GEOLOGICAL AND GEOCHEMICAL
REPORT ON THE
MOUNT GRAVES PROPERTY
(GRAVES 1 & 2 CLAIMS)
TOODOGGONE RIVER AREA,
OMINECA MINING DIVISION, B.C.

NTS Map Quad 94E/7W
Latitude 57°23'N
Longitude 126°59'W

FOR

BLUE EMERALD RESOURCES INC.
440 - 625 Howe Street
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BY

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FEBRUARY, 1988

ARIS SUMMARY SHEET

District Geologist, Smithers Off Confidential: 89.01.26

ASSESSMENT REPORT 17326 MINING DIVISION: Omineca

PROPERTY: Graves
LOCATION: LAT 57 22 40 LONG 126 58 19
UTM 09 6361045 621942
NTS 094E07W
CLAIM(S): Graves 1-2
OPERATOR(S): Blue Emerald
AUTHOR(S): Lyman, D.A.
REPORT YEAR: 1988, 79 Pages
COMMODITIES
SEARCHED FOR: Gold,Silver,Copper,Lead,Zinc
GEOLOGICAL
SUMMARY: The claims are underlain by Lower Jurassic Hazelton Group volcanic and volcaniclastic rocks, including welded andesite and pumice lapilli breccia, andesite flows and minor intrusives. Propylitic alteration is pervasive. Mineralization, found in two zones (GWP and Yellow Rose), includes gold, silver, lead and zinc and is associated with fault-related quartz veining.
WORK
DONE: Geological,Geochemical
GEOL 500.0 ha
Map(s) - 1; Scale(s) - 1:5000,1:1250
ROCK 57 sample(s) ;ME
SILT 10 sample(s) ;ME
SOIL 116 sample(s) ;ME
RELATED
REPORTS: 10050,13458,14824
MINFILE: 094E 087

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1.0 SUMMARY

The Mount Graves property is comprised of the Graves 1 and Graves 2 claims totalling 35 units and is controlled under option agreement by Blue Emerald Resources Inc., Vancouver, B.C. The property is located in the Toodoggone River area of the Omineca Mining Division, 280 km north of Smithers, and is accessible by helicopter from Sturdee Airstrip. The Toodoggone River area is known to host epithermal gold deposits in Upper Triassic and Jurassic volcanics, and four properties, each having reserves over 100,000 tonnes, have been discovered to date. The Baker Mine, one of these properties, has produced 77,500 tonnes averaging 15.0 g/tonne Au and 297.8 g/tonne Ag.

Previous mineral exporation on the property over four field seasons had outlined a favourable geologic environment for epithermal gold deposits. Two mineralized areas, the GWP Zone and the Yellow Rose zone were trenched and sampled yielding values up to 11,000 ppb Au and 149 oz/ton Ag on the GWP and up to 0.306 oz/ton Au on the Yellow Rose.

Work performed during the 1987 program has confirmed the GWP Zone as the most promising prospect on the property. Results of trenching and mapping indicate probable extensions to the southwest and northeast. Rock chip sampling on the GWP Zone yielded values up to 3,000 ppb Au, 503 ppm Ag, 14,493 ppm Pb and 33,791 ppm Zn. Additional trenching and rock sampling was done on the Yellow Rose Zone with indications from mapping and soil sampling that similar mineralization may occur on a southeasterly extension. Four other mineralized areas were investigated. Additional information has been added to the geologic and structural framework of the proeprty.

An exploration program is recommended which would concentrate work on the GWP Zone including core drilling, additional trenching, mapping and sampling, and a geophysical survey. More limited work is recommended for other prospects.

2.0 INTRODUCTION

At the request of the directors of Blue Emerald Resources Inc., Hi-Tec Resource Management Ltd. conducted a mineral exploration program on the Graves 1 and 2 claims in the Toodoggone River Area on August 26, 1987, and from September 1 to 18, 1987. The program was confined almost exclusively to the eastern half of the Graves 1 claim where two known gold mineralized areas, the GWP zone and the Yellow Rose Zone required further definition and possible extension along strike.

Other mineral showings and gossans were investigated to complete a general assessment of precious and base metal mineralization potential. Hand trenching, soil sampling on small grids, rock chip sampling and geologic mapping were employed on the established mineralized zones. Reconnaissance mapping and sampling methods were used on other showings.

A four-man crew composed of a geologist and three geological technicians conducted the work from a camp in the southernmost cirque on the property, termed the South Bowl. A statement of costs for the 1987 program is presented in Appendix II.

2.1 Property and Ownership

The Mount Graves property consists of two contiguous claims totalling 35 units, located on 23 January 1981 for Charles Kowall and still under his ownership. The claims are currently under option by Blue Emerald Resources Inc., Vancouver, B.C. Pertinent claim information is tabulated below:

Claim Name	Record No.	Record Date	Tag No.	No. Units	Area (ha.)
Graves 1	3529	Jan. 26/81	53464	15	375
Graves 2	3530	Jan. 26/81	53465	20	500
			Totals:	**35**	**875**

Roughly 100 ha on the eastern Graves 2 claim boundary are overstaked, and the claim boundary depicted on Figures 2 and 4 excludes the overstaked ground.

Only part of the costs of the 1987 program will be required to fulfill assessment requirements for the year ending January 26, 1988. The balance of the 1987 program will be applied to subsequent years.

2.2 Location and Access

Both claims are located roughly 280 km due north of Smithers, B.C., immediately southwest of Toodoggone Lake (Figures 1 and 2). The claims lie centered on approximate geographic coordinates $57^{\circ}23'$ North latitude, $126^{\circ}59'$ West longitude, on the western edge of NTS Map quad 94E/7W.

Immediate access is by helicopter from Sturdee Airstrip 17 km northeast to Mount Graves, which is located in the center of the property.

An alternate access is via float plane directly to Toodoggone Lake at the northeast corner of the Graves 2 claim with a short helicopter ferry to the center of the claims.

During the 1987 field season, Northern Mountain Helicopters of Smithers based a Bell 206 at Sturdee Airstrip and a Hughes 500D at the Energex camp 35 km northwest of Mount Graves. Sturdee Airstrip, at an elevation of 1200 m, has a

BLUE EMERALD RESOURCES INC

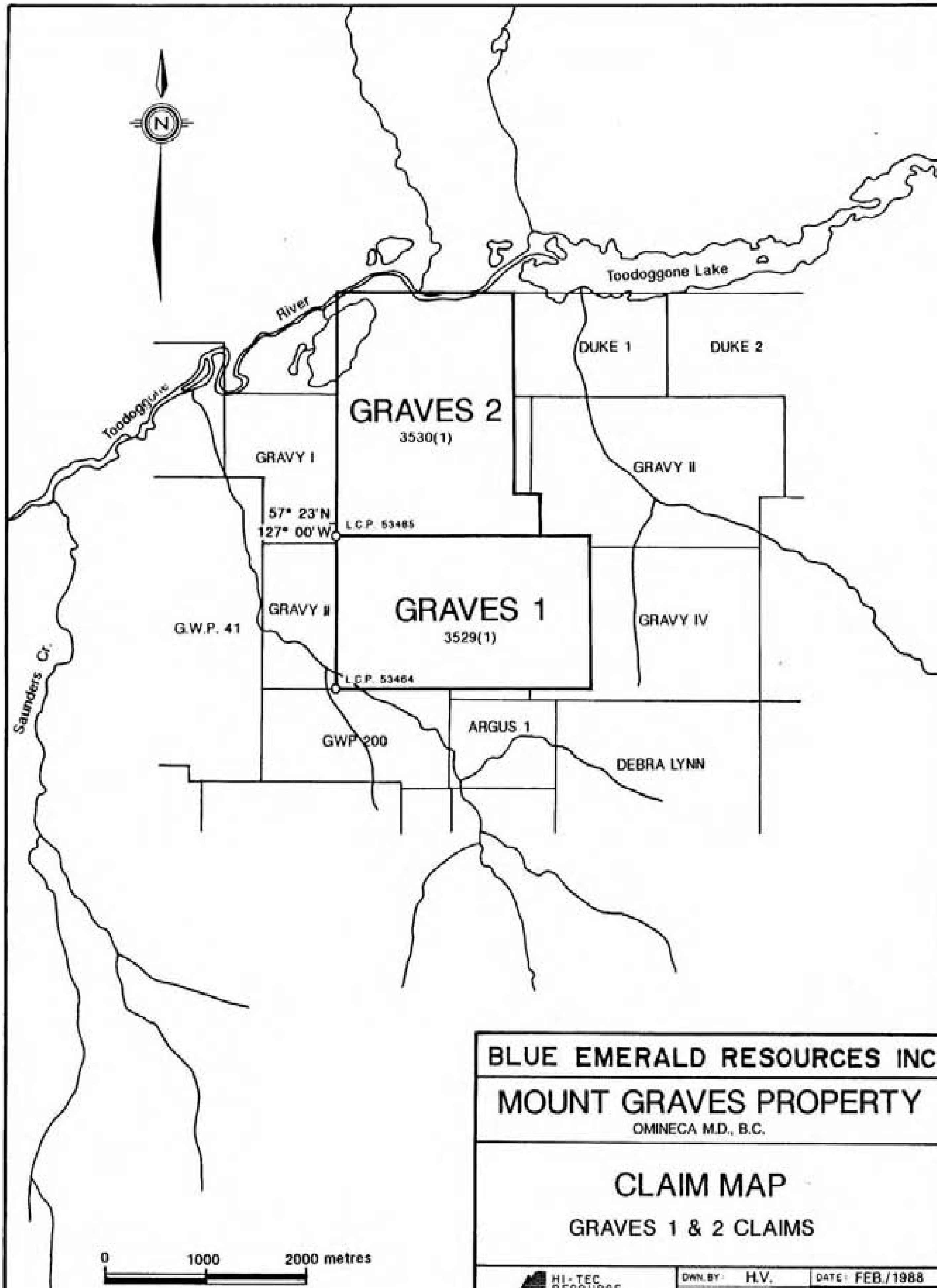
MT. GRAVES PROPERTY

OMINECA M.D., B.C.

GENERAL LOCATION MAP

GRAVES 1 & 2 CLAIMS

HI-TEC RESOURCE MANAGEMENT LIMITED	By:	Date: Nov '87
	N.T.S. 94E	Figure: 1
	Scale: see above	



BLUE EMERALD RESOURCES INC

MOUNT GRAVES PROPERTY

OMINECA M.D., B.C.

CLAIM MAP

GRAVES 1 & 2 CLAIMS

HI-TEC RESOURCE MANAGEMENT LIMITED

DWN. BY: H.V.	DATE: FEB./1988	FIGURE Nº 2
NTS M94E/7W		
SCALE: 1 : 50 000		

wide gravel surface over 1,600 m long and is suitable for landing fully-loaded cargo aircraft.

The Omineca Mining Access Road was completed to Sturdee Airstrip in mid-September 1987, opening land access from Germansen Landing 250 km northwest to the Toodoggone mining camp.

An existing access road from Sturdee Airstrip 7km northeast to the Shasta Prospect, was extended in 1987, 6 km further northeast down Jock Creek. This road construction places the nearest roadhead 9 km south from the Mt. Graves property (Figure 3).

2.3 Physiography

The main river valleys have been cut by valley glaciation to U-shaped cross sections, and the valley bottoms display hummocks and other glacial relicts. Mountainous areas are cut by V-shaped stream valleys with hanging valley remnants of recent alpine glaciation including steep cirque walls.

Much of the property is above timberline (roughly 1700 m elevation), where grasses, sedges and dwarf willow dominate. This vegetation gives way at higher elevations to mosses and lichens, and finally bare rock. The property ranges in elevation from 1150 m at the northwest corner of the Graves 2 claim in the Toodoggone River Valley to 2070 m on the summit of Mt. Graves. Horizontally-lying evergreens and scrub pine form a dense tanglefoot on some lower portions of the mountain slopes just below timberline, but give way to normal pines below 1620 m. The broad river valleys are relatively dry and support only grasses and brush.

Water sufficient for drilling is available in the northeast quadrant of the Graves 1 claim from lakes at about 1630 m elevation in the cirque east of Mt. Graves and at 1700 m elevation in the South Bowl. Drilling on the GWP zone could use snow melt from the GWP Bowl during June or early July depending on weather, thus avoiding the expense of pumping uphill from the lake.

2.4 Exploration History

The area, later to be described as the Toodoggone Gold Camp, was explored in the late 1960's for base metal deposits associated with Omineca Intrusive-driven porphyry environments, and later in the 1970's for precious metal epithermal vein-type deposits. Within a northwest-trending belt roughly 20 km wide and twice as long, four sizeable deposits have been defined, each with reserves of more than one hundred thousand tons. One of these properties, the Baker Mine, achieved production, and Cheni Gold Mines, owners of the Lawyers deposit, have scheduled the start of production for November 1988 at a rate of 550 tons per day.

A summary of these properties extracted from Schroeter & Lefebure (1987) is presented in Table 1.

The Baker Mine, Lawyers and Shasta properties lie within a 15 km arc to the south and west of Mount Graves between the Toodoggone River and Sturdee Airstrip. Discoveries of pyritic quartz veining leading to the definition of the Chappelle (Baker Mine) deposits were made by Kennco in 1969 as part of a porphyry copper exploration program (Barr, 1978). The Lawyers and Shasta properties were found in 1973 by follow-up exploration investigating northwesterly-trending regional faulting and associated alteration (Vulimiri et al., 1983, Downing & Hoffman, 1986). On the AL property, 27 km northwest of Mount Graves, Energex has

TABLE 1: Production and Reserves, Toodoggone Gold Camp

Property	Operator	Reserves Tonnes (Tons)	Grade g/Tonne (oz/Ton) Au	Ag
Baker (Chapelle)	Dupont	77,500 (85,500)	15.0 (0.44)	297.8 (8.68)
	Produced 1980-83: 1,168,175g Au (37,557 oz) 23,084,969g Ag (710,048 oz)			
"	Multinational Res. (extension of above deposit, 1986)	55,000 (60,600)	Unspecified	
Lawyers (3 zones)	Cheni Gold Mines	1,757,680 (1,937,000)	6.7 (0.196)	243.4 (7.10)
Shas	International Shasta	2,176,800 (2,400,000)	2.7 (0.079)	--
		Above reserve includes: 471,640 (520,000)	5.9 (0.172)	--
AL (3 zones)	Energex	239,500 (269,000)	8.51 (0.248)	--

operated a 6 tpd pilot mill for the last two years producing over 24,000 g Au.

