, it would require very little work to make it passable to four-wheel-drive vehicles.

## 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 and, in the south end of the property, there are many cliffs from 10 to 30 meters high.

About ten percent of the property was logged about 25 years ago. Most of the remainder is well timbered with fir, spruce, hemlock and cedars from

20 centimeters to more than 50 centimeters in diameter, but access to most of it would be difficult. Part of the south boundary is more or less at the timber line.

There are a few small springs on the north slope, including one rising from an old trench at geochemical survey grid co-ordinates 16N, 14+70E.

Bedrock outcrops are rare and are confined to road cuts, creek beds, cliff faces and very steep banks.

## 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 owners are Lee Morrison of Robsart, Saskatchewan with an interest of 56.66 percent, Jack Wild and A.H. Pfeffer of Calgary, Alberta, each with an interest of 16.67 percent and Barrie Dargie of Calgary with an interest of 10 percent.

## 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 2,650 tonnes of silver, 527,000 tonnes of lead, 443,000 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 1900-1924. It produced 966 tonnes of sorted ore containing 3.5 kilograms of silver per ton with lead values reported as 15% by Alcock (1930) and 87.5% by Cairns (1935). The former figure seems more probable.

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 limy to quartzitic. They are very fine grained and contain microscopic sericite and biotite. Some argillaceous members are highly metamorphosed to hornfels and schists containing staurolite, garnet and/or andalusite.

Limestone occurs as well defined beds mostly less 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 north half of the property are Slocan argillites and phyllites. They are mostly calcareous and are locally interbedded with nearly pure limestone. Their relative ages are unknown, and contacts between them are not clearly defined.

In the southwest corner of Cat 2 the degree of metamorphism in markedly higher than along Keen Creek. The dominant rock types are quartzite, staurolite-bearing hornfels and schist, mica schist and nodular schist.

East of Deer Creek, in the south half of Cat 2, there is abundant cliff-forming limestone intruded by small lenticular felsic bodies believed to be mostly granodiorite.

*Staurolite hornfels* and *staurolite schist* contain abundant (5-20% each) porphyroblasts of staurolite and biotite in an intermediate grey, very fine grained matrix varying in composition from siliceous argillite to impure quartzite. Brownish grey euhedral to subhedral staurolite metacrysts 0.5 mm to 3 mm long are mostly randomly oriented. Cruciform twins are common. Resistance of the staurolite to weathering yields a distinctive "knobby" weathered surface. Ragged biotite flakes less than 1.0 mm in diameter display random to mostly parallel orientation and occasionally impart true schistosity to the rock. Rare accessory minerals are andalusite, 0.5 mm to 1.0 mm crystals of pink garnet and lenticular blebs of a pearly grey scaly mineral believed to be stilbite.

*Quartzite* occurs along a northwest trending cliff on the west side of Deer Creek, mostly south of the property. It is light grey to brownish grey, fine grained (0.1 mm) equigranular, massive to faintly bedded. Accessory minerals are biotite, sericite and rare pink garnet. *Impure quartzite* is slightly coarser grained. It contains more than 10% biotite or, less commonly, sericite. Impure quarzite grades into *siliceous phyllite* which contains more than 20% megascopic biotite and probably has a significant feldspar content.

*Meta-siltstone* is tan to intermediate grey, very fine grained, very finely bedded material of intermediate hardness. A single thin sectioned sample contained approximately 65% quartz, 30% plagioclase and 6% mica and chlorite. More micaceous and felsic varieties are equivalent to phyllitic argillite which is abundant at the north end of the property.

*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 peculiar "crinkled" appearance caused by closely spaced irregular ridges about 1mm wide.

*Mica schist* occurs as narrow bands within all of the high-grade metamorphic rocks on the property and is the dominant rock type along line 9E from 11N to 14N. It is light to intermediate grey, fine grained and fissile, with pearly cleavage surfaces. Mica content, with muscovite more abundant than biotite, is commonly about 30%, but may be as low as 10% in thin, hard quartzitic to silty interbeds. The more siliceous material contains up to 10% pink euhedral garnets. Pearly, fissile material contains rare minute grains of staurolite.

*Nodular schist* occurs mostly as narrow bands within meta-siltstone and impure quartzite in the southwest quarter of the property. It is probably intensely metamorphosed argillite. An intermediate grey, very fine grained matrix of quartz, feldspar and biotite contains lenticular nodules, up to 5 mm long, composed mainly of a pearly grey soft, tabular mineral tentatively identified as stilbite.

*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. Rare beds, mostly less than 1cm thick, are sufficiently carbonaceous to soil the fingers.

*Limestone* members are mostly less than 10 meters thick, but a band about 200 meters wide is well exposed on a series of cliff faces which cross line 16N on the east side of Deer Creek. The rock is mostly very light grey to white, medium grained, thinly bedded and almost completely acid-soluble . It is composed of densely packed but weakly cemented 0.5 mm to 1 mm angular calcite grains and is commonly sandy-weathering. Freshly broken surfaces have a strong fetid odor of $H_2S$. The rock may be a calcarenite with peripherally recrystallized grains. Minor, discontinuous, dark grey strata mostly less than 1 cm thick are nearly pure limestone with acid solubilities of more than 90 percent.

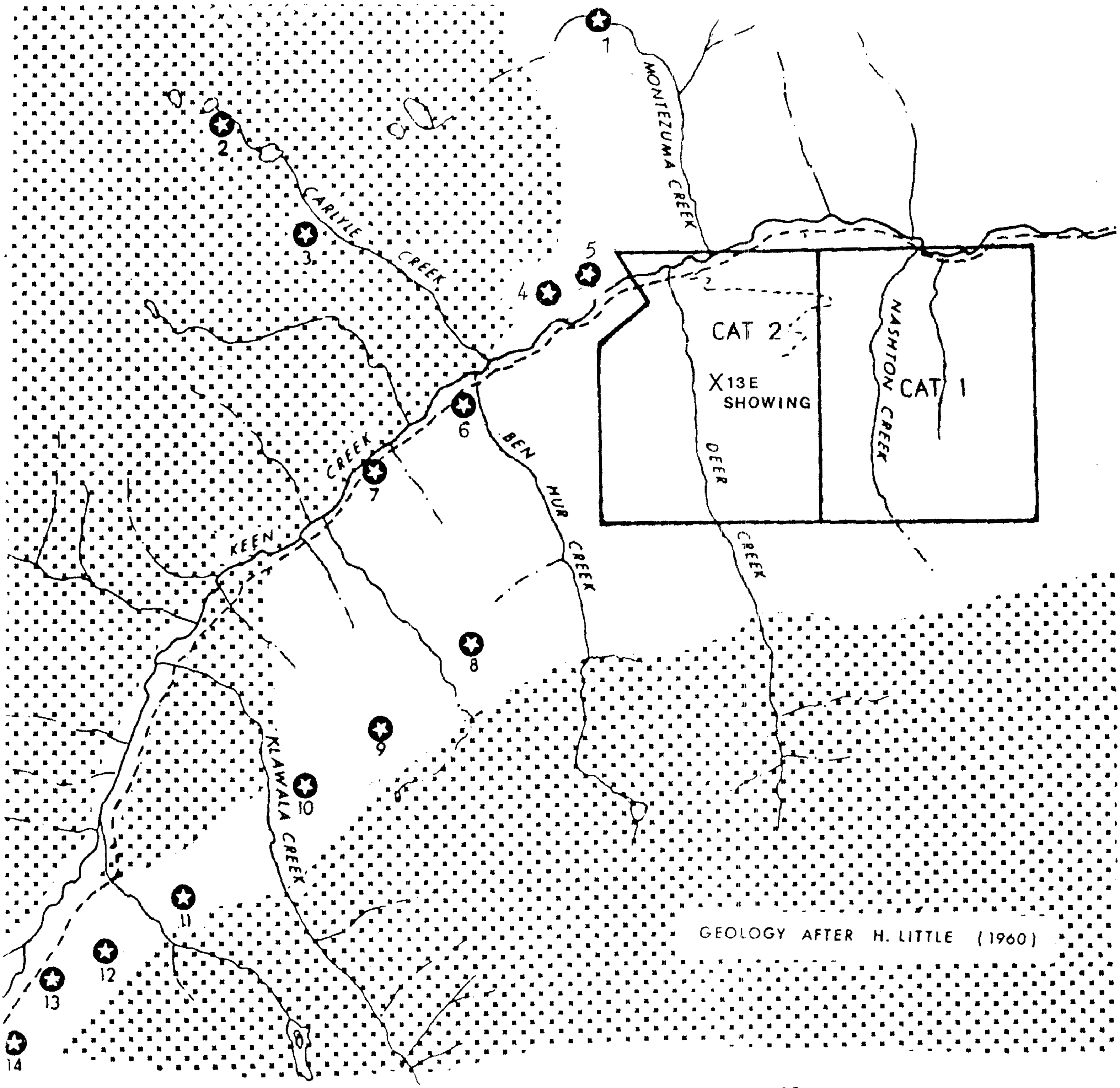
*Felsic intrusive rocks* occur as narrow lenticular dykes and sills throughout the mapped area. They are buff, grey or pink, very fine grained equigranular to coarsely porphyritic. The most abundant facies contains 10-20% white, subhedral, corroded 2 mm to 4 mm feldspar phenocrysts in a fine grained matrix composed of feldspar, quartz and less than 5% biotite. A thin sectioned sample had a granodiorite composition.

## Structure

Bedding along Keen Creek strikes mostly north-northwest and dips steeply northeast. In the high-grade metamorphics west of Deer Creek bedding strikes mostly N 40°E and dips 70°NW to vertical.

In the limestone cliff area east of Deer Creek, peripheral to a felsic intrusion more than 200 meters wide, bedding strikes vary between N 30°W and N 75°E with dips ranging from 40°NE to 40°SE. Bedding attitudes indicate small recumbent folds with axial planes striking N 70°W. The absence of stratigraphic markers within the limestone precludes accurate definition of these folds, but amplitudes appear to be about 100 meters. The folds probably plunge steeply northwest, away from the intrusion. Minor tight folds with amplitudes of less than one meter are common in the limestone.

The valley of Deer Creek is sharply linear, V-shaped, and bounded at higher elevations by cliffs 10 to 30 meters high. In spite of the creek's steep gradient, outcrops in the stream bed are almost non-existent. Topographic evidence and generally lower metamorphic grades east of the creek suggest a north-striking fault. There is, however, no evidence of significant horizontal displacement.




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

Mineralization

Lenticular quartz veins a few centimeters to more than two meters wide are common, mostly within or peripheral to felsic intrusions. West of Deer Creek the veins are all barren, but east of the creek, at 13E,16N quartz in granodiorite(?) porphyry intruding granulose limestone contains minor concentrations of highly argentiferous galena.

The principal quartz lens at the 13E showing is 50 cm to 2 m wide and about 10 m long. It strikes N 70°E and dips 25° to 40° SE. A trench across the lens and an inclined pit about 5 meters deep are probably about 75 years old. A 5 kg sample of mineralized chips taken from the dump in 1988 contained only 1.5% Pb but nevertheless assayed 266 g Ag/t (7.76 oz/st). A chip sample with a true width of 1.7 m assayed 0.24% Pb and 58 g Ag/t . The average silver : lead ratio of 185 grams Ag per percent Pb is comparable to ore from the Bismark, Silver Bell, Gibson-Daybreak and other former producers along the Bismark-Index trend. Samples of quartz with no visible galena assayed from 1.5 to 12.5 g Ag/t.

About 50 m east of the pit, at a contact between limestone and felsic intrusive rock,a quartz lens 10 cm wide assayed 0.13% Pb and 26 g Ag/t.

## EXPLORATION CONCEPT

The Cat claims were staked for proximity to the Cork-Province and Last Chance mines and to cover the strike extension of seven abandoned workings along the N 50°E Bismark-Index trend (cf. facing page). The strike of the Bismark veins is N 55°E .

