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**1992 GEOLOGICAL  
AND GEOCHEMICAL REPORT  
ON THE  
BULL 1-4 CLAIMS**

Located on the Nechako Plateau  
Omineca Mining Division  
NTS 93F/5E, 6W  
53° 27' North Latitude  
125° 31' West Longitude

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**22,535**

-prepared for-  
SLEEPING GOLD LTD.

-prepared by-  
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September, 1992

# 1992 GEOLOGICAL AND GEOCHEMICAL REPORT ON THE BULL 1-4 CLAIMS

## TABLE OF CONTENTS

		<u>Page</u>
1.0	INTRODUCTION	.1.
2.0	LIST OF CLAIMS	.1.
3.0	LOCATION, ACCESS AND GEOGRAPHY	.1.
4.0	REGIONAL AND PROPERTY MINING HISTORY	
4.1	Previous Work	.2.
4.2	1992 Exploration Program	.3.
5.0	REGIONAL GEOLOGY	.4.
6.0	PROPERTY GEOLOGY AND MINERALIZATION	
6.1	Geology	.6.
6.2	Mineralization	.8.
7.0	GEOCHEMISTRY	.9.
8.0	DISCUSSION AND CONCLUSIONS	.11.

## APPENDICES

Appendix A	Bibliography
Appendix B	Statement of Expenditures
Appendix C	Rock Descriptions
Appendix D	Certificates of Analysis
Appendix E	Log Probability Plots and Tables - Soil Geochemistry
Appendix F	Geologist's Certificate

## LIST OF TABLES

		<u>Page</u>
Table 2.0.1	Claim Data	.1.
Table 6.2.1	Rock Sampling Results	.9.
Table 7.0.1	Anomalous Levels For Soil Geochemistry	.10.

## LIST OF FIGURES

		<u>Following Page</u>
Figure 1	Location Map	.1.
Figure 2	Claim Map	.1.
Figure 3	Regional Geology	.4.
Figure 4	Property Compilation Map	-Pocket-
Figure 5	Bull Grid Compilation Map	-Pocket-
Figure 6	Gold/Silver in Soils	.9.
Figure 7	Copper/Arsenic in Soils	.9.
Figure 8	Lead/Zinc in Soils	.9.

## 1.0 INTRODUCTION

The Bull property is located on the Nechako Plateau, approximately 90 kilometres south of Burns Lake in central British Columbia. It is underlain by Hazelton Group volcanics and sediments cut by rhyolite dykes. Reconnaissance exploration by Placer Development Ltd. and Prism Resources Ltd. in 1973 and 1980 revealed lead-zinc-arsenic soil geochemical anomalies over an area of 600 x 700 metres. The source for these anomalies was not discovered by these programs and the ground was restaked as the Bull 1-4 claims in 1991.

Geological mapping, prospecting and geochemical sampling were carried out over the Bull property during May and June of 1992. Equity Engineering Ltd. conducted this exploration program for Sleeping Gold Ltd. and has been retained to report on the fieldwork.

## 2.0 LIST OF CLAIMS

The Bull property comprises four contiguous claims totalling 75 claim units, located in the Omineca Mining Division (Figure 2). Records of the British Columbia Ministry of Energy, Mines and Petroleum Resources indicate that the Bull 1-4 claims are owned by Bruno Kasper. Separate documents indicate that they are held under option by Sleeping Gold Ltd.. Claim data for the Bull property is summarized in Table 2.0.1.

**TABLE 2.0.1**  
**CLAIM DATA**

Claim Name	Mineral Tenure No.	No. of Units	Record Date	Expiry Year
Bull 1	301435	20	July 1, 1991	1994*
Bull 2	301436	20	July 1, 1991	1994*
Bull 3	301437	20	July 1, 1991	1994*
Bull 4	301438	15	July 1, 1991	1994*
		75		

\* Subject to approval of assessment work covered by this report.

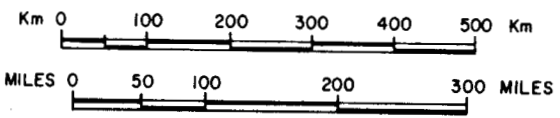
The position of the legal corner posts for the Bull 1-4 claims has been verified by the author. The southwestern corners of the Bull 3 and 4 claims lie below 3000 feet and overlap either Chelaslie Arm of Euchu Lake or a non-staking reserve. This reduces the effective ground coverage of the Bull claim group to approximately 63 units.

## 3.0 LOCATION, ACCESS AND GEOGRAPHY

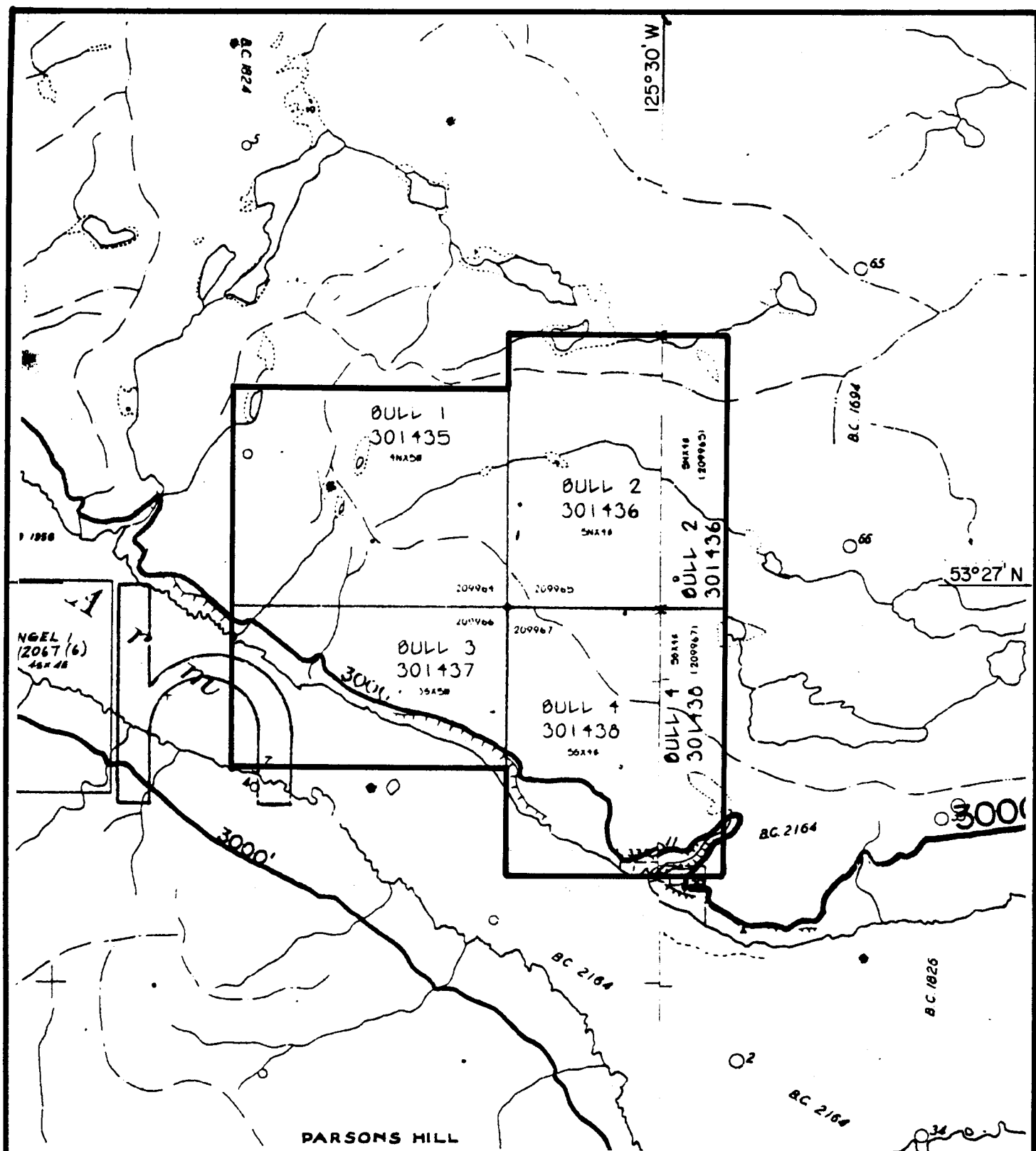
The Bull property is situated on the Nechako Plateau of



**PROPERTY LOCATION**



<b>SLEEPING GOLD LTD.</b>		
<b>BULL 1 - 4 CLAIMS</b>		
<b>LOCATION MAP</b>		
BRITISH COLUMBIA		
EQUITY ENGINEERING LTD.		
DRAWN:	MINING DIV. OMINECA	FIGURE
N.T.S.: 93F/5E, 6W	SCALE: AS SHOWN	1
DATE: AUG., 1992	REVISED:	



PARSONS HILL



<b>SLEEPING GOLD LTD.</b>		
<b>BULL 1 - 4 CLAIMS CLAIM MAP</b>		
BRITISH COLUMBIA		
EQUITY ENGINEERING LTD.		
DRAWN:	MINING DIV.: OMINECA	FIGURE
N.T.S.: 93F/5E, 6W	SCALE: 1:50000	2
DATE: AUG., 1992	REVISED:	

central British Columbia, approximately 90 kilometres south of Burns Lake and 500 kilometres north of Vancouver (Figure 1). The claims are located within the Omineca Mining Division, centred at 53° 27' north latitude and 125° 31' west longitude.

The property is accessed by logging roads from Vanderhoof and Fraser Lake. To reach it from Vanderhoof, one follows the Kenney Dam road to its termination, then follow the 500 Forest Road to a barge crossing on Intata Reach. On the south side of the reach, logging roads extend south to the northeastern boundary of the property. This road continues along the northern boundary of the Bull 2 claim, and secondary roads provide access to the northern third of this claim.

The Bull claims follow the northern shore of Chelaslie Arm, a branch of Euchu Lake, for four kilometres and extend north for two to five kilometres over a group of rolling hills. Euchu Lake is one of a series of artificial lakes formed behind the Kenney Dam. Upland surfaces are generally well drained with few lakes or marshes. Creek valleys are broad and marshy. Topography on the property is moderate, with elevations ranging from 850 metres on Chelaslie Arm to over 1,200 metres on the hill tops. Outcrop exposure is fairly good at higher elevations, but becomes increasingly masked by glacial till towards the valley bottoms. Overall, the property would average less than 5% outcrop.

The property is largely covered by spruce and lodgepole pine with a light undergrowth of huckleberry and alder. Approximately 10% of the property was clear-cut in the early 1980's, leaving logging slash with a light growth of shrubbery. The Bull property is subject to a continental climatic regime, with warm summers and cold winters. Snowfall is moderate with an accumulation of one to two metres during the winter.

#### **4.0 REGIONAL AND PROPERTY MINING HISTORY**

##### **4.1 Previous Work**

The area around the Bull property received little exploration until the late 1960's, when several major mining companies carried out stream and lake sediment sampling surveys throughout the Nechako Plateau, searching primarily for copper-molybdenum porphyry deposits. As a result, Placer Developments Ltd. staked their MR claims in an area currently covered by the Bull 1 claim, and reconnaissance mapping and sampling were carried out in 1973. A total of 196 soil samples were taken at 120 metre intervals on lines spaced 150 or 300 metres apart and analyzed for Pb, Zn, Ag, Mo and Cu. Two well-defined, moderate-intensity, lead-zinc soil anomalies were recognized by Placer in areas underlain by oxidized quartz-feldspar porphyry and rhyolitic rocks. The larger anomaly, with peak values of 173 ppm lead and 780 ppm zinc, covered an area

of 400 by 800 metres and remained open to the northeast (Buckley, 1973).

Follow-up work on one of Rio Tinto Canadian Exploration's regional lake sediment anomalies by Granges Exploration Ltd. and Cominco Ltd. led to the discovery in 1979 of the Capoose silver-lead-zinc deposit approximately thirty kilometres southeast of the Bull property. Reserves at Capoose have been estimated at 20 million tonnes grading 48 g/tonne silver and 0.5 g/tonne gold (Schroeter and Panteleyev, 1986).

Following the recognition of a major silver resource at Capoose, several nearby silver-lead-zinc geochemical anomalies, underlain by geology similar to Capoose, were staked by BP Minerals, Prism Resources, Rio Canex and Granges. Prism staked their Precious Metal claims in 1980 to cover Placer's MR lead-zinc anomaly. They conducted reconnaissance geological mapping and sampling that year, taking a total of 218 soil, silt and rock samples from the property. Samples were analyzed for copper, lead, zinc and silver, defining a 600 by 700 metre lead-zinc soil geochemical anomaly with maximum values of 1950 ppm lead and 2760 ppm zinc. Silver values were erratic and generally low (Harivel and Livingston, 1981).

No fieldwork was carried out in 1982 on the Precious Metal claims, but the 1980 sample pulps were analyzed for gold, arsenic and molybdenum. Gold and molybdenum values were generally low in both soils and rocks; higher arsenic values in soils, to a maximum of 145 ppm, coincided with the previously-defined lead-zinc anomaly (Harivel and Livingston, 1982).

#### **4.2 1992 Exploration Program**

During May and June of 1992, Sleeping Gold Ltd. carried out a preliminary exploration program on the Bull property, consisting of geological mapping, prospecting and soil sampling. This program was designed to verify the reported lead-zinc-arsenic soil anomalies, locate their source and evaluate the property's potential for epithermal and volcanogenic massive sulphide mineralization. A total of 24 rock samples and 152 soil samples were taken. The property was accessed by truck from a camp on the south side of Natalkuz Lake, approximately 8.0 kilometres northeast of the claim group.

Grid control was established over the area of anomalous soil geochemistry as defined by previous surveys. A cut baseline was surveyed by chain and compass in a southeasterly direction from the Bull 1-4 common legal corner post for 1000 metres. Stations were established at slope corrected distances of 25 metres along the baseline and 600 metre crosslines (400 metres - east; 200 metres - west) which were run every 100 metres. Stations were marked with orange flagging and tyvex tags tied to available trees

or shrubs; in open areas, these items were tied to small cut stakes. Geological mapping was carried out over the grid at a scale of 1:2,000 (Figure 5). Outside the grid area, a 1:10,000 enlargement of the government's 1:50,000 topographic map provided control for the limited mapping conducted along access roads (Figure 4). Rock samples are described in Appendix C, and analytical certificates are attached in Appendix D. In the field, rock sample locations were marked by metal tag and a combination of orange and blue flagging. Soil samples were collected every 50 metres on all grid lines. Wherever possible, soil samples were taken from the red-brown "B" horizon at depths ranging from 5 to 35 centimetres, but talus fines were taken in areas of poor soil development. All rock and soil samples were analyzed geochemically for gold and 9 elements by ICP. Two rock samples were fire assayed for gold and a single overlimit lead value (463771) was assayed.

## 5.0 REGIONAL GEOLOGY

Geological mapping in the area surrounding the Bull property is quite preliminary in nature (Figure 3). H. W. Tipper mapped the Nechako River map sheet from 1949 to 1952 at a scale of 1:253,440 (Tipper, 1963). The ages and regional correlations of several of his units were reassigned by Tipper et al (1974) in their 1:1,000,000 compilation. The British Columbia Geological Survey will be re-mapping map-sheet 93F/6 in 1992 at a scale of 1:50,000, providing useful information on the eastern edge of the Bull property and its regional setting.

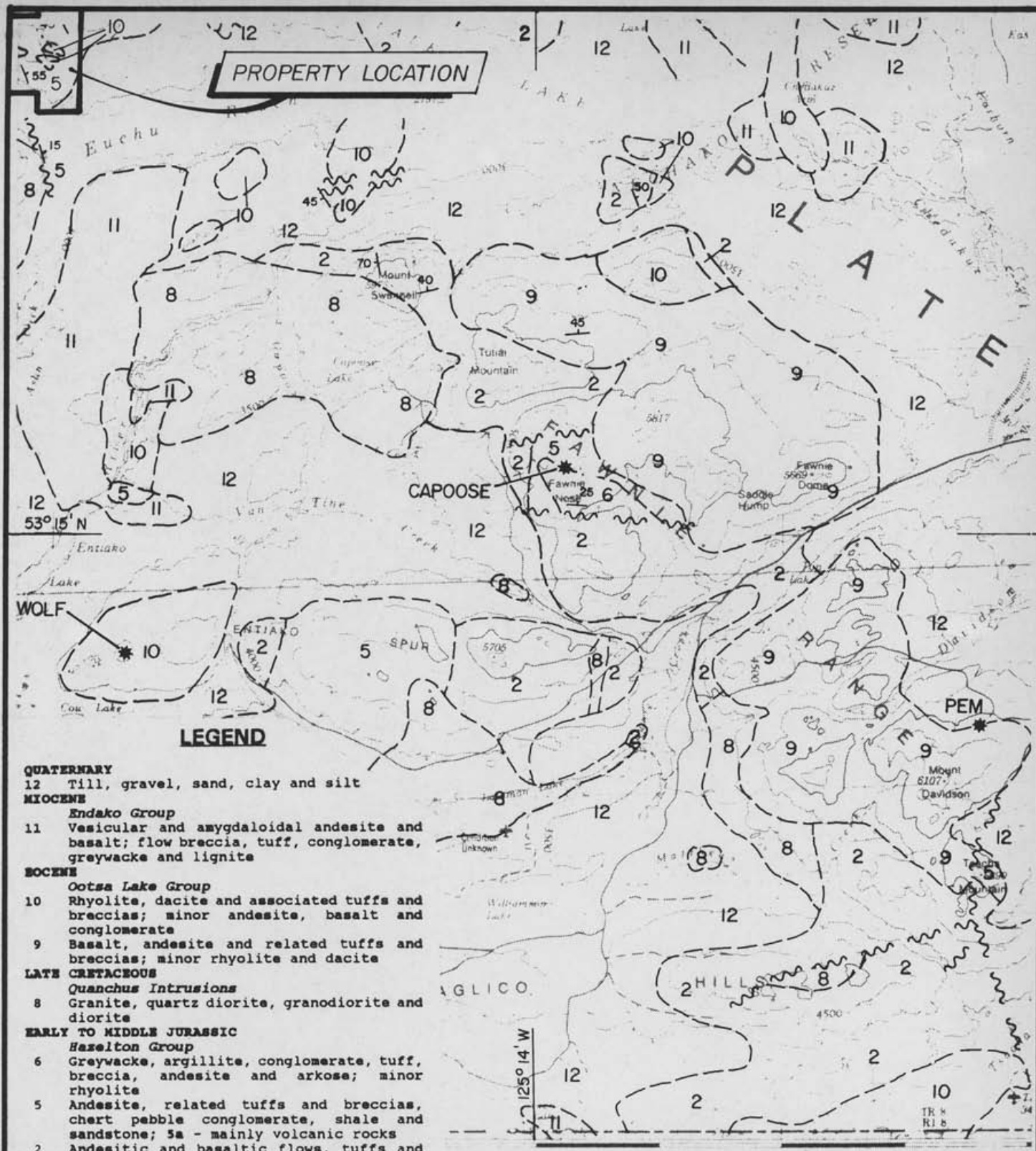
The oldest rocks identified in the area were assigned to the Upper Triassic and Lower Jurassic Takla Group by Tipper (1963). These rocks consist largely of basalt and andesite with lesser interflow sediments (Unit 2). Based on fossil evidence, radiometric dating and nomenclature revision, portions of the previously mapped Takla Group rocks in the vicinity of the Bull property were re-assigned to the Lower Jurassic section of the Hazelton Group (Tipper et al., 1974).