The Mount Graves property was optioned by Great Western Petroleum Corp. in 1981 and reconnaissance geology and geochemistry of the Graves group of claims, plus other claims to the west and south were conducted over the next two years. The mineral showing now termed the GWP zone was discovered by this work, and returned soil values of up to 95 ppb Au and 90.5 ppm Ag, and rock values as high as 11,000 ppb Au and 7,500 ppm Ag (Caira, 1982). Based on work with Great Western, Douglas Forster completed an M.Sc. thesis that includes a regional geologic study of the southern Toodoggone River area, with a comparative economic geology analysis of eight prospects including Mount Graves. Using data from fluid inclusion analysis of mineralized rock from Mount Graves and Moosehorn Creek properties, Forster proposed a regional epithermal model that places Mount Graves at a depth favourable for hosting mixed precious and base metal deposition (Forster, 1984).

In 1984, Charles Kowall tested the gossan in the area of the Vole Peak and the head of GWP Bowl (Snowfield gossan), and possible links of the gossan to the GWP Zone, collecting soil and rock samples on cross lines and in shallow trenches. Soil samples ranged up to 280 ppb Au and 10.4 ppm Ag. Rock samples resulted in high values of 30 ppb Au and 12 ppm Ag. However, only isolated samples were anomalous and no patterns of metal zoning were detected (Kowall, 1984).

Yeager conducted assessment work in 1985 for Geostar Mining Corp. and resampled the GWP zone (Yeager and Ikona, 1986). Those rock grab samples returned gold values up to 0.170 oz/ton and silver values up to 149.21 oz/ton. Also investigated was the Yellow Rose Zone, a gossan associated with argillic alteration and quartz veining, 550 m south of the GWP Zone. Thirty meters of trenching revealed sparse quartz veining with gold values up to 0.306 oz/ton Au in a 5 cm-wide quartz vein. Lead and zinc values over 1% were also noted.

3.0 GEOLOGY

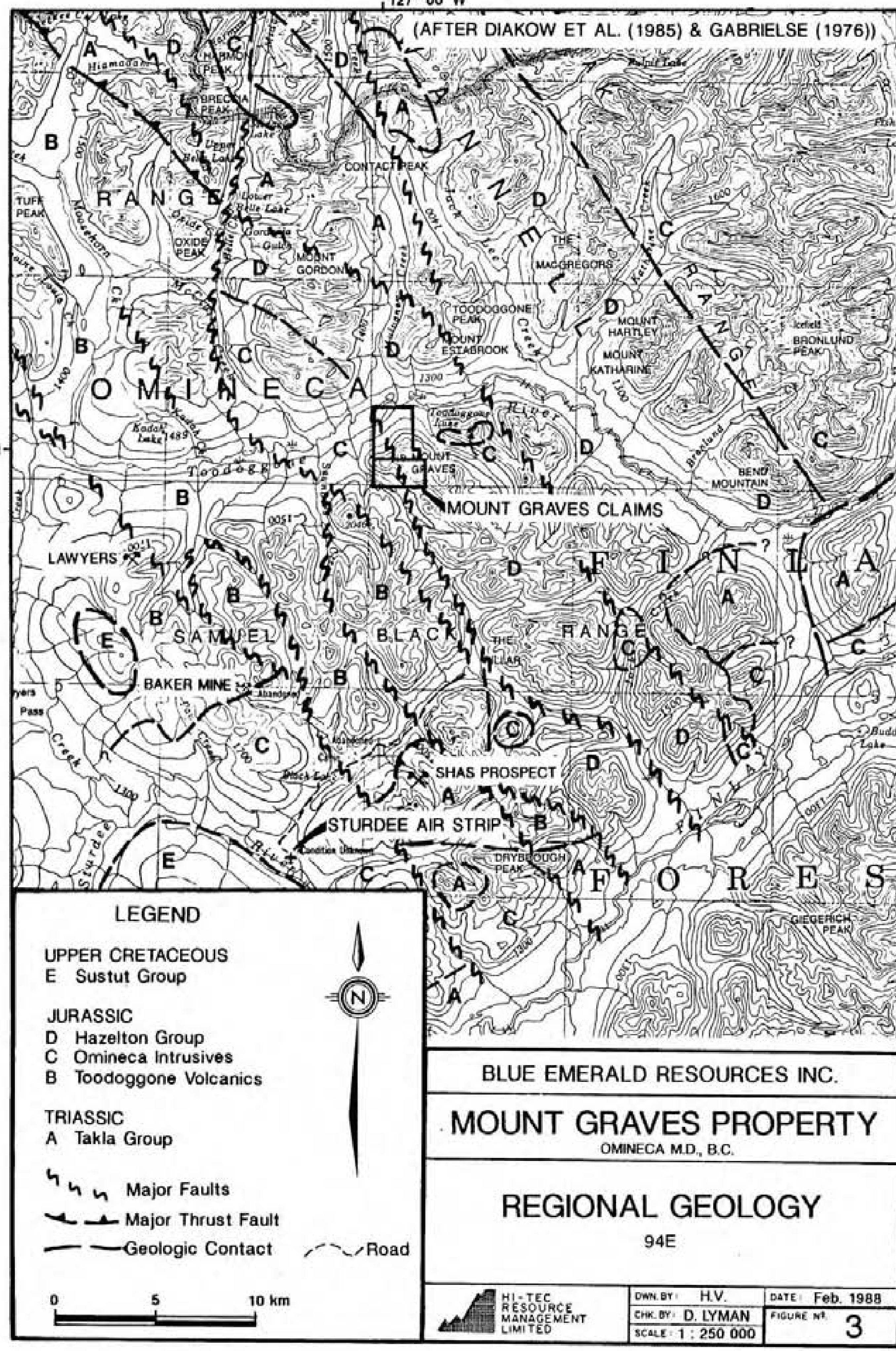
3.1 Regional Geology

The Mount Graves property lies on the eastern margin of the Intermontane Belt, a northwesterly-trending pile of volcanic rocks and related basin sediments between the Omineca Intrusives to the east and the coast Plutonic complex to the west (Figure 3). Quartz monzonite intrusive contacts are mapped on the northwest part of the Graves 1 claim and Omineca intrusives are also present to the north and east across river valleys.

The Toodoggone River area geology has been described by Carter (1972) and Schroeter (1981). Additional work by Diakow (1984) and Panteleyev (1983 and 1984) north and south of the Toodoggone River detailed stratigraphy and structure culminating in Preliminary Map 61 (Diakow et al., 1985). The oldest rocks described are Permian Asitka Group correlates mapped south of the Toodoggone River, and which consist of limestone with argillite and cherts. These rocks may actually belong to the next oldest rock unit, the Upper Triassic Takla group consisting of basaltic or andesitic flows, breccias, and tuffs.

Early to Middle Jurassic Toodoggone volcanics unconformably overlie earlier rocks and consist of well over 500 m of volcanics and volcanic-derived sediments in four divisions:

1. Lower volcanics -- dacite pyroclastics.


127° 00' W
57° 23' N
(AFTER DIAKOW ET AL. (1985) & GABRIELSE (1976))
OMINECA
RANGE
SAMUEL BLACK RANGE
FINLAY RANGE
FORES
HARMON PEAK
BRECCIA PEAK
CONTACT PEAK
TUFF PEAK
OXIDE PEAK
MOUNT GORDON
THE MACGREGORS
TOODOGGONE PEAK
MOUNT ESTABROOK
MOUNT HARTLEY
MOUNT KATHARINE
BRONLUND PEAK
MOUNT GRAVES
BEND MOUNTAIN
MOUNT GRAVES CLAIMS
LAWYERS
BAKER MINE
SHAS PROSPECT
STURDEE AIR STRIP
DRYBROUGH PEAK
GIEGERICH PEAK
LEGEND
UPPER CRETACEOUS
E Sustut Group
JURASSIC
D Hazelton Group
C Omineca Intrusives
B Toodoggone Volcanics
TRIASSIC
A Takla Group
Major Faults
Major Thrust Fault
Geologic Contact
Road
0 5 10 km
N
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
REGIONAL GEOLOGY
94E
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN. BY: H.V.
CHK. BY: D. LYMAN
SCALE: 1 : 250 000
DATE: Feb. 1988
FIGURE Nº 3

2. Middle volcanics -- acidic pyroclastics that hosted explosive brecciation along faults, followed by silicification and metal deposition.

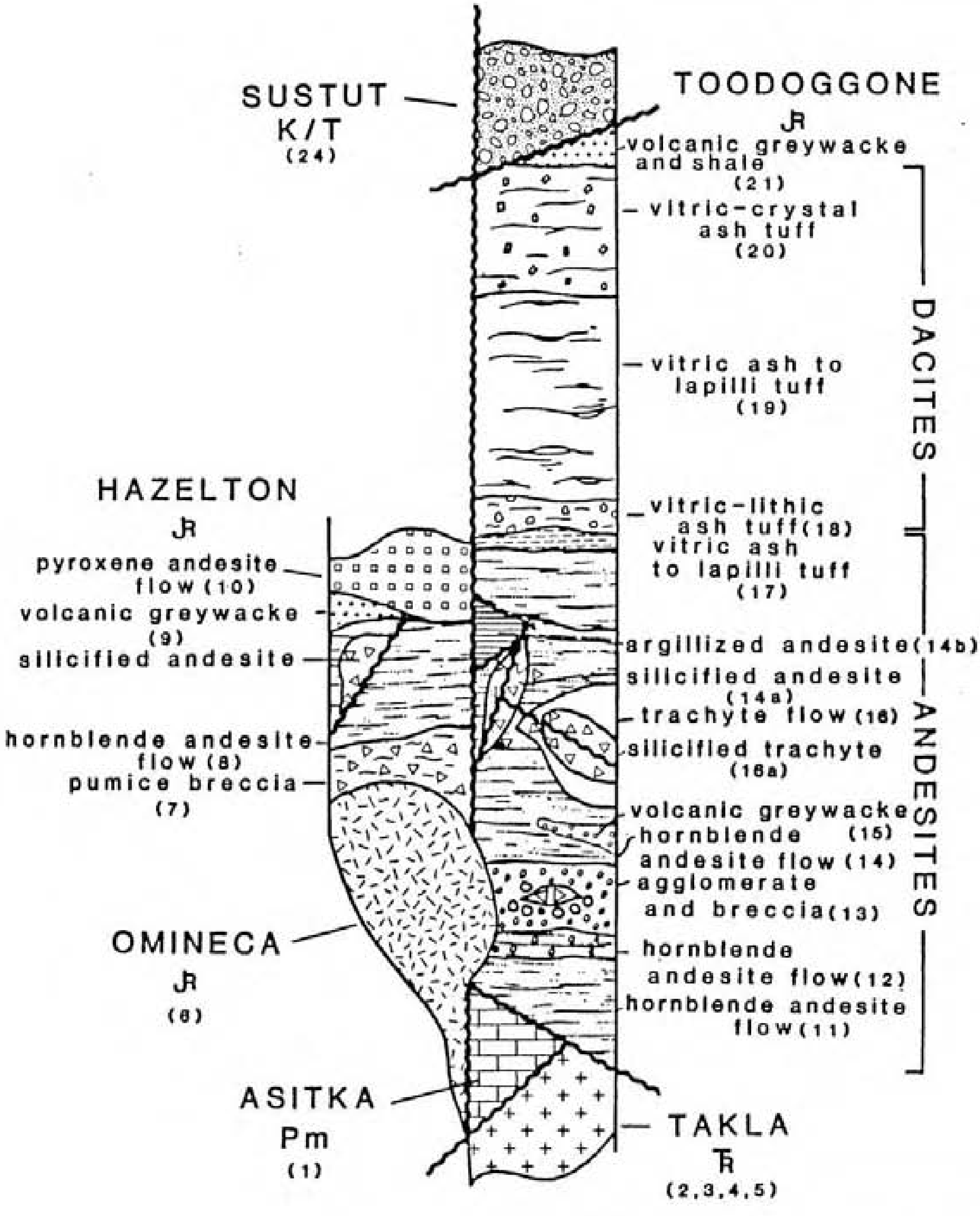
3. Upper volcanic-intrusive -- crystal tuffs and quartz-eye feldspar porphyries.

4. Upper volcanic-sedimentary -- lake and stream sediments with interbedded tuffs.

Rocks of the Early to Middle Jurassic Hazelton Group are more clearly defined south of the Toodoggone area. Toodoggone volcanics appear to be equivalent to at least one formation of the lower Hazelton Group (Telkwa Fm.) south of the Findlay River (Panteleyev, 1984). Hazelton Group volcanics occur in the region north of the Findlay River as a northwesterly-trending belt over 50 km long by 15 km wide to the northeast of the Toodoggone volcanic belt, and have been found only in fault contact with Toodoggone rocks. Both Toodoggone and Hazelton Group volcanics unconformably overlie Takla volcanics. In the area of Mt. Graves, Forster (1984) mapped Hazelton rocks as a series of andesite flows and lapilli breccias with related minor volcanic-derived sediments, all divided into four sub-units (Figure 3a).

Upper Cretaceous Sustut Group conglomerates and sandstones unconformably overlie earlier volcanics west of Sturdee Airstrip.

Volcanic centres elongated on northwesterly trends appear to be related to repeated normal block faulting episodes. Northeast over southwest thrust faulting may have been related to Omineca Intrusive emplacement in the Middle Jurassic. The relationship of volcanism and mineralization to northwesterly-trending faults and the regional geologic setting is summed up by Schroeter et al. (1986):



From FORSTER, D.B. 1984 Geology, Petrology and Precious Metal Mineralization, TOODOGGONE RIVER AREA, B.C.; University of British Columbia, M.Sc. Thesis.

BLUE EMERALD RESOURCES INC.

MOUNT GRAVES PROPERTY

OMINECA M.D., B.C.

TOODOGGONE RIVER AREA
DIAGRAMATIC COMPOSITE
STRATIGRAPHIC SECTION

HI-TEC RESOURCE MANAGEMENT LIMITED

DWN. BY:		DATE: Feb. 1988
CHK. BY:		FIGURE Nº 3a
SCALE:		

> "Potassium-rich andesitic, subaerial pyroclastic rocks form a distinctive region within the upper part of a Mesozoic island arc-back arc complex of the Intermontane Tectonic zone. The volcanic belt is extensively block faulted (with) otherwise little disruption of stratigraphy and little metamorphism above zeolite grade. No caldera development has been recognized, ... but regional subsidence (occurred) during volcanism and local grabens developed. Northwesterly trending faults with strike lengths exceeding 20 km have been outlined in the region ... Hydrothermal fluids focused along the major faults, particularly where they are intersected by local northeasterly trending structures."