The 1989 field program was mostly designed to investigate the strike projections of the Bismark mine and the 13E showing from 9E to 36E. A previously identified geochemically anomalous area south of Keen Creek, from 25N to 29N, between 16E and 20E was also examined. Emphasis was on traditional geological mapping and prospecting. In conjunction with the mapping, reconnaissance soil sampling was done along traverse lines perpendicular to the Bismark-Index trend.

The Bismark orebody was hosted by limestone in proximity to a sill of quartz-porphyry. The prospecting objective on the Cat property has been silver-lead mineralization in a similar environment.

# GEOCHEMISTRY

## Overburden

Overburden on the property consists mostly of colluvium and soil derived from colluvial material. Most soil profiles are relatively mature with well defined yellow to reddish brown "B" horizons 2 to 20 centimeters thick. However, on the steepest slopes the humic "A" horizon rests directly on weathered parent material.

## Soil Sampling and Analytical Procedures

In 1989, two hundred samples were collected at 50 meter intervals, along topofil lines bearing N 30°W and spaced 200 meters apart. Slope-chained distances were corrected for plotting with reference to aerial photographs, topographic maps and existing road surveys. One hundred and forty-five samples were collected in the 13E showing area, at intervals of 25 to 50 meters, along lines 9E to 15E spaced 100 meters apart. Seven samples were taken to confirm a zinc anomaly at 1E, 15N.

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 (Appendix 4) by Loring Laboratories Ltd. in Calgary. Lead analyses in 1989 included a deuterium correction for matrix interference and were therefore incompatible with lead values obtained from the property in 1987 and 1988.

## Data Treatment and Interpretation

To increase the sample population for statistical analysis, values from 120 samples collected on the property in 1987 and 144 samples collected in 1988 were combined with results from 345 samples collected in 1989. Because 1989 values for lead were deuterium-corrected, and those in the 244 previous samples were not, 30 of the 1989 samples were run both with and without the correction. It was determined that the corrected values were consistently about 9 ppm lower than uncorrected values, regardless of the absolute values of the analyses. Therefore, before combining the three sets of samples, 9 ppm was subtracted from each of the lead values reported in 1987 and 1988. Mean values for each metal were then calculated and, in order to eliminate scatter effect at the end of normal distribution curves, values greater than six times the mean and less than one sixth of the mean were omitted from the calculation of adjusted means (m') and standard deviations.

Upper threshold values ($t_{2S}$) at two standard deviations above the adjusted means and lower threshold values ($t_S$) at one standard deviation above the adjusted means were calculated for each metal.

Mean and threshold values are tabulated below:

| | m (ppm) | m' (ppm) | $t_{2S}$ (ppm) | $t_S$ (ppm) |
|---|---|---|---|---|
| Ag | 0.64 | 0.64 | 1.7 | 1.1 |
| Pb | 12.5 | 12.1 | 28 | 20 |
| Zn | 201 | 200 | 452 | 326 |
| Cu | 21.1 | 20.9 | 40 | 30 |

There are two distinct copper populations. Calculation of copper thresholds based on all analyses from 1987, 1988 and 1989 resulted in many apparently anomalous values from the 1988 samples west of Deer Creek. It is clear that soils overlying high grade metamorphic rocks in the area have higher background copper contents than soils overlying limestones and calcareous argillites. Therefore, it is inferred that an apparent copper anomaly indicated by 1989 sampling along lines 9E, 10E and 11E (Plate 6) is probably derived from a narrow band of mica schist (Plate 2) and is of no economic significance.

Within a 100 meter radius of the 13E showing, more than half of the soil samples collected were anomalous in at least one metal. Anomalous values north of the16N baseline may be due to surface drainage and/or fly rock from old trenches on the vein. However, anomalous samples south of the baseline were collected up slope from the showing and are suggestive of unexposed mineralization. It is, moreover, unlikely that the up slope area was contaminated by trenching since fly rock, especially from the inclined pit, would have tended to travel northwest. High silver and lead values on line 13E from 14+75N to 16N are especially encouraging.

A previously located anomalous area near the north end of Cat 2 was re-confirmed by samples on lines 16E, 18E and 20E. The most important values are clustered around two small, boggy springs on line 16E (24+50N to 26N) and near the north end of line 20E.

Ten anomalous samples were collected between 11N and 16N along lines 30E to 36E. Previous sampling along three east-west lines in the area indicated a strong four-metal anomaly on both sides of a small north-flowing creek, but 1989 results were less impressive. The source of metal values is unknown.

A sample taken in 1988 at 1E, 15N contained 1,500 ppm Zn. In 1989, seven samples collected within an area of 400 $m^2$ around the original point contained an average of 880 ppm Zn and 37 ppm Cu but only background Pb and Ag values. Outcrops of staurolite hornfels and rusty siliceous argillite within the sampled area contain up to 5% pyrrhotite, mostly along foliation planes in the argillite. A sample of very rusty argillite contained 15 ppm Pb, 0.3 ppm Ag and 392 ppm Zn. High zinc values in the soil are therefore probably derived from the argillite.

## MAGNETOMETER SURVEY

Magnetometer profiles were run from 14N to 17N across the 13E showing area on lines 12E, 13E, 14E and two short intermediate lines (Plate 7). A GeoMetrics G-816 proton precession instrument mounted on a 2.2 meter aluminium staff was used. Sensitivity and accuracy in the staff mounted mode are ± 1 gamma.

Readings were taken at station intervals of 12.5 meters, with extra readings at half-station intervals wherever gradients between stations were greater than about 10 gammas.

Diuranal variations were measured by frequently doubling back and re-reading stations at the ends of traverse lines and on the baseline. Corrections were made from a manually plotted curve.

Results were plotted at a scale of 1:1,250 and manually contoured.

The magnetometer survey was performed, as an experiment, in an unsuccessful attempt to define contacts between limestone and felsic intrusive rocks. It was found that magnetic gradients over both rock types are commonly less than one gamma per meter in the 57,600 gamma range. The unanticipated result of the survey was the discovery of a small, sharply defined magnetic anomaly at the the southwest end of the 13E showing. Magnetic intensities relative to local background values range from -70 to +340 gammas. The anomaly is coincident with a tightly folded zone in the wide band of crystalline limestone (cf. page 8)

The magnetic signature of the anomaly is characteristic of low concentrations of pyrrhotite or magnetite, neither of which was observed on outcrops in the area.

Magnetic minerals are uncommon in the ores of the Slocan district, but at the Whitewater mine there was sufficient pyrrhotite and magnetite that some mineralization was classified as "magnetic ore". Minor pyrrhotite has also been observed at the Silvana mine.

## 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.

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 with geophysical confirmation of geochemical anomalies. Because of the steepness of the terrain, geochemical anomalies will be both mechanically and chemically displaced, and geophysical follow-up must be planned accordingly.

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 is also applicable. 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 fieldwork performed in 1987, 1988 and 1989, in conjunction with reviews of published geological and historical data, the following conclusions have been 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 on the property, and previously reported geochemical anomalies have been confirmed;

4. Silver-lead mineralization (the 13E showing) exists on the property, on strike from seven abandoned workings along the Bismark - Index trend;

5. The 13E showing, although of no direct economic importance is, especially in view of its high silver : lead ratio, a promising discovery and a useful guide to further exploration;

6. Twenty meters southwest (on strike) from the 13E showing, there is an exceptionally wide band of a type of limestone considered to be a very favourable host for silver-lead-zinc deposits in the Slocan district;

7. The economic significance, if any, of sharply defined magnetic highs and lows together with tight, small scale folding in the limestone on strike from the 13E showing is unknown, but the structural and magnetic conditions are clearly anomalous;

8. The signature of the magnetic anomaly southwest of the 13E showing is diagnostic of low concentrations of pyrrhotite and/or magnetite;

9. A geochemically anomalous halo in soil around the 13E showing is partly up slope from the trenched vein and may be indicative of hidden mineralization;

10. The most cost effective initial method of exploring the limestone horizon in the 13E area would be shallow drilling with a Winkie or similar small, easily portable diamond drill;

11. An existing logging road extends to within 150 meters of the 13E showing;

12. A spring rising from an old trench near the end of the logging road would be a convenient source of water for drilling from early June until mid-August;

13. Geochemical anomalies near the north ends of traverse lines 16E to 20E and between 11N and 16N on lines 30E to 36E require further investigation;

14. Electromagnetic methods are applicable on the property, but topography will make both surveying and interpretation difficult;

15. If silver-lead-zinc ore contains significant amounts of pyrite, it will give a self-potential response. S.P. surveying should therefore be tried as a follow-up technique over geochemically anomalous areas.

## RECOMMENDATIONS

The following program is proposed:

Access

1. Improve the existing road on Cat 2 to provide easy truck access to the 13E showing;
2. Clear a walking trail from the road at 22E, 17N to the upper end of proposed survey area #1.

Geophysics

1. In proposed survey area #1 (Plate 1), do SP and Shootback EM surveys along eleven 600 meter traverse lines spaced 70 meters apart and bearing N 50°W;
2. In proposed survey area #2, do SP and Shootback EM surveys from the main forestry road to the southeast edge of the area indicated on Plate 1, along eleven lines spaced 60 meters apart, bearing N 40°W

Diamond Drilling

In the 13E showing area, complete the following twelve short holes with a light portable drill (cf. Plate 2):

1. Location 13+00E, 15+75N
   Bearing Grid North (N 30°W)
   Inclination -50°
   Depth 50 m
   Objectives
   a. Dip projection of the 13E vein
   b. Felsic intrusion - limestone contact

2. Location 13+00E, 15+50N
   Bearing Grid North
   Inclination -60°
   Depth 50 m
   Objective
   Dip projection of the 13E vein

3. Location 12+75E, 15+85N
   Bearing Grid North
   Inclination -50°
   Depth 30 m
   Objectives
   a. Strike projection of the 13E vein
   b. Limestone near the felsic intrusive contact

4. Location 12+50E, 15+65N
   Bearing Grid North
   Inclination -50°
   Depth 50 m
   Objectives
   a. Strike projection of the 13E vein
   b. Felsic intrusion - limestone contact
   c. Magnetic low

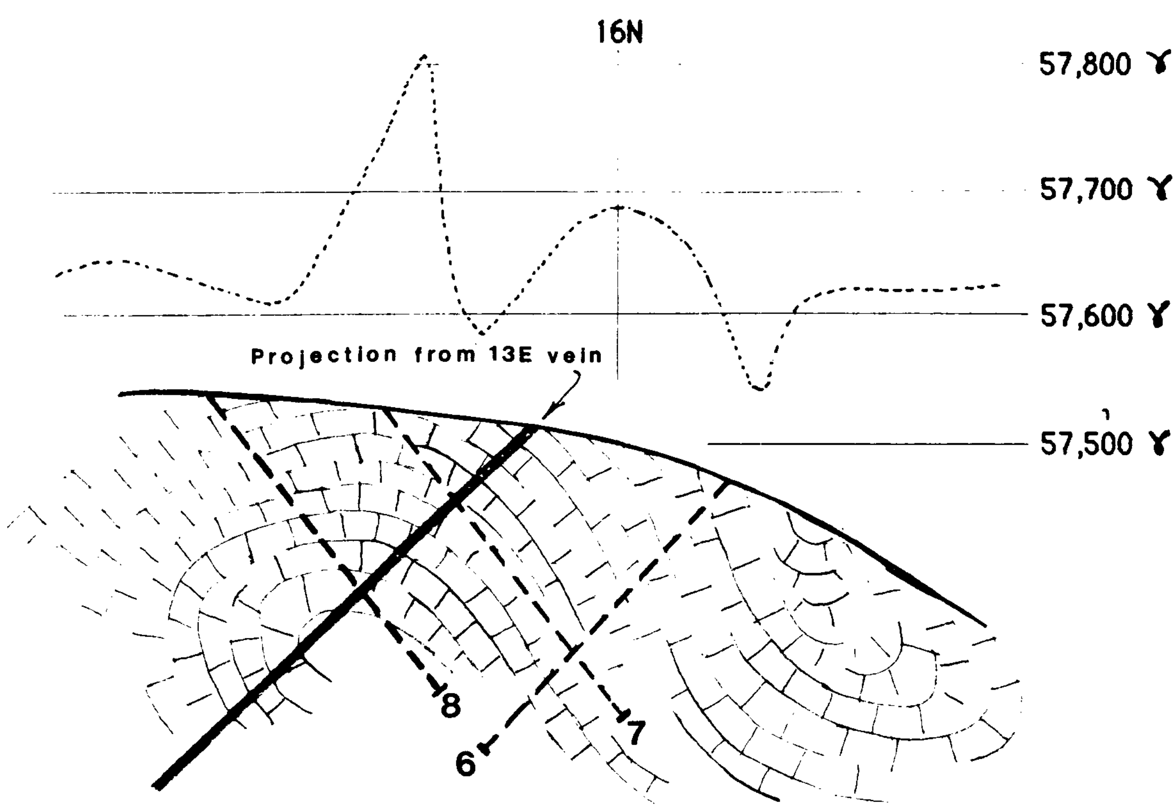
5. Location 12+50E, 15+45N
   Bearing Grid North
   Inclination -50°
   Depth 50 m
   Objectives
   Same as hole *4