Tipper's (1963) Units 5 and 6 comprise andesites, chert pebble conglomerate, marine clastic sediments and minor rhyolite which he assigned to the Middle and Upper Jurassic Hazelton Group. Tipper (pers. comm., 1991) feels that re-mapping may show the chert pebble conglomerates to be Cretaceous in age. Fossil evidence (Tipper, 1963) shows the Unit 6 sediments to be Bajocian (early Middle Jurassic). The Hazelton Group rocks (Units 2, 5 and 6) are broadly folded about a northwesterly-trending axis, forming a northwesterly-trending belt at least eighty kilometres long, centred on the Fawnie Range.

The Quanchus Intrusions, Late Cretaceous batholiths of granitic to granodioritic composition (Unit 8), cut Hazelton Group rocks south of the Bull property. These batholiths are generally



**PROPERTY LOCATION**



**LEGEND**

- QUATERNARY**  
 12 Till, gravel, sand, clay and silt
- MIOCENE**  
**Endako Group**  
 11 Vesicular and amygdaloidal andesite and basalt; flow breccia, tuff, conglomerate, greywacke and lignite
- EOCENE**  
**Ootsa Lake Group**  
 10 Rhyolite, dacite and associated tuffs and breccias; minor andesite, basalt and conglomerate  
 9 Basalt, andesite and related tuffs and breccias; minor rhyolite and dacite
- LATE CRETACEOUS**  
**Quanchus Intrusions**  
 8 Granite, quartz diorite, granodiorite and diorite
- EARLY TO MIDDLE JURASSIC**  
**Hazelton Group**  
 6 Greywacke, argillite, conglomerate, tuff, breccia, andesite and arkose; minor rhyolite  
 5 Andesite, related tuffs and breccias, chert pebble conglomerate, shale and sandstone; 5a - mainly volcanic rocks  
 2 Andesitic and basaltic flows, tuffs and breccias; interbedded argillite and minor limestone

**SYMBOLS**

- \* Mineral deposit or prospect
- 40 Bedding with dip
- ~ Fault (inferred)

Adapted from Tipper, 1963



<b>SLEEPING GOLD LTD.</b>		
<b>BULL 1 - 4 CLAIMS</b>		
<b>REGIONAL GEOLOGY</b>		
<b>MAP</b>		
<b>BRITISH COLUMBIA</b>		
<b>EQUITY ENGINEERING LTD.</b>		
DRAWN:	MINING DIV.: OMINECA	FIGURE
N.T.S.: 93F/5E, 6W	SCALE: 1:250 000	<b>3</b>
DATE: AUGUST, 1992	REVISED:	

coarse-grained, equigranular and light coloured. Potassium-argon dating indicates an age of  $64.3 \pm 2.4$  Ma for the Capoose batholith, twenty kilometres southeast of the Bull claims (Andrew, 1988).

Flat-lying to moderately dipping, subaerial volcanics of the Ootsa Lake Group unconformably overlie older Mesozoic rocks, including the Cretaceous batholiths. Potassium-argon dating of Ootsa Lake rocks at the Wolf prospect gave an age of  $48 \pm 2$  million years (mid-Eocene). Tipper (1963) divided the Ootsa Lake into two broad lithological units composed predominantly of andesites (Unit 9) and rhyolites (Unit 10). Each unit also contains minor clastic sediments, such as basal conglomerate, tuffaceous shales and sandstones.

Miocene plateau basalts and andesites of the Endako Group (Unit 11) unconformably overlie all other units.

Low grade regional metamorphism and weak deformation are pervasive on the Nechako Plateau. Contact metamorphism is pronounced around intrusives. Tipper (1959) observed that the overall lack of structural features may, in part, be attributed to the abundance of often structureless volcanics in the area. The Hazelton volcanics appear more strongly deformed in comparison to other rock types, with dips of up to  $70^\circ$ . The Ootsa Lake Group volcanics were deposited in a period of extensional tectonism. Another period of deformation during the Oligocene produced broad open folds in the Ootsa Lake Group volcanics and sediments. The relatively undeformed Endako Group consists of generally flat-lying to gently easterly-dipping plateau lavas (Tipper, 1963).

Several styles and ages of mineralization have been documented in the vicinity of the Bull property (Figure 3), despite a relative lack of exploration attention. The Capoose silver deposit, located thirty kilometres southeast of the Bull claim group, is hosted by Lower to Middle Jurassic Hazelton Group mafic flows, rhyolite tuff, argillite and lithic wacke intruded by Late Cretaceous quartz-garnet rhyolite sills related to the Capoose batholith. Mineralization consists of pyrite, sphalerite, galena, chalcopyrite and arsenopyrite in disseminations, fracture-fillings and replacing garnets, and is thought to be Late Cretaceous in age (Andrew, 1988). The Capoose deposit contains 20 million tonnes grading 48 g/tonne silver and 0.5 g/tonne gold (Schroeter and Panteleyev, 1986). The Capoose Batholith itself has been extensively explored for porphyry-style copper-molybdenum mineralization, with the best prospects lying a few kilometres to the northwest of the Capoose silver deposit.

The Wolf epithermal gold-silver prospect, located 25 kilometres south of the Bull property, is hosted by Eocene Ootsa Lake rhyolitic flows, tuffs and subvolcanic intrusives. Repeated low-sulphide silicification, brecciation and stockwork veining have been accompanied by up to 8.49 g/tonne gold and 42.2 g/tonne silver

across 7.5 metres in trenching (Cann, 1984). It has been suggested that the Wolf deposit may have been related to maar (Andrew et al, 1986), collapse caldera (Andrew, 1988) or hot-spring (Andrew, 1988) paleo-environments.

The Fawn property, which lies thirty kilometres southeast of the Bull claims, hosts high-sulphide epithermal mineralization associated with felsic Eocene dykes cutting Hazelton Group andesites. Alteration and mineralization are limited to a series of recessive, easterly-trending, VLF-EM conductors with widths exceeding 20 metres and strike lengths which have been defined for up to 2,200 metres. Separate subcrop samples from the Fawn have returned assays up to 12.9 g/tonne gold and 637 g/tonne silver (Awmack, 1991).

The PEM property, located 50 kilometres southeast of the Bull property, is underlain by andesitic, dacitic and rhyolitic tuffs, presumably of the Ootsa Lake Group. These have been brecciated and altered over an area of several hundred metres, with introduction of 2-7% pyrite and lesser sphalerite. Zbitnoff (1988) reports drill intersections up to 6.3 metres grading 14.3 g/tonne gold, 27 g/tonne silver and 1.25% zinc. It appears that the PEM mineralization may also be epithermal in nature, but probably emplaced at greater depths (hence the higher sulphide and base metal contents) than the Wolf prospect.

## 6.0 PROPERTY GEOLOGY AND MINERALIZATION

### 6.1 Geology

Where examined, the Bull property is underlain by a sequence of Lower to Middle Jurassic Hazelton Group rhyolitic and andesitic volcanics with minor epiclastic sediments. These units have been intruded by Eocene Ootsa Lake Group rhyolite dykes which in turn are cut by diabase dykes thought to be feeders to the Miocene Endako Group mafic flows (Figures 4 and 5).

The Lower to Middle Jurassic Hazelton Group rock units consist of mafic volcanoclastics and epiclastics in the grid area. The oldest mapped rocks, mafic volcanic tuffs and breccias (Unit 1A), form the large brown-weathering bluffs in the southwestern part of the grid and further south. These bluffs are comprised of a thick succession of grit-textured tuffaceous debris with areas of large subangular to subrounded, cobble size fragments. On fresh surface, the tuffs consist of feldspar fragments supported in a grey-green aphanitic matrix with <1% disseminated pyrite. The breccia unit is similar with regards to composition, colour and texture of the matrix, but contains large mafic volcanic, quartz-porphyrific rhyolite and silicious green argillite clasts. The bleached white, rhyolite fragments are easily recognizable against the brown-weathering mafic component of the breccia on the outcrop surface.

The coarse fraction may be poorly sorted, but no graded bedding was observed. Within the grid, the sorted layering indicates a north-south strike and moderate easterly dip to the unit. These volcanoclastics have been assigned to the Hazelton Group as opposed to the older Takla Group, due to the distinct sorting and difference in composition between the matrix and fragments (Tipper, 1959).

The classification of mafic volcanic flows (Unit 1B) is based on the outcrops observed on L5+00S on the east side of the grid. Outcrops adjacent to felsic dykes are comprised of dark green weathering, silicious exposures. Crowded, white, euhedral feldspar phenocrysts were noted within this unit at 5+15S, 1+30E. The degree of hornfelsing and alteration imparted by nearby intrusives makes classification of these exposures tentative at best.

Exposures of rhyolitic flow banded tuffs (Unit 1C) are exposed in tractor scrapings in two locations along the logging access road passing diagonally through the Bull 2 claim. Within the two exposures, five different tuff horizons were identified based on colour variations and textural differences. All of the units are distinguished by their silicious nature and the presence of quartz and feldspar phenocrysts and/or fragments. In the most northerly exposure, light rusty brown weathering is present throughout the central portion of the outcrop, reflecting 5% pyrite occurring as disseminations and concentrations within clasts. This mineralization is accompanied by epidote and chlorite alteration. Garnet and epidote alteration were observed in outcrop adjacent to a pond west of the logging road.

Hazelton Group epiclastics (Unit 2) were mapped within the grid area and in the logging slash in the Bull 2 claim. These consist of argillite, siltstone and pebble conglomerate. One small, light brown outcrop of interbedded black argillite and grey siltstone, with 2-3% disseminated pyrite, occurs at 6+00S, 0+50W. Calcareous fossil molds of ribbed pelecypods (*Trigonia* sp.) are found at this location, within similar looking subcrop at 7+00S, 2+50E and in the logging slash north of the grid. At all three locations, this unit is very hard, exhibiting "chert-like" conchoidal fracturing. Elsewhere, the siltstone is interbedded with darker green grit layers composed of volcanoclastic material. The pebble conglomerate was located at the south end of the baseline and at 6+25S, 0+75W. The outcrop surface has weathered to a knobby texture, and is generally a buff colour, although, some clasts weather a chalky white colour. The subrounded clasts are 1-2 centimetres in size, dominantly dark green, silicious and showing no preferred alignment or grading. Stratigraphically, the pebble conglomerate lies within Unit 1A close to the main volcanic-sediment contact (Units 1A-2). Additionally, a very hard, light green argillite bed occurs below this contact (6+00S, 0+75W). Calc silicate development, including epidote and garnet, occurs within sedimentary units adjacent to felsic dykes.

A number of prominent, chalky white rhyolite dykes (Unit 3) trend northwesterly through the grid. In addition to the bleached colour and resistant nature, the dykes can be recognized by their abundant jointing and the presence of goethite coated vugs. The dykes contain euhedral (5-10 mm.) feldspar phenocrysts and very often, contain anhedral (2 mm.) quartz phenocrysts. The colour of the matrix varies from fleshy white to pale green, and the intrusive is nonmagnetic. Mafic and sulphide (pyrite>>chalcopyrite) minerals average <1% of the rock mass. The dykes swarm through the eastern part of the grid; there is no evidence to indicate that these dykes coalesce into a larger body at depth or along strike. Where observed, dyke contacts are sharp and crosscut stratigraphy (6+70S, 1+80E). The amount of sulphide mineralization within the dykes is insignificant, but increased pyrite and pyrrhotite mineralization are present in hornfelsed contact rocks. These rhyolite dykes are thought to be feeders to the Eocene Ootsa Lake Group volcanics.

The youngest rock unit on the property is a light grey weathering diabase (Unit 4) dyke. The dyke(s?) strikes northerly and dips moderately to the east, crosscutting all other units. It is probable that these unaltered dykes are feeders for the Miocene Endako Group andesitic and basaltic flows. On fresh surface, the dyke is fine to medium grained, containing equal amounts of mafic and feldspar grains. Normally, the diabase is equigranular, but porphyritic needles of pyroxene and feldspar have been noted. Metallic minerals include 1-2% pyrite and 3-4% magnetite.

According to the government mapping, a northwest trending syncline passes through the Bull property. Attitudes taken in Hazelton strata are consistent with this interpretation, indicating that the strata in the grid area lies on the southwestern limb of the fold. A number of prominent topographic linears cross the property which may be interpreted as faults; displacement was confirmed along one north and one northeast trending linear. Only the Hazelton Group strata is displaced by the northeast trending fault, suggesting that faulting preceded emplacement of the Eocene dykes. On the south end of the grid, a strong northeast trending linear crosses the property. The location and orientation of the pebble conglomerate (10+50S, 0+25E; 6+25S, 0+75W) on either side of this structure, indicate left lateral displacement has occurred along this linear.

## 6.2 Mineralization

The most significant gold- and silver-bearing mineralization found to date on the Bull property was located on the grid at 3+00S, 1+00W (Figure 5). A quartz vein stockwork and breccia at this location is accompanied by pervasive silicification and up to 5% pyrite, 3% galena and 1% sphalerite. There appears to be at least two vein structures striking east-west with near vertical dips. The veining is exposed over a strike length of 20 metres,

and the width of the zone is difficult to estimate due to lack of exposure, but individual vein outcrops exceed 2.0 metres in width and the positions of these outcrops relative to each other would indicate a total width of at least 4.0 metres. The vein system remains open along strike to the west and probably continues to the east as far as the baseline (see Section 7.0, Geochemistry), but appears to be cut off by rhyolite dykes further east. The mineralization is hosted in tuff/breccia of Unit 1A. Sampling data for this occurrence is contained in Table 6.2.1.

**TABLE 6.2.1**  
**ROCK SAMPLING RESULTS**

Sample Number	Type	Width (m)	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Sb (ppm)	Zn (ppm)
463761	Float	N/A	21.4 g/t	186.5 g/t	440	168	3.30%	288	532
463762	Grab	0.30	2.1 g/t	22.0	108	10	2730	30	34
463763	Grab	0.45	130	13.8	116	7	710	12	38
463764	Grab	2.00	95	4.2	230	15	260	10	68
463768	Grab	0.30	200	49.8	310	18	3230	34	106

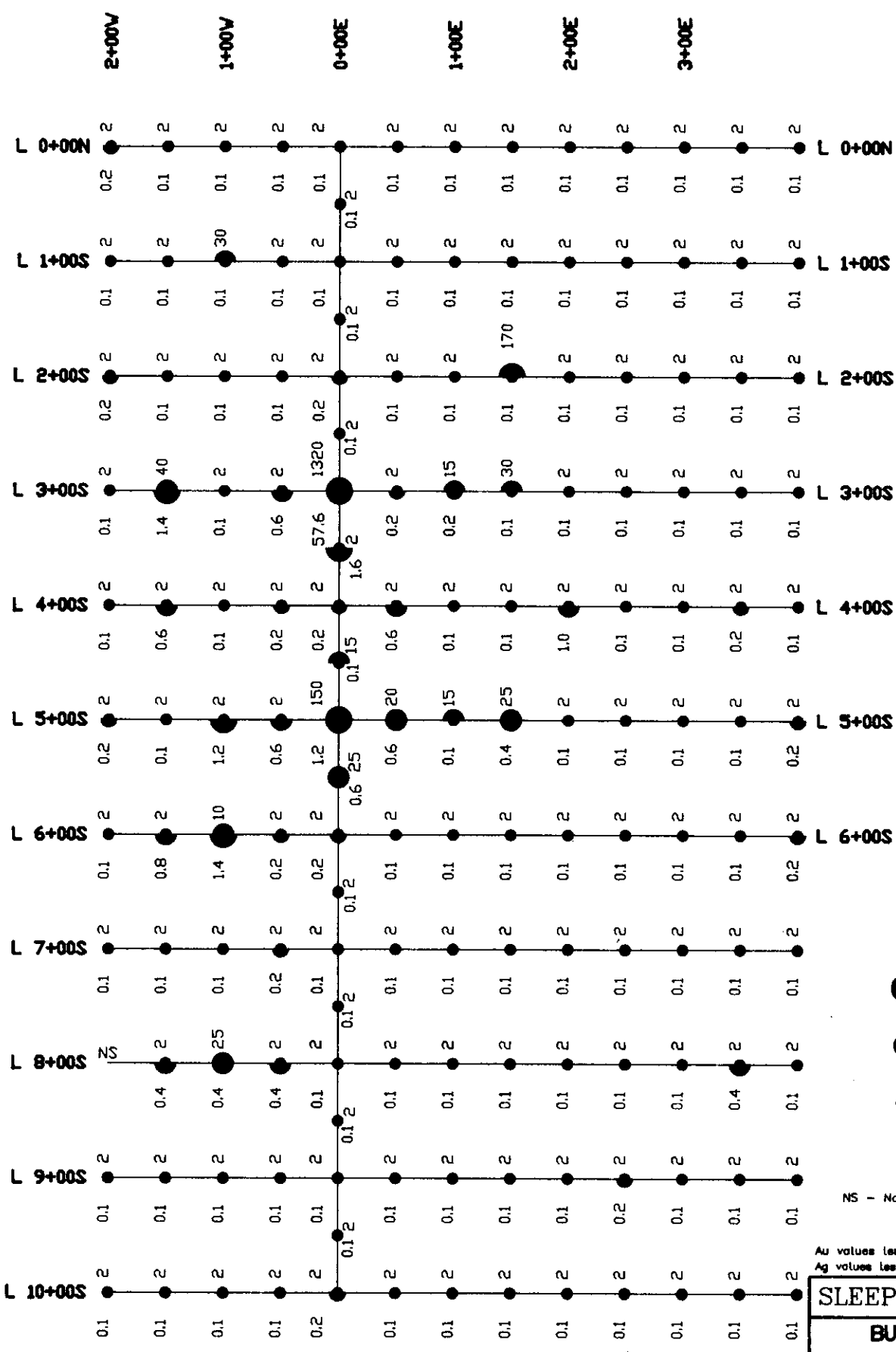
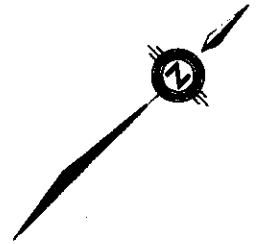
The assay results show that arsenic, lead and antimony are anomalous in the vein samples. Two northerly trending quartz veins are located 80 metres southeast of the above zone; the two samples taken at this location returned low precious metal values. The only other vein sample (463773), taken from float in the logging slash on the Bull 2 claim, contained elevated zinc values (2090 ppm) with all other metal values at background levels (Figure 4).