The Toodoggone volcanics have been the focus of regional study because most of the defined mineral deposits occur in Toodoggone Group rocks. One of several exceptions is the Baker Mine group of deposits. The Baker Mine (Chappelle) mineralization occurs in steep-dipping northeasterly-trending quartz vein systems within a window of Upper Triassic Takla Group volcanics (Barr, 1978). These volcanics are overlain unconformably by Toodoggone volcanics and are cut by Omineca Intrusions varying in composition from granodiorite to quartz monzonite, and locally syenomonzonite. Mineralization, consisting of pyrite, chalcopyrite, electrum, argentite, bornite and sphalerite grains and blebs in brecciated quartz veining, is related to intrusive emplacement and is controlled locally by northeasterly-trending faulting.

Mineralization in the Lawyers and Shasta deposits occur in Toodoggone volcanics as native silver, electrum and sulfides in brecciated quartz veining controlled by steep-dipping northwesterly-trending faulting (Vulimiri, 1983, Downing and Hoffman, 1986).

3.2 Property Geology

The Graves 1 and 2 claims were staked primarily over Early Jurassic Hazelton Group volcanic and volcaniclastic rocks forming the eastern limb of a north-northwest trending faulted anticline (Figure 4). Forster (1984) divided these rocks into four units, which on the property dip steeply to the northeast at 50 to 80 degrees, and form Mt. Graves and adjoining ridges.

Among the Hazelton Group lower units is a welded to partly-welded andesite and pumice lapilli breccia (Unit 7) composed of 30 to 60% clasts set within a vitrified groundmass of lithic fragments, glass shards and crystals of plagioclase, biotite, hornblende and magnetite. Unit 7 was formed as a pyroclastic flow and is unsorted. The clasts range in size from 1/2 to 10 cm, and are rounded, except near the top of the unit where angular, crowded clasts occur. Colour is generally brown to maroon with a less common greenish groundmass near the top of the unit.

Grey, green to orange hornblende porphyritic andesite flows (Unit 8) may be interbedded with the above breccia unit in places. A total thickness for the flows of 425 m was estimated by Forster. Composing the resistant heights of Mt. Graves and the western slopes, this succession of medium-grained flows contain 30-50% plagioclase and hornblende phenocrysts with a similar composition groundmass. Also included in the groundmass are magnetite, hematite and volcanic glass. Some discontinuous andesite tuffs are also present in Unit 8.

Unit 9 is composed of thin, discontinuous, volcanic-derived greywacke with some laminated siltstone. Occurring only on the south shoulder of Mt. Graves at the 1970 m level, this brown to grey sedimentary unit is less than 15 m thick, and displays small scale, recumbent, epigenetic folding.

The uppermost Hazelton Group unit is a series of maroon to brown pyroxene andesite flows (Unit 10) forming resistant caps to ridges north and east of the Mt. Graves summit. Variable thicknesses of crystal and lapilli tuff and agglomerate may mark flow boundaries.

At the core of a northwest-trending anticline on the west margin of the property is an elongate quartz monzonite stock (Unit 6) in fault contact with lower Hazelton Group units. Some related steep-dipping, quartz-monzonite dikes occur on the western half of the property, mostly along northeastly to easterly-trending faults.

Quartz-feldspar porphyry dykes (Unit 22) are steep (55^{o} to near vertical), easterly dipping and trend predominantly northwesterly, subparallel to Hazelton Group bedding. Rhyolite in composition, these dykes consist of potash feldspar, quartz, plagioclase and less than 1% hornblende phenocrysts in a crypto-crystalline quartz-potash feldspar groundmass. Appearing as brown to flesh-coloured "fresh" rock, this unit was found by Forster in thin-section to display pseudomorphs of sericite and carbonate after all components. The resistant, unbroken nature of these dykes leaves them relatively impermeable, and as demonstrated on the GWP Zone, they act to confine and channel mineralizing fluids to broken or more permeable rock.

Pyroxene andesite dykes (Unit 23) are commonly mapped in the region as thin basalt or mafic dykes, and in most cases appear to post-date mineralization. However, on the lower GWP Zone, one thicker (to 2 m) dyke occurs along a mineralized fault and may itself contain mineralization. This is probably a local effect, because dykes of identical composition and orientation cutting upper GWP Zone mineralization were clearly emplaced after the mineralization. These andesite dykes contain up to 50% fine grained plagioclase and clinopyroxene phenocrysts in a plagioclase, chlorite and magnetite groundmass. Small, sparse calcite-filled amygdules are characteristic of late alteration.

Three types of faults provide the dominate structural control and, additionally, control hydrothermal systems on the Mount Graves property. First of these are the high-angle northwesterly-oriented block faults which are part of the regional fabric. The best example is the Yellow Rose Fault that persists along the entire southwestern flank of the Mount Graves ridge. Secondly, bedding-plane faults are northwesterly-trending, relatively high-angle (50 to 80), and probably closely related to block faulting. These zones are the preferred intrusive conduit for rhyolite and mafic dykes north and east of the Mount Graves ridgeline. Finally, easterly to northeasterly-trending, high angle faults crosscut northwesterly-trending structures and commonly have a right-lateral component. The mineralized Upper GWP Zone fault is one example. Quartz veining, mineralization, and varying alteration have been found associated with all three of these fault types.

3.3 Alteration and Mineralization

Forster (1984) notes that propylitic alteration in varying intensities is pervasive in all major units, and is seen in thin sections in otherwise fresh appearing rock. Typically, mafic phenocrysts are altered to chlorite and epidote with hematite or magnetite inclusions and rims. Plagioclase phenocrysts are replaced and sometimes zoned with epidote, chlorite and carbonate. Groundmasses are commonly altered to epidote, chlorite, carbonate, sericite and pyrite.

Goodall (1984) similarly noted a regional alteration facies of "propylitic to argillic" at the Shasta property. In addition, argillic to advanced phyllic and potassic to silicic alteration facies were found associated with quartz veining and brecciation on the Shasta property. At the Mount Graves prospects these last two alteration facies are either poorly defined or absent. The reasons for this are dealt with later in this section in the discussion of Mount Graves' position in a regional epithermal model.

Highly variable silicification is specifically related to fault conduits and fracture zones, and is found in increasing intensity from hairline veinlets of quartz and calcite through all intermediate stages to complete quartz flooding. Multiple movement along these zones with renewed silicification has resulted in banded and/or brecciated veins in some areas. Late stage veining, consisting of calcite with lesser zeolite and prehnite, is especially common in the propylitized margins of silicified zones.

Pyrite is commonly associated with all intensities of quartz veining as vein-fillings and disseminations especially on partly silicified, clay-altered vein margins. Weathering of pyrite results in red, orange and yellow-coloured zones of iron oxides, jarosite and manganese oxides, which invariably occur along fault and fracture zones. Stockwork and breccia zones are composed primarily of amethystine, clear, white and creamy chalcedonic quartz, with lesser calcite, siderite, hematite and barite. Forster distinguishes five successive stages of mineralization and brecciation:

1. Amethystine and white quartz with disseminated pyrite. Veins to 2.5 cm wide.

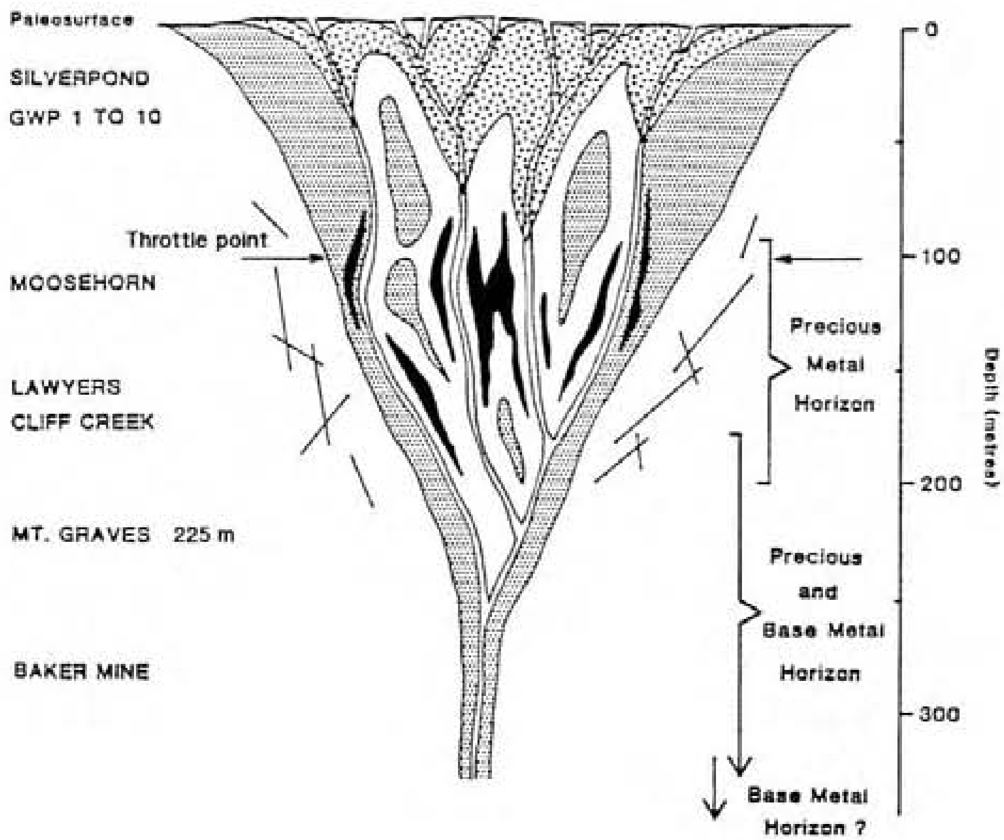
2 & 3. White quartz with minor barite, galena and sphalerite.

4. Banded chalcedonic, amethystine and white quartz with argentite (acanthite), native gold (electrum), native silver, tetrahedrite and pyrite. Veinlets commonly 0.5 cm or less wide.

5. Late stage calcite, siderite, albite and minor barite.

Forster's polished section studies revealed that native gold is associated with at least two stages of mineralization as intergrowths with pyrite, and, in addition, is associated with native silver and argentite.

Forster (1986, p. 135) also conducted a fluid inclusion analysis on mineralized rock from Mount Graves and the Moosehorn Creek property, 16 km west. Based on that study, he proposed a Toodoggone regional epithermal model (Figure 4a). This model requires a throttle point at 100 m depth to provide a best fit to temperature and pressure data. The concept of a throttle consists of a constriction in the mineralization plumbing system that is gradually closed by near-surface deposition of calcite, zeolite, clay and silica gangue minerals. This throttling down permits buildup of pressures greater than a simple hydrostatic column, just as a pressure cooker lid permits pressures greater than atmospheric pressure. A throttled system in turn allows assumption of lithostatic pressures in determining depth of formation. Samples from the GWP Zone of Mount Graves were calculated to have been formed at 225 m depth at the top of the boiling zone with temperatures ranging from 245 to 296^{o}C. Repeated breaching of the throttled system by a tectonic or hyrofracturing mechanism



HYDROTHERMAL ALTERATION ASSEMBLAGES

INTERMEDIATE TO ADVANCED ARGILLIC
kaolinite, montmorillonite, illite, dickite, alunite, fluorite

SILICIC (INCLUDES SINTER)
amethystine, chalcedonic, jasperoidal and milky quartz, barite, hematite, manganese oxide

POTASSIC
adularia, orthoclase, biotite, calcite, sericite

PROPYLITIC
epidote, chlorite, sericite, carbonate, pyrite

ZEOLITIC
laumontite, natrolite, calcite

FROM FORSTER, D.B. (1984) GEOLOGY, PETROLOGY & PRECIOUS METAL MINERALIZATION TOODOGGONE RIVER AREA; Univ. of B.C., M.Sc. Thesis.

BLUE EMERALD RESOURCES INC.

MOUNT GRAVES PROPERTY

OMINECA M.D., B.C.

REGIONAL EPITHERMAL MODEL

HI-TEC RESOURCE MANAGEMENT LIMITED

DWN BY	H.V.	DATE	Feb. 1988
CHK BY	D. LYMAN	FIGURE No	4a
SCALE			

would allow episodic boiling and thus mineral deposition, at greater depths. Forster concludes:

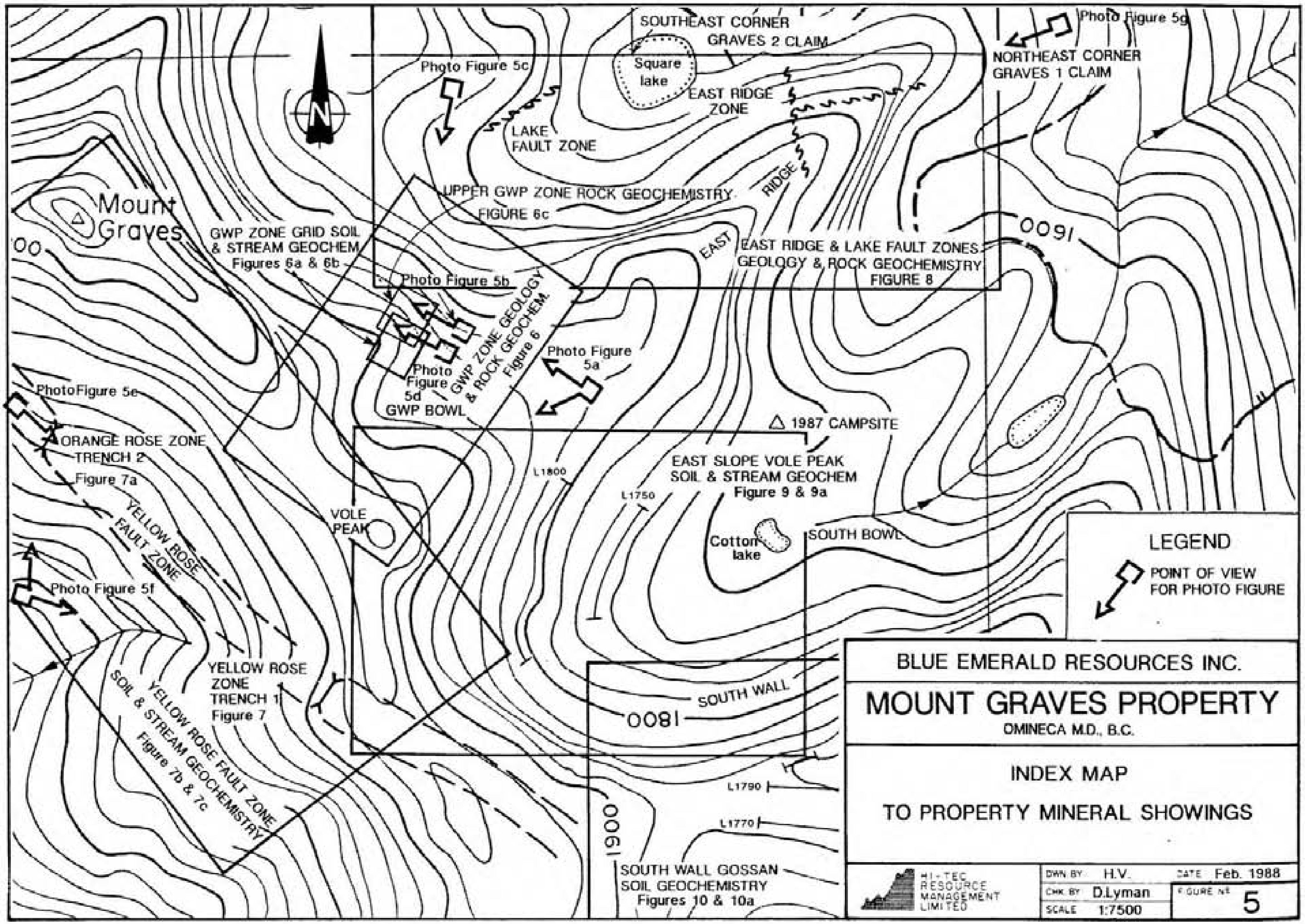
> "Boiling generally occurs near the top of the base metal horizon, in a highly mineralized zone of mixed precious and base metals... The Mount Graves prospect would have probably formed in this mixed zone, as is indicated by the presence of fluid inclusion boiling textures, and the occurrence of galena and sphalerite, as well as gold and silver."