6. Location 12+05E, 16+15N
   Bearing True South
   Inclination -50°
   Depth 50 m
   Objectives
a. Magnetic high
b. Cross section perpendicular to the axial plane at the nose of a tight 100 m anticline in crystalline limestone

7. Location 12+00E, 15+70N
   Bearing Grid North
   Inclination -50°
   Depth 50 m
   Objectives
a. Strike projection of the 13E vein
b. Magnetic high

8. Location 12+00E, 15+45N
   Bearing Grid North
   Inclination -50°
   Depth 50 m
   Objectives
   Same as hole #7

**PROPOSED HOLES, SECTION 12+00E SCALE 1:1,000**



9. Location 13+00E, 14+70N
Bearing S 85°W
Inclination -50°
Depth 50 m
Objective
Section perpendicular to the projected felsic intrusion - limestone contact up slope from a strong Ag anomaly in soil

10. Location 12+75E, 14+80N
Bearing S 85°W
Inclination -50°
Depth 50 m
Objective
The felsic intrusion - limestone contact on a section up slope from a strong Ag anomaly in soil

11. Location 12+90E, 15+30N
Bearing S 85°W
Inclination -50°
Depth 50 m
Objective
The felsic intrusion - limestone contact

12. Location 12+60E, 15+40N
Bearing S 85°W
Inclination -50°
Depth 50 m
Objectives
a. Strike and dip projections of a weakly mineralized quartz stringer on a felsic intrusion - limestone contact
b. The edge of a magnetic high

## COST ESTIMATES

The cost of the foregoing program is estimated as follows:

| | | |
|---|---|---|
| Field geologist, 5 weeks @ $2,400 | | $12,000 |
| Field assistant, 5 weeks @ $550 | | 2,750 |
| Food & lodging, 70 man days @ $45 | | 3,150 |
| Roads and trails | | |
| Tractor, 16 hours @ $75 | $1,200 | |
| Local labour, 8 man days @ $85 | 680 | 1,880 |
| Grid layout, 14 man days @ $85 | | 1,190 |
| EM & SP surveying (12.5 km), including mobilization & crew maintenance | | 18,000 |
| Diamond drilling (incl. mob. & demob.), 580 m @ $72 | | 41,760 |
| Vehicle | | |
| Rental, 5 weeks @ $200 | $1,000 | |
| Mileage & fuel, 1,500 @ $0.40 | 600 | 1,600 |
| Sub-total | | $82,330 |
| Contingency of 15% | | 12,350 |
| | | $94,680 |
| Proposed budget | | $95,000 |

Respectfully submitted,

Lee Morrison, P. Eng.
October 20, 1989

## Appendix 1

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 more than 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 registered owner of a working interest of 56.66% in the Cat claims.

Lee G. Morrison, P. Eng.

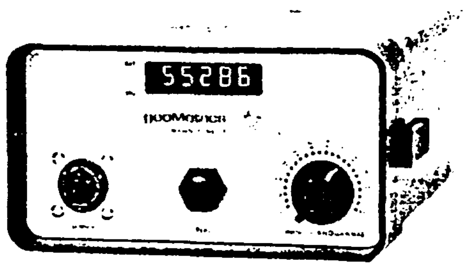
## Appendix 2

### STATEMENT OF COSTS

| | | |
|---|---|---|
| Field Personnel (including payroll burden) | | |
| L.G. Morrison, Consulting Geologist<br>July 16 - August 3, 1989 (13 days @ $400) | $5,200.00 | |
| Shawn Handley, Field Assistant & Sampler<br>July 19-26, 1989 (8 days @ $70 + 20% burden) | 672.00 | |
| Adrian Kremler, Field Assistant & Sampler<br>July 25-29, 1989 (5 days @ $60 + 20% burden) | 360.00 | $6,232.00 |
| Food and Accommodations | | |
| L. Morrison, 18 days Kaslo @ $40 | | 720.00 |
| Vehicle | | |
| 3/4 ton 4x4 , 18 days @ $40 | | 720.00 |
| Sample Preparations & Analyses | | |
| 352 soil geochemical (Ag, Pb, Cu, Zn) @ $6.15 | 2,164.80 | |
| 11 rock geochemical preparations @ $2.75 | 30.25 | |
| 7 rock geochemical (Ag, Pb,Zn) @ $4.25 | 29.75 | |
| 4 rock geochemical (Au, Ag) @ $9.25 | 37.00 | 2,261.80 |
| Supplies (topofil thread, flagging & envelopes) | | 122.34 |
| Equipment Rental | | |
| Magnetometer (1 day) | 50.00 | |
| JD450 tractor with operator (9 hrs. @ $50) | 450.00 | 500.00 |
| Data Interpretion & Report Preparation | | |
| L. Morrison , 6 days @ $400 | 2,400.00 | |
| Draughting (44 hrs @ $20) | 880.00 | |
| Typing & reproduction | 108.50 | 3,388.50 |
| Total | | $13,944.64 |

### "Hands-free" Back Pack Sensor

Based upon the principle of nuclear precession (proton) the G-816 offers absolute drift-free measurements of the total field directly in gammas. (The proton precession method is the officially recognized standard for measurement of the earth's magnetic field.) Operation is worldwide with one gamma sensitivity and repeatability maintained throughout the range. There is no temperature drift, no set-up or leveling required, and no adjustment for orientation, field polarity, or arbitrary reference levels. Operation is very simple with no prior training required. Only 6 seconds are required to obtain a measurement which is always correct to one gamma, regardless of operator experience. Only the Proton Magnetometer offers such repeatability—an important consideration even for 10 gamma survey resolution.




### Complete Field Portable System

The Model G-816 comes complete, ready for portable field operation and consists of:

1. Electronics console with internally mounted and easily replaced "D" cell battery pack.
2. Proton sensor and signal cable for attachment to carrying harness or staff.
3. Adjustable carrying harness.
4. 8 foot collapsible aluminum staff.
5. Instruction manual, complete set of spare batteries, applications manual, and rugged field suitcase.

Price and lease rates on the G-816 magnetometer are available upon request.

## SPECIFICATIONS

**Sensitivity:** ±1 gamma throughout range

**Range:** 20,000 to 90,000 gammas (worldwide)

**Tuning:** Multi-position switch with signal amplitude indicator light on display

**Gradient Tolerance:** Exceeds 300 gammas/ft (increased gradient tolerance to 800 gammas/ft upon request)

**Sampling Rate:** Manual push-button, one reading each 6 seconds

**Output:** 5 digit numeric display with readout directly in gammas

**Power Requirements:** Twelve self-contained 1.5 volt "D" cell, universally available flashlight-type batteries. Charge state or replacement signified by flashing indicator light on display.

| Battery Type | Number of Readings | |
|---|---|---|
| Alkaline | over | 10,000 |
| Premium Carbon Zinc | over | 4,000 |
| Standard Flashlight | over | 1,500 |

*NOTE: Battery life decreases with low temperature operation.*

**Temperature Range:**
Console and sensor: -40° to +85°C
Battery Pack: 0° to +50°C (limited use to -15°C; lower temperature battery belt operation—optional)

**Accuracy (Total Field):** ±1 gamma through 0° to +50°C temperature range

**Sensor:** High signal, noise cancelling, interchangeably mounted on separate staff or attached to carrying harness

**Size:**
Console: 3.5 x 7 x 10.5 inches (9 x 18 x 27 cm)
Sensor: 4.5 x 6 inches (11 x 15 cm)
Staff: 1 inch diameter x 8 ft lenght (3 cm x 2.44 m)

**Weight:**

| | Lbs. | Kgs. |
|---|---|---|
| Console (w/batteries): | 5.5 | 2.4 |
| Sensor & signal cable: | 4 | 1.8 |
| Aluminum staff: | 2 | 0.9 |
| **Total:** | 11.5 | 5.1 |

*All magnetometers and parts are covered by a one year warranty beginning with the date of receipt but not to exceed fifteen months from the shipping date.*

# APPENDIX 4

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.

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

LORING LABORATORIES LTD.

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.

APPENDIX 5

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
S0N 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| Geochemical Analysis | | | | |
| A-1 | 0.3 | 29 | 16 | 191 |
| A-2 | 0.4 | 51 | 12 | 189 |
| B-1 | 0.3 | 30 | 14 | 1000 |
| B-2 | 0.3 | 29 | 11 | 381 |
| B-3 | 0.3 | 39 | 14 | 1000 |
| B-4 | 0.3 | 32 | 13 | 1000 |
| B-5 | 0.3 | 46 | 18 | 874 |
| B-6 | 0.3 | 35 | 13 | 789 |
| B-7 | 0.4 | 43 | 12 | 1100 |
| 9E 11 + 50 N | 0.3 | 41 | 7 | 170 |
| 12 + 00 N | 0.4 | 39 | 12 | 184 |
| 13 + 00 N | 0.3 | 58 | 29 | 183 |
| 13 + 50 N | 0.3 | 35 | 17 | 286 |
| 13 + 75 N | 0.3 | 40 | 13 | 144 |
| 14 + 25 N | 0.3 | 40 | 10 | 267 |
| 14 + 75 N | 0.4 | 31 | 8 | 364 |
| 15 + 25 N | 0.5 | 31 | 9 | 492 |
| 15 + 50 N | 0.5 | 34 | 10 | 322 |
| 15 + 75 N | 0.5 | 27 | 10 | 394 |
| 10E 11 + 50 N | 0.2 | 16 | 10 | 187 |
| 12 + 00 N | 0.4 | 21 | 13 | 268 |
| 12 + 50 N | 1.0 | 32 | 12 | 181 |
| 13 + 00 N | 0.2 | 35 | 10 | 312 |
| 14 + 00 N | 0.4 | 34 | 9 | 199 |
| 14 + 50 N | 0.5 | 36 | 4 | 250 |
| 14 + 75 N | 0.2 | 36 | 19 | 283 |
| 15 + 00 N | 0.4 | 41 | 15 | 306 |
| 15 + 25 N | 0.2 | 37 | 14 | 176 |
| 15 + 50 N | 0.2 | 37 | 11 | 187 |
| 15 + 75 N | 0.3 | 31 | 6 | 188 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2C0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 10E 16 + 00 N | 0.2 | 69 | 23 | 299 |
| 11E 7 + 00 N | 0.3 | 14 | 5 | 162 |
| 7 + 50 N | 0.6 | 15 | 5 | 244 |
| 8 + 00 N | 0.2 | 24 | 7 | 326 |
| 8 + 50 N | 0.6 | 28 | 3 | 188 |
| 9 + 00 N | 0.3 | 26 | NIL | 151 |
| 9 + 50 N | 0.9 | 17 | 14 | 233 |
| 10 + 00 N | 0.6 | 23 | 9 | 340 |
| 10 + 50 N | 0.4 | 25 | 9 | 187 |
| 11 + 00 N | 0.4 | 17 | 12 | 239 |
| 11 + 50 N | 0.9 | 17 | 21 | 203 |
| 12 + 00 N | 1.8 | 28 | 7 | 315 |
| 12 + 50 N | 0.5 | 22 | 9 | 296 |
| 12 + 75 N | 0.7 | 20 | 6 | 211 |
| 13 + 00 N | 0.4 | 32 | 7 | 219 |
| 13 + 25 N | 0.5 | 16 | 8 | 271 |
| 13 + 50 N | 1.3 | 18 | 10 | 265 |
| 13 + 75 N | 0.3 | 41 | 8 | 268 |
| 14 + 00 N | 0.3 | 42 | 4 | 296 |
| 14 + 25 N | 0.4 | 33 | 7 | 290 |
| 14 + 50 N | 0.6 | 30 | 6 | 240 |
| 14 + 75 N | 2.4 | 25 | 42 | 291 |
| 15 + 75 N | 0.5 | 24 | 8 | 232 |
| 15 + 50 N | 0.2 | 20 | 8 | 227 |
| 12E 7 + 00 N | 0.2 | 12 | 5 | 155 |
| 7 + 50 N | 0.6 | 15 | 15 | 160 |
| 8 + 00 N | 0.3 | 14 | 9 | 195 |
| 8 + 50 N | 0.2 | 19 | 4 | 153 |
| 9 + 00 N | 0.4 | 12 | 5 | 97 |
| 9 + 50 N | 0.6 | 13 | 7 | 161 |
| 10 + 00 N | 0.4 | 12 | 6 | 186 |
| 10 + 50 N | 0.5 | 24 | 4 | 178 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.