The hornfelsed and skarned areas adjacent to the rhyolite dykes are quite often gossanous from weathering of pyrite and pyrrhotite. This mineralization occurs with epidote, chlorite and pervasive silicification. Garnet was found in one spot where fossiliferous limy sedimentary horizons are located. Geochemical analysis of these areas returned background metal values, except for a single sample (463758 - 144 ppm Pb, 304 ppm Zn).

Pyrite is associated with rhyolite tuffs exposed on the logging road on the Bull 2 claim (Figure 4). The two samples taken at this location returned low metal values.

## 7.0 GEOCHEMISTRY

The soil sampling program on the Bull 1-4 claims was designed to confirm and better define the lead-zinc-arsenic anomalies outlined by soil sampling campaigns by Placer (1973) and Prism (1980). It was hoped that some of the earlier work could have been tied to the new grid; however, no old sample locations were discovered except for one station (20W, 14+50S) tied to an old claim identification post (Precious Metals 1&2 claims) located at



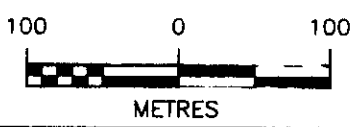
**LEGEND**

Gold - Au ppb  
Silver - Ag ppm

- 95 ≤ value  
1.1 ≤ value
- 5 ≤ value < 95  
0.4 ≤ value < 1.1
- 0.2 ≤ value < 0.4
- value < 5  
value < 0.2

NS - No Sample

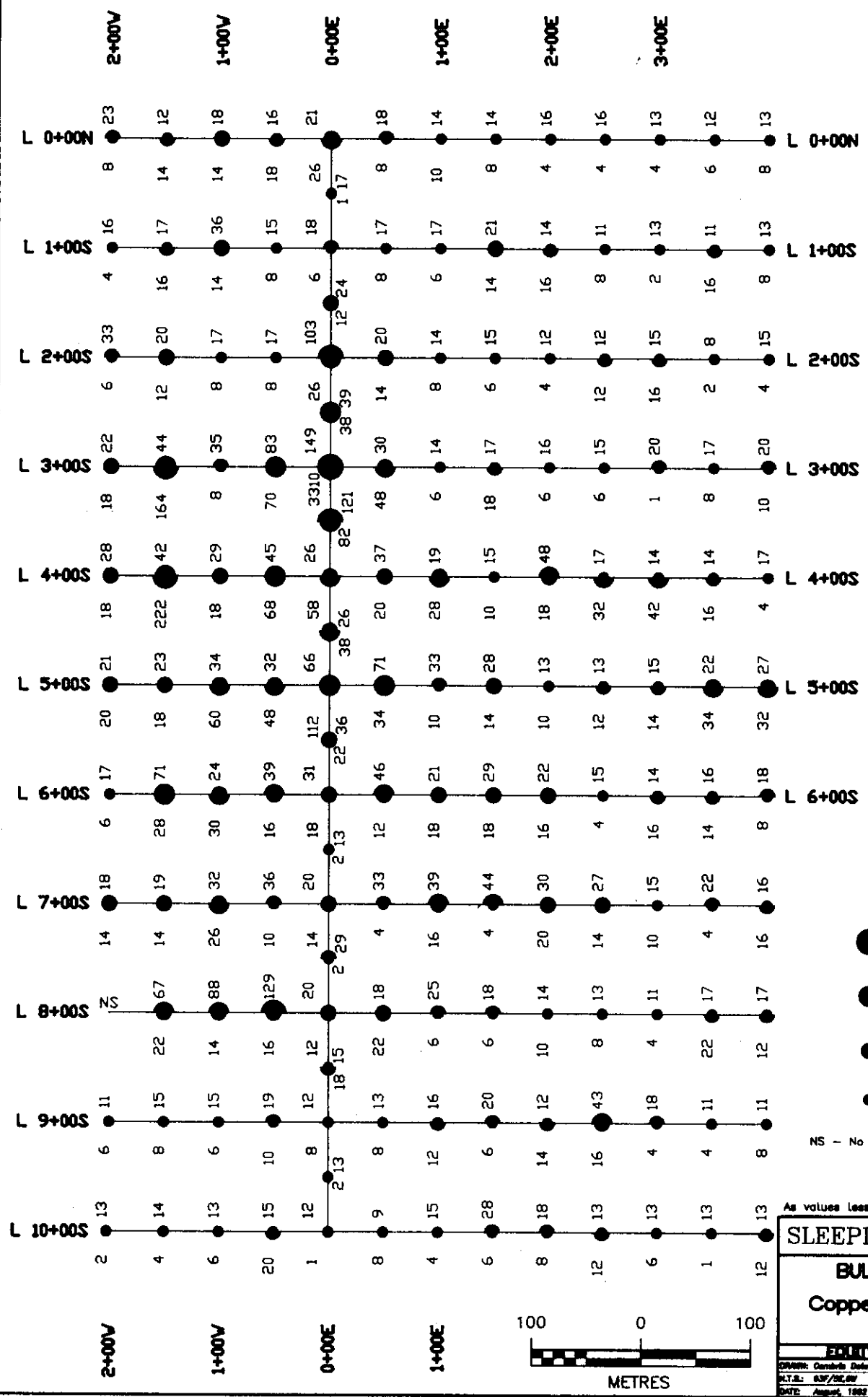
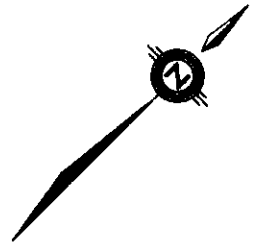
Au values less than 5 ppb detection shown as 2  
Ag values less than 2 ppm detection shown as 0.1



**SLEEPING GOLD LTD.**  
**BULL 1-4 CLAIMS**  
**Gold / Silver in Soils**

**EQUITY ENGINEERING LTD.**

Drawn: Corbridge Dale Pty. Ltd.	Issued On: Ombrose	Figure:
N.T.S.: 637/DE/87	Scale: 1:6000	6.
Date: August, 1992	Revised:	



**LEGEND**

- Copper - Cu ppm
- Arsenic - As ppm
- 99 ≤ value
- 130 ≤ value
- 39 ≤ value < 99
- 24 ≤ value < 130
- 18 ≤ value < 39
- 12 ≤ value < 24
- value < 18
- value < 12

NS - No Sample

As values less than 2 ppm detection shown as 1

**SLEEPING GOLD LTD.**

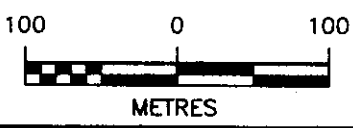
**BULL 1-4 CLAIMS**

**Copper / Arsenic in Soils**

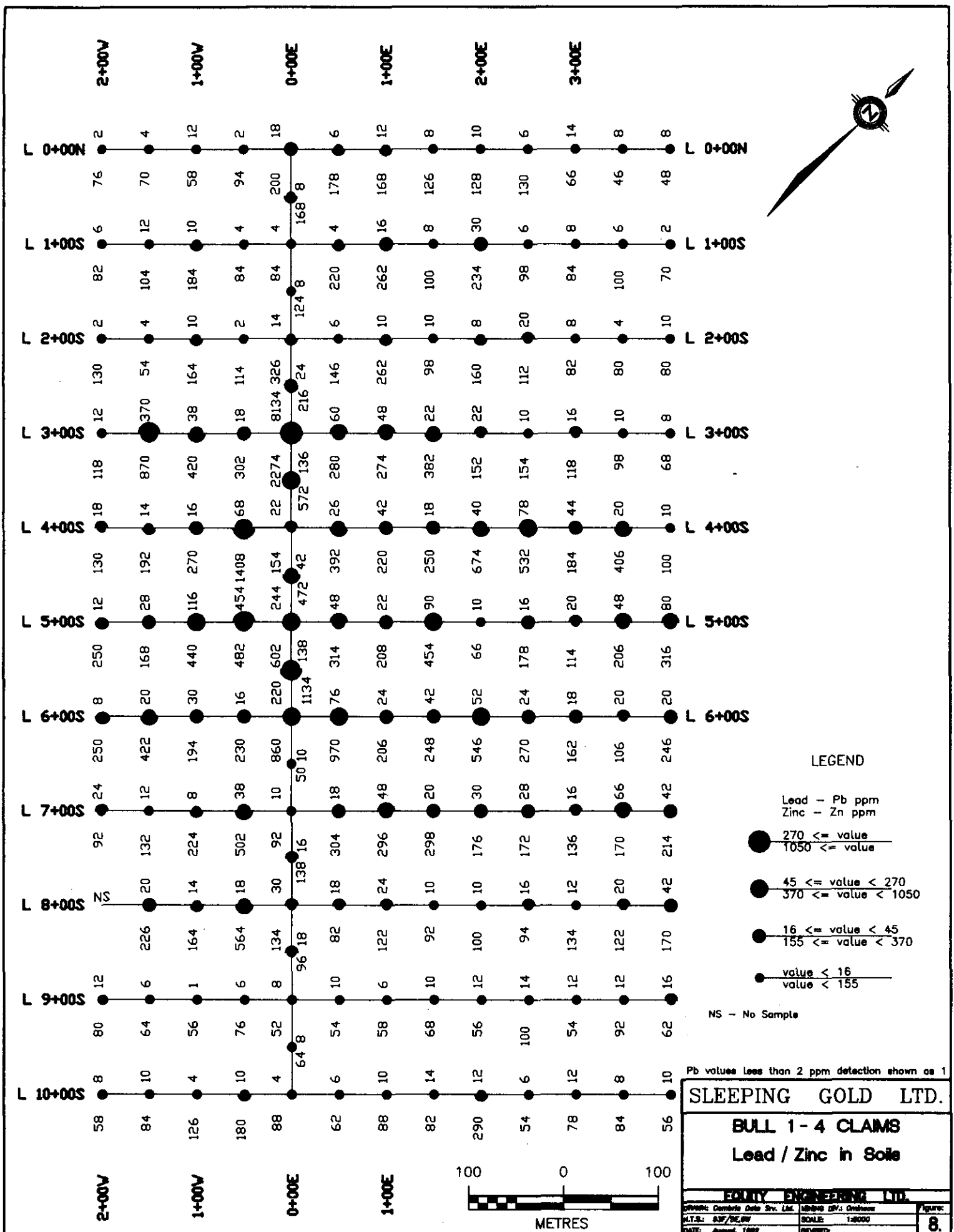
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**EDDY ENGINEERING LTD.**

DRAWN: Geraldine Dale Str. Ltd.	ISSUED BY: Geraldine	Figure:
P.L.S.: 637/02, 6V	SCALE: 1:5000	7.
DATE: August, 1982	REVISED:	







**LEGEND**

- Lead - Pb ppm
- Zinc - Zn ppm
- 270 ≤ value < 1050
- 45 ≤ value < 270  
370 ≤ value < 1050
- 16 ≤ value < 45  
155 ≤ value < 370
- value < 16  
value < 155
- NS - No Sample

Pb values less than 2 ppm detection shown as 1

**SLEEPING GOLD LTD.**

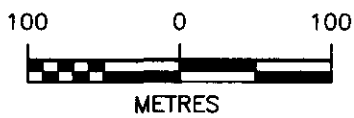
**BULL 1-4 CLAIMS**

**Lead / Zinc in Soils**

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**EQUITY ENGINEERING LTD.**

CLIENT: Cambridge Data Sys. Ltd.	DRAWING NO.: 01/0000	Figure:
PLT.S: ASJ/DE/09	SCALE: 1:8000	8.
DATE: August 1982	REVISED:	



9+05S, 0+66E on the new grid. A total of 152 soil samples were collected from the soil grid (Figures 6-8) and log probability plots for gold, silver, arsenic, copper, lead and zinc, were constructed from them. These distribution diagrams were then used to calculate background, anomalous and strongly anomalous levels. The values are based on the median, median plus one standard deviation (84.1 percentile) and median plus two standard deviations (97.7 percentile). The anomalous levels and the maximum and minimum values for each element are summarized in Table 7.0.1. It should be noted that the lack of detectable gold in the soil samples is reflected in the low "background" and "possibly anomalous" values.

**TABLE 7.0.1**  
**ANOMALOUS LEVELS FOR SOIL GEOCHEMISTRY**

ELEMENT	BACKGROUND	POSSIBLY ANOMALOUS	ANOMALOUS	MAXIMUM	MINIMUM
Gold	<5 ppb	<5 ppb	95 ppb	1320 ppb	<5 ppb
Silver	<0.2 ppm	0.4 ppm	1.1 ppm	57.6 ppm	<0.2 ppm
Copper	18 ppm	39 ppm	99 ppm	149 ppm	8 ppm
Lead	16 ppm	45 ppm	270 ppm	8130 ppm	<2 ppm
Zinc	155 ppm	370 ppm	1050 ppm	2270 ppm	46 ppm
Arsenic	12 ppm	24 ppm	130 ppm	3310 ppm	<2 ppm

The bulk of the anomalous soil geochemistry is contained in an area bounded by 3+00S-6+00S and 2+00W-4+00E. As best as can be discerned, this is the same area outlined by the previous surveys. Part of this anomaly likely marks the eastern strike extension of the quartz vein system found at 3+00S, 1+00W. Sample station 3+50S, B/L, which lies along strike to the east, returned elevated silver (1.6 ppm), copper (121 ppm), lead (136 ppm) and zinc (572 ppm) values, which are comparable to those of the soil sample taken directly over the main showing. Unfortunately, the western strike extension of the quartz vein zone was not covered by the survey.

The most anomalous soil sample was taken at 3+00S, B/L, 50 metres north of the quartz vein system described above. It contained all the maximum metal values listed in Table 7.0.1, and lies on the western end of another east-west anomaly which extends to 5+00S, 4+00E. The source of this anomaly may be a similar, but as yet undiscovered, quartz vein system, considering the geochemical signature and orientation of the anomaly. Alternatively, the two anomalies may mark a single quartz vein system which has been displaced by faulting between 3+00S and 3+50S on the baseline.

Anomalous precious and base metal values were returned from sampling on lines 5+00S and 6+00S near to the baseline. Sampling of the conspicuous gossanous outcrops in this area indicate that

these outcrops are not the source of the anomalies and that another, perhaps less obvious, source remains to be found.

A large portion of the Bull property outside of the grid is underlain by glacial till. Some of the till is locally derived, but most contains rounded cobbles of mixed lithology. This till, will mask underlying geochemical trends in places, making interpretation difficult. It gives anomalous areas a "thumbprint" pattern of high values (where till is thin or absent) and very low values (where till is impervious or too thick to indicate underlying anomalies). The low lying till covered areas on lines 8+00S and 9+00S, would not likely be satisfactory for indicating soil anomalies.

## 8.0 DISCUSSION AND CONCLUSIONS

The 1992 exploration program on the Bull property was designed to confirm and better define, using grid control, soil anomalies outlined by earlier exploration programs, and to use this data to test for its potential for epithermal and volcanogenic massive sulphide mineralization. The first type was discovered during the program, and the presence of altered and pyritic felsic tuffs of the Hazelton Group within a shallow submarine environment indicates that the geological environment appears suitable for finding massive sulphide deposits. The Bull property's underlying geology shows many similarities to the shallow submarine Hazelton Group mafic/felsic volcanics which host the gold-rich Eskay Creek volcanogenic massive sulphide deposit approximately 500 kilometres to the northwest.

The most significant mineralization found to date is a poorly exposed quartz vein stockwork and breccia system at 3+00S, 1+00W on the new grid. A float sample from this occurrence assayed 21.4 g/t gold and 186.5 g/t silver. The width of the vein system likely exceeds 4.0 metres in width and the veining is exposed over a strike length of 20 metres in an east-west direction. The zone remains open to the west and soil geochemical results suggest that the mineralization trends in an easterly direction for approximately 100 metres. The style of mineralization suggests an epithermal origin, genetically related to the Ootsa Lake Group rhyolite dykes crossing the property.

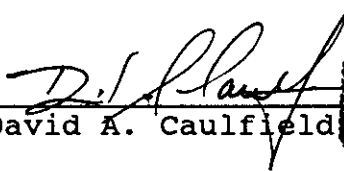
The soil geochemistry outlined a large area of anomalous metal values. Part of this anomaly reflects the known mineralization and possibly a second parallel vein system, but the source of the anomalous results near the gossanous exposures on lines 5+00S and 6+00S remains to be found.