Six separate areas are discussed in following sections of text. The location of all figures accompanying each discussion may be found on the Index Map to property mineral showings (Figure 5). Also shown on the Index Map are the location and points of view of seven photo Figures (5a through 5g) referred to in the text).

3.4 GWP Zone Geology, Alteration and Mineralization

The GWP Zone is composed of two separate but probably related showings, termed the Upper and Lower GWP Zones (Figures 5a and 6).

The Lower GWP Zone lies in a steep-dipping andesite flow forming the hanging wall of a 30 m thick rhyolite (quartz feldspar) dyke (Figures 5b and 5c). Both the mineralized andesite and the rhyolite dykes are cut by a pyroxene andesite dyke 1/2 m to 2 m thick, injected along bedding plane faulting in the andesite. Relict textures of the andesite are preserved except in sparse areas of intense silicification. Fine to medium grained disseminated pyrite composes up to 3% of the rock, especially in areas of increased quartz veining. Some trace galena is also associated with quartz veining. Limonite, jarosite and alunite crusts are present on weathered surfaces. Mineralization



N
Mount Graves
SOUTHEAST CORNER GRAVES 2 CLAIM
Square lake
Photo Figure 5g
NORTHEAST CORNER GRAVES 1 CLAIM
Photo Figure 5c
EAST RIDGE ZONE
LAKE FAULT ZONE
UPPER GWP ZONE ROCK GEOCHEMISTRY FIGURE 6c
RIDGE
EAST
1600
GWP ZONE GRID SOIL & STREAM GEOCHEM Figures 6a & 6b
EAST RIDGE & LAKE FAULT ZONES GEOLOGY & ROCK GEOCHEMISTRY FIGURE 8
Photo Figure 5b
GWP ZONE GEOLOGY & ROCK GEOCHEM Figure 6
Photo Figure 5a
Photo Figure 5d
GWP BOWL
PhotoFigure 5e
ORANGE ROSE ZONE TRENCH 2 Figure 7a
1987 CAMPSITE
EAST SLOPE VOLE PEAK SOIL & STREAM GEOCHEM Figure 9 & 9a
L1800
L1750
YELLOW ROSE FAULT ZONE
VOLE PEAK
Cotton lake
SOUTH BOWL
Photo Figure 5f
YELLOW ROSE ZONE TRENCH 1 Figure 7
SOUTH WALL
1800
YELLOW ROSE FAULT ZONE SOIL & STREAM GEOCHEMISTRY Figure 7b & 7c
L1790
L1770
1900
SOUTH WALL GOSSAN SOIL GEOCHEMISTRY Figures 10 & 10a
LEGEND
POINT OF VIEW FOR PHOTO FIGURE
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
INDEX MAP
TO PROPERTY MINERAL SHOWINGS
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY H.V.
DATE Feb. 1988
CHK BY D.Lyman
FIGURE Nº 5
SCALE 1:7500

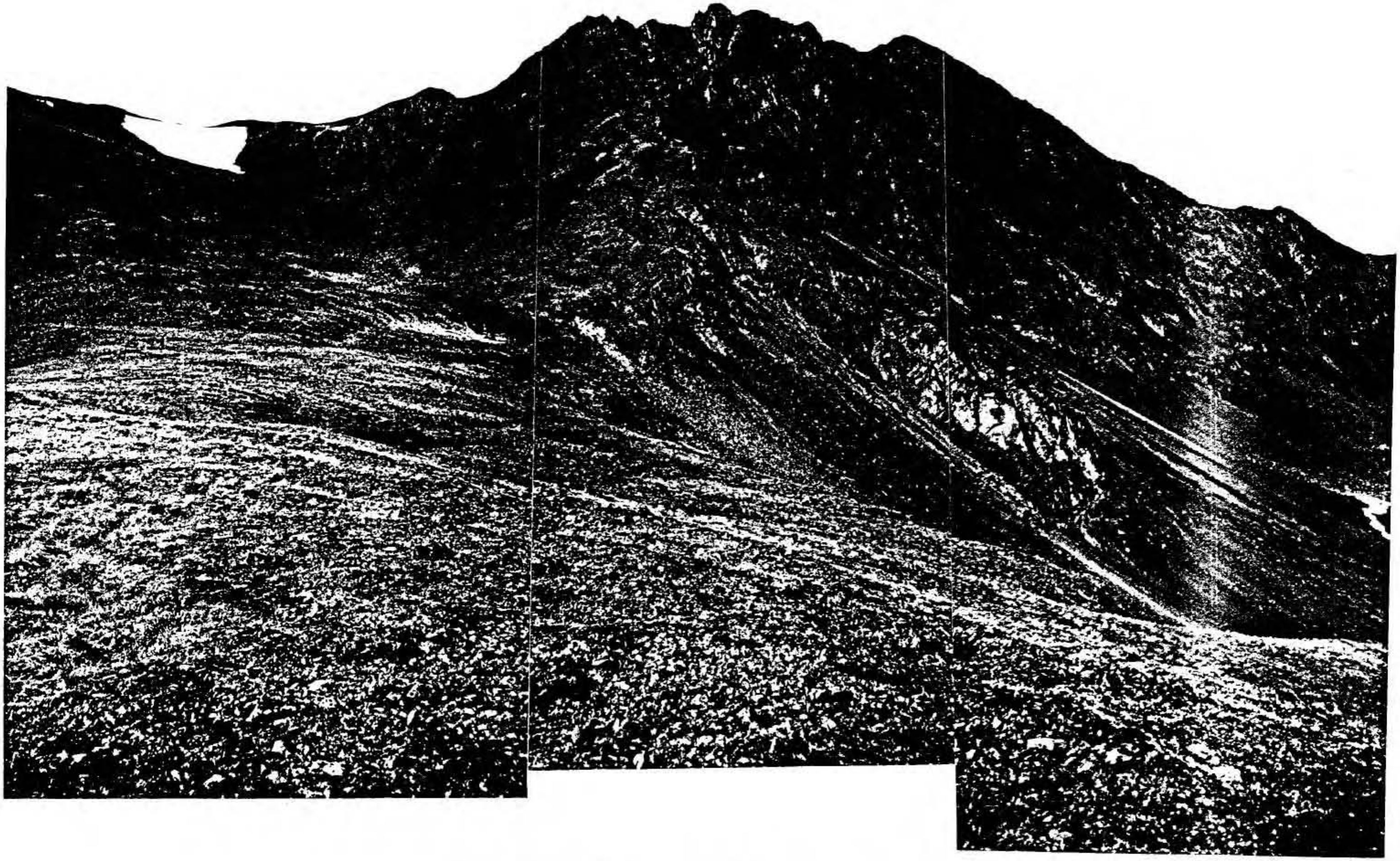


FIGURE 5a. PANORAMA OF THE UPPER AND LOWER GWP ZONES, looking west.

FIGURE 5b. LOWER GWP ZONE, looking northwest.

Note contact of mineralized andesite with rhyolite dyke on left of photo.

FIGURE 5c. GWP ZONE, looking south from hill above Square Lake.

FIGURE 5d. UPPER GWP ZONE, TRENCH 3, looking northwest.

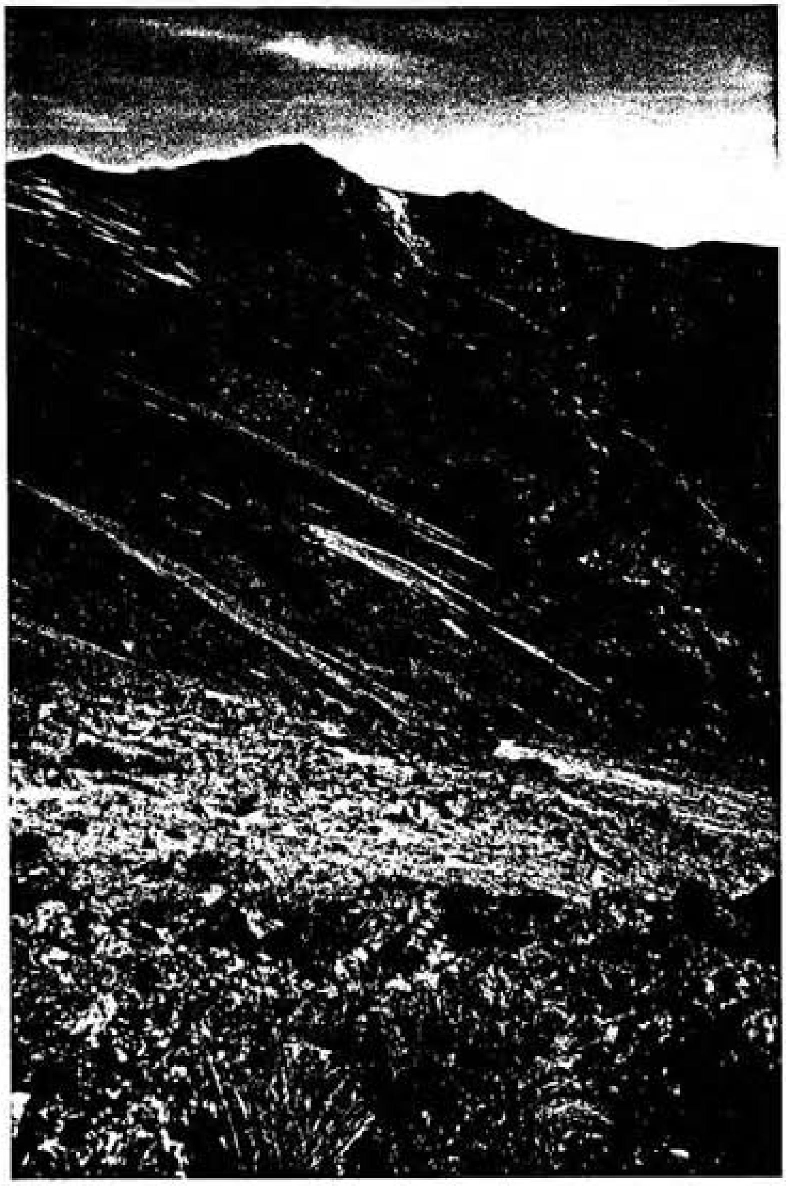


FIGURE 5e. YELLOW ROSE FAULT ZONE, looking along fault to the southeast from the Orange Rose Zone toward the Yellow Rose Zone.

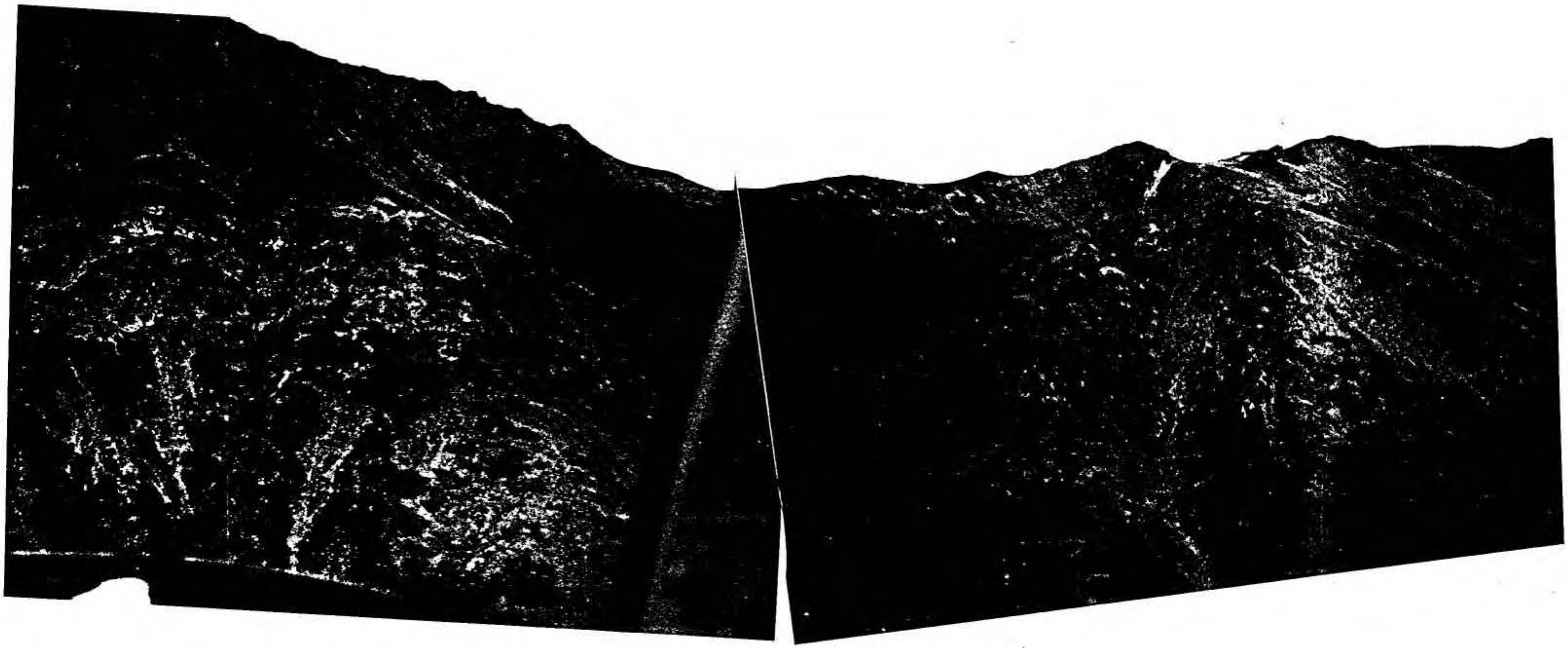


FIGURE 5f. PANORAMA OF THE YELLOW ROSE FAULT ZONE, looking east. Orange Rose Zone on the left and Yellow Rose Zone on the right.