Page # 3

| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 12E 11 + 00 N | 0.3 | 28 | 7 | 196 |
| 11 + 50 N | 0.1 | 39 | 5 | 146 |
| 12 + 00 N | 0.4 | 12 | 7 | 258 |
| 12 + 50 N | 0.6 | 9 | 10 | 180 |
| 12 + 75 N | 0.8 | 14 | 11 | 210 |
| 13 + 00 N | 0.5 | 9 | 12 | 172 |
| 13 + 25 N | 0.6 | 12 | 14 | 270 |
| 13 + 50 N | 0.4 | 11 | 13 | 168 |
| 14 + 00 N | 0.2 | 8 | 6 | 324 |
| 14 + 25 N | 0.8 | 18 | 8 | 283 |
| 14 + 50 N | 0.4 | 12 | 5 | 252 |
| 14 + 75 N | 0.4 | 19 | 4 | 297 |
| 15 + 00 N | 0.5 | 30 | 5 | 231 |
| 15 + 25 N | 0.8 | 15 | 7 | 252 |
| 15 + 50 N | 0.9 | 20 | 6 | 228 |
| 18 + 00 N | 0.6 | 23 | 37 | 483 |
| 13E 7 + 00 N | 0.2 | 4 | 2 | 19 |
| 7 + 50 N | 0.3 | 12 | 11 | 142 |
| 8 + 00 N | 0.2 | 17 | 10 | 197 |
| 8 + 50 N | 0.3 | 14 | 10 | 103 |
| 9 + 00 N | 1.3 | 18 | 10 | 113 |
| 9 + 50 N | 0.5 | 19 | 7 | 130 |
| 10 + 00 N | 0.3 | 18 | 10 | 170 |
| 10 + 50 N | 0.5 | 18 | 5 | 206 |
| 11 + 00 N | 2.2 | 8 | 2 | 111 |
| 11 + 50 N | 2.2 | 16 | 11 | 169 |
| 12 + 00 N | 0.4 | 17 | 7 | 172 |
| 12 + 25 N | 0.3 | 20 | 10 | 252 |
| 12 + 50 N | 0.7 | 18 | 10 | 453 |
| 12 + 75 N | 0.6 | 33 | 12 | 421 |
| 13 + 00 N | 0.3 | 11 | 18 | 204 |
| 13 + 25 N | 0.4 | 15 | 17 | 202 |

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 are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2CO

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 13E 13 + 50 N | 0.7 | 16 | 15 | 212 |
| 13 + 75 N | 1.1 | 15 | 10 | 217 |
| 14 + 00 N | 0.6 | 17 | 11 | 141 |
| 14 + 25 N | 1.0 | 29 | 11 | 310 |
| 14 + 50 N | 0.6 | 17 | 10 | 252 |
| 14 + 75 N | 1.5 | 15 | 9 | 202 |
| 15 + 00 N | 2.0 | 15 | 13 | 124 |
| 15 + 25 N | 1.9 | 18 | 14 | 153 |
| 15 + 50 N | 0.9 | 11 | 28 | 101 |
| 15 + 75 N | 0.9 | 6 | 16 | 56 |
| 16 + 75 N | 0.7 | 21 | 12 | 250 |
| 17 + 00 N | 0.9 | 19 | 10 | 136 |
| 17 + 50 N | 1.2 | 19 | 39 | 384 |
| 18 + 00 N | 0.5 | 24 | 21 | 212 |
| 13 + 50E 15 + 50N | 1.4 | 18 | 67 | 277 |
| 14E 12 + 50 N | 0.5 | 18 | 9 | 143 |
| 12 + 75 N | 1.2 | 21 | 11 | 171 |
| 13 + 00 N | 0.6 | 12 | 14 | 165 |
| 13 + 25 N | 0.4 | 12 | 11 | 94 |
| 13 + 50 N | 0.9 | 19 | 4 | 95 |
| 13 + 75 N | 0.7 | 19 | 5 | 137 |
| 14 + 00 N | 0.9 | 18 | 8 | 116 |
| 14 + 25 N | 0.7 | 11 | 7 | 123 |
| 14 + 50 N | 0.4 | 22 | 6 | 156 |
| 14 + 75 N | 0.8 | 17 | 10 | 362 |
| 15 + 00 N | 1.2 | 16 | 8 | 226 |
| 15 + 25 N | 1.0 | 17 | 9 | 275 |
| 15 + 50 N | 0.6 | 32 | 12 | 350 |
| 17 + 00 N | 0.4 | 10 | 11 | 169 |
| 17 + 50 N | 0.6 | 30 | 15 | 280 |
| 18 + 00 N | 1.1 | 11 | 11 | 159 |
| 15E 8 + 00 N | 0.3 | 10 | 12 | 74 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2CO

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 15E 8 + 50 N | 0.3 | 12 | 7 | 91 |
| 9 + 00 N | 0.6 | 8 | 8 | 41 |
| 9 + 50 N | 0.5 | 15 | 6 | 57 |
| 10 + 00 N | 1.7 | 13 | 20 | 69 |
| 10 + 50 N | 0.9 | 10 | 10 | 69 |
| 11 + 00 N | 0.8 | 18 | 6 | 76 |
| 11 + 50 N | 0.7 | 17 | 4 | 71 |
| 12 + 00 N | 0.4 | 8 | 7 | 74 |
| 12 + 50 N | 0.5 | 12 | 10 | 72 |
| 13 + 00 N | 0.3 | 13 | 9 | 92 |
| 13 + 50 N | 0.6 | 11 | 9 | 100 |
| 14 + 00 N | 0.4 | 11 | 8 | 69 |
| 14 + 25 N | 0.3 | 23 | 3 | 100 |
| 14 + 50 N | 0.5 | 16 | 5 | 80 |
| 14 + 75 N | 0.1 | 27 | NIL | 71 |
| 15 + 00 N | 0.6 | 20 | 19 | 166 |
| 15 + 25 N | 1.1 | 17 | 10 | 141 |
| 15 + 50 N | 0.7 | 25 | 11 | 177 |
| 15 + 75 N | 0.3 | 16 | 9 | 218 |
| 16 + 00 N | 0.7 | 20 | 7 | 131 |
| 16 + 25 N | 1.0 | 19 | 15 | 207 |
| 16 + 50 N | 0.4 | 18 | 14 | 257 |
| 16 + 75 N | 0.5 | 19 | 22 | 211 |
| 17 + 00 N | 1.0 | 16 | 18 | 219 |
| 17 + 50 N | 0.6 | 16 | 9 | 162 |
| 18 + 00 N | 0.3 | 23 | 10 | 336 |
| 16E 8 + 00 N | 0.2 | 5 | 6 | 21 |
| 8 + 50 N | 0.1 | 8 | 5 | 87 |
| 9 + 00 N | 0.4 | 11 | 8 | 109 |
| 9 + 50 N | 0.4 | 11 | 5 | 91 |
| 10 + 00 N | 0.6 | 12 | 10 | 142 |
| 10 + 50 N | 0.7 | 20 | 9 | 134 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
S0N 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.