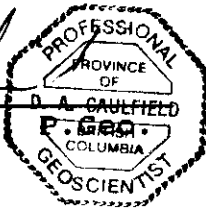
The exploration program demonstrated that epithermal mineralization exists on the property along with Lower to Middle Jurassic Hazelton bimodal volcanics-shallow submarine sediments.

Further exploration is required to determine the extent of the known epithermal mineralization and to fully investigate the property's volcanogenic massive sulphide potential.

Respectfully submitted,

**EQUITY ENGINEERING LTD.**

  
David A. Caulfield



Vancouver, British Columbia  
September, 1992

**APPENDIX A**

**BIBLIOGRAPHY**

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**APPENDIX B**

**STATEMENT OF EXPENDITURES**



**STATEMENT OF EXPENDITURES**  
**BULL 1-4 CLAIMS**  
**May 30 to June 5, 1992**

**PROFESSIONAL FEES AND WAGES:**

David A. Caulfield, P. Geo.		
7 days @ \$375/day	\$ 2,625.00	
Donald McInnes, Sampler		
7 days @ \$200/day	<u>1,400.00</u>	\$ 4,025.00

**EQUIPMENT RENTAL:**

4x4 F250 Truck		
7 days @ \$80/day	\$ 560.00	
Fly Camp		
14 mandays @ \$25/day	<u>350.00</u>	910.00

JOINT MOBILIZATION COSTS: (Pro-rated between three clients in the Fawnie Range Area)		2,088.80
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**CHEMICAL ANALYSES:**

Rock Geochemical Analyses		
23 @ \$15.11 each	\$ 347.53	
Soil Geochemical Analyses		
152 @ \$11.83 each	1,798.16	
Assay		
1 @ 6.19	<u>6.19</u>	2,151.88

**EXPENSES:**

Materials and Supplies	\$ 134.24	
Maps and Publications	98.16	
Printing and Reproductions	220.11	
Camp Food	218.26	
Barge Transportation	400.00	
Automotive Fuel	25.94	
Automotive Expenses	48.13	
Telephone Distance Charges	18.46	
Freight	67.18	
Expediting	<u>179.65</u>	1,410.13

**MANAGEMENT FEES:**

15% on expenses		534.30
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REPORT (estimated)		<u>3,000.00</u>
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SUBTOTAL:		\$ 14,120.11
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GST:		
7% on subtotal		<u>988.40</u>

TOTAL:		\$ 15,108.51 =====
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## APPENDIX C

### ROCK SAMPLE DESCRIPTIONS

#### MINERALS AND ALTERATION TYPES

AS	arsenopyrite	BA	barite	BI	biotite
CA	calcite	CB	Fe-carbonate	CC	chalcocite
CL	chlorite	CP	chalcopyrite	CY	clay
DI	diopside	EP	epidote	GA	garnet
GE	goethite	GL	galena	HE	hematite
HS	specularite	JA	jarosite	MC	malachite
MG	magnetite	MN	Mn-oxides	MS	sericite
PO	pyrrhotite	PY	pyrite	QZ	quartz
SI	silica	SP	sphalerite	TT	tetrahedrite

#### ALTERATION INTENSITIES

s	strong	m	medium	w	weak
tr	trace				

Property : Bull

NTS : 93F/5E, 6W

Date : 09/21/92

Sample No. Location : 5924 429 N Type : Grab Alteration : mCA, sEP, sSI Au Ag As Cu Pb Zn  
 333 143 E Strike Length Exp. : 10 m Sulphides : 5-10%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463751 Elevation: 1090 m Sample Width : m Oxides : GE <5 <0.2 2. 26. 2. 48.  
 Orientation: 135 / 60 NE True Width : m Host : Fine grained clastic sediments  
 Comments : Skarn/hornfelsed sedimentary unit, character/grab of sporadic outcrop covering 5 x 10m; located near L6+00S, 1+50E.

Sample No. Location : 5924 542 N Type : Grab Alteration : sSI Au Ag As Cu Pb Zn  
 333 122 E Strike Length Exp. : 5 m Sulphides : 5%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463752 Elevation: 1120 m Sample Width : m Oxides : sGE, sJA <5 0.6 12. 17. 6. 6.  
 Orientation: ? / True Width : m Host : Mafic volcanic  
 Comments : Irregular pod of silicified, mafic volcanic in contact with rhyolite intrusive dyke.

Sample No. Location : 5924 370 N Type : Grab Alteration : wCY Au Ag As Cu Pb Zn  
 333 262 E Strike Length Exp. : 25 m Sulphides : 1-2%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463753 Elevation: 1050 m Sample Width : m Oxides : GE <5 0.2 16. 6. 20. 36.  
 Orientation: 135 / 70 SW True Width : m Host : Rhyolite dyke  
 Comments : Euhedral pyrite disseminated throughout with local concentrations in open cavities.

Sample No. Location : 5923 842 N Type : Grab Alteration : mCL, wSI Au Ag As Cu Pb Zn  
 333 252 E Strike Length Exp. : 3.0 m Sulphides : 2%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463754 Elevation: 1050 m Sample Width : 50 cm Oxides : GE <5 <0.2 10. 17. 4. 44.  
 Orientation: 170 / 90 ? True Width : 50 cm Host : Volcanic tuff/breccia  
 Comments : Irregular zone (gossan) in bluff of volcanic tuff/breccia. Outcrop is quite friable; potential limited to south (pinches out).

Sample No. Location : 5924 420 N Type : Grab Alteration : wEP, sSI Au Ag As Cu Pb Zn  
 332 972 E Strike Length Exp. : 5 m Sulphides : 2-3%PO, 1%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463755 Elevation: 1070 m Sample Width : 6.0 m Oxides : GE, wHE <5 0.2 <2 19. 20. 118.  
 Orientation: ? / True Width : 6.0? m Host : Volcaniclastic?  
 Comments : Hornfels volcaniclastic in contact with intrusive rhyolite.

Sample No. Location : 5924 412 N Type : Grab Alteration : wEP, sSI Au Ag As Cu Pb Zn  
 332 971 E Strike Length Exp. : 5 m Sulphides : 3%PO, 2%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463756 Elevation: 1065 m Sample Width : 8 m Oxides : <5 0.4 <2 17. 20. 76.  
 Orientation: ? / True Width : 8? m Host : Volcaniclastic?  
 Comments : As above, sample taken 5m down slope from 463755.

Property : Bull

NTS : 93F/5E, 6W

Date : 09/21/92

Sample No.	Location :	5924 320 N	Type :	Float	Alteration :	wCA	Au	Ag	As	Cu	Pb	Zn
		332 989 E	Strike Length Exp. :	m	Sulphides :	2%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463757	Elevation:	1010 m	Sample Width :	m	Oxides :	GE	<5	0.2	2.	21.	<2	78.
	Orientation:	/	True Width :	m	Host :	Fossiliferous siliceous argillite						

Comments : Sample taken from subcrop up slope for 20 metres.

Sample No.	Location :	5924 380 N	Type :	Grab	Alteration :	wCA, w-mCY, sSI	Au	Ag	As	Cu	Pb	Zn
		332 929 E	Strike Length Exp. :	0.5 m	Sulphides :	PO, 3-5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463758	Elevation:	1050 m	Sample Width :	2 m	Oxides :	GE, wHE, JA may be As	<5	1.2	54.	24.	144.	304.
	Orientation:	130 / 60 NE	True Width :	2.0? m	Host :	Volcaniclastic?						

Comments : Gossanous rock exposed under blown-down; very broken rock. White coating on outcrop (not hydrozincite). Fe oxide after pyrrhotite.

Sample No.	Location :	5924 485 N	Type :	Grab	Alteration :	wEP, sSI	Au	Ag	As	Cu	Pb	Zn
		333 059 E	Strike Length Exp. :	25 m	Sulphides :	3-5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463759	Elevation:	1090 m	Sample Width :	3 m	Oxides :	GE	<5	<0.2	8.	53.	2.	80.
	Orientation:	150 / 60 NE	True Width :	3 m	Host :	Altered volcanic						

Comments : Contact zone between volcanics and rhyolite dyke. Contact is well sheared, but sharp. Dyke stands as resistant rib.

Sample No.	Location :	5924 540 N	Type :	Float	Alteration :	mCL, ?KF, wQZ, mSI	Au	Ag	As	Cu	Pb	Zn
		332 970 E	Strike Length Exp. :	m	Sulphides :	3%PO, 5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463760	Elevation:	1100 m	Sample Width :	m	Oxides :	GE	<5	2.2	32.	78.	84.	72.
	Orientation:	/	True Width :	m	Host :	Mafic volcanic?						

Comments : 40 cm. float boulder under blow-down; close to source.

Sample No.	Location :	5924 479 N	Type :	Float	Alteration :	sQZ	Au	Ag	As	Cu	Pb	Zn
		332 754 E	Strike Length Exp. :	m	Sulphides :	1-2%GL, 5%PY, 2%SP	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463761	Elevation:	1100 m	Sample Width :	m	Oxides :	GE, MN, Pb oxides	>10000	186.5	440.	168.	>10000	532.
	Orientation:	/	True Width :	m	Host :	Volcanic tuff/breccia						

Comments : Subcrop; basically in place, estimated width of vein to be 30cm or greater. Sphalerite is dark black colour.

Sample No.	Location :	5924 491 N	Type :	Grab	Alteration :	sQZ, sSI	Au	Ag	As	Cu	Pb	Zn
		332 748 E	Strike Length Exp. :	10 m	Sulphides :	1%?GL, 5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463762	Elevation:	1100 m	Sample Width :	30 cm	Oxides :	GE, JA	2280	22.0	108.	10.	2730.	34.
	Orientation:	100 / 90	True Width :	30 cm	Host :	Volcanic tuff/breccia						

Comments : Quartz vein stockwork with matrix silicification. Sample 463764 taken from same vein 10m to the west. Structure not fully exposed.

Property : Bull

NTS : 93F/5E, 6W

Date : 09/21/92

Sample No. Location : 5924 584 N Type : Grab Alteration : sQZ,sSI Au Ag As Cu Pb Zn  
 332 734 E Strike Length Exp. : 3.0 m Sulphides : 1%GL, 2-3%PY, trSP (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463763 Elevation: 1100 m Sample Width : 45 cm Oxides : GE, HE, JA 130. 13.8 116. 7. 710. 38.  
 Orientation: 070 / V ? True Width : 45 cm Host : Volcanic tuff/breccia

Comments : Vein zone exposed 4.0m into hanging wall of 463764 vein. Poorly exposed under small pine tree.

Sample No. Location : 5924 489 N Type : Grab Alteration : sQZ, sSI Au Ag As Cu Pb Zn  
 332 732 E Strike Length Exp. : 10 m Sulphides : 1%GL, 5%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463764 Elevation: 1100 m Sample Width : 2.0 m Oxides : GE, HE, JA, MC 95. 4.2 230. 15. 260. 68.  
 Orientation: 085 / 80 S True Width : 2.0 m Host : Volcanic tuff/breccia

Comments : Width of zone is not completely exposed. Vein is stockwork, rebrecciated. Sulphides are finely disseminated giving dark grey reticulate pattern to vein quartz.

Sample No. Location : N Type : Grab Alteration : sCA, sSI Au Ag As Cu Pb Zn  
 E Strike Length Exp. : 0.5 m Sulphides : 3-5%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463765 Elevation: 1140 m Sample Width : 30 cm Oxides : 10. <0.2 16. 22. 12. 60.  
 Orientation: 132 / 50 NE True Width : 30 cm Host : Calcareous volcanoclastic

Comments : Tuff unit with abundant siliceous fragments. Very fine grained pyrite disseminated throughout.

Sample No. Location : 5924 434 N Type : Grab Alteration : wQZ, sSI Au Ag As Cu Pb Zn  
 332 787 E Strike Length Exp. : 4.0 m Sulphides : 5%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463766 Elevation: 1100 m Sample Width : 40 cm Oxides : GE 5. 0.2 20. 18. 10. 30.  
 Orientation: 000 / 75 W True Width : 40 cm Host : Volcanic tuff/breccia

Comments : Silicified zone with minor quartz veining.

Sample No. Location : 5924 407 N Type : Grab Alteration : wQZ, sSI Au Ag As Cu Pb Zn  
 332 786 E Strike Length Exp. : 1.0 m Sulphides : 3%PY, 1%SP (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463767 Elevation: 1100 m Sample Width : 8 cm Oxides : GE, HE 10. 0.6 118. 31. 20. 1225.  
 Orientation: 130 / 72 SE True Width : 8 cm Host : Volcanic tuff/breccia

Comments : Narrow silicified zone and minor quartz veining.

Sample No. Location : 5924 496 N Type : Grab Alteration : wEP, sQZ, sSI Au Ag As Cu Pb Zn  
 332 748 E Strike Length Exp. : 4.0 m Sulphides : 1-2%GL, 10%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463768 Elevation: 1120 m Sample Width : 30 cm Oxides : GE, HE 200. 49.8 310. 18. 3230. 106.  
 Orientation: 070 / 70 N? True Width : 30 cm Host : Volcanic tuff/breccia

Comments :

Property : Bull

NTS : 93F/5E, 6W

Date : 09/21/92

Sample No.	Location :	5924 399 N	Type :	Alteration :	w-mEP, mSI	Au	Ag	As	Cu	Pb	Zn
		332 947 E	Strike Length Exp. :	Sulphides :	3-5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463769	Elevation:	1100 m	Sample Width :	Oxides :	GE	<5	0.4	20.	19.	14.	52.
	Orientation:	/	True Width :	Host :	Volcanic tuff?						

Comments : Gossanous silicified outcrop on Line 5+00S to the west.

Sample No.	Location :	5924 409 N	Type :	Alteration :	wEP, sSI	Au	Ag	As	Cu	Pb	Zn
		332 954 E	Strike Length Exp. :	Sulphides :	5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463770	Elevation:	1100 m	Sample Width :	Oxides :	GE	<5	0.6	8.	18.	8.	42.
	Orientation:	/	True Width :	Host :							

Comments : Sample taken 10m north of 463769.

Sample No.	Location :	5926 130 N	Type :	Alteration :	wCL, mEP, sSI	Au	Ag	As	Cu	Pb	Zn
		333 170 E	Strike Length Exp. :	Sulphides :	?GL, 5%PY, ?SP	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463771	Elevation:	1100 m	Sample Width :	Oxides :	GE	<5	<0.2	78.	11.	18.	78.
	Orientation:	055 / V ?	True Width :	Host :	Volcaniclastic?						

Comments : Gossanous silicified zone exposed along access adjacent to small pond. Pyrite occurs as stringers and disseminations.

Sample No.	Location :	5926 100 N	Type :	Alteration :	wCL, mEP, sSI	Au	Ag	As	Cu	Pb	Zn
		333 210 E	Strike Length Exp. :	Sulphides :	5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463772	Elevation:	1100 m	Sample Width :	Oxides :	GE	<5	<0.2	20.	27.	8.	30.
	Orientation:	/	True Width :	Host :	Volcaniclastic						

Comments : Sample taken 75m ESE of 463771 along road. Very similar in appearance.

Sample No.	Location :	5925 350 N	Type :	Alteration :	wEP, mQZ, gypsum	Au	Ag	As	Cu	Pb	Zn
		333 540 E	Strike Length Exp. :	Sulphides :	2%PO, 10%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
463773	Elevation:	1090 m	Sample Width :	Oxides :	GE	<5	1.0	52.	105.	14.	2090
	Orientation:	/	True Width :	Host :	Green argillite/siltstone						

Comments : Cat push at edge of road in logging slashing very near bedrock; strong boxwork after sulphides. Size of float suggests zone less than 10cm wide.

**APPENDIX D**

**CERTIFICATES OF ANALYSIS**



# Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers  
212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

To: EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
VANCOUVER, BC  
V6B 1N2

A9215920

Comments:

**CERTIFICATE**

**A9215920**

EQUITY ENGINEERING LTD.

Project: SGL 92-01  
P.O. #:

Samples submitted to our lab in Vancouver, BC.  
This report was printed on 18-JUN-92.

## SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	23	Geochem ring to approx 150 mesh
226	23	0-5 lb crush and split
229	23	ICP - AQ Digestion charge

## ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	23	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
397	2	Au g/tonne: 1/2 assay ton	FA-GRAVIMETRIC	0.1	500.0
2118	23	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	200
2120	23	As ppm: 32 element, soil & rock	ICP-AES	2	10000
2123	23	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2128	23	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2131	23	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2136	23	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2140	23	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
2141	23	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2149	23	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000





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To: EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
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 V6B 1N2

Project : SGL 92-01  
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 Total Pages :1  
 Certificate Date: 18-JUN-92  
 Invoice No. :19215920  
 P.O. Number :  
 Account :EIA

## CERTIFICATE OF ANALYSIS A9215920

SAMPLE	PREP CODE	Au ppb FA+AA	Au FA g/tonne	Ag ppm	As ppm	Bi ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm			
463751	205 226	< 5	-----	< 0.2	2	6	26	< 1	1	2	2	48			
463752	205 226	< 5	-----	0.6	12	< 2	17	< 1	1	6	2	6			
463753	205 226	< 5	-----	0.2	16	< 2	6	< 1	5	20	< 2	36			
463754	205 226	< 5	-----	< 0.2	10	4	17	< 1	< 1	4	4	44			
463755	205 226	< 5	-----	0.2	< 2	4	19	< 1	< 1	20	2	118			
463756	205 226	< 5	-----	0.4	< 2	6	17	< 1	< 1	20	2	76			
463757	205 226	< 5	-----	0.2	2	4	21	< 1	2	< 2	2	78			
463758	205 226	< 5	-----	1.2	54	< 2	24	< 1	2	144	6	304			
463759	205 226	< 5	-----	< 0.2	8	8	53	< 1	1	2	8	80			
463760	205 226	< 5	-----	2.2	32	8	78	< 1	3	84	10	72			
463761	205 226	>10000	21.4	186.5	440	< 2	168	< 1	54	>10000	288	532			
463762	205 226	2280	2.1	22.0	108	2	10	< 1	12	2730	30	34			
463763	205 226	130	-----	13.8	116	< 2	7	< 1	1	710	12	38			
463764	205 226	95	-----	4.2	230	< 2	15	< 1	2	260	10	68			
463765	205 226	10	-----	< 0.2	16	8	22	< 1	< 1	12	6	60			
463766	205 226	5	-----	0.2	20	2	18	< 1	1	10	6	30			
463767	205 226	10	-----	0.6	118	4	31	< 1	5	20	4	1225			
463768	205 226	200	-----	49.8	310	2	18	< 1	2	3230	34	106			
463769	205 226	< 5	-----	0.4	20	6	19	< 1	< 1	14	2	52			
463770	205 226	< 5	-----	0.6	8	2	18	< 1	< 1	8	4	42			
463771	205 226	< 5	-----	< 0.2	78	< 2	11	< 1	5	18	4	78			
463772	205 226	< 5	-----	< 0.2	20	8	27	< 1	3	8	6	30			
463773	205 226	< 5	-----	1.0	52	8	105	< 1	32	14	8	2090			

CERTIFICATION:

*Yhai D Ma*



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers  
212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

To: EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
VANCOUVER, BC  
V6B 1N2

A9216262

Comments:

**CERTIFICATE**

**A9216262**

EQUITY ENGINEERING LTD.