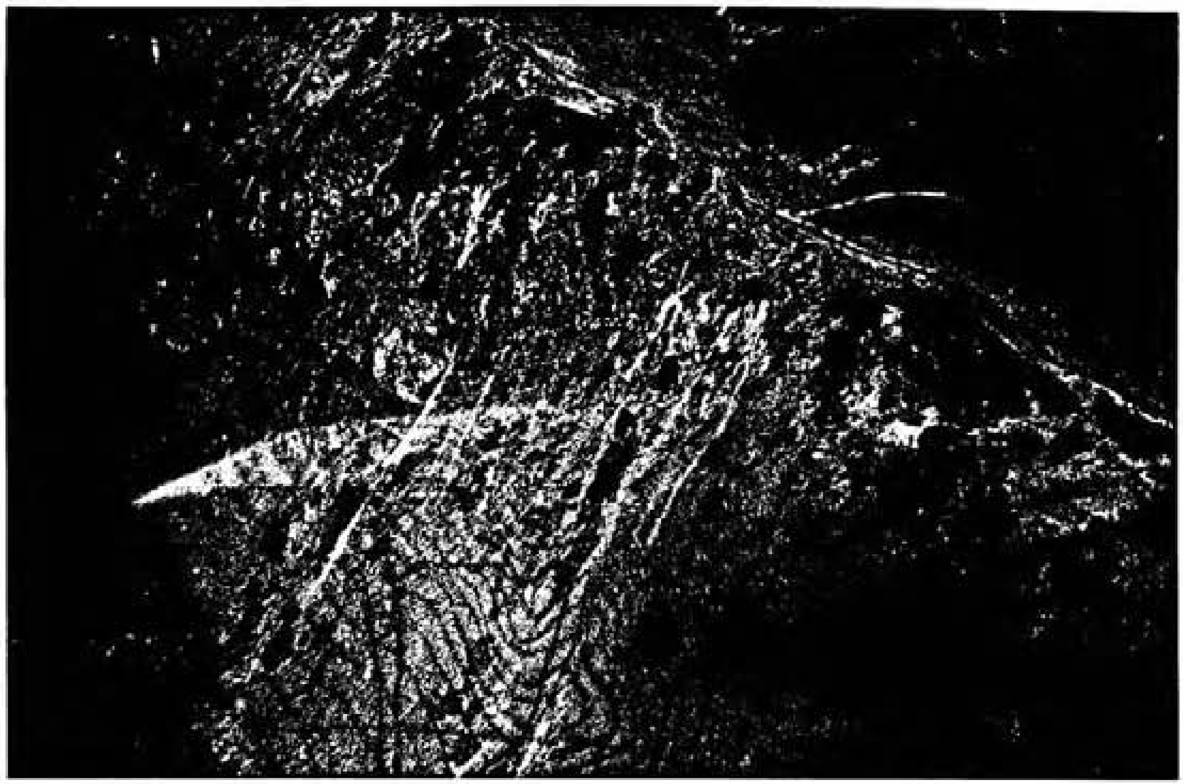


FIGURE 5g. EAST RIDGE ZONE, looking west from helicopter.

FIGURE 5h. EAST RIDGE, looking southeast from hill above Square Lake.

The East Ridge Zone is near the end of the ridge.

LEGEND

(modified from Forster, 1986)

EARLY TO MIDDLE JURASSIC
Hazelton Group

10	Maroon to brown pyroxene andesite flows, minor crystal and lapilli tuff and agglomerate between flows
10a	Green hornblende plagioclase porphyry flows
9	Brown to grey greywacke and siltstone
8	Grey to green hornblende porphyritic andesite flows, minor tan to brown andesite tuffs
8a	Maroon to purple porphyritic basalt
8b	Grey to green hornblende porphyritic andesite breccia, variable brecciation and silicification

INTRUSIVE ROCKS

TERTIARY (?)

23	Pyroxene andesite dykes (mafic dykes), calcite-filled amygdules

EARLY TO MIDDLE JURASSIC

22	Quartz-feldspar porphyry (rhyolite) dykes

Geologic contact, dashed where inferred.

Fault, queried where location uncertain

Fault with lateral movement

65 Bedding attitude with dip

70 Jointing, vertical, inclined

Outcrop

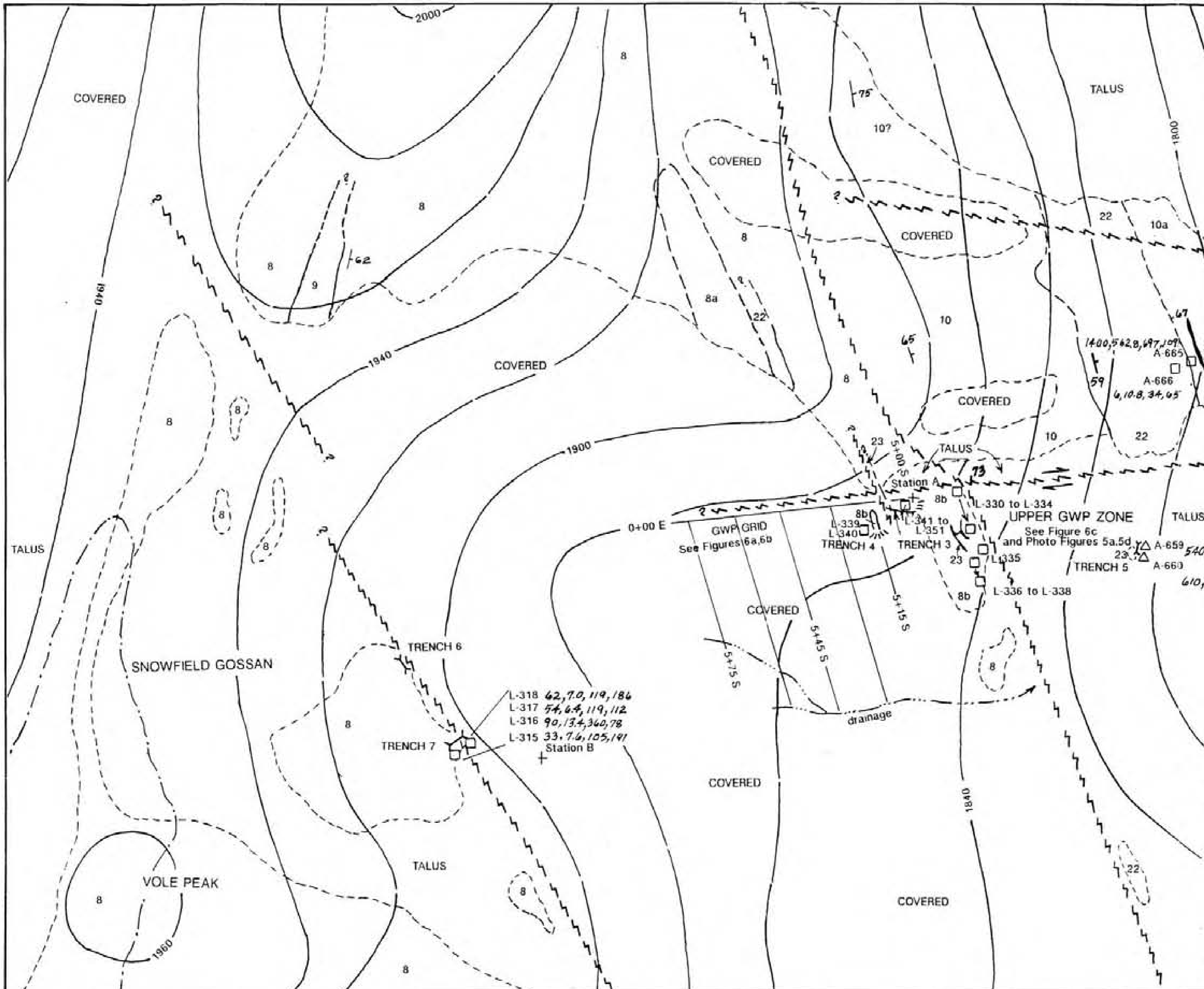
Altered area

\+ Survey point

2000 Contour, interval 20 m

A-662 □ Rock sample number and location
215, 53.0, 779, 1105 ppb Au, ppm Ag, Pb, Zn

A-659 △ Soil sample number and location
540, 79.6, 1206, 990 ppb Au, ppm Ag, Pb, Zn



BLUE EMERALD RESOURCES INC.

MOUNT GRAVES PROPERTY

OMINECA M.D., B.C.

GWP ZONE GEOLOGY AND GEOCHEMISTRY

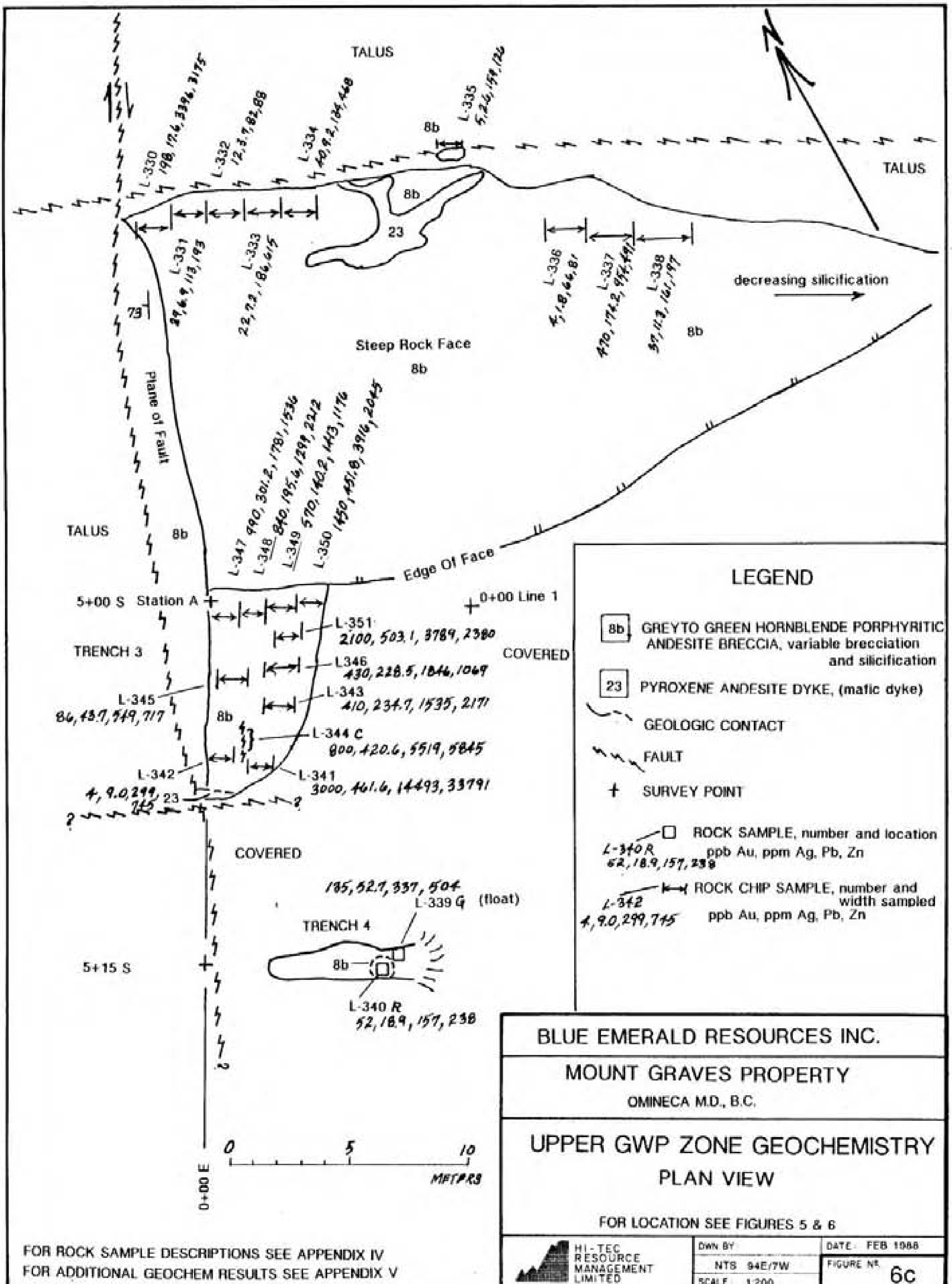
FOR LOCATION SEE FIGURE 5

HI-TEC RESOURCE MANAGEMENT LIMITED | DWN BY: | DATE FEB 1988 | NTS 94E/7W | FIGURE No 6 | SCALE 1:1250 and alteration appear to be controlled by faulting and fracturing subparallel to bedding with little brecciation noted.

The mineralization and alteration do not persist along strike but narrow and disappear just northwest of sample A-661.

The Upper GWP Zone is a steeply northwesterly-dipping fault zone at least 30 m wide striking 030^{O} (Figures 5a, 5d and 6). Movement on the fault from the evidence of striations on the hanging wall is largely right lateral. The fault zone is interbraided with highly variable silicification, brecciation and mineralization. Some small lenses (samples L-342, L-347) are more lightly silicified and retain relict andesite porphyry textures. Most of the samples in Trench 3, however have been repeatedly brecciated and silicified. The more heavily silicified rock may not necessarily contain higher precious and base metal values. Quartz vein banding is not common. Cycles of sugary quartz replacement and fine quartz veining alternate with brecciation, largely destroying relict textures. Pyrite, galena, sphalerite and tetrahedrite are found as blebs, disseminations and stringers in breccia openings. Most breccia fragments show rounding. It is important to note that rounded rhyolite dyke fragments are common. Post-mineral mafic dykes have been emplaced along faults parallel to the andesite bedding planes and cut all earlier rocks including the GWP Zone breccia.