Page # 6

| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 16E 11 + 00 N | 0.4 | 27 | 7 | 103 |
| 11 + 50 N | 0.4 | 14 | 7 | 84 |
| 12 + 00 N | 0.4 | 11 | 5 | 76 |
| 12 + 50 N | 0.6 | 13 | 6 | 71 |
| 13 + 00 N | 0.7 | 16 | 5 | 52 |
| 13 + 50 N | 0.5 | 8 | 5 | 85 |
| 14 + 00 N | 0.4 | 18 | 6 | 87 |
| 14 + 50 N | 0.6 | 15 | 6 | 92 |
| 15 + 00 N | 0.7 | 18 | 4 | 119 |
| 15 + 50 N | 0.9 | 11 | 7 | 96 |
| 16 + 00 N | 1.2 | 14 | 10 | 105 |
| 16 + 50 N | 0.5 | 14 | 5 | 110 |
| 17 + 00 N | 1.1 | 17 | 7 | 118 |
| 17 + 50 N | 1.1 | 17 | 12 | 70 |
| 18 + 00 N | 0.9 | 9 | 6 | 45 |
| 18 + 50 N | 0.9 | 22 | 9 | 183 |
| 19 + 00 N | 1.2 | 18 | 9 | 166 |
| 19 + 50 N | 0.5 | 16 | 7 | 136 |
| 20 + 00 N | 1.0 | 16 | 9 | 118 |
| 20 + 50 N | 1.9 | 14 | 9 | 126 |
| 21 + 00 N | 0.4 | 16 | 9 | 173 |
| 21 + 50 N | 0.8 | 14 | 8 | 145 |
| 22 + 00 N | 0.3 | 18 | 7 | 261 |
| 22 + 50 N | 0.4 | 9 | 10 | 139 |
| 23 + 00 N | 0.3 | 17 | 9 | 174 |
| 23 + 50 N | 0.3 | 15 | 10 | 150 |
| 24 + 00 N | 0.6 | 20 | 11 | 234 |
| 24 + 50 N | 0.3 | 18 | 9 | 394 |
| 25 + 00 N | 0.4 | 19 | 9 | 327 |
| 25 + 50 N | 0.8 | 22 | 15 | 485 |
| 26 + 00 N | 1.1 | 32 | 15 | 454 |
| 26 + 50 N | 0.4 | 24 | 10 | 407 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 16E 27 + 00 N | 0.5 | 20 | 11 | 266 |
| 27 + 50 N | 0.7 | 27 | 10 | 327 |
| 28 + 00 N | 0.5 | 16 | 11 | 378 |
| 18E 9 + 00 N | 0.5 | 5 | 6 | 47 |
| 9 + 50 N | 0.4 | 7 | 5 | 74 |
| 10 + 00 N | 0.2 | 15 | 5 | 53 |
| 10 + 50 N | 0.7 | 11 | 4 | 68 |
| 11 + 00 N | 0.8 | 8 | 8 | 70 |
| 11 + 50 N | 0.3 | 7 | 4 | 63 |
| 12 + 00 N | 0.4 | 22 | 3 | 116 |
| 12 + 50 N | 0.4 | 11 | 5 | 94 |
| 13 + 00 N | 0.6 | 12 | 5 | 130 |
| 13 + 50 N | 0.9 | 17 | 7 | 131 |
| 14 + 00 N | 0.3 | 7 | 6 | 40 |
| 14 + 50 N | 0.4 | 10 | 5 | 149 |
| 15 + 00 N | 0.4 | 10 | 4 | 73 |
| 15 + 50 N | 0.4 | 6 | 2 | 47 |
| 16 + 00 N | 1.3 | 13 | 10 | 81 |
| 16 + 50 N | 0.7 | 15 | 8 | 102 |
| 17 + 00 N | 0.8 | 21 | 9 | 91 |
| 17 + 50 N | 0.4 | 12 | 6 | 148 |
| 18 + 00 N | 0.7 | 14 | 8 | 139 |
| 18 + 50 N | 0.7 | 12 | 7 | 149 |
| 19 + 00 N | 0.7 | 12 | 5 | 134 |
| 19 + 50 N | 0.8 | 13 | 6 | 133 |
| 20 + 00 N | 0.3 | 6 | 5 | 73 |
| 20 + 50 N | 0.3 | 15 | 4 | 141 |
| 21 + 00 N | 0.4 | 17 | 8 | 112 |
| 21 + 50 N | 0.5 | 15 | 6 | 169 |
| 22 + 00 N | 0.8 | 19 | 5 | 126 |
| 22 + 50 N | 0.2 | 14 | 4 | 89 |
| 23 + 00 N | 0.5 | 13 | 4 | 133 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
S0N 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 18E 23 + 50 N | 0.6 | 12 | 7 | 145 |
| 24 + 00 N | 0.4 | 16 | 7 | 234 |
| 24 + 50 N | 0.6 | 14 | 9 | 107 |
| 25 + 00 N | 0.3 | 13 | 8 | 143 |
| 25 + 50 N | 0.8 | 11 | 6 | 197 |
| 26 + 00 N | 0.9 | 17 | 8 | 404 |
| 26 + 50 N | 0.4 | 16 | 5 | 216 |
| 27 + 00 N | 0.4 | 19 | 9 | 176 |
| 27 + 50 N | 0.5 | 15 | 9 | 224 |
| 28 + 00 N | 0.4 | 16 | 15 | 304 |
| 28 + 50 N | 0.5 | 17 | 10 | 253 |
| 29 + 00 N | 0.6 | 33 | 10 | 366 |
| 20E 9 + 00 N | 0.3 | 12 | 7 | 74 |
| 9 + 50 N | 0.9 | 14 | 7 | 83 |
| 10 + 00 N | 0.8 | 11 | 6 | 81 |
| 10 + 50 N | 0.4 | 13 | 7 | 84 |
| 11 + 00 N | 0.8 | 12 | 11 | 91 |
| 11 + 50 N | 0.6 | 10 | 8 | 100 |
| 12 + 00 N | 0.3 | 15 | 9 | 168 |
| 12 + 50 N | 0.3 | 19 | 15 | 369 |
| 13 + 00 N | 1.9 | 13 | 12 | 244 |
| 13 + 50 N | 1.9 | 11 | 11 | 106 |
| 14 + 00 N | 1.0 | 13 | 5 | 72 |
| 14 + 50 N | 0.4 | 10 | 10 | 84 |
| 15 + 00 N | 0.5 | 10 | 9 | 77 |
| 15 + 50 N | 0.3 | 18 | 5 | 97 |
| 16 + 00 N | 0.5 | 9 | 13 | 88 |
| 16 + 50 N | 0.4 | 14 | 10 | 124 |
| 17 + 00 N | 0.2 | 12 | 11 | 140 |
| 17 + 50 N | 0.4 | 12 | 8 | 196 |
| 18 + 00 N | 0.3 | 16 | 9 | 186 |
| 18 + 50 N | 0.4 | 9 | 7 | 174 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 20E 19 + 00 N | 0.3 | 11 | 6 | 141 |
| 19 + 50 N | 0.9 | 13 | 5 | 185 |
| 20 + 00 N | 0.2 | 12 | 3 | 87 |
| 20 + 50 N | 0.3 | 30 | 5 | 240 |
| 21 + 00 N | 0.2 | 7 | 5 | 177 |
| 21 + 50 N | 0.3 | 19 | 4 | 92 |
| 22 + 00 N | 0.3 | 13 | 6 | 176 |
| 22 + 50 N | 0.2 | 13 | 5 | 119 |
| 23 + 00 N | 0.3 | 15 | 6 | 118 |
| 23 + 50 N | 0.3 | 11 | 7 | 157 |
| 24 + 00 N | 0.4 | 13 | 8 | 173 |
| 24 + 50 N | 0.3 | 19 | 8 | 190 |
| 25 + 00 N | 0.3 | 23 | 8 | 143 |
| 25 + 50 N | 0.3 | 10 | 8 | 147 |
| 26 + 00 N | 0.4 | 26 | 7 | 149 |
| 26 + 50 N | 0.5 | 12 | 6 | 308 |
| 27 + 00 N | 0.7 | 9 | 12 | 459 |
| 27 + 50 N | 3.0 | 23 | 24 | 507 |
| 28 + 50 N | 0.2 | 18 | 8 | 142 |
| 22E 8 + 00 N | 0.2 | 18 | 23 | 212 |
| 8 + 50 N | 0.7 | 13 | 9 | 106 |
| 9 + 50 N | 0.2 | 15 | 5 | 84 |
| 10 + 00 N | 0.2 | 10 | 6 | 97 |
| 10 + 50 N | 0.2 | 10 | 7 | 83 |
| 11 + 00 N | 0.9 | 22 | 6 | 297 |
| 11 + 50 N | 0.6 | 17 | 7 | 220 |
| 12 + 00 N | 0.4 | 9 | 6 | 111 |
| 12 + 50 N | 0.5 | 11 | 7 | 95 |
| 13 + 00 N | 0.3 | 11 | 5 | 64 |
| 13 + 50 N | 0.4 | 7 | 6 | 74 |
| 14 + 00 N | 0.8 | 11 | 10 | 108 |
| 14 + 50 N | 0.9 | 21 | 9 | 94 |

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 are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 22E 15 + 00 N | 0.4 | 12 | 9 | 88 |
| 15 + 50 N | 0.2 | 14 | 7 | 119 |
| 16 + 00 N | 0.2 | 7 | 6 | 145 |
| 24E 9 + 50 N | 0.6 | 17 | 16 | 263 |
| 10 + 00 N | 0.2 | 12 | 8 | 179 |
| 10 + 50 N | 0.2 | 9 | 11 | 140 |
| 12 + 50 N | 0.3 | 20 | 6 | 91 |
| 13 + 00 N | 1.4 | 14 | 6 | 91 |
| 13 + 50 N | 0.9 | 15 | 5 | 92 |
| 14 + 00 N | 0.3 | 7 | 7 | 113 |
| 14 + 50 N | 0.4 | 11 | 8 | 90 |
| 15 + 00 N | 0.2 | 15 | 32 | 192 |
| 15 + 50 N | 0.2 | 17 | 12 | 154 |
| 16 + 00 N | 0.5 | 18 | 12 | 143 |
| 30E 11 + 50 N | 0.3 | 30 | 21 | 284 |
| 12 + 00 N | 0.2 | 26 | 23 | 193 |
| 12 + 50 N | 2.2 | 25 | 9 | 297 |
| 13 + 00 N | 0.3 | 23 | 8 | 445 |
| 13 + 50 N | 0.3 | 18 | 7 | 296 |
| 13 + 85 N | 0.8 | 18 | 7 | 157 |
| 14 + 50 N | 0.3 | 22 | 17 | 161 |
| 15 + 00 N | 0.5 | 30 | 12 | 196 |
| 15 + 50 N | 0.3 | 22 | 8 | 170 |
| 16 + 00 N | 0.8 | 14 | 12 | 216 |
| 16 + 50 N | 0.3 | 19 | 7 | 224 |
| 17 + 00 N | 0.3 | 15 | 8 | 119 |
| 32E 11 + 50 N | 0.7 | 34 | 9 | 121 |
| 12 + 00 N | 0.4 | 28 | 10 | 171 |
| 13 + 00 N | 0.5 | 17 | 13 | 238 |
| 13 + 50 N | 0.2 | 21 | 11 | 315 |
| 14 + 00 N | 2.6 | 29 | 8 | 210 |
| 14 + 50 N | 0.5 | 24 | 8 | 321 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
S0N 2G0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 32E 15 + 00 N | 0.6 | 45 | 7 | 192 |
| 15 + 50 N | 0.8 | 10 | 9 | 154 |
| 34E 8 + 00 N | 0.6 | 12 | 13 | 87 |
| 8 + 50 N | 0.4 | 23 | 15 | 91 |
| 9 + 00 N | 0.9 | 19 | 12 | 92 |
| 9 + 50 N | 0.6 | 11 | 13 | 84 |
| 10 + 00 N | 0.8 | 21 | 17 | 83 |
| 10 + 50 N | 0.3 | 19 | 20 | 222 |
| 11 + 00 N | 0.2 | 17 | 11 | 272 |
| 11 + 50 N | 0.3 | 27 | 11 | 109 |
| 13 + 00 N | 0.2 | 16 | 9 | 168 |
| 13 + 50 N | 0.2 | 10 | 8 | 92 |
| 14 + 00 N | 0.2 | 24 | 10 | 129 |
| 14 + 50 N | 0.5 | 24 | 11 | 181 |
| 15 + 00 N | 7.2 | 67 | 9 | 154 |
| 15 + 50 N | 0.9 | 31 | 12 | 210 |
| 16 + 00 N | 0.3 | 15 | 9 | 176 |
| 36E 8 + 00 N | 0.2 | 8 | 9 | 46 |
| 8 + 50 N | 0.3 | 16 | 8 | 187 |
| 9 + 00 N | 0.1 | 8 | 7 | 75 |
| 9 + 50 N | 0.4 | 11 | 8 | 115 |
| 10 + 00 N | 0.2 | 10 | 7 | 104 |
| 10 + 50 N | 0.1 | 22 | 11 | 98 |
| 11 + 00 N | 0.1 | 29 | 11 | 373 |
| 11 + 50 N | 0.1 | 16 | 10 | 149 |
| 12 + 00 N | 0.3 | 21 | 12 | 165 |
| 12 + 50 N | 0.3 | 18 | 9 | 114 |
| 13 + 00 N | 0.2 | 15 | 8 | 175 |
| 13 + 50 N | 0.2 | 14 | 9 | 216 |
| 14 + 00 N | 0.2 | 14 | 8 | 159 |
| 14 + 50 N | 0.2 | 29 | 8 | 167 |
| 15 + 00 N | 0.4 | 16 | 8 | 135 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
SON 2C0

File No. 32688
Date August 28, 1989
Samples Soil

# Certificate of Assay
# LORING LABORATORIES LTD.

Page # 12

| SAMPLE NO. | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|
| 36E 15 + 50 N | 0.2 | 20 | 7 | 197 |
| 16 + 00 N | 0.8 | 39 | 8 | 201 |

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
are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Sask.
S0N 2G0

File No. 32688
Date August 28, 1989
Samples Rock

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | PPB Au | PPM Ag | PPM Cu | PPM Pb | PPM Zn |
|---|---|---|---|---|---|
| Geochemical Analysis | | | | | |
| "Rock Samples" | | | | | |
| R 1E 14 + 90 N | - | 0.3 | - | 15 | 392 |
| R11E 14 + 10 N | - | 0.8 | - | 5 | 122 |
| R13E 9 + 00 N | NIL | 0.1 | - | - | - |
| R13E 12 + 75 N | NIL | 0.1 | - | - | - |
| R14E 13 + 00 N | NIL | 0.3 | - | - | - |
| R16E 18 + 15 N | - | 0.1 | - | 7 | 44 |
| R30E 11 + 50 N | - | 0.1 | - | 32 | 57 |
| R33+50E 18 + 00 N | - | 0.2 | 23 | 6 | 142 |
| R16E 15 + 30 N | NIL | 0.1 | - | 8 | 46 |
| R15N 0 + 95 E | - | 0.3 | 41 | 10 | 215 |
| R16N 11 + 15 E | - | 0.3 | - | 21 | 197 |

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 are made in advance.