Project: SGL 92-01  
P.O. #:

Samples submitted to our lab in Vancouver, BC.  
This report was printed on 24-JUN-92.

## SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
244	1	Pulp; prev. prepared at Chemex

## ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
312	1	Pb %: Reverse Aqua-Regia digest	AAS	0.01	100.0



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P.O. Number :  
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## CERTIFICATE OF ANALYSIS

A9216262

SAMPLE	PREP CODE		Pb %									
463761	244	--	3.30									

CERTIFICATION:

*A. Christie*



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers  
212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

To: EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
VANCOUVER, BC  
V6B 1N2

A9215921

Comments:

<b>CERTIFICATE</b>	<b>A9215921</b>
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EQUITY ENGINEERING LTD.

Project: SGL 92-01

P.O. #:

Samples submitted to our lab in Vancouver, BC.  
This report was printed on 14-JUL-92.

<b>SAMPLE PREPARATION</b>		
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
201	152	Dry, sieve to -80 mesh
229	152	ICP - AQ Digestion charge

<b>ANALYTICAL PROCEDURES</b>					
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	152	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
2118	152	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	200
2120	152	As ppm: 32 element, soil & rock	ICP-AES	2	10000
2123	152	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2128	152	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2131	152	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2136	152	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2140	152	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
2141	152	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2149	152	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000



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 Certificate Date: 18-JUN-92  
 Invoice No. : 19215921  
 P.O. Number :  
 Account : EIA

\*\* CORRECTED COPY \*\*

## CERTIFICATE OF ANALYSIS A9215921

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	As ppm	Bi ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm
BL 00+00S	201 229	< 5	< 0.2	26	6	21	< 1	3	18	< 2	200
BL 00+50S	201 229	< 5	< 0.2	< 2	2	17	< 1	1	8	< 2	168
BL 01+00S	201 229	< 5	< 0.2	6	6	18	< 1	< 1	4	< 2	84
BL 01+50S	201 229	< 5	< 0.2	12	6	24	< 1	2	8	4	124
BL 02+00S	201 229	< 5	0.2	26	2	103	< 1	2	14	2	326
BL 02+50S	201 229	< 5	< 0.2	38	< 2	39	< 1	2	24	2	216
BL 03+00S	201 229	1320	57.6	3310	< 2	149	< 1	10	8130	32	2270
BL 03+50S	201 229	< 5	1.6	82	< 2	121	< 1	6	136	2	572
BL 04+00S	201 229	< 5	0.2	58	< 2	26	< 1	3	22	2	154
BL 04+50S	201 229	15	< 0.2	38	6	26	< 1	1	42	2	472
BL 05+00S	201 229	150	1.2	112	< 6	66	< 1	4	244	< 4	602
BL 05+50S	201 229	25	0.6	22	< 2	36	< 1	3	138	< 2	1135
BL 06+00S	201 229	< 5	0.2	18	6	31	< 1	8	220	< 2	860
BL 06+50S	201 229	< 5	< 0.2	2	< 2	13	< 1	1	10	< 2	50
BL 07+00S	201 229	< 5	< 0.2	14	6	20	< 1	1	10	< 2	92
BL 07+50S	201 229	< 5	< 0.2	2	2	29	< 1	1	16	< 2	138
BL 08+00S	201 229	< 5	< 0.2	12	2	20	< 1	3	30	< 2	134
BL 08+50S	201 229	< 5	< 0.2	18	4	15	< 1	2	18	2	96
BL 09+00S	201 229	< 5	< 0.2	8	6	12	< 1	1	8	2	52
BL 09+50S	201 229	< 5	< 0.2	2	< 2	13	< 1	1	8	< 2	64
BL 10+00S	201 229	< 5	0.2	< 2	4	12	< 1	1	4	< 2	88
0+00 0+50E	201 229	< 5	< 0.2	8	2	18	< 1	1	6	< 2	178
0+00 1+00E	201 229	< 5	< 0.2	10	2	14	< 1	3	12	< 2	168
0+00 1+50E	201 229	< 5	< 0.2	8	6	14	< 1	2	8	< 2	126
0+00 2+00E	201 229	< 5	< 0.2	4	4	16	< 1	2	10	< 2	128
0+00 2+50E	201 229	< 5	< 0.2	4	2	16	< 1	1	6	< 2	130
0+00 3+00E	201 229	< 5	< 0.2	4	6	13	< 1	1	14	< 2	66
0+00 3+50E	201 229	< 5	< 0.2	6	< 2	12	< 1	1	8	2	46
0+00 4+00E	201 229	< 5	< 0.2	8	4	13	< 1	1	8	2	48
0+00 0+50W	201 229	< 5	< 0.2	18	4	16	< 1	2	2	4	94
0+00 1+00W	201 229	< 5	< 0.2	14	4	18	< 1	2	12	< 2	58
0+00 1+50W	201 229	< 5	< 0.2	14	2	12	< 1	2	4	< 2	70
0+00 2+00W	201 229	< 5	0.2	8	< 2	23	< 1	< 1	2	< 2	76
1+00S 0+50E	201 229	< 5	< 0.2	8	2	17	< 1	1	4	2	220
1+00S 1+00E	201 229	< 5	< 0.2	6	6	17	< 1	4	16	< 2	262
1+00S 1+50E	201 229	< 5	< 0.2	14	6	21	< 1	2	8	< 2	100
1+00S 2+00E	201 229	< 5	< 0.2	16	4	14	< 1	1	30	< 2	234
1+00S 2+50E	201 229	< 5	< 0.2	8	4	11	< 1	2	6	< 2	98
1+00S 3+00E	201 229	< 5	< 0.2	2	8	13	< 1	1	8	4	84
1+00S 3+50E	201 229	< 5	< 0.2	16	6	11	< 1	1	6	2	100

CERTIFICATION:

*Mark Vornh*



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers  
 212 Brooksbank Ave., North Vancouver  
 British Columbia, Canada V7J 2C1  
 PHONE: 604-984-0221

To: EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
 VANCOUVER, BC  
 V6B 1N2

Project : SGL 92-01  
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Page Number :2  
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 Certificate Date: 18-JUN-92  
 Invoice No. :19215921  
 P.O. Number :  
 Account :EIA

## CERTIFICATE OF ANALYSIS A9215921

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	As ppm	Bi ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm
1+00S 4+00E	201 229	< 5	< 0.2	8	2	13	< 1	1	2	2	70
1+00S 0+50W	201 229	< 5	< 0.2	8	10	15	< 1	2	4	< 2	84
1+00S 1+00W	201 229	30	< 0.2	14	6	36	< 1	2	10	2	184
1+00S 1+50W	201 229	< 5	< 0.2	16	2	17	< 1	1	12	< 2	104
1+00S 2+00W	201 229	< 5	< 0.2	4	< 2	16	< 1	1	6	< 2	82
2+00S 0+50E	201 229	< 5	< 0.2	14	2	20	1	1	6	2	146
2+00S 1+00E	201 229	< 5	< 0.2	8	2	14	< 1	1	10	< 2	262
2+00S 1+50E	201 229	170	< 0.2	6	2	15	< 1	1	10	< 2	98
2+00S 2+00E	201 229	< 5	< 0.2	4	4	12	< 1	1	8	< 2	160
2+00S 2+50E	201 229	< 5	< 0.2	12	8	12	< 1	< 1	20	2	112
2+00S 3+00E	201 229	< 5	< 0.2	16	2	15	< 1	1	8	< 2	82
2+00S 3+50E	201 229	< 5	< 0.2	2	< 2	8	< 1	< 1	4	< 2	80
2+00S 4+00E	201 229	< 5	< 0.2	4	6	15	< 1	< 1	10	2	80
2+00S 0+50W	201 229	< 5	< 0.2	8	2	17	< 1	< 1	2	2	114
2+00S 1+00W	201 229	< 5	< 0.2	8	< 2	17	< 1	2	10	< 2	164
2+00S 1+50W	201 229	< 5	< 0.2	12	2	20	< 1	1	4	< 2	54
2+00S 2+00W	201 229	< 5	0.2	6	4	33	< 1	1	2	2	130
3+00S 0+50E	201 229	< 5	0.2	48	< 2	30	< 1	3	60	4	280
3+00S 1+00E	201 229	15	0.2	6	6	14	< 1	2	48	2	274
3+00S 1+50E	201 229	30	< 0.2	18	6	17	1	2	22	2	382
3+00S 2+00E	201 229	< 5	< 0.2	6	< 2	16	< 1	1	22	< 2	152
3+00S 2+50E	201 229	< 5	< 0.2	6	2	15	< 1	< 1	10	2	154
3+00S 3+00E	201 229	< 5	< 0.2	< 2	6	20	< 1	1	16	2	118
3+00S 3+50E	201 229	< 5	< 0.2	8	10	17	< 1	1	10	< 2	98
3+00S 4+00E	201 229	< 5	< 0.2	10	< 2	20	< 1	1	8	2	68
3+00S 0+50W	201 229	< 5	0.6	70	< 2	83	< 1	3	18	< 2	302
3+00S 1+00W	201 229	< 5	< 0.2	8	< 2	35	< 1	1	38	2	420
3+00S 1+50W	201 229	40	1.4	164	2	44	< 1	2	370	2	870
3+00S 2+00W	201 229	< 5	< 0.2	18	< 2	22	< 1	1	12	< 2	118
4+00S 0+50E	201 229	< 5	0.6	20	2	37	< 1	3	26	< 2	392
4+00S 1+00E	201 229	< 5	< 0.2	28	6	19	< 1	1	42	< 2	220
4+00S 1+50E	201 229	< 5	< 0.2	10	10	15	< 1	1	18	< 2	250
4+00S 2+00E	201 229	< 5	1.0	18	6	48	< 1	6	40	< 2	674
4+00S 2+50E	201 229	< 5	< 0.2	32	2	17	< 1	2	78	< 2	532
4+00S 3+00E	201 229	< 5	< 0.2	42	2	14	< 1	1	44	< 2	184
4+00S 3+50E	201 229	< 5	< 0.2	16	8	14	< 1	1	20	< 2	406
4+00S 4+00E	201 229	< 5	< 0.2	4	8	17	< 1	1	10	< 2	100
4+00S 0+50W	201 229	< 5	0.2	68	< 2	45	< 1	2	68	< 2	1410
4+00S 1+00W	201 229	< 5	< 0.2	18	8	29	< 1	< 1	16	< 2	270
4+00S 1+50W	201 229	< 5	0.6	222	< 2	42	< 1	9	14	6	192

CERTIFICATION: *[Signature]*



# Chemex Labs Ltd.

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 212 Brooksbank Ave., North Vancouver  
 British Columbia, Canada V7J 2C1  
 PHONE: 604-984-0221

To: EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
 VANCOUVER, BC  
 V6B 1N2

Project : SGL 92-01  
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 Total Pages :4  
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 Invoice No. :19215921  
 P.O. Number :  
 Account :EIA

## CERTIFICATE OF ANALYSIS A9215921

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	As ppm	Bi ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm
4+00S 2+00W	201 229	< 5	< 0.2	18	< 2	28	< 1	2	18	4	130
5+00S 0+50E	201 229	20	< 0.6	34	< 2	71	< 1	4	48	6	314
5+00S 1+00E	201 229	15	< 0.2	10	2	33	< 1	2	22	< 2	208
5+00S 1+50E	201 229	25	0.4	14	2	28	< 1	2	90	2	454
5+00S 2+00E	201 229	< 5	< 0.2	10	8	13	< 1	2	10	< 2	66
5+00S 2+50E	201 229	< 5	< 0.2	12	< 2	13	< 1	1	16	2	178
5+00S 3+00E	201 229	< 5	< 0.2	14	2	15	< 1	< 1	20	2	114
5+00S 3+50E	201 229	< 5	< 0.2	34	6	22	< 1	1	48	2	206
5+00S 4+00E	201 229	< 5	0.2	32	2	27	< 1	1	80	< 2	316
5+00S 0+50W	201 229	< 5	0.6	48	6	32	< 1	2	454	4	482
5+00S 1+00W	201 229	< 5	1.2	60	4	34	< 1	3	116	8	440
5+00S 1+50W	201 229	< 5	< 0.2	18	< 2	23	< 1	2	28	2	168
5+00S 2+00W	201 229	< 5	0.2	20	6	21	< 1	3	12	< 2	250
6+00S 0+50E	201 229	< 5	< 0.2	12	2	46	< 1	1	76	2	970
6+00S 1+00E	201 229	< 5	< 0.2	18	4	21	< 1	2	24	2	206
6+00S 1+50E	201 229	< 5	< 0.2	18	< 2	29	< 1	2	42	< 2	248
6+00S 2+00E	201 229	< 5	< 0.2	16	8	22	< 1	3	52	< 2	546
6+00S 2+50E	201 229	< 5	< 0.2	4	6	15	< 1	1	24	4	270
6+00S 3+00E	201 229	< 5	< 0.2	16	4	14	< 1	2	18	2	162
6+00S 3+50E	201 229	< 5	< 0.2	14	6	16	< 1	1	20	< 2	106
6+00S 4+00E	201 229	< 5	0.2	8	< 2	18	< 1	1	20	2	246
6+00S 0+50W	201 229	< 5	0.2	16	2	39	< 1	2	16	2	230
6+00S 1+00W	201 229	10	1.4	30	< 2	24	< 1	4	30	2	194
6+00S 1+50W	201 229	< 5	0.8	28	4	71	< 1	2	20	< 2	422
6+00S 2+00W	201 229	< 5	< 0.2	6	2	17	< 1	< 1	8	2	250
7+00S 0+50E	201 229	< 5	< 0.2	4	4	33	< 1	1	18	< 2	304
7+00S 1+00E	201 229	< 5	< 0.2	16	< 2	39	< 1	1	48	< 2	296
7+00S 1+50E	201 229	< 5	< 0.2	4	4	44	< 1	1	20	4	298
7+00S 2+00E	201 229	< 5	< 0.2	20	4	30	< 1	1	30	2	176
7+00S 2+50E	201 229	< 5	< 0.2	14	2	27	< 1	2	28	< 2	172
7+00S 3+00E	201 229	< 5	< 0.2	10	< 2	15	< 1	< 1	16	< 2	136
7+00S 3+50E	201 229	< 5	< 0.2	4	4	22	< 1	1	66	< 2	170
7+00S 4+00E	201 229	< 5	< 0.2	16	4	16	< 1	2	42	4	214
7+00S 0+50W	201 229	< 5	0.2	10	2	36	< 1	5	38	4	502
7+00S 1+00W	201 229	< 5	< 0.2	26	8	32	< 1	2	8	2	224
7+00S 1+50W	201 229	< 5	< 0.2	14	< 2	19	< 1	2	12	4	132
7+00S 2+00W	201 229	< 5	< 0.2	14	4	18	< 1	1	24	2	92
8+00S 0+50E	201 229	< 5	< 0.2	22	4	18	< 1	3	18	2	82
8+00S 1+00E	201 229	< 5	< 0.2	6	6	25	< 1	4	24	2	122
8+00S 1+50E	201 229	< 5	< 0.2	6	6	18	< 1	1	10	< 2	92

CERTIFICATION:

*Theresa V...*



# Chemex Labs Ltd.

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 212 Brooksbank Ave., North Vancouver  
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 PHONE: 604-984-0221

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 Comments:

Page Number : 4  
 Total Pages : 4  
 Certificate Date: 18-JUN-92  
 Invoice No. : I9215921  
 P.O. Number :  
 Account : EIA