In Trench 4 to the southwest of Trench 3, similar mineralized and altered andesite has been found under 3 m of overburden, indicating a probable extension to the southwest (Figures 6 and 6c). The northeasterly extension of the Upper GWP Zone lies under talus cover probably exceeding 3 m. The only outcrop along the extension is a small mafic


TALUS
L-330 198, 17.6, 3396, 3175
L-331 39, 6.9, 113, 193
L-332 12, 3.7, 82, 88
L-333 22, 7.2, 186, 615
L-334 40, 9.2, 184, 468
L-335 5, 2.6, 158, 126
8b
23
L-336 4, 1.8, 66, 81
L-337 470, 174.2, 954, 491
L-338 37, 11.3, 161, 197
TALUS
decreasing silicification
Steep Rock Face
8b
Plane of Fault
73
TALUS
L-347 990, 301.2, 1781, 1536
L-348 840, 195.6, 1298, 2212
L-349 570, 140.2, 1413, 1176
L-350 1650, 451.8, 3916, 2045
Edge Of Face
5+00 S
Station A
0+00 Line 1
TRENCH 3
COVERED
L-351 2100, 503.1, 3789, 2380
L346 430, 228.5, 1846, 1069
L-345 86, 43.7, 549, 717
L-343 410, 234.7, 1535, 2171
L-344 C 800, 420.6, 5519, 5845
L-342 4, 9.0, 299, 745
L-341 3000, 461.6, 14493, 33791
COVERED
185, 52.7, 337, 504
L-339 G (float)
TRENCH 4
5+15 S
L-340 R 52, 18.9, 157, 238
0 5 10
METRES
0+00 E
LEGEND
8b GREY TO GREEN HORNBLENDE PORPHYRITIC ANDESITE BRECCIA, variable brecciation and silicification
23 PYROXENE ANDESITE DYKE, (mafic dyke)
GEOLOGIC CONTACT
FAULT
SURVEY POINT
L-340 R 52, 18.9, 157, 238 ROCK SAMPLE, number and location ppb Au, ppm Ag, Pb, Zn
L-342 4, 9.0, 299, 745 ROCK CHIP SAMPLE, number and width sampled ppb Au, ppm Ag, Pb, Zn
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
UPPER GWP ZONE GEOCHEMISTRY
PLAN VIEW
FOR LOCATION SEE FIGURES 5 & 6
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY:
NTS 94E/7W
SCALE: 1:200
DATE: FEB 1988
FIGURE Nº 6c
FOR ROCK SAMPLE DESCRIPTIONS SEE APPENDIX IV
FOR ADDITIONAL GEOCHEM RESULTS SEE APPENDIX V

dyke. Trench 5, dug along that dyke, is less than 1.5 m deep and did not cut additional bedrock. Two soil samples (L-659, L-660) taken in Trench 5 were anomalous in gold and silver as may be expected downslope from the Upper GWP showing.

The question of the relationship between the Upper and Lower GWP Zones remains open because of the lack of evidence in the field. However, the presence of altered rhyolite dyke fragments in the Upper Zone suggests that the northeasterly extension does indeed cut through the rhyolite dyke between the Upper and Lower Zones.

3.5 Yellow Rose Fault Zone Geology

The Yellow Rose Fault Zone, with an exposed length of roughly 2 km, is one of the most persistent structures found on the Mount Graves property (Figures 4, 5e and 5f). Air photos most clearly show the northwesterly striking trace of a broadly arcuate, near vertical fault inclined steeply to the southwest. On the extreme northwest ridge of Mount Graves, the fault pinches to less than 10 m wide and is associated with only scattered quartz and calcite veins. However, on the Orange Rose and Yellow Rose gossans, the fault zone is over 30 m wide with associated argillic and lesser quartz-pyrite alteration. One additional gossanous area occurs along the length of the fault in the headwall of the South Bowl, and may be related to the Yellow Rose Gossan. This relation is discussed further in the Geochemistry chapter.

In Trench 1 on the Yellow Rose Zone, sparse, thin and largely barren, clear quartz veining, cuts broken, clay-altered andesite on the explosed hanging wall (southwest). An additional 5 m length of shattered, increasingly clay-altered andesite was excavated further into the fault zone to the northeast during the 1987 program (Figure 7). Thin, sparse quartz veining with little or no sulfides persists in the newly sampled part of Trench 1. With the exception of thin pyritic silicified andesite lenses found in rubble on the northeast side of the fault and a few rusty vein selvages, very little pyrite is available to be oxidized on the Yellow Rose Zone gossan.

In contrast, the Orange Rose Zone contains lenses of moderately to heavily silicified andesite varying from a few centimeters to 2 m thick with up to 5% disseminated pyrite (Figure 7a). Most of the fault is clay altered, ranging from shattered, in-place rock with clay rims to thick gouge. Nowhere along the Yellow Rose Fault Zone was there found the repeated brecciation and silicification associated with the GWP Zone.

3.6 East Ridge and Lake Fault Zone Geology

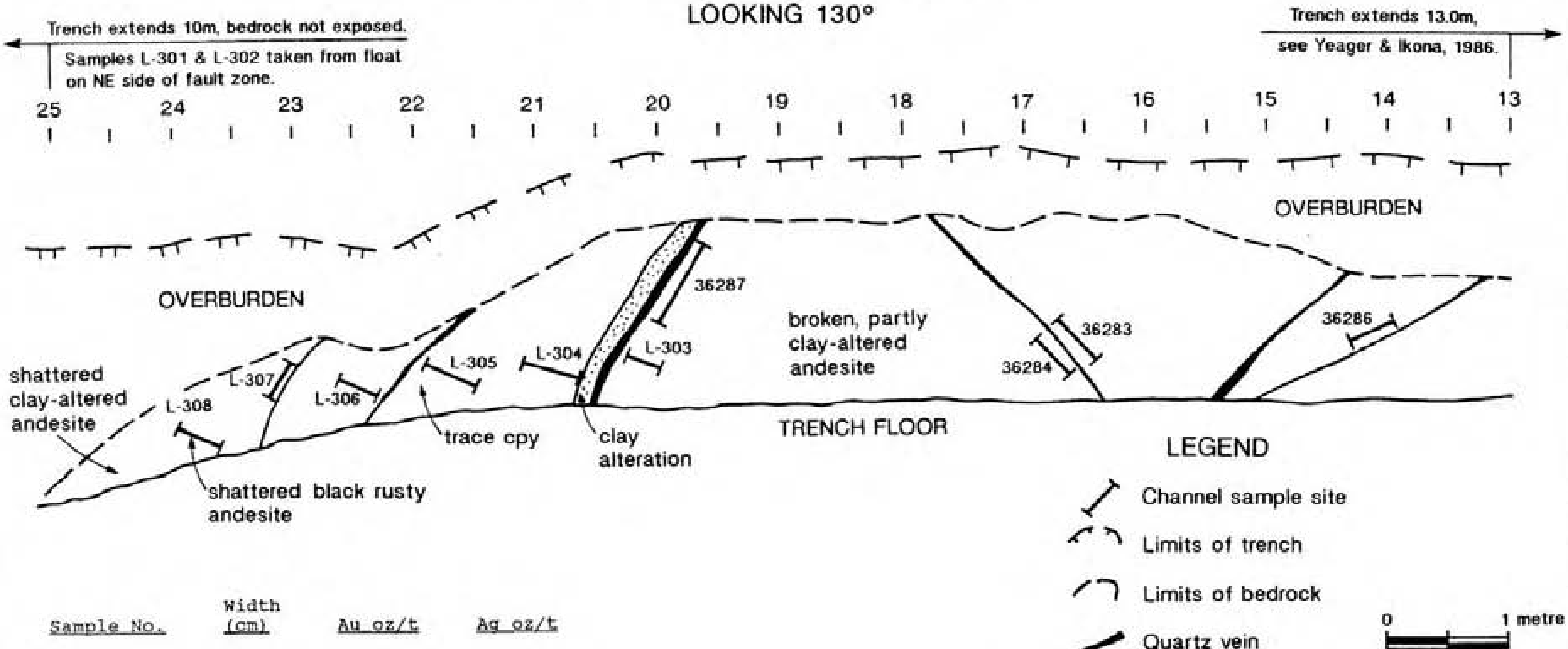
The East Ridge Zone is a discontinuous series of gossanous areas associated with steep faults cutting moderately easterly-dipping andesite flows, and also with permeable beds between flows. Figure 5g is an oblique aerial photo looking toward the west at the East Ridge Zone. The orange and yellow gossans, such as those in the photo, were sampled by Great Western Petroleum geologists with low, erratic precious and base metal values (Caira, 1982).

Sampling during the 1987 program was confined to rocks along the main ENE-trending fault which pinches and swells along its short exposed length (Figure 8). Four samples were taken in an area of argillic alteration up to 20 m wide. The highest precious metal values were associated with thin quartz-pyrite altered lenses. Calcite veining is common on the periphery of gossanous areas. Several meters downhill an agglomerate up to 4 m thick is exposed that is

FACE MAP OF TRENCH 1 BACKWALL

LOOKING 130°

NE | SW



Sample No.	Width (cm)	Au oz/t	Ag oz/t
36283	10	< .003	.01
36284	3	< .003	.02
36286	10	.050	.11
36287	5	.306	.05

(from Yeager and Ikona, 1986)

Sample No.	Width (cm)	Au ppb	Ag ppm	Cd ppm	Pb ppm	Zn ppm
L-301	float	29	0.8	55.9	695	4651
L-302	float	238	0.9	25.6	1721	1124
L-303	30	16	0.6	54.4	213	3085
L-304	50	9	0.3	188.7	163	4932
L-305	50	11	0.5	28.8	3554	1364
L-306	45	6	0.3	36.0	128	1864
L-307	1-2	960	0.6	7.0	899	400
L-308	40	4	0.3	16.1	500	689

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MOUNT GRAVES PROPERTY

OMINECA M.D., B.C.

YELLOW ROSE ZONE

TRENCH 1 PROFILE

FOR LOCATION SEE FIGURE 5

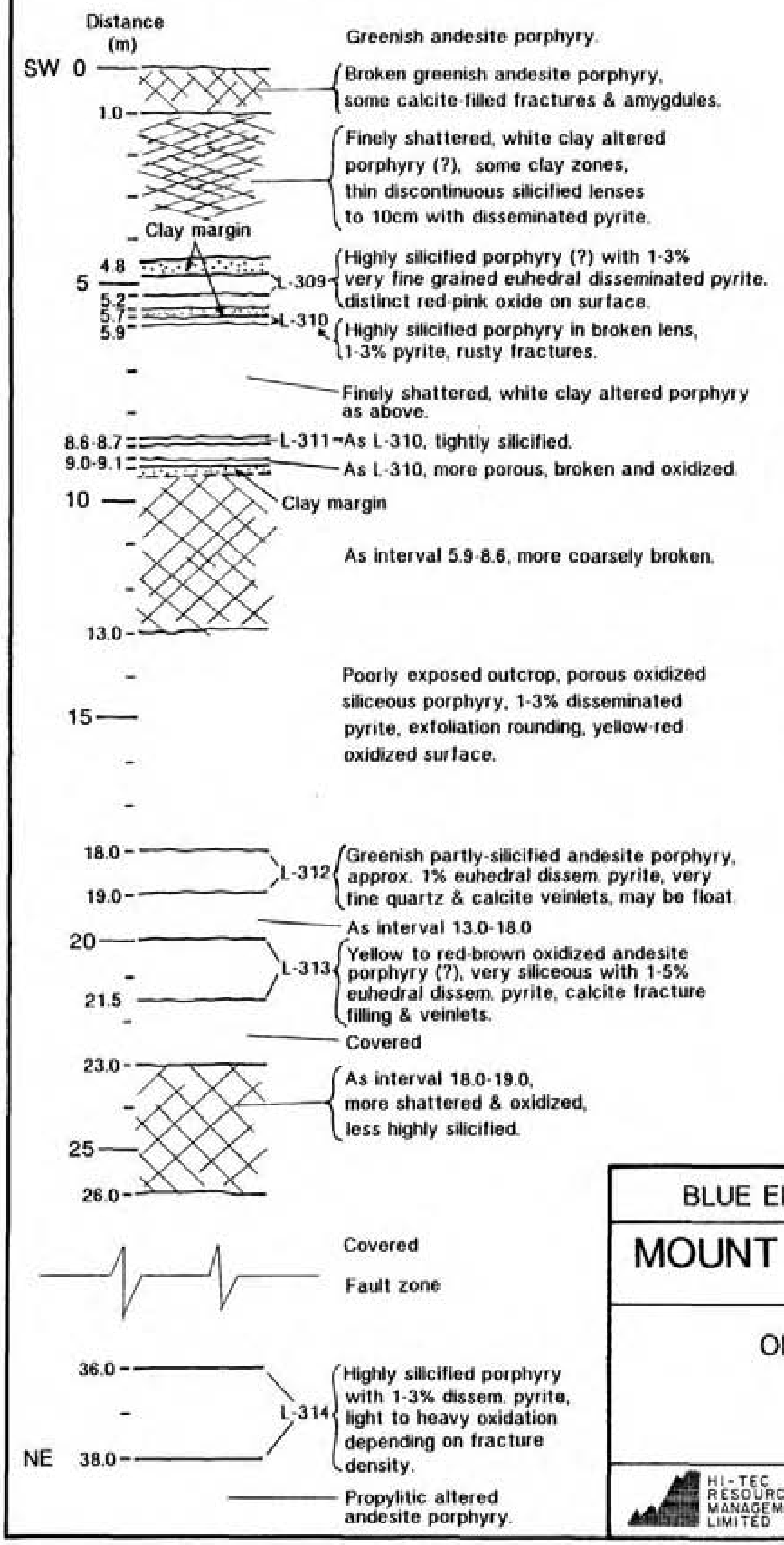
HI-TEC RESOURCE MANAGEMENT LIMITED

DWN. BY	H.V.	DATE	Feb. 1988
CHK. BY	D. Lyman	FIGURE No.	7
SCALE	1 : 50		

TRENCH 2 PLAN MAP

Trench aligned 021°

For location see Figure 5



Sample no.	L-309	L-310	L-311	L-312	L-313	L-314
Width (cm)	40	20	10	float	150	200
Au ppb	12	6	5	6	11	23
Ag ppm	0.7	0.8	2.9	0.8	1.0	0.7
Pb ppm	83	93	159	40	42	45
Zn ppm	92	75	36	126	49	26

0

5 metres

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MOUNT GRAVES PROPERTY

OMINECA M.D., B.C.