Assayer

To: MR. LEE MORRISON,
Box 105,
Robsart, Saskatchewan
S0N 2G0

File No. 32688
Date October 6, 1989
Samples

# Certificate of Assay
# LORING LABORATORIES LTD.



| SAMPLE NO. | Pb Uncorrected | Pb Corrected |
|---|---|---|
| Geochemical Analysis | | |
| A-1 | 21 | 13 |
| A-2 | 22 | 12 |
| B-3 | 24 | 15 |
| B-7 | 22 | 11 |
| 9E-13+00N | 34 | 22 |
| 14+25N | 25 | 14 |
| 11E- 7+00N | 20 | 13 |
| 9+00N | 12 | 2 |
| 14+75N | 47 | 38 |
| 12E- 8+00N | 20 | 12 |
| 9+00N | 16 | 7 |
| 11+00N | 20 | 12 |
| 15+00N | 19 | 9 |
| 18+00N | 49 | 37 |
| 13E- 7+00N | 14 | 7 |
| 13+00N | 26 | 17 |
| 16E-12+00N | 15 | 6 |
| 20+00N | 19 | 10 |
| 18E-10+00N | 12 | 7 |
| 19+00N | 16 | 7 |
| 29+00N | 21 | 12 |
| 20E-10+00N | 14 | 8 |
| 22+00N | 17 | 9 |
| 27+50N | 31 | 23 |
| 22E-10+00N | 16 | 8 |
| 14+00N | 18 | 12 |
| 24E-10+00N | 16 | 11 |
| 30E-17+00N | 18 | 10 |
| 32E-15+00N | 18 | 12 |
| 36E-11+00N | 25 | 15 |

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
are made in advance.

[signature]
Assayer

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

File No. 32688
Date October 6, 1989
Samples

# Certificate of Assay
# LORING LABORATORIES LTD.

Page # 2

| SAMPLE NO. | Pb Uncorrected | Pb Corrected |
|---|---|---|
| 36E-16+00N | 18 | 10 |
| R30E-11+50N | 51 | 41 |
| R15N- 0+95E | 21 | 10 |

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 are made in advance.

Assayer

## Appendix 6

### REFERENCES


Alcock, F.J. (1930): *Zinc and Lead Deposits of Canada,* Geological Survey of Canada, Economic Geology Series No. 8

Cairns, C.E. (1935): *Description of Properties, Slocan Mining Camp, British Columibia*, Geological Survey of Canada, Memoir 184

Hedley, M.S. (1945): *Geology of Whitewater and Lucky Jim Mine Areas,* British Columbia Department of Mines, Bulletin No. 22

______ (1952): *Geology and Ore Deposits of the Sandon Area, Slocan Mining Camp, British Columbia,* British Columbia Department of Mines, Bulletin No. 29

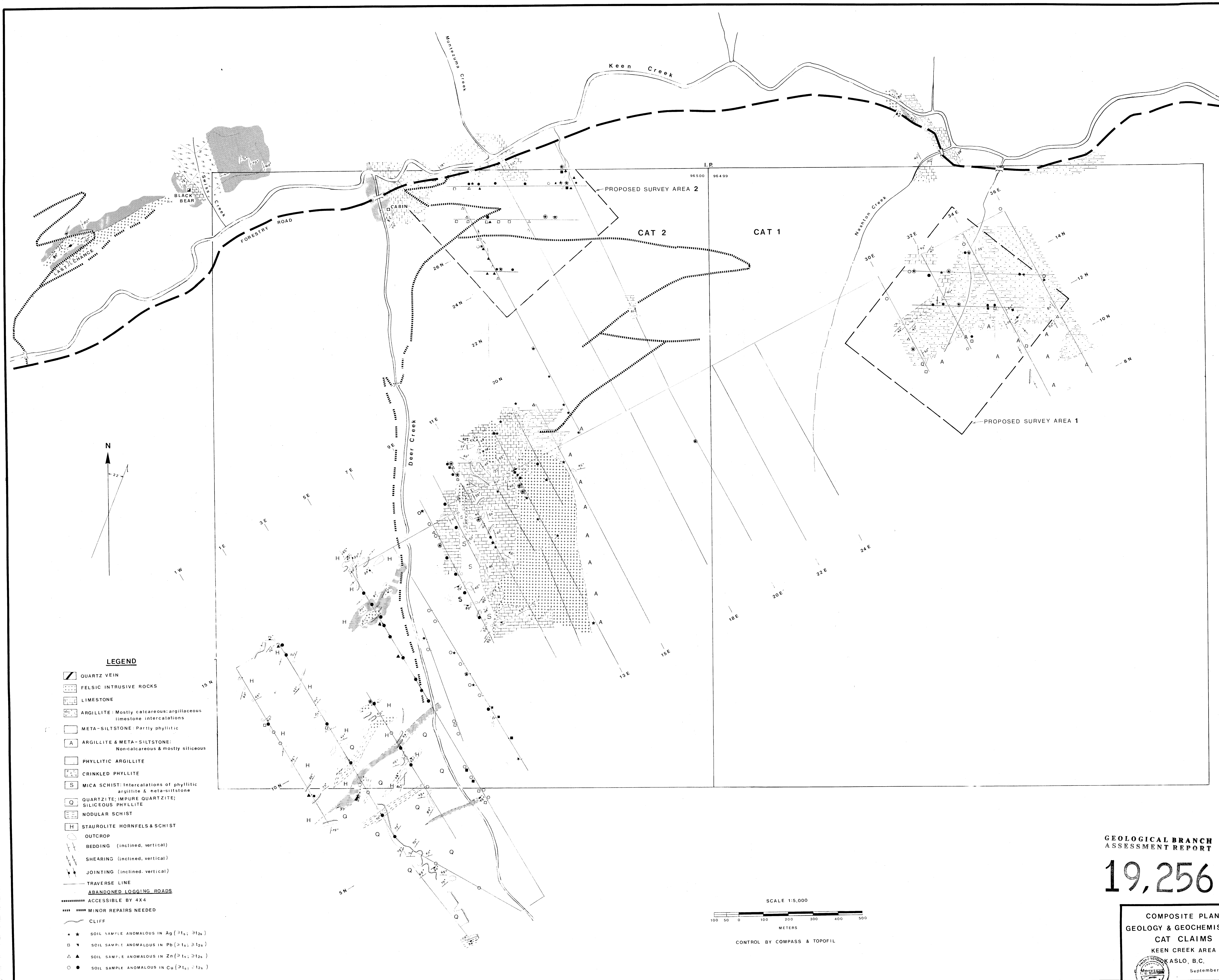
Little, H.W. (1960): *Nelson Map Area, West Half,* Geological Survey of Canada, Memoir 308 (includes Maps 1090A and 1091A)

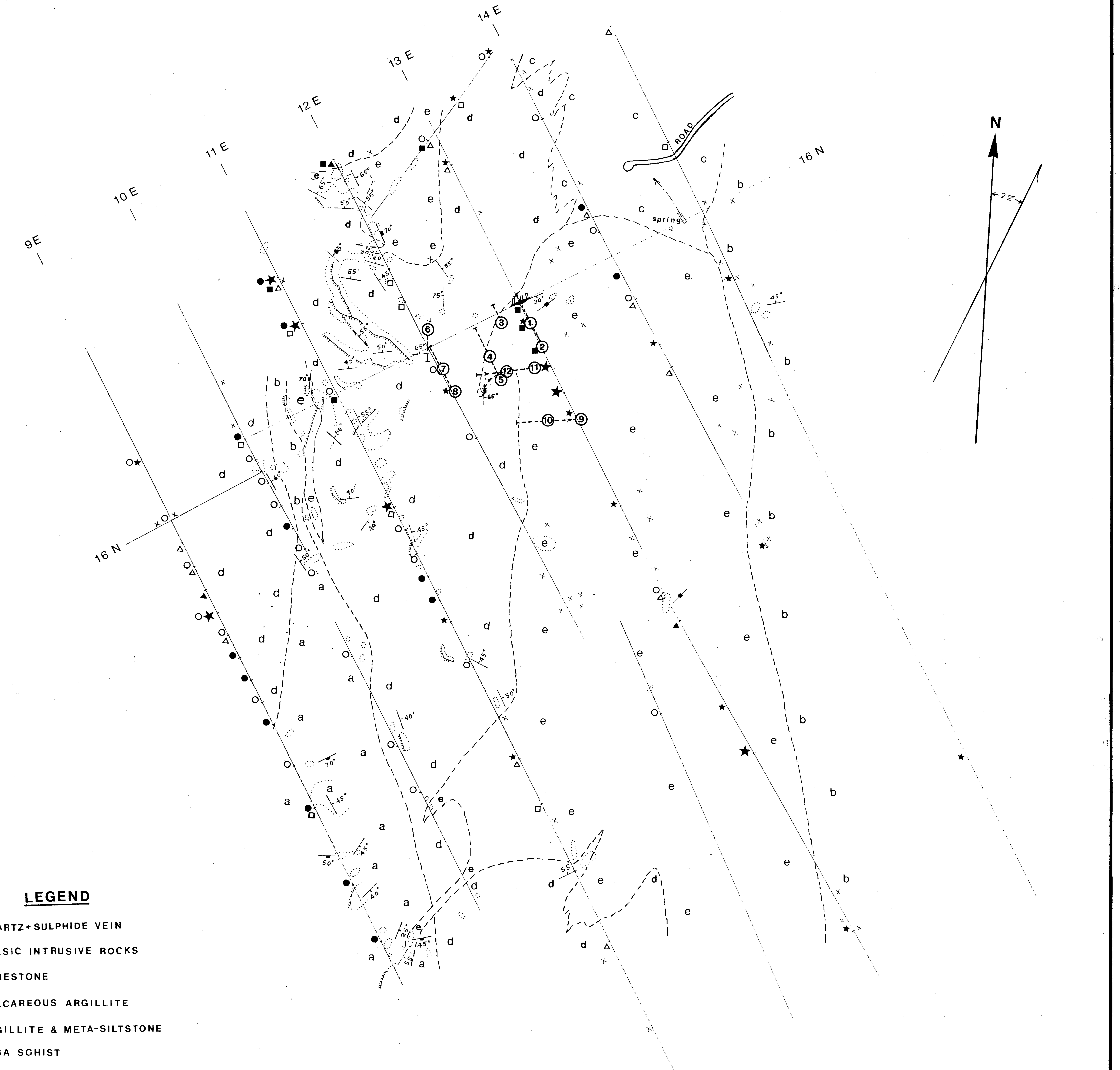
Minister of Mines, British Columbia (1900-1964): *Annual Reports*

Morrison, L.G. (1987): *Report on Geological & Geochemical Studies, Cat-1 & Cat-2 Claims,* B.C. Assessment Report No. 87-757-16556

______ (1988): *Report on Geological and Geochemical Studies on the Cat Claims;* B.C. Assessment Report No. 88-17954

Ross, J.V. and Kellerhals, P(1968): *Evolution of the Slocan Syncline,* Canadian Journal of Earth Sciences, v.5, p. 851-864


Keen Creek
Montezuma Creek
Swiss Creek
Deer Creek
Nashton Creek
FORESTRY ROAD
BLACK BEAR
LAST CHANCE
CABIN
I.P.
96500
96499
CAT 2
CAT 1
PROPOSED SURVEY AREA 2
PROPOSED SURVEY AREA 1
N
LEGEND
QUARTZ VEIN
FELSIC INTRUSIVE ROCKS
LIMESTONE
ARGILLITE: Mostly calcareous; argillaceous limestone intercalations
META-SILTSTONE: Partly phyllitic
ARGILLITE & META-SILTSTONE: Non-calcareous & mostly siliceous
PHYLLITIC ARGILLITE
CRINKLED PHYLLITE
MICA SCHIST: Intercalations of phyllitic argillite & meta-siltstone
QUARTZITE; IMPURE QUARTZITE; SILICEOUS PHYLLITE
NODULAR SCHIST
STAUROLITE HORNFELS & SCHIST
OUTCROP
BEDDING (inclined, vertical)
SHEARING (inclined, vertical)
JOINTING (inclined, vertical)
TRAVERSE LINE
ABANDONED LOGGING ROADS
ACCESSIBLE BY 4X4
MINOR REPAIRS NEEDED
CLIFF
SOIL SAMPLE ANOMALOUS IN Ag
SOIL SAMPLE ANOMALOUS IN Pb
SOIL SAMPLE ANOMALOUS IN Zn
SOIL SAMPLE ANOMALOUS IN Cu
SCALE 1:5,000
METERS
CONTROL BY COMPASS & TOPOFIL
GEOLOGICAL BRANCH
ASSESSMENT REPORT
19,256
COMPOSITE PLAN
GEOLOGY & GEOCHEMISTRY
CAT CLAIMS
KEEN CREEK AREA
KASLO, B.C.
September, 1989
Plate 1