## CERTIFICATE OF ANALYSIS A9215921

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	As ppm	Bi ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm
8+00S 2+00E	201 229	< 5	< 0.2	10	4	14	< 1	1	10	2	100
8+00S 2+50E	201 229	< 5	< 0.2	8	4	13	< 1	1	16	2	94
8+00S 3+00E	201 229	< 5	< 0.2	4	4	11	< 1	1	12	< 2	134
8+00S 3+50E	201 229	< 5	< 0.4	22	2	17	< 1	2	20	< 2	122
8+00S 4+00E	201 229	< 5	< 0.2	12	< 2	17	< 1	5	42	< 2	170
8+00S 0+50W	201 229	< 5	0.4	16	4	129	< 1	1	18	< 2	564
8+00S 1+00W	201 229	25	0.4	14	8	88	< 1	1	14	2	164
8+00S 1+50W	201 229	< 5	0.4	22	6	67	< 1	2	20	2	226
9+00S 0+50E	201 229	< 5	< 0.2	8	6	13	< 1	1	10	2	54
9+00S 1+00E	201 229	< 5	< 0.2	12	4	16	< 1	1	6	< 2	58
9+00S 1+50E	201 229	< 5	< 0.2	6	4	20	< 1	2	10	< 2	68
9+00S 2+00E	201 229	< 5	< 0.2	14	6	12	< 1	2	12	4	56
9+00S 2+50E	201 229	< 5	< 0.2	16	4	43	< 1	1	14	2	100
9+00S 3+00E	201 229	< 5	< 0.2	4	6	18	< 1	1	12	2	54
9+00S 3+50E	201 229	< 5	< 0.2	4	10	11	< 1	1	12	< 2	92
9+00S 4+00E	201 229	< 5	< 0.2	8	< 2	11	< 1	1	16	2	62
9+00S 0+50W	201 229	< 5	< 0.2	10	< 2	19	< 1	2	6	2	76
9+00S 1+00W	201 229	< 5	< 0.2	6	6	15	< 1	< 1	< 2	2	56
9+00S 1+50W	201 229	< 5	< 0.2	8	4	15	< 1	1	6	2	64
9+00S 2+00W	201 229	< 5	< 0.2	6	4	11	< 1	< 1	12	< 2	80
10+00S 0+50E	201 229	< 5	< 0.2	8	< 6	9	< 1	< 1	6	< 2	62
10+00S 1+00E	201 229	< 5	< 0.2	4	< 2	15	< 1	1	10	4	88
10+00S 1+50E	201 229	< 5	< 0.2	6	4	28	< 1	1	14	< 2	82
10+00S 2+00E	201 229	< 5	< 0.2	8	< 2	18	< 1	1	12	2	290
10+00S 2+50E	201 229	< 5	< 0.2	12	2	13	< 1	< 1	6	< 2	54
10+00S 3+00E	201 229	< 5	< 0.2	6	2	13	< 1	< 1	12	2	78
10+00S 3+50E	201 229	< 5	< 0.2	< 2	4	13	< 1	< 1	8	2	84
10+00S 4+00E	201 229	< 5	< 0.2	12	6	13	< 1	1	10	< 2	56
10+00S 0+50W	201 229	< 5	< 0.2	20	< 2	15	< 1	1	10	< 2	180
10+00S 1+00W	201 229	< 5	< 0.2	6	4	13	< 1	< 1	4	2	126
10+00S 1+50W	201 229	< 5	< 0.2	4	< 6	14	< 1	< 1	10	< 2	84
10+00S 2+00W	201 229	< 5	< 0.2	2	< 2	13	< 1	< 1	8	< 2	58

CERTIFICATION: *[Signature]*



**APPENDIX E**

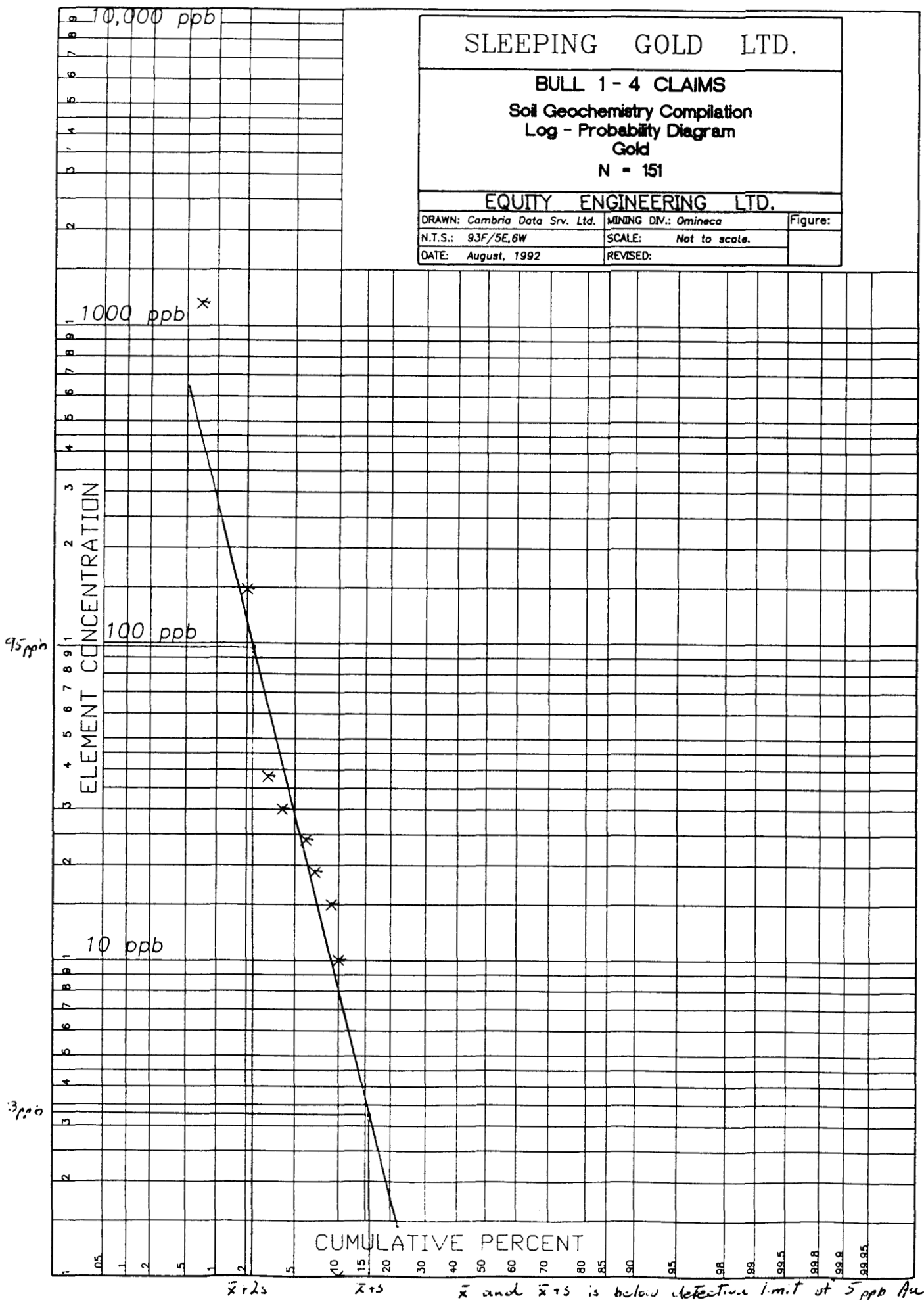
**LOG PROBABILITY PLOTS AND TABLES - SOIL GEOCHEMISTRY**

# SLEEPING GOLD LTD.

BULL 1 - 4 CLAIMS  
Soil Geochemistry Compilation  
Log - Probability Diagram  
Gold  
N = 151

EQUITY ENGINEERING LTD.

DRAWN: Cambria Data Srv. Ltd.	MINING DIV.: Omineca	Figure:
N.T.S.: 93F/5E,6W	SCALE: Not to scale.	
DATE: August, 1992	REVISED:	



POND CAD SERVICES  
 MAPPER-CAD SOFTWARE  
 LOG-PROBABILITY TABLE (LEPELTIER TABLE)  
 =====

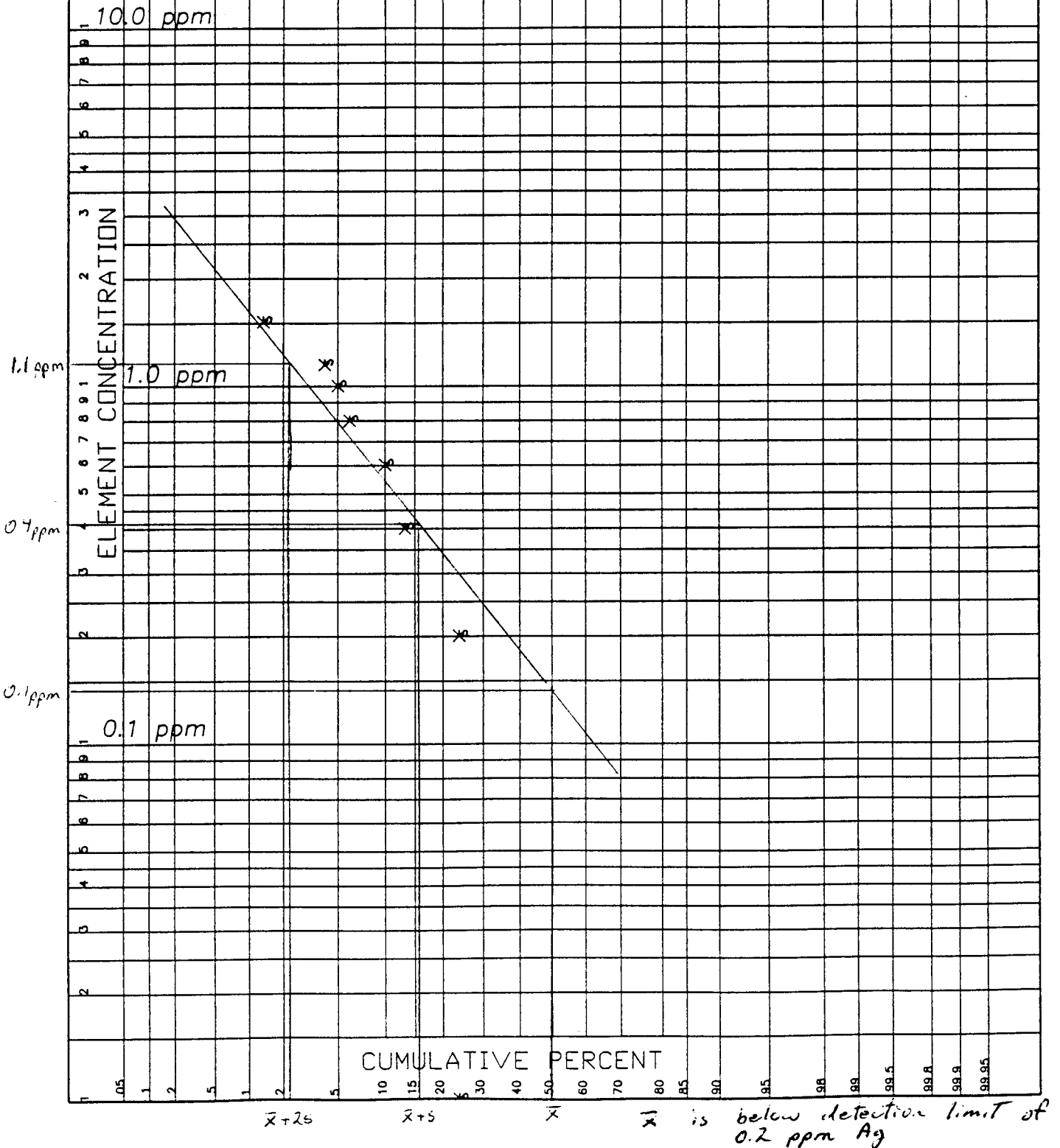
LOWER LOG LIMIT INTERVAL	LOWER CONCENTRATION LIMIT	SAMPLE POPULATION TALLY	CUMULATIVE SUM	CUMULATIVE PERCENT
-0.13	0	137	151	100.00
-0.03	1	0	14	9.27
0.27	2	0	14	9.27
0.47	3	0	14	9.27
0.57	4	0	14	9.27
0.67	5	0	14	9.27
0.77	6	0	14	9.27
0.87	8	0	14	9.27
0.97	10	1	14	9.27
1.07	12	0	13	8.61
1.17	15	3	13	8.61
1.27	19	1	10	6.62
1.37	24	3	9	5.96
1.47	30	2	6	3.97
1.57	38	1	4	2.65
1.67	47	0	3	1.99
1.77	59	0	3	1.99
1.87	75	0	3	1.99
1.97	94	0	3	1.99
2.07	118	0	3	1.99
2.17	148	2	3	1.99
2.27	187	0	1	0.66
2.37	235	0	1	0.66
2.47	296	0	1	0.66
2.57	372	0	1	0.66
2.67	468	0	1	0.66
2.77	589	0	1	0.66
2.87	742	0	1	0.66
2.97	934	0	1	0.66
3.07	1175	1	1	0.66
3.17	1480	0	0	0.00
3.27	1863	0	0	0.00
3.37	2345	0	0	0.00
3.47	2952	0	0	0.00
3.57	3716	0	0	0.00
3.67	4678	0	0	0.00
3.77	5889	0	0	0.00
3.87	7414	0	0	0.00
3.97	9333	0	0	0.00
4.07	11749	0	0	0.00

# SLEEPING GOLD LTD.

BULL 1 - 4 CLAIMS  
 Soil Geochemistry Compilation  
 Log - Probability Diagram  
 Silver  
 N = 151

EQUITY ENGINEERING LTD.

DRAWN: Cambria Data Srv. Ltd.	MINING DIV.: Omineca	Figure:
N.T.S.: 93F/5E,6W	SCALE: Not to scale.	
DATE: August, 1992	REVISED:	



Page No. 1 ASSAY FILE NUMBER - B0098 :  
 ELEMENT - AG  
 07/06/92

POND CAD SERVICES  
 MAPPER-CAD SOFTWARE  
 LOG-PROBABILITY TABLE (LEPELTIER TABLE)  
 =====

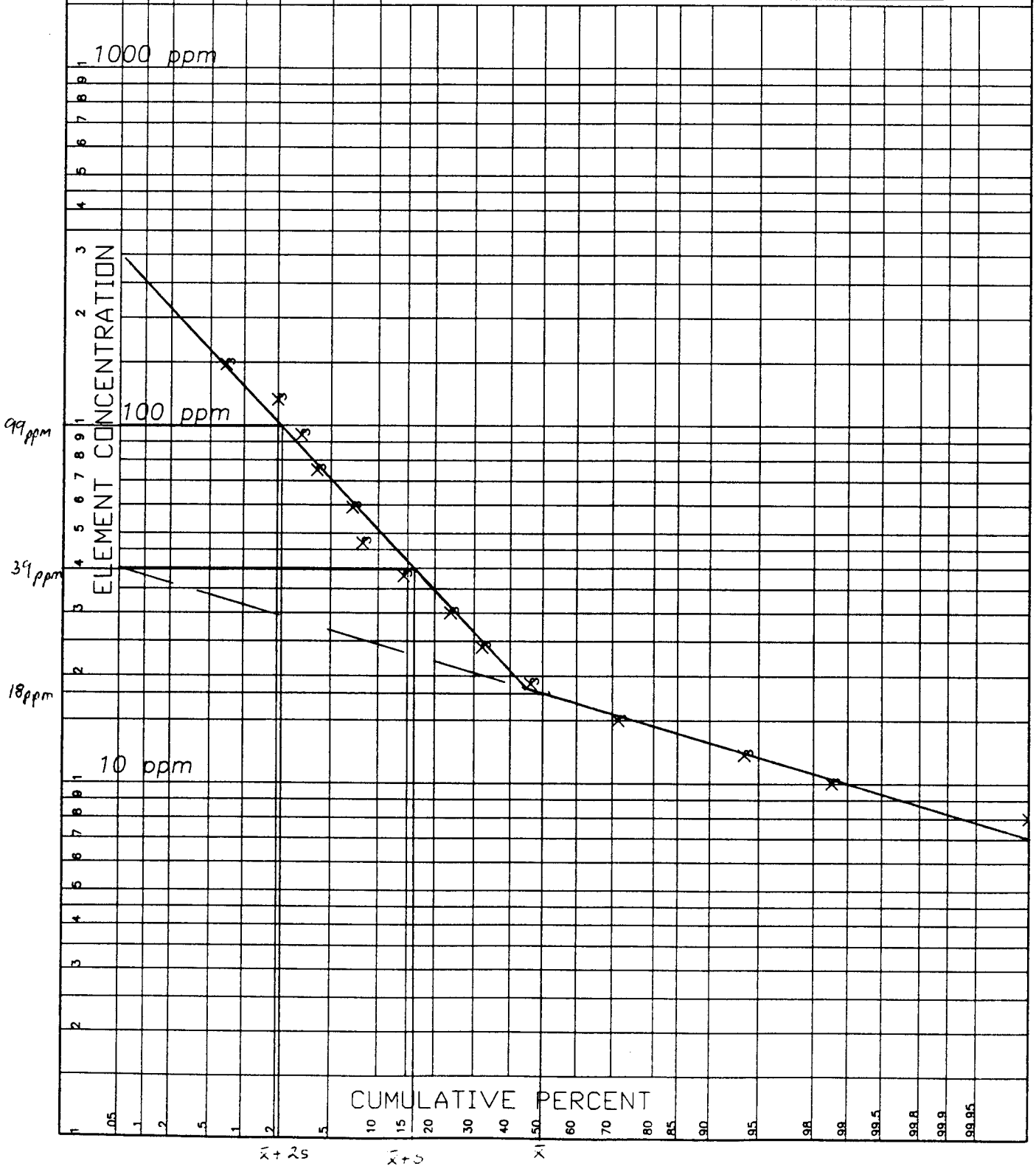
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1.27	.2	16	35	23.18
1.57	.4	5	19	12.58
1.77	.6	6	14	9.27
1.87	.8	1	8	5.30
1.97	1.0	1	7	4.64
2.07	1.2	4	6	3.97
2.17	1.6	1	2	1.32
2.27	2.0	0	1	0.66
2.37	2.4	0	1	0.66
2.47	3.0	0	1	0.66
2.57	3.8	0	1	0.66
2.67	4.8	0	1	0.66
2.77	6.0	0	1	0.66
2.87	7.6	0	1	0.66
2.97	9.4	0	1	0.66
3.07	11.8	0	1	0.66
3.17	14.8	0	1	0.66
3.27	18.8	0	1	0.66
3.37	23.6	0	1	0.66
3.47	29.6	0	1	0.66
3.57	37.2	0	1	0.66
3.67	46.8	1	1	0.66
3.77	60.0	0	0	0.00

# SLEEPING GOLD LTD.

**BULL 1 - 4 CLAIMS**  
 Soil Geochemistry Compilation  
 Log - Probability Diagram  
 Copper  
 N = 151

**EQUITY ENGINEERING LTD.**

DRAWN: Cambria Data Srv. Ltd.	MINING DIV.: Omineca	Figure:
N.T.S.: 93F/5E,6W	SCALE: Not to scale.	
DATE: August, 1992	REVISED:	