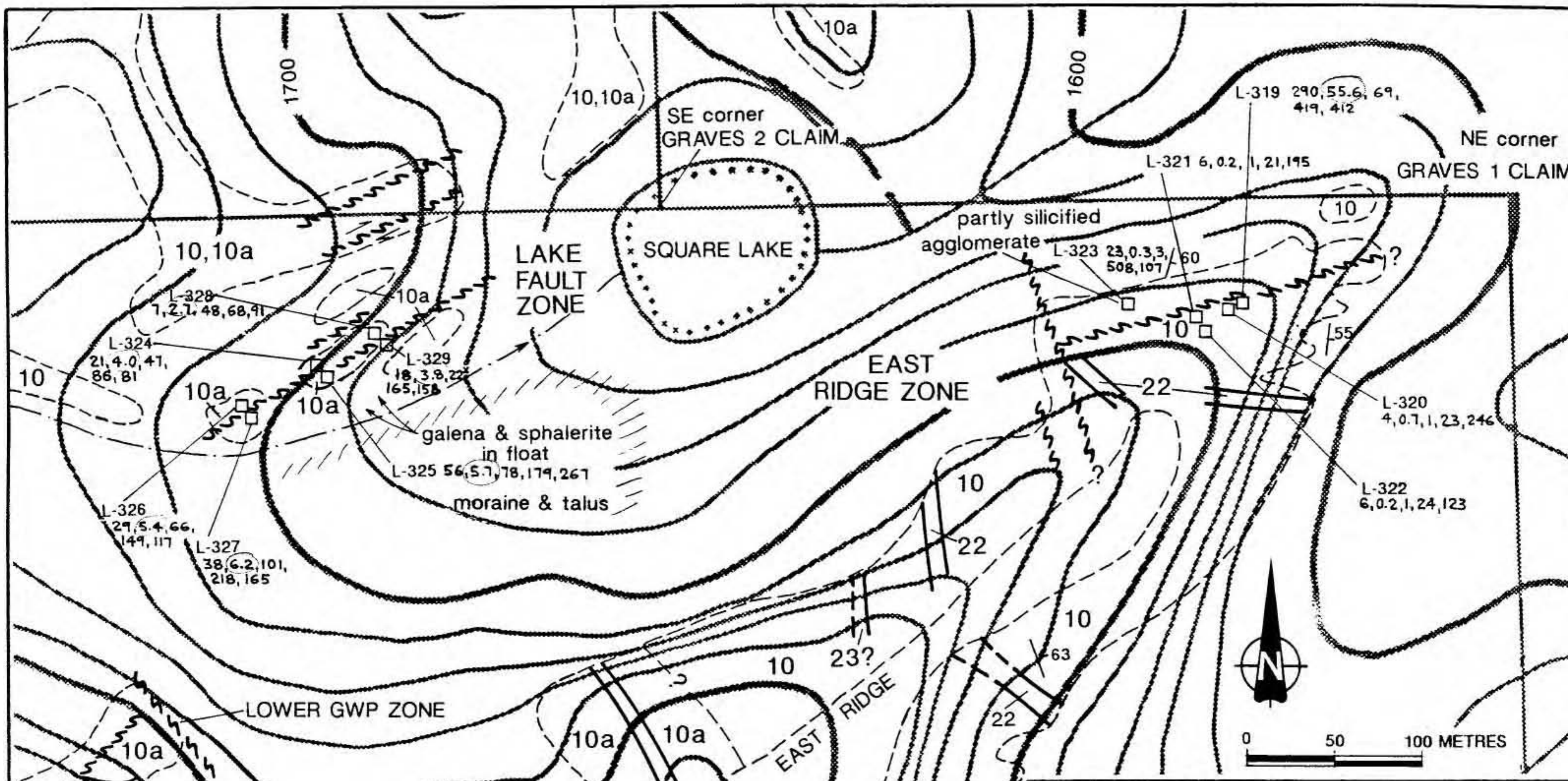
ORANGE ROSE ZONE

TRENCH 2

PLAN MAP

HI-TEC RESOURCE MANAGEMENT LIMITED

DWN BY: H.V.	DATE: Feb. 1988
CHK BY: D. Lyman	FIGURE Nº 7a
SCALE: 1:150	



LEGEND

(modified from Forster, 1986)

EARLY TO MIDDLE JURASSIC

Hazelton Group

10 — Maroon to brown pyroxene andesite flows, minor crystal & lapilli tuff and aglomerate between flows

10a — Green hornblende plagioclase porphyry flows

INTRUSIVE ROCKS

TERTIARY (?)

23 — Pyroxene andesite dykes (mafic dykes), calcite-filled amygdules

EARLY to MIDDLE JURASSIC

22 — Quartz-feldspar porphyry (rhyolite) dykes

Geologic contact, dashed where inferred

Fault, queried where location uncertain

63 — Bedding attitude with dip

Outcrop

L-323 □ 23,0.3,3,508,107 — Rock sample location & no. ppbAu,ppmAg,As,Pb,Zn

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MOUNT GRAVES PROPERTY

OMINECA M.D., B.C

EAST RIDGE & LAKE FAULT ZONES

GEOLOGY & ROCK GEOCHEMISTRY

FOR LOCATION SEE FIGURE 5

HI-TEC RESOURCE MANAGEMENT LIMITED	DWN BY: HV.	DATE Feb. 1988
	CHK BY D. Lyman	FIGURE Nº 8
	SCALE 1:3500	

partly silicified with some disseminated pyrite and galena. The one sample (L-323) taken had low precious metal values, but contained 3628 ppm Ba. A NNW-trending fault also displayed some quartz-pyrite alteration, but was not sampled. The area merits further prospecting, and permeable horizons such as the agglomerate may offer the best chance of hosting commercial values.

The Lake Fault Zone can be seen in photo Figure 5g in the distance just beyond Square Lake as a series of ENE-trending steps in the pine covered hillside. Rock samples with up to 1230 ppm Au and 37 ppm Ag were collected by Great Western Petroleum geologists just northwest of the lake (Caira, 1982). The sites sampled were probably thin (less than 4 cm) quartz veins with no sulfides which were found along the northernmost pair of steep ENE-trending faults shown in Figure 8. The stair-step faulting found to the south has thin clear to white quartz veining along and cross-cutting the ENE-trending structure, and some galena and sphalerite were found associated. The veining was sampled along one fault and returned disappointing precious metal values of up to 56 ppb Au and 5.7 ppm Ag. The hillside is closely covered with vegetation and has very limited exposure. Boulders found below the hillside have higher concentrations of base metals that were not found in place during the program.

4.0 GEOCHEMICAL SURVEYS

4.1 The 1987 Program

Previous work on the property had outlined three geochemically anomalous zones: the GWP Zone, the Yellow Rose Zone and the East Ridge Zone. During the current field season an effort was made to extend the first two zones, with soil and stream sampling on small grids and with reconnaissance soil and stream sampling along strike and in the general vicinity. Also, additional mapping, rock chip sampling and hand trenching were concentrated in these areas. A more limited amount of mapping and rock sampling was done on the East Ridge Zone.

Two other areas received brief attention: the South Wall Gossan and the Lake Fault Zone. Because of an obvious gossan and previous reconnaissance soil sampling of anomalies below the South Wall area, a small soil sampling grid was established on the ridge top above the gossan. A new mineralized area, the Lake Fault Zone was found by prospecting, and limited rock chip sampling was conducted.

Each of the above zones are detailed in subsequent sections complete with relevant geochemical results.

4.2 Sampling and Analytical Procedures

A total of 116 soil samples were dug with mattocks or soil augers, and collected in Kraft paper bags. Except for rocky terrain, a minimum sampling depth of 20 cm was maintained, collecting "B" horizon soil. A total of 10 stream samples were taken from active stream sediments and dry stream beds, both along grid lines and while prospecting. The 57 rock samples collected are described in Appendix IV and are graded as channel, rock chip and grab samples according to decreasing reliability of representation. These classifications are indicated as a suffix to rock sample numbers as "C", "R" and "G" respectively.

All samples were sent to Min-En Laboratories Ltd., 705 West 15th Street, North Vancouver, B.C. for analysis. All samples were subjected to a 12 element ICP analysis for Ag, As, Ba, Cd, Co, Cr, Cu, Mn, Mo, Pb, Sb and Zn.

All samples were analysed for Au using atomic absorption methods for soil and stream samples, and geochemical methods with fire assay preconcentration and atomic absorption finish for rock samples.

Soil and stream samples were dried at 95^{o}C, then sieved to separate the minus 80 mesh fraction. A 1 gm portion of this fraction was placed in a test tube and digested for 6 hours with 1:1 equimolar (50%) aqua regia. After cooling, samples were diluted to a standard volume, and the solution analysed using a Jarell Ash model 900ICP Inductively-Coupled Plasma Analyser.

Rock samples were crushed and split, separating a 300 g pulp. For ICP analysis the pulp is pulverized by ceramic plate pulverizer to minus 80 mesh and processed the same as soils. For geochemical analysis for gold, a 300 g split is pulverized to minus 150 mesh, and a 15 g sample weight is fire assay preconcentrated. The sample is then digested with aqua regia and taken up with 25% HCl. The gold is extracted with methyl iso-butyl ketone, and analysed by atomic absorption to a detection limit of 1 ppb against a standard gold solution.

4.3 Discussion of Geochemical Results

Reports tabulating analytical results are presented in Appendix V.

Because of the non-random location of samples on the various mineral occurrences and the limited number of samples taken in each area, conventional statistical analyses with assignment of anomalous values is not appropriate. Some correlation coefficients were calculated for selected metal relations in separate zones, and are discussed below.

Rock chip sampling on the GWP Zone yielded results for representative sampling of up to 3000 ppb Au, 503 ppm Ag, 14,493 ppm Pb and 33,791 ppm Zn. In Trench 3, eleven rock chip samples (L-341 to L-351) averaged 971 ppb Au, 272 ppm Ag, 3312 ppm Pb and 4880 ppm Zn on a triangular exposure measuring 5 m wide by 8 m along strike. These results are consistent with earlier reported sampling in the same trench of up to 0.170 oz/ton Au and 149.21 oz/ton Ag (Yeager & Ikona, 1986) and up to 11,000 ppb Au, 7500 ppm Ag, 30,000 ppm Pb and 33,000 ppm Zn (Caira, 1982). Analysis of trench soil profiles proved that soil sampling to detect mineralized extensions in the GWP Bowl would not be effective unless samples were collected from at least 180 cm (6 feet) depth in soil flow and talus overburden exceeding 3 meters.

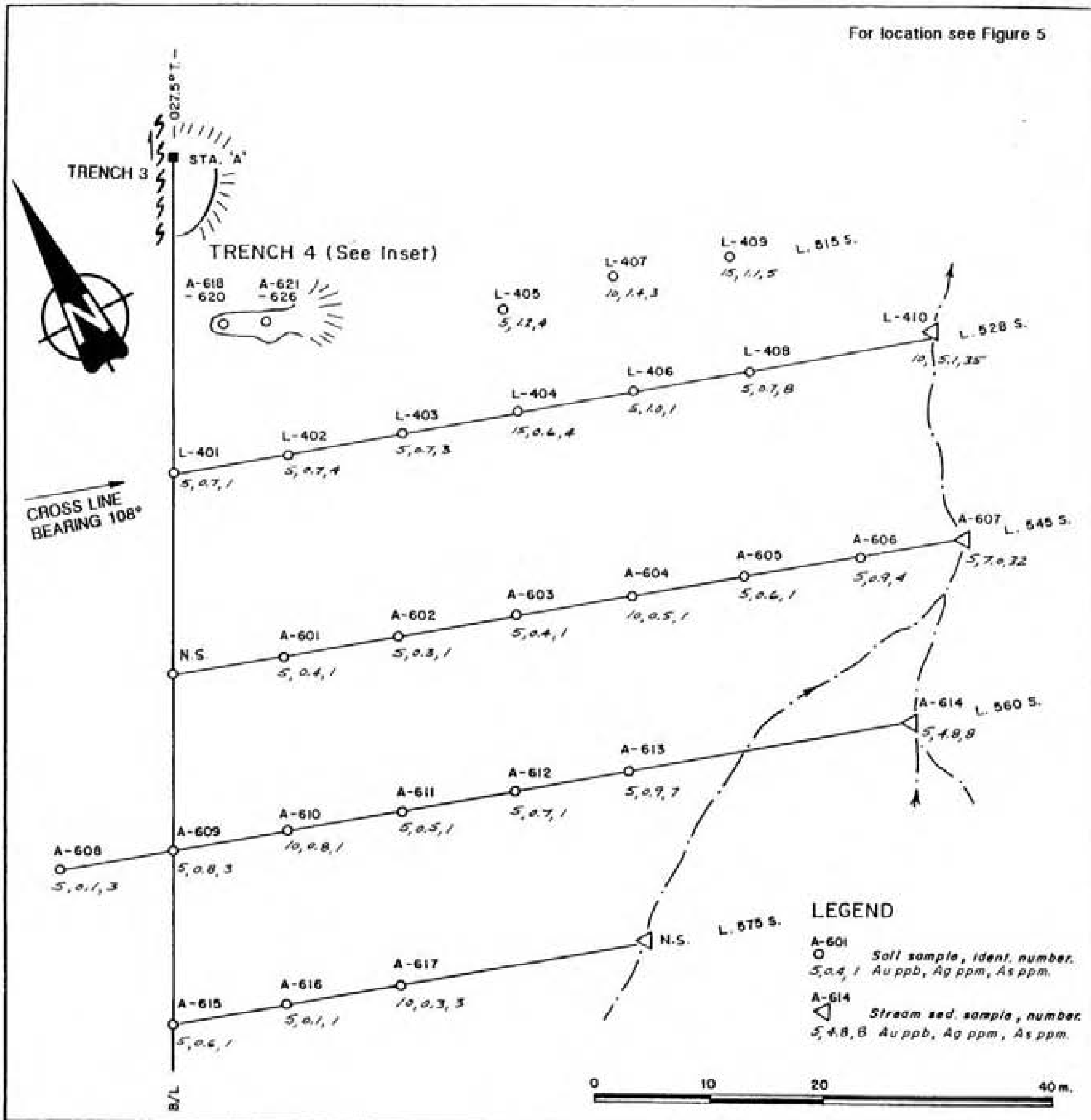
4.4 GWP Zone Geochemistry

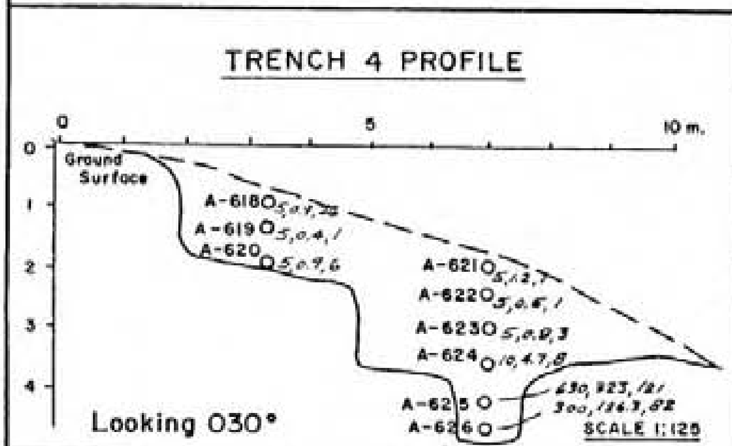
On the GWP Zone, 28 rock chip or rock channel samples (L-330 to L-351, A-661 to A-666) were collected with values returning up to 3,000 ppb Au, 503 ppm Ag, 106 ppm As, 373.1 ppm Cd, 1,445 ppm Cu, 5,503 ppm Mn, 14,493 ppm Pb and 33,791 ppm Zn (Figure 6c). Correlation coefficients (r) calculated for selected metal pairs using analyses from the 28 GWP zone rock samples are tabulated below:

	Ag	Au	Cd	Cu	Pb	Zn
Ag	1.00	0.88	0.45	0.59	0.62	0.45
Au		1.00	0.73	0.76	0.83	0.74
Cd			1.00	0.94	0.93	0.99
Cu				1.00	0.95	0.93
Pb					1.00	0.94
Zn						1.00

The strong cadmium-zinc correlation indicates a consistent substitution of cadmium in sphalerite. The high lead-zinc correlation implies that at least locally, mineralization was coeval. The more marginal silver-lead and silver-copper coefficients in conjunction with the high copper-lead coefficient suggest that silver mineralization is not exclusively tied to either galena or tetrahedrite deposition, and that argentite and/or native silver may be important contributors to silver values. Additional mineralogical evidence may be required to account for the high correlation of copper to cadmium, lead and zinc.

A small soil sample grid was established to test for a southwesterly extension of the GWP Zone mineralization (Figures 6a and 6b). Kowall (1984) had tested the extension with inconclusive results using several cross cutting traverse lines and relatively shallow soil sampling because of adverse weather. In order to improve the method, samples from a minimum depth of 60 cm were collected using soil augers. This technique failed to yield samples with values that could be considered anomalous. The reason becomes apparent when examining soil profile results from Trench 4 (inset Figures 6a and 6b). Within 8 meters southwest from old trenching (Trench 3) on the GWP zone where overburden is less than 1 meter deep, the overburden depth increased to over 3 meters in Trench 4. The soil profile in Trench 4 shows that a doubling of silver and lead values over previous samples does not occur until 180 cm depth (sample A-624). Clearly anomalous metal values are encountered in the next soil sample (A-625) at 240 cm depth. Below 240 cm the soil becomes rusty and sandy between boulders and cobbles of pyritic silicified andesite (rock sample L-339). The same type of pyritic silicified vein bedrock (sample L-440) was finally uncovered at just over 3 meters depth. Values of these Trench 4 rock samples are lower (up to 135 ppm Au, 52.7 ppm Ag, 377 ppm Pb and 504 ppm Zn) than rock chip samples just to the north in Trench 3 (samples L-341 to L-351) which averaged 971 ppb Au, 272 ppm Ag, 3,312 ppm Pb and 4,880 ppm Zn. Nevertheless, the





BLUE EMERALD RESOURCES INC.

MOUNT GRAVES PROPERTY

OMINECA M.D. B.C.

GWP ZONE GRID SOIL AND STREAM GEOCHEMISTRY (Au, Ag, As)

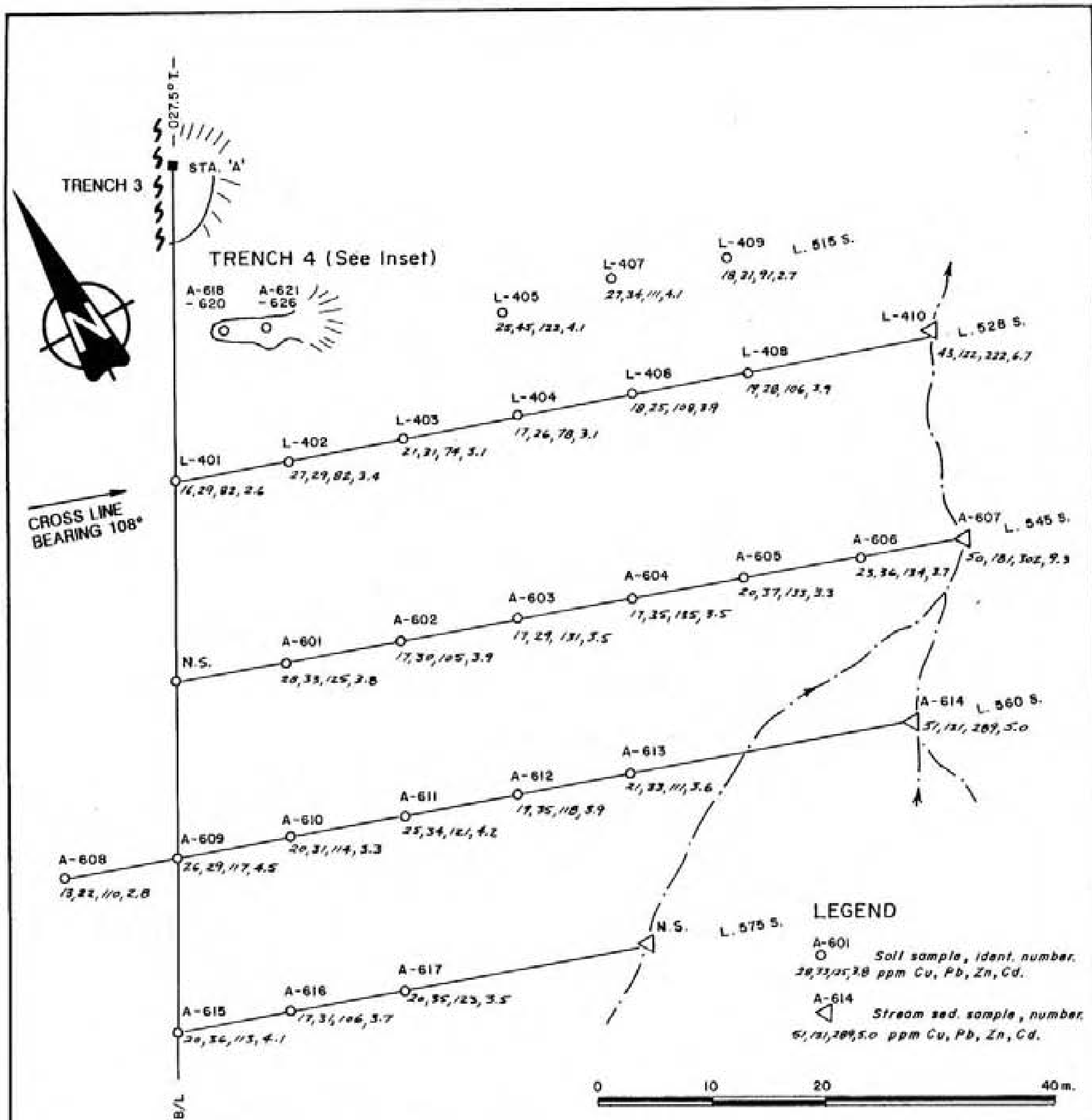
N.T.S. 94E/7W

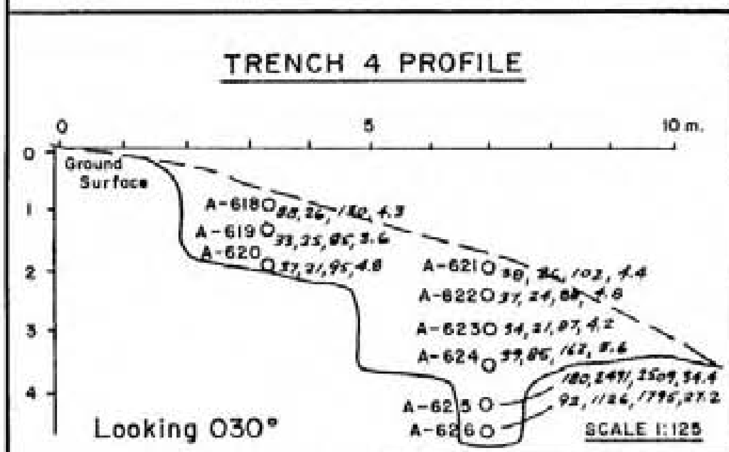
HI-TEC RESOURCE MANAGEMENT LIMITED

DWN BY:
CHK BY:
SCALE: 1:500

DATE: Feb. 1988

FIGURE No. 6a





BLUE EMERALD RESOURCES INC.

MOUNT GRAVES PROPERTY

OMINECA M.D. B.C.

GWP ZONE GRID
SOIL AND STREAM GEOCHEMISTRY
(Cu, Pb, Zn, Cd)

For location see Figure 5

N.T.S. 94 E / 7 W

HI-TEC RESOURCE MANAGEMENT LIMITED	DWN BY:	DATE: Feb. 1988
	CHK BY:	FIGURE No. 6b
	SCALE: 1:500	

mineralization, alteration and rock type are identical in Trenches 3 and 4, firmly indicating that the zone extends to the southwest across a late, thin pyroxene andesite dyke and a possible fault encountered at the south end of Trench 3.

Further south in the GWP Bowl, Trenches 6 and 7 (Figure 6) were dug along an easterly-trending fault containing some associated quartz veining and disseminated pyrite. Four rock chip samples (L-315 to L-318) in Trench 7 returned values up to 90 ppb Au and 13.4 ppm Ag.

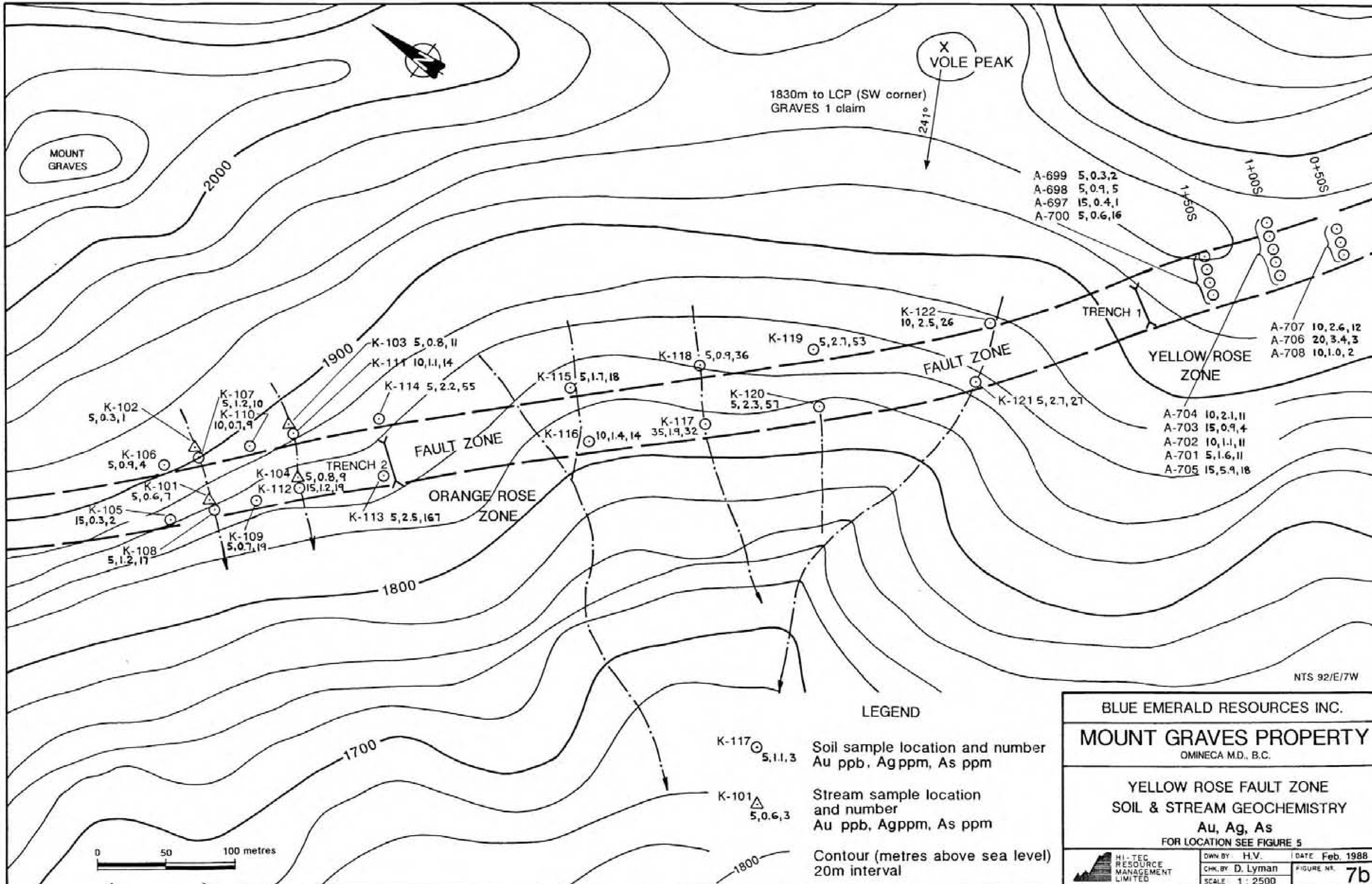
One further comment on overburden in the GWP Bowl is needed. The colluvial wedge formed at the slope break between the northwestern cirque wall and the bottom of the GWP Bowl is only 3 m deep at Trench 4. At Trench 4, however, there is little upslope area to contribute material to overburden (Figure 5a). As one proceeds further into the Bowl along the southwesterly extension of the GWP Zone, the depth of overburden will increase, and thicknesses of 5 m are probable.

4.5 Yellow Rose Zone Geochemistry