## LEGEND

- QUARTZ + SULPHIDE VEIN
- e FELSIC INTRUSIVE ROCKS
- d LIMESTONE
- c CALCAREOUS ARGILLITE
- b ARGILLITE & META-SILTSTONE
- a MICA SCHIST
- OUTCROP
- PULL-UP
- BEDDING (inclined, vertical)
- SHEARING (inclined, vertical)
- JOINTING (inclined, vertical)
- TRAVERSE LINE
- CLIFF
- ★ ★ SOIL SAMPLE ANOMALOUS IN Ag ($\geq t_s$; $\geq t_{2s}$)
- □ ■ SOIL SAMPLE ANOMALOUS IN Pb ($\geq t_s$; $\geq t_{2s}$)
- △ ▲ SOIL SAMPLE ANOMALOUS IN Zn ($\geq t_s$; $\geq t_{2s}$)
- ○ ● SOIL SAMPLE ANOMALOUS IN Cu ($\geq t_s$; $\geq t_{2s}$)
- 13 PROPOSED DRILL HOLE
- INFERRED CONTACT

SCALE 1:5,000

50 25 0 50 100 150 200

METERS

CONTROL BY COMPASS & TOPOFIL

GEOLOGICAL BRANCH
ASSESSMENT REPORT

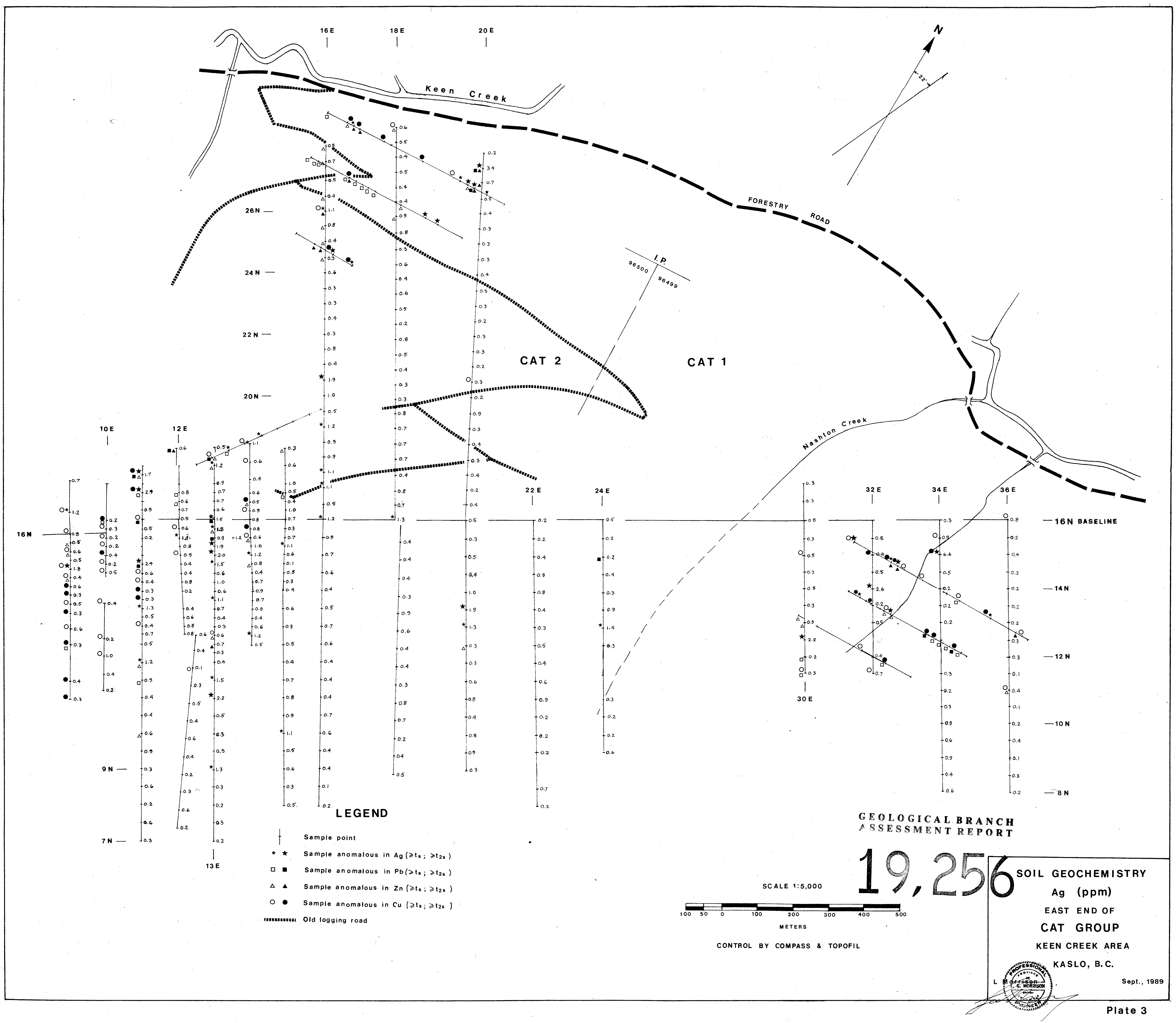
19,256

**COMPOSITE PLAN**
**13E SHOWING AREA**
**CAT 2 CLAIM**
**KEEN CREEK**
**KASLO, B.C.**

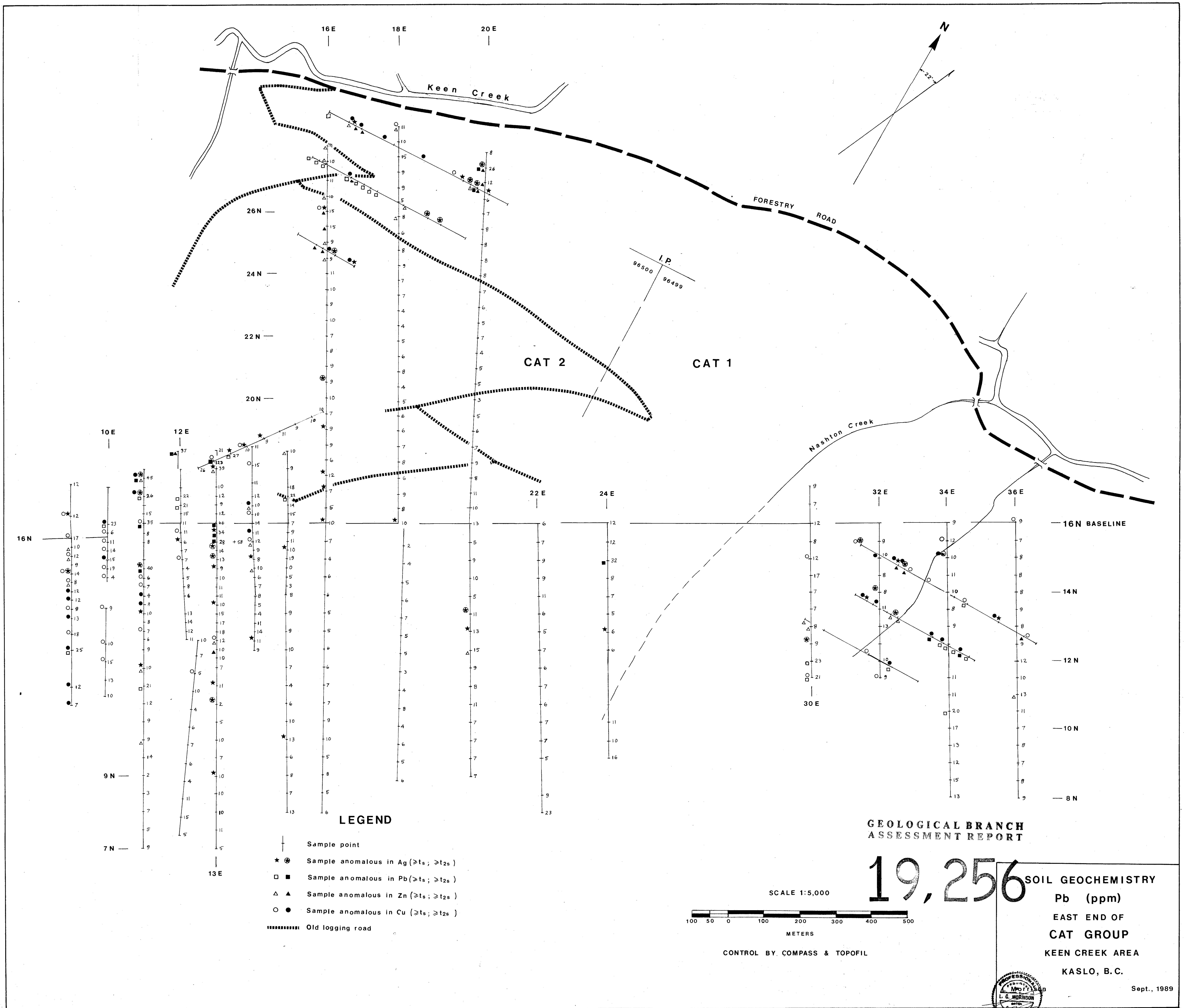
L. Morrison September, 1989

PROFESSIONAL ENGINEER — L. G. MORRISON

Plate 2



N
22°
16 E
18 E
20 E
Keen Creek
FORESTRY ROAD
I.P.
96500
96499
CAT 2
CAT 1
Nashton Creek
26 N
24 N
22 N
20 N
16 N
9 N
7 N
10 E
12 E
13 E
22 E
24 E
30 E
32 E
34 E
36 E
16 N BASELINE
14 N
12 N
10 N
8 N
LEGEND
Sample point
Sample anomalous in Ag (≥ts ; ≥t2s )
Sample anomalous in Pb (≥ts ; ≥t2s )
Sample anomalous in Zn (≥ts ; ≥t2s )
Sample anomalous in Cu (≥ts ; ≥t2s )
Old logging road
GEOLOGICAL BRANCH
ASSESSMENT REPORT
19,256
SCALE 1:5,000
100 50 0 100 200 300 400 500
METERS
CONTROL BY COMPASS & TOPOFIL
SOIL GEOCHEMISTRY
Ag (ppm)
EAST END OF
CAT GROUP
KEEN CREEK AREA
KASLO, B.C.
L. Morrison
Sept., 1989
Plate 3