07/06/92

POND CAD SERVICES  
MAPPER-CAD SOFTWARE  
LOG-PROBABILITY TABLE (LEPeltier TABLE)  
=====

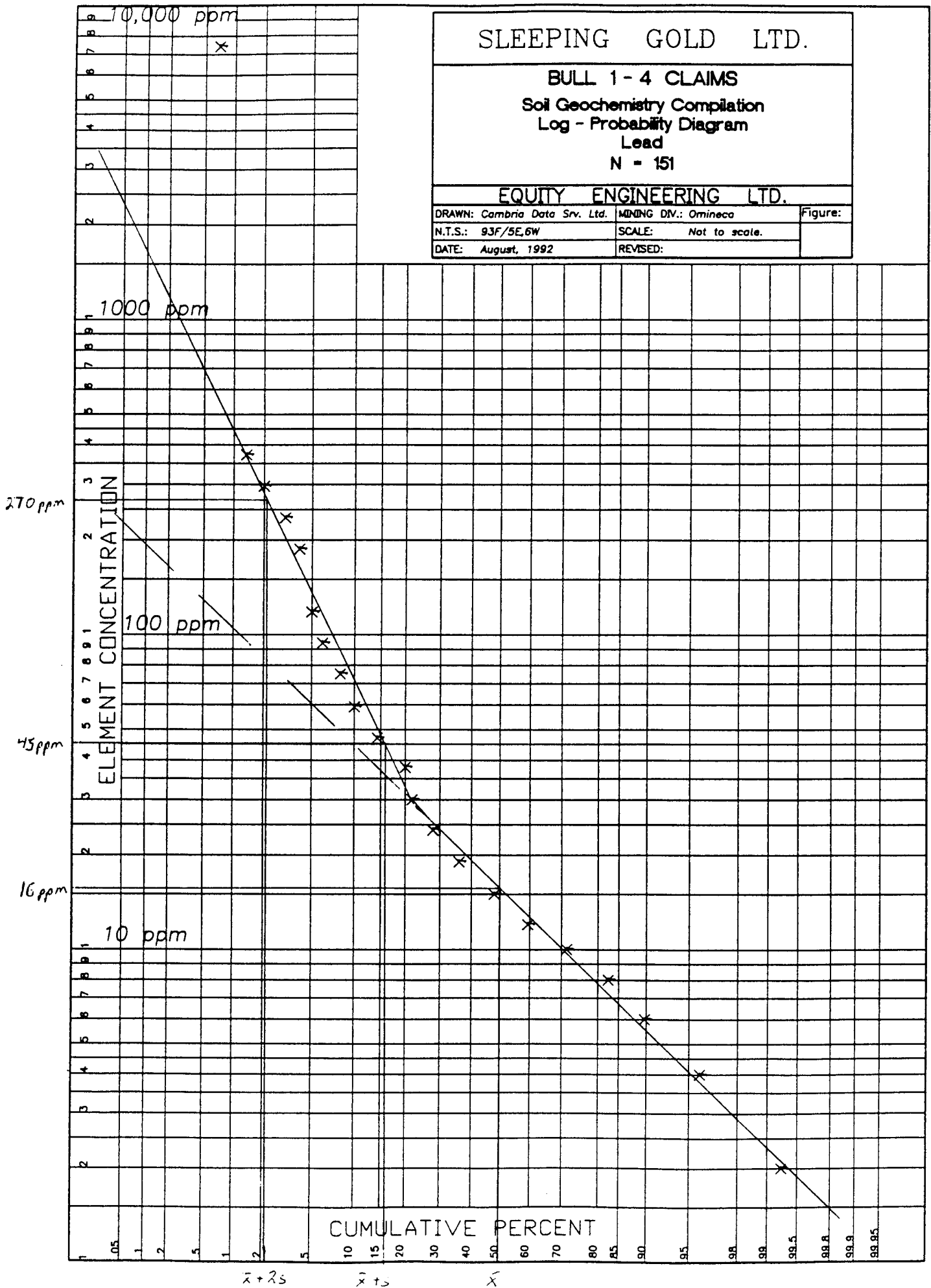
LOWER LOG LIMIT INTERVAL	LOWER CONCENTRATION LIMIT	SAMPLE POPULATION TALLY	CUMULATIVE SUM	CUMULATIVE PERCENT
-0.13	0	0	151	100.00
-0.03	1	0	151	100.00
0.27	2	0	151	100.00
0.47	3	0	151	100.00
0.57	4	0	151	100.00
0.67	5	0	151	100.00
0.77	6	0	151	100.00
0.87	8	2	151	100.00
0.97	10	6	149	98.68
1.07	12	32	143	94.70
1.17	15	44	111	73.51
1.27	19	20	67	44.37
1.37	24	13	47	31.13
1.47	30	14	34	22.52
1.57	38	9	20	13.25
1.67	47	1	11	7.28
1.77	59	4	10	6.62
1.87	75	2	6	3.97
1.97	94	1	4	2.65
2.07	118	1	3	1.99
2.17	148	1	1	0.66
2.27	187	0	0	0.00
2.37	235	0	0	0.00
2.47	296	0	0	0.00
2.57	372	0	0	0.00
2.67	468	0	0	0.00
2.77	589	0	0	0.00
2.87	742	0	0	0.00
2.97	934	0	0	0.00
3.07	1175	0	0	0.00
3.17	1480	0	0	0.00
3.27	1863	0	0	0.00
3.37	2345	0	0	0.00
3.47	2952	0	0	0.00
3.57	3716	0	0	0.00
3.67	4678	0	0	0.00
3.77	5889	0	0	0.00
3.87	7414	0	0	0.00
3.97	9333	0	0	0.00
4.07	11749	0	0	0.00

# SLEEPING GOLD LTD.

**BULL 1 - 4 CLAIMS**  
**Soil Geochemistry Compilation**  
**Log - Probability Diagram**  
**Lead**  
**N = 151**

**EQUITY ENGINEERING LTD.**

DRAWN: Cambria Data Sv. Ltd.	MINING DIV.: Omineca	Figure:
N.T.S.: 93F/5E,6W	SCALE: Not to scale.	
DATE: August, 1992	REVISED:	





POND CAD SERVICES  
 MAPPER-CAD SOFTWARE  
 LOG-PROBABILITY TABLE (LEPELTIER TABLE)

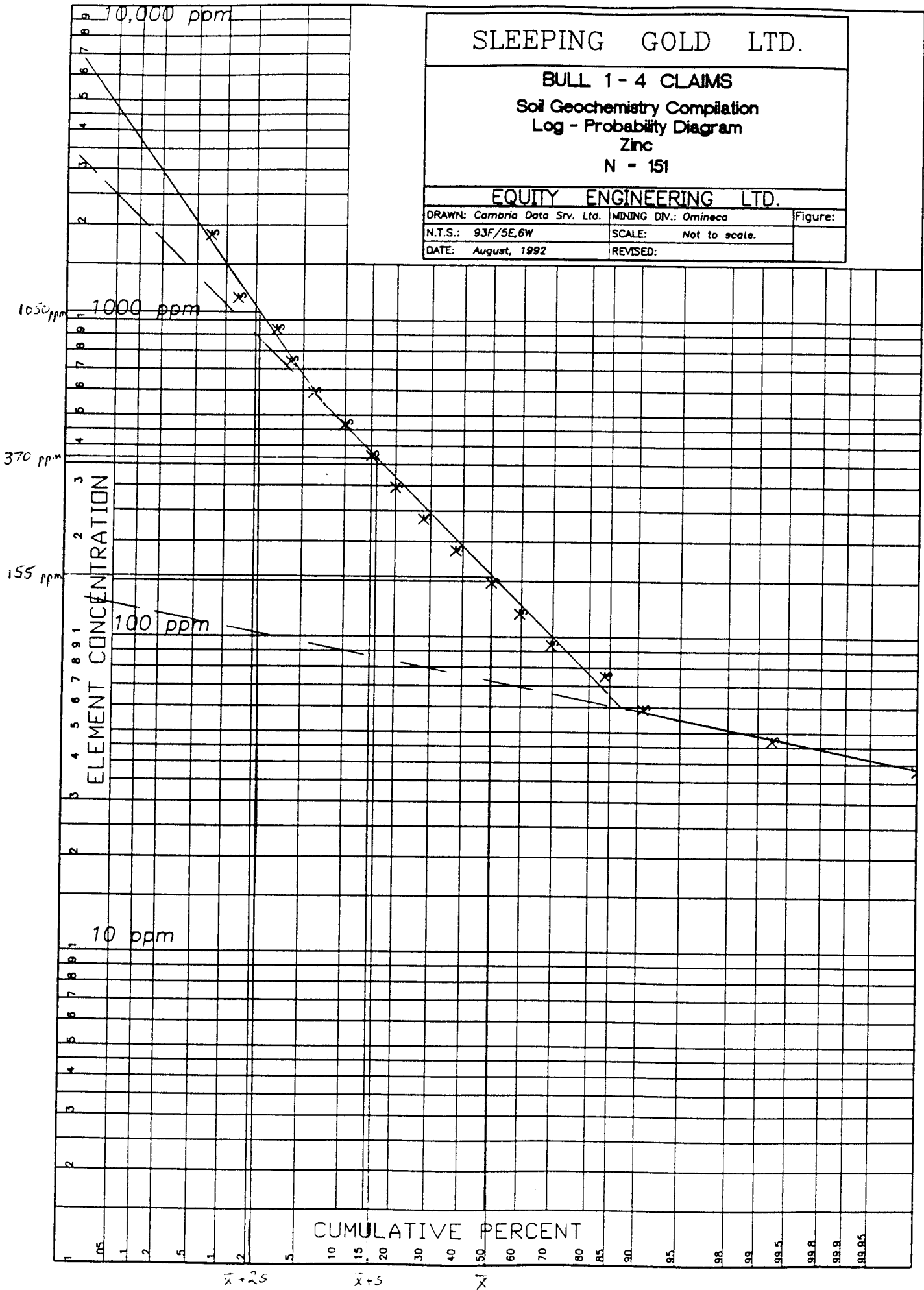
LOWER LOG LIMIT INTERVAL	LOWER CONCENTRATION LIMIT	SAMPLE POPULATION TALLY	CUMULATIVE SUM	CUMULATIVE PERCENT
-0.13	0	1	151	100.00
-0.03	1	0	150	99.34
0.27	2	5	150	99.34
0.47	3	0	145	96.03
0.57	4	8	145	96.03
0.67	5	0	137	90.73
0.77	6	11	137	90.73
0.87	8	15	126	83.44
0.97	10	20	111	73.51
1.07	12	19	91	60.26
1.17	15	18	72	47.68
1.27	19	13	54	35.76
1.37	24	8	41	27.15
1.47	30	4	33	21.85
1.57	38	9	29	19.21
1.67	47	5	20	13.25
1.77	59	3	15	9.93
1.87	75	4	12	7.95
1.97	94	1	8	5.30
2.07	118	2	7	4.64
2.17	148	0	5	3.31
2.27	187	1	5	3.31
2.37	235	1	4	2.65
2.47	296	1	3	1.99
2.57	372	1	2	1.32
2.67	468	0	1	0.66
2.77	589	0	1	0.66
2.87	742	0	1	0.66
2.97	934	0	1	0.66
3.07	1175	0	1	0.66
3.17	1480	0	1	0.66
3.27	1863	0	1	0.66
3.37	2345	0	1	0.66
3.47	2952	0	1	0.66
3.57	3716	0	1	0.66
3.67	4678	0	1	0.66
3.77	5889	0	1	0.66
3.87	7414	1	1	0.66
3.97	9333	0	0	0.00
4.07	11749	0	0	0.00

# SLEEPING GOLD LTD.

BULL 1-4 CLAIMS  
 Soil Geochemistry Compilation  
 Log - Probability Diagram  
 Zinc  
 N = 151

EQUITY ENGINEERING LTD.

DRAWN: Cambria Data Srv. Ltd.	MINING DIV.: Omineca	Figure:
N.T.S.: 93F/5E,6W	SCALE: Not to scale.	
DATE: August, 1992	REVISED:	



POND CAD SERVICES  
 MAPPER-CAD SOFTWARE  
 LOG-PROBABILITY TABLE (LEPELTIER TABLE)  
 =====

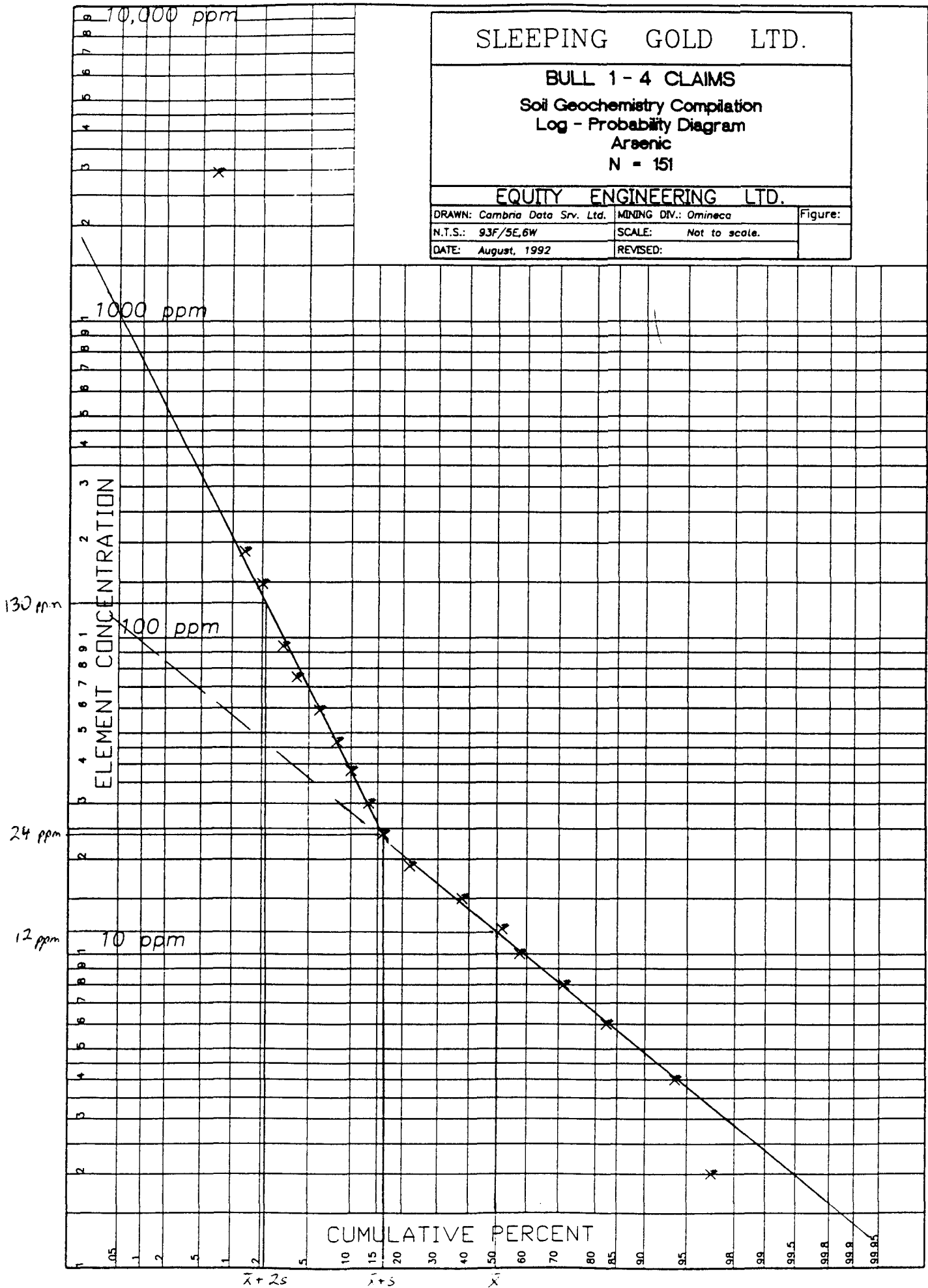
LOWER LOG LIMIT INTERVAL	LOWER CONCENTRATION LIMIT	SAMPLE POPULATION TALLY	CUMULATIVE SUM	CUMULATIVE PERCENT
-0.13	0	0	151	100.00
-0.03	1	0	151	100.00
0.27	2	0	151	100.00
0.47	3	0	151	100.00
0.57	4	0	151	100.00
0.67	5	0	151	100.00
0.77	6	0	151	100.00
0.87	8	0	151	100.00
0.97	10	0	151	100.00
1.07	12	0	151	100.00
1.17	15	0	151	100.00
1.27	19	0	151	100.00
1.37	24	0	151	100.00
1.47	30	0	151	100.00
1.57	38	1	151	100.00
1.67	47	12	150	99.34
1.77	59	10	138	91.39
1.87	75	21	128	84.77
1.97	94	16	107	70.86
2.07	118	17	91	60.26
2.17	148	19	74	49.01
2.27	187	14	55	36.42
2.37	235	12	41	27.15
2.47	296	7	29	19.21
2.57	372	7	22	14.57
2.67	468	7	15	9.93
2.77	589	2	8	5.30
2.87	742	2	6	3.97
2.97	934	2	4	2.65
3.07	1175	1	2	1.32
3.17	1480	0	1	0.66
3.27	1863	1	1	0.66
3.37	2345	0	0	0.00
3.47	2952	0	0	0.00
3.57	3716	0	0	0.00
3.67	4678	0	0	0.00
3.77	5889	0	0	0.00
3.87	7414	0	0	0.00
3.97	9333	0	0	0.00
4.07	11749	0	0	0.00

# SLEEPING GOLD LTD.

BULL 1 - 4 CLAIMS  
 Soil Geochemistry Compilation  
 Log - Probability Diagram  
 Arsenic  
 N = 151

EQUITY ENGINEERING LTD.

DRAWN: Cambria Data Srv. Ltd.	MINING DIV.: Omineca	Figure:
N.T.S.: 93F/5E,6W	SCALE: Not to scale.	
DATE: August, 1992	REVISED:	



POND CAD SERVICES  
 MAPPER-CAD SOFTWARE  
 LOG-PROBABILITY TABLE (LEPELTIER TABLE)

LOWER LOG LIMIT INTERVAL	LOWER CONCENTRATION LIMIT	SAMPLE POPULATION TALLY	CUMULATIVE SUM	CUMULATIVE PERCENT
-0.13	0	4	151	100.00
-0.03	1	0	147	97.35
0.27	2	5	147	97.35
0.47	3	0	142	94.04
0.57	4	16	142	94.04
0.67	5	0	126	83.44
0.77	6	17	126	83.44
0.87	8	21	109	72.19
0.97	10	9	88	58.28
1.07	12	24	79	52.32
1.17	15	23	55	36.42
1.27	19	8	32	21.19
1.37	24	5	24	15.89
1.47	30	5	19	12.58
1.57	38	3	14	9.27
1.67	47	3	11	7.28
1.77	59	3	8	5.30
1.87	75	1	5	3.31
1.97	94	1	4	2.65
2.07	118	0	3	1.99
2.17	148	1	3	1.99
2.27	187	1	2	1.32
2.37	235	0	1	0.66
2.47	296	0	1	0.66
2.57	372	0	1	0.66
2.67	468	0	1	0.66
2.77	589	0	1	0.66
2.87	742	0	1	0.66
2.97	934	0	1	0.66
3.07	1175	0	1	0.66
3.17	1480	0	1	0.66
3.27	1863	0	1	0.66
3.37	2345	0	1	0.66
3.47	2952	1	1	0.66
3.57	3716	0	0	0.00
3.67	4678	0	0	0.00
3.77	5889	0	0	0.00
3.87	7414	0	0	0.00
3.97	9333	0	0	0.00
4.07	11749	0	0	0.00

**APPENDIX F**

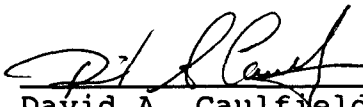
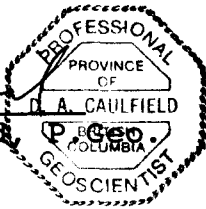
**GEOLOGIST'S CERTIFICATE**

**GEOLOGIST'S CERTIFICATE**

I, DAVID A. CAULFIELD, of 3142 Gambier Street, Coquitlam, in the Province of British Columbia, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geologist with offices at Suite 207, 675 West Hastings Street, Vancouver, British Columbia.
2. THAT I am a graduate of the University of British Columbia with a Bachelor of Science degree in Geology.
3. THAT I am a Professional Geoscientist registered in good standing with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
4. THAT this report is based on fieldwork carried out under my direction in May and June of 1992, government publications and assessment reports filed with the Province of British Columbia. I have examined the property in the field.

DATED at Vancouver, British Columbia, this 22<sup>nd</sup> day of September, 1992.

  
David A. Caulfield,  P. Geo.

**STATEMENT OF EXPENDITURES  
BULL 1-4 CLAIMS  
May 30 to June 5, 1992**

**PROFESSIONAL FEES AND WAGES:**

David A. Caulfield, P. Geo.			
7 days @ \$375/day	\$	2,625.00	
Donald McInnes, Sampler			
7 days @ \$200/day		<u>1,400.00</u>	\$ 4,025.00

**EQUIPMENT RENTAL:**

4x4 F250 Truck			
7 days @ \$80/day	\$	560.00	
Fly Camp			
14 mandays @ \$25/day		<u>350.00</u>	910.00

JOINT MOBILIZATION COSTS: (Pro-rated between three clients in the Fawnie Range Area)			2,088.80
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**CHEMICAL ANALYSES:**

Rock Geochemical Analyses			
23 @ \$15.11 each	\$	347.53	
Soil Geochemical Analyses			
152 @ \$11.83 each		1,798.16	
Assay			
1 @ 6.19		<u>6.19</u>	2,151.88

**EXPENSES:**

Materials and Supplies	\$	134.24	
Maps and Publications		98.16	
Printing and Reproductions		220.11	
Camp Food		218.26	
Barge Transportation		400.00	
Automotive Fuel		25.94	
Automotive Expenses		48.13	
Telephone Distance Charges		18.46	
Freight		67.18	
Expediting		<u>179.65</u>	1,410.13

**MANAGEMENT FEES:**

15% on expenses			534.30
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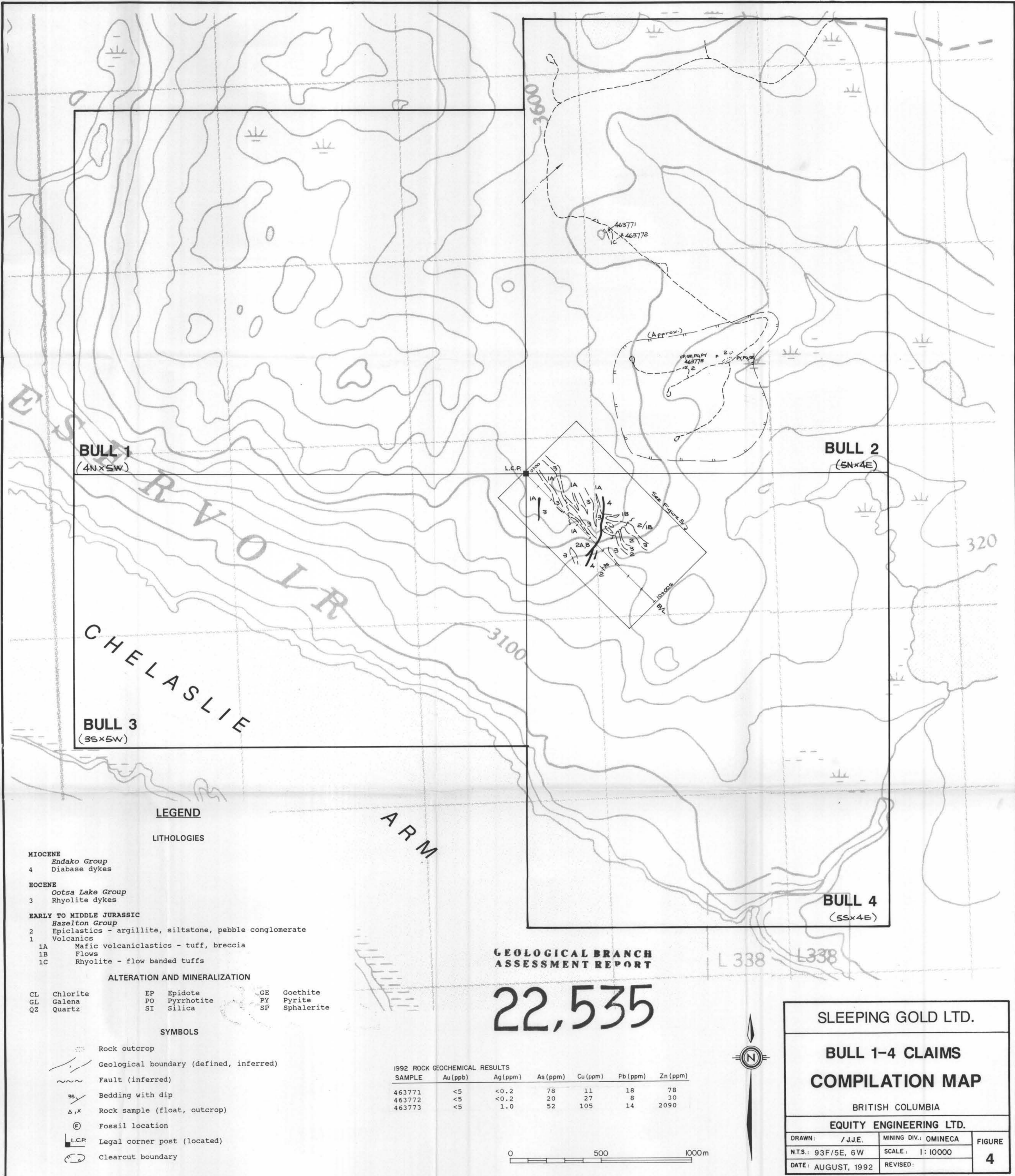
REPORT (estimated)			<u>3,000.00</u>
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SUBTOTAL:			\$ 14,120.11
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GST: 7% on subtotal			<u>988.40</u>
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TOTAL:			\$ 15,108.51 =====
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**BULL 1**  
(4N x 5W)

**BULL 2**  
(5N x 4E)

**BULL 3**  
(3S x 5W)

**BULL 4**  
(5S x 4E)

**LEGEND**

**LITHOLOGIES**

- MIOCENE**  
4 Endako Group  
Diabase dykes
- EOCENE**  
3 Ootsa Lake Group  
Rhyolite dykes
- EARLY TO MIDDLE JURASSIC**  
Hazelton Group  
2 Epiclastics - argillite, siltstone, pebble conglomerate  
1 Volcanics  
1A Mafic volcanoclastics - tuff, breccia  
1B Flows  
1C Rhyolite - flow banded tuffs

**ALTERATION AND MINERALIZATION**

- |             |               |               |
|-------------|---------------|---------------|
| CL Chlorite | EP Epidote    | GE Goethite   |
| GL Galena   | PO Pyrrhotite | PY Pyrite     |
| QZ Quartz   | SI Silica     | SP Sphalerite |

**SYMBOLS**

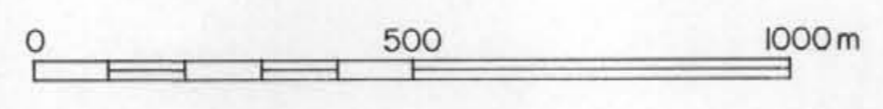
- Rock outcrop
- Geological boundary (defined, inferred)
- Fault (inferred)
- Bedding with dip
- Rock sample (float, outcrop)
- Fossil location
- Legal corner post (located)
- Clearcut boundary

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

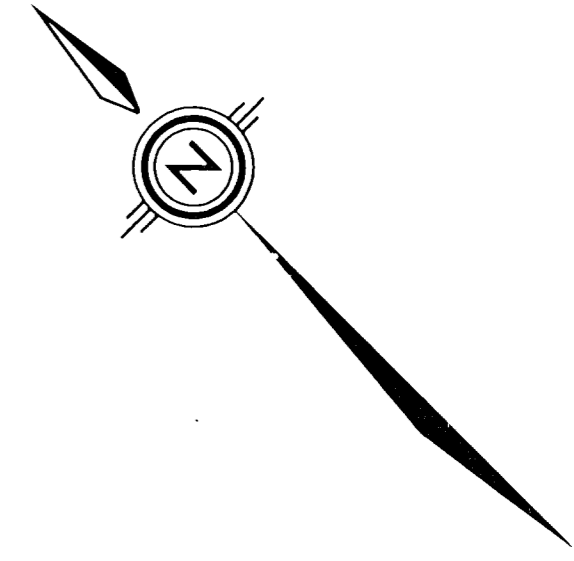
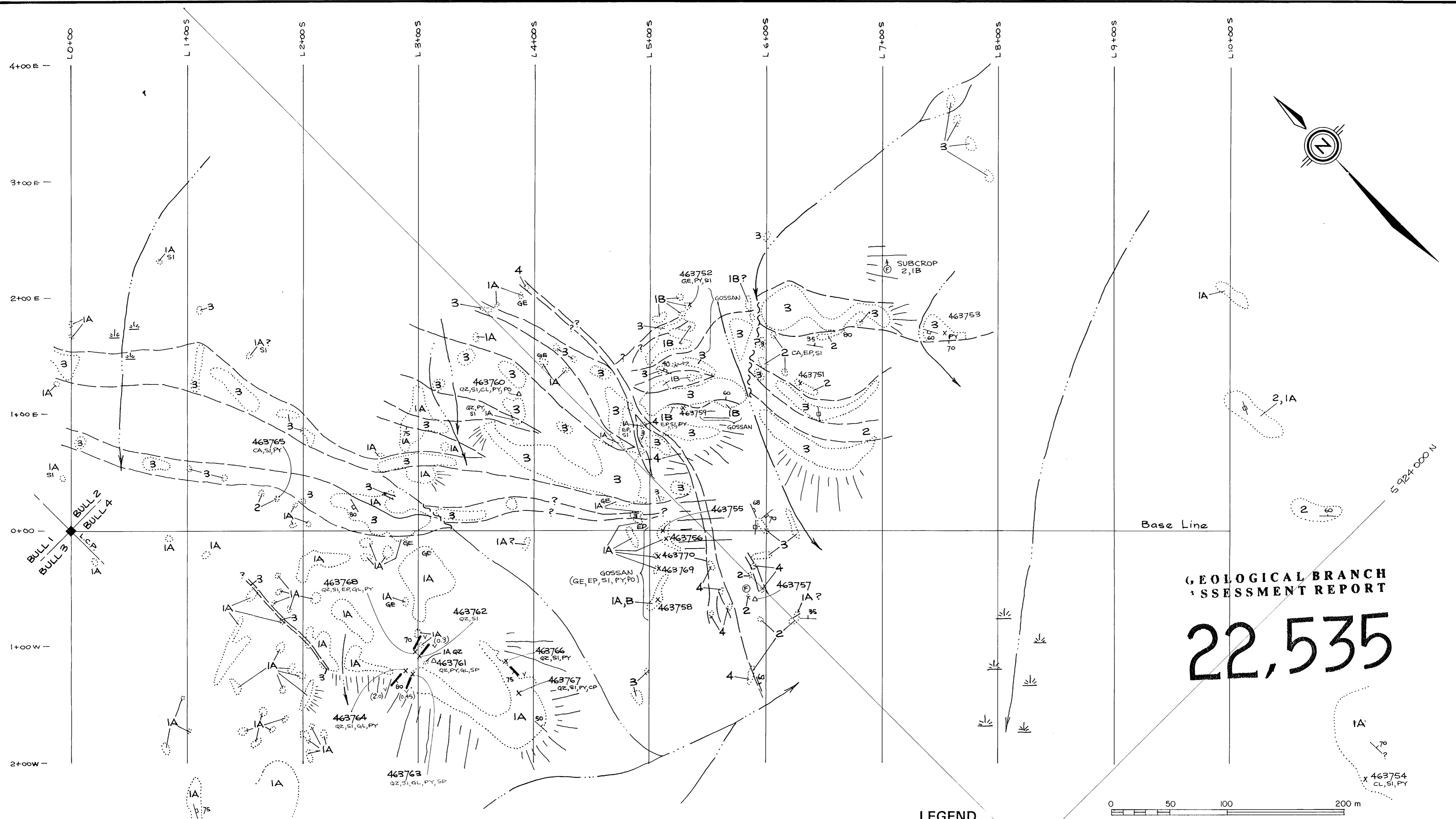
**22,535**

1992 ROCK GEOCHEMICAL RESULTS

SAMPLE	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
463771	<5	<0.2	78	11	18	78
463772	<5	<0.2	20	27	8	30
463773	<5	1.0	52	105	14	2090

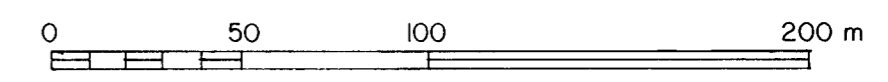


<b>SLEEPING GOLD LTD.</b>		
<b>BULL 1-4 CLAIMS COMPILATION MAP</b>		
BRITISH COLUMBIA		
<b>EQUITY ENGINEERING LTD.</b>		
DRAWN: /J.J.E.	MINING DIV.: OMINECA	FIGURE
N.T.S.: 93F/5E, 6W	SCALE: 1:10000	<b>4</b>
DATE: AUGUST, 1992	REVISED:	



GEOLOGICAL BRANCH  
ASSESSMENT REPORT

22,535



1992 ROCK GEOCHEMICAL RESULTS

Sample	Au(ppb)	Ag(ppm)	As(ppm)	Cu(ppm)	Pb(ppm)	Zn(ppm)
463751	<5	<0.2	2	26	2	48
463752	<5	0.6	12	17	6	6
463753	<5	0.2	16	6	20	36
463754	<5	<0.2	10	17	4	44
463755	<5	0.2	<2	19	20	118
463756	<5	0.4	<2	17	20	76
463757	<5	0.2	2	21	<2	78
463758	<5	1.2	54	24	144	304
463759	<5	<0.2	8	53	2	80
463760	<5	2.2	32	78	84	72
463761	21.4 g/t	186.5	440	168	3.30%	532
463762	2.1 g/t	22.0	108	10	2730	34
463763	130	13.8	116	7	710	38
463764	95	4.2	230	15	260	68
463765	10	<0.2	16	22	12	60
463766	5	0.2	20	18	10	30
463767	10	0.6	118	31	20	1225
463768	200	49.8	310	18	3230	106
463769	<5	0.4	20	19	14	52
463770	<5	0.6	8	18	8	42

SYMBOLS

- Rock outcrop
- Geological boundary (defined, inferred)
- Fault (inferred)
- Lineament
- Bedding with dip
- Joint with dip (inclined, vertical)
- Vein with dip (inclined, vertical)
- Rock sample (float, outcrop)
- Fossil location
- Legal corner post (located)
- Swamp

LEGEND

LITHOLOGIES

- MIOCENE**
  - 4 Endako Group
  - Diabase dykes
- EOCENE**
  - Ootsa Lake Group
  - 3 Rhyolite dykes
- EARLY TO MIDDLE JURASSIC**
  - Hazelton Group
  - 2 Epiclastics - argillite, siltstone, pebble conglomerate
  - 1 Volcanics
    - 1A Mafic volcanoclastics - tuff, breccia
    - 1B Flows

ALTERATION AND MINERALIZATION

- CL Chlorite
- GL Galena
- QZ Quartz
- EP Epidote
- PO Pyrrhotite
- SI Silica
- GE Goethite
- PY Pyrite
- SP Sphalerite

**SLEEPING GOLD LTD.**

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**BULL 1-4 CLAIMS  
BULL GRID GEOLOGY**

BRITISH COLUMBIA

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**EQUITY ENGINEERING LTD.**

DRAWN: /J.J.E.	MINING DIV: OMINECA	FIGURE
N.T.S.: 93F/5E	SCALE: 1:2000	<b>5</b>
DATE: AUGUST, 1992	REVISED:	