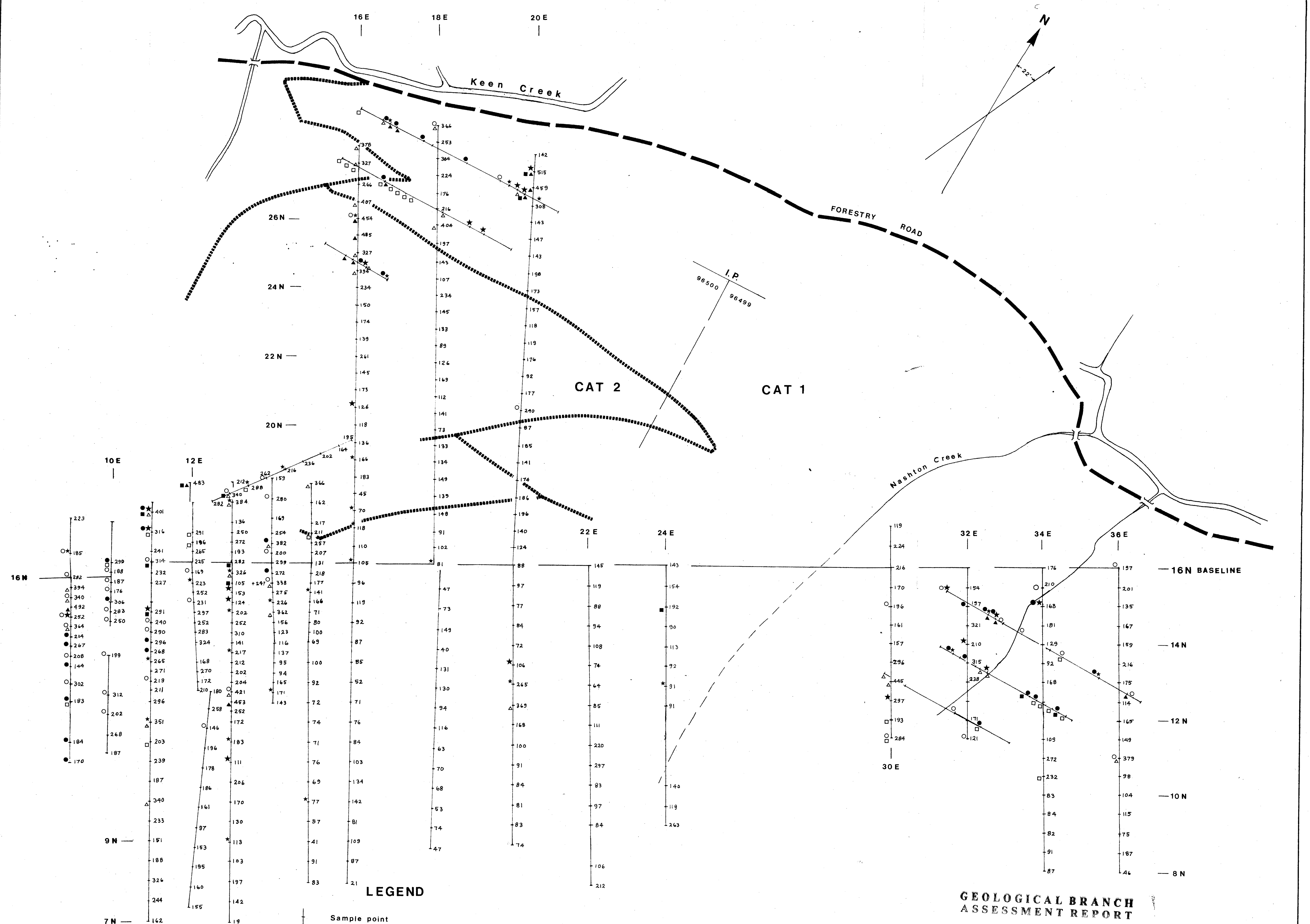

GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,256

SOIL GEOCHEMISTRY
Pb (ppm)
EAST END OF
CAT GROUP
KEEN CREEK AREA
KASLO, B.C.

Sept., 1989

Plate 4




## LEGEND

- Sample point
- ★ ★ Sample anomalous in Ag (≥ts ; ≥t2s )
- □ ■ Sample anomalous in Pb (≥ts ; ≥t2s )
- △ ▲ Sample anomalous in Zn (≥ts ; ≥t2s )
- ○ ● Sample anomalous in Cu (≥ts ; ≥t2s )
- Old logging road

SCALE 1:5,000

100 50 0 100 200 300 400 500

METERS

CONTROL BY COMPASS & TOPOFIL

GEOLOGICAL BRANCH
ASSESSMENT REPORT

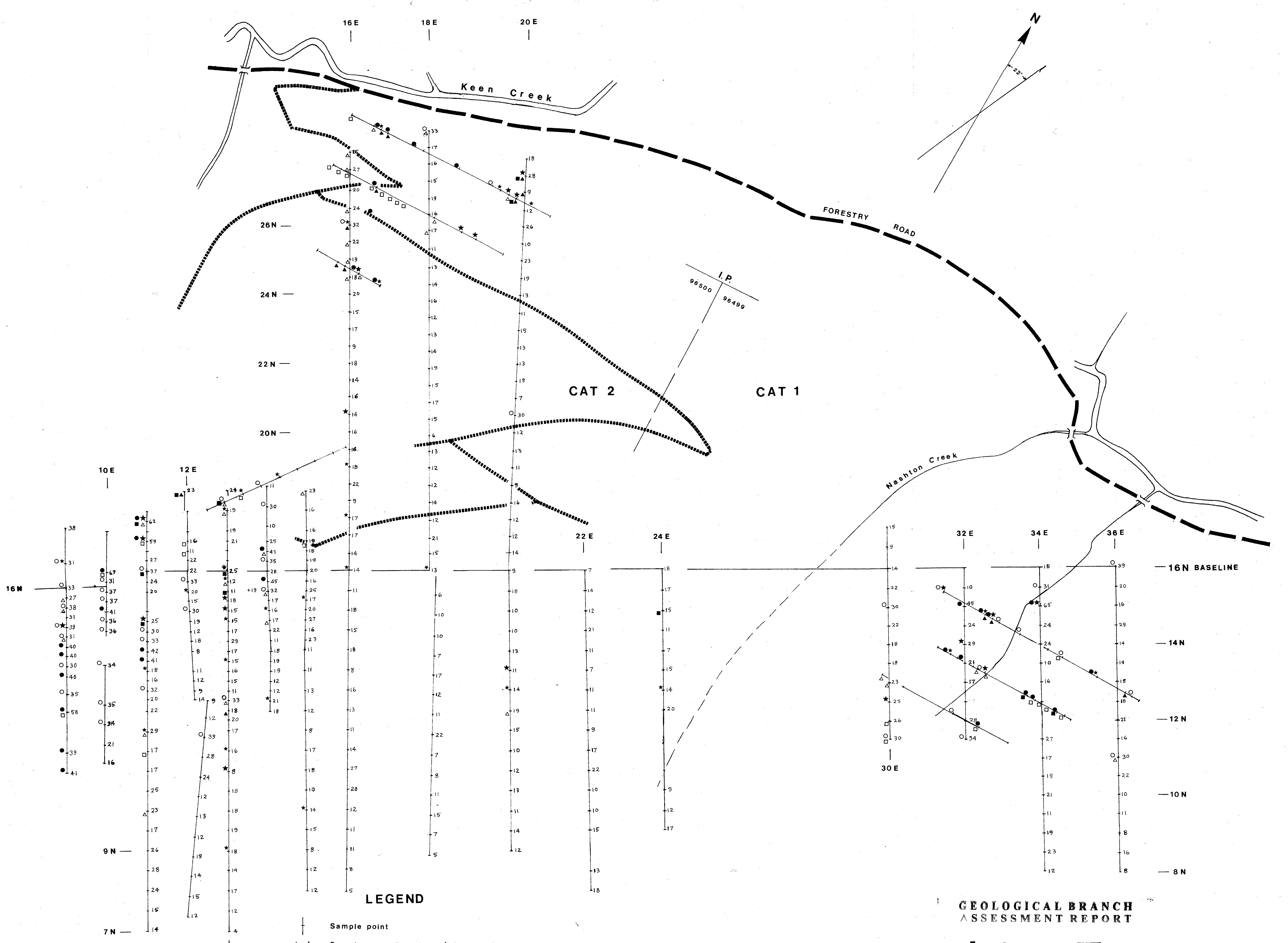
19,256

SOIL GEOCHEMISTRY
Zn (ppm)
EAST END OF
CAT GROUP
KEEN CREEK AREA
KASLO, B.C.

L. G. MORRISON
PROFESSIONAL ENGINEER

Sept., 1989

Plate 5




## LEGEND

- Sample point
- ★ ★ Sample anomalous in Ag (≥ts ; ≥t2s)
- □ ■ Sample anomalous in Pb (≥ts ; ≥t2s)
- △ ▲ Sample anomalous in Zn (≥ts ; ≥t2s)
- ○ ● Sample anomalous in Cu (≥ts ; ≥t2s)
- Old logging road

SCALE 1:5,000

100 50 0 100 200 300 400 500

METERS

CONTROL BY COMPASS & TOPOFIL

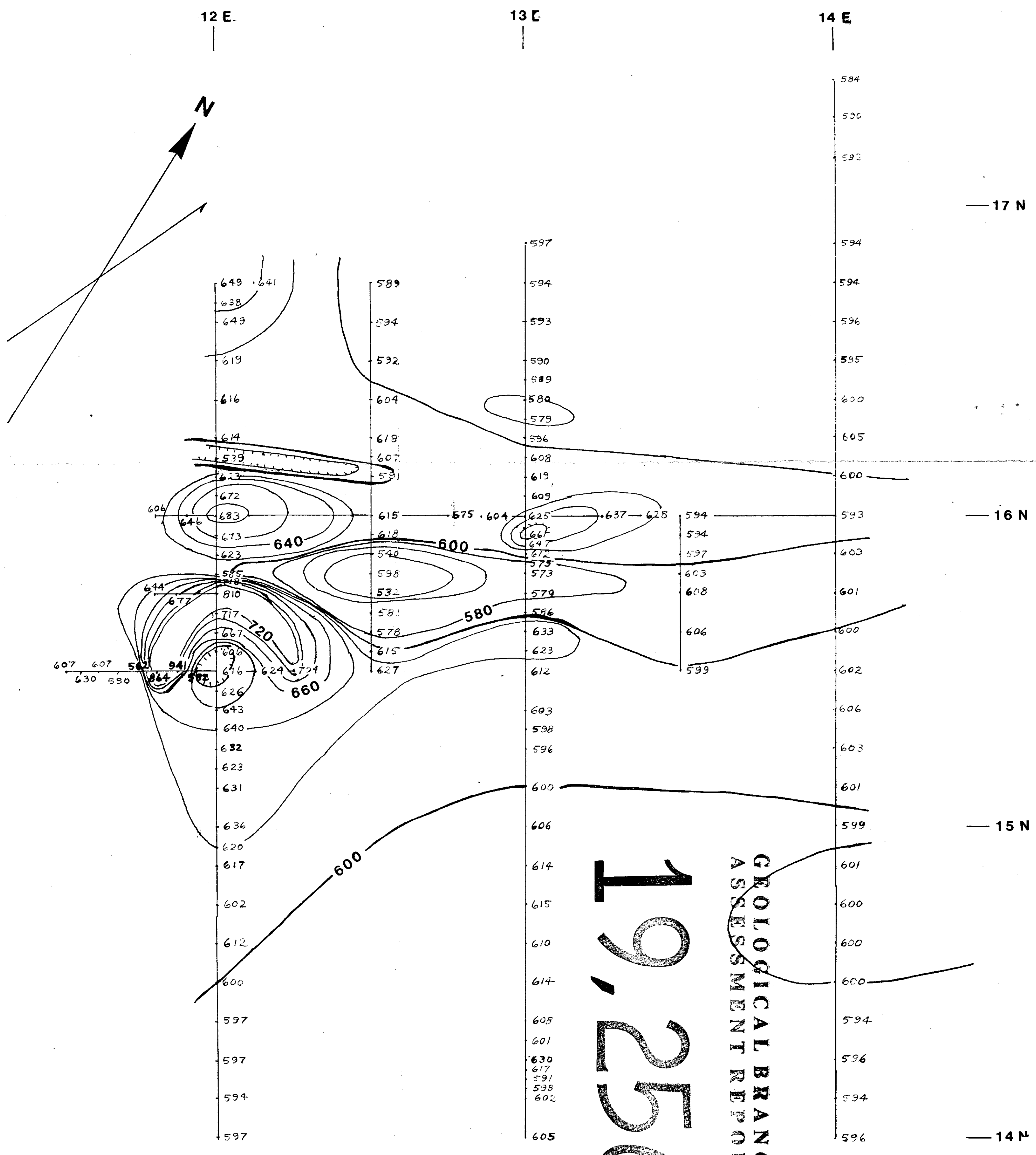
GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,256

**SOIL GEOCHEMISTRY**
**Cu (ppm)**
**EAST END OF**
**CAT GROUP**
**KEEN CREEK AREA**
**KASLO, B.C.**

Sept., 1989

Plate 6






TOTAL FIELD READINGS ABOVE 57,000 γ DATUM

SCALE 1:1,250

50 25 0 50 100

METERS

CONTOUR INTERVAL 20 GAMMAS

**MAGNETOMETER SURVEY**
**13E SHOWING AREA**
**CAT 2**

KEEN CREEK AREA
KASLO, B.C.

L. Morrison

August, 1989



**Plate 7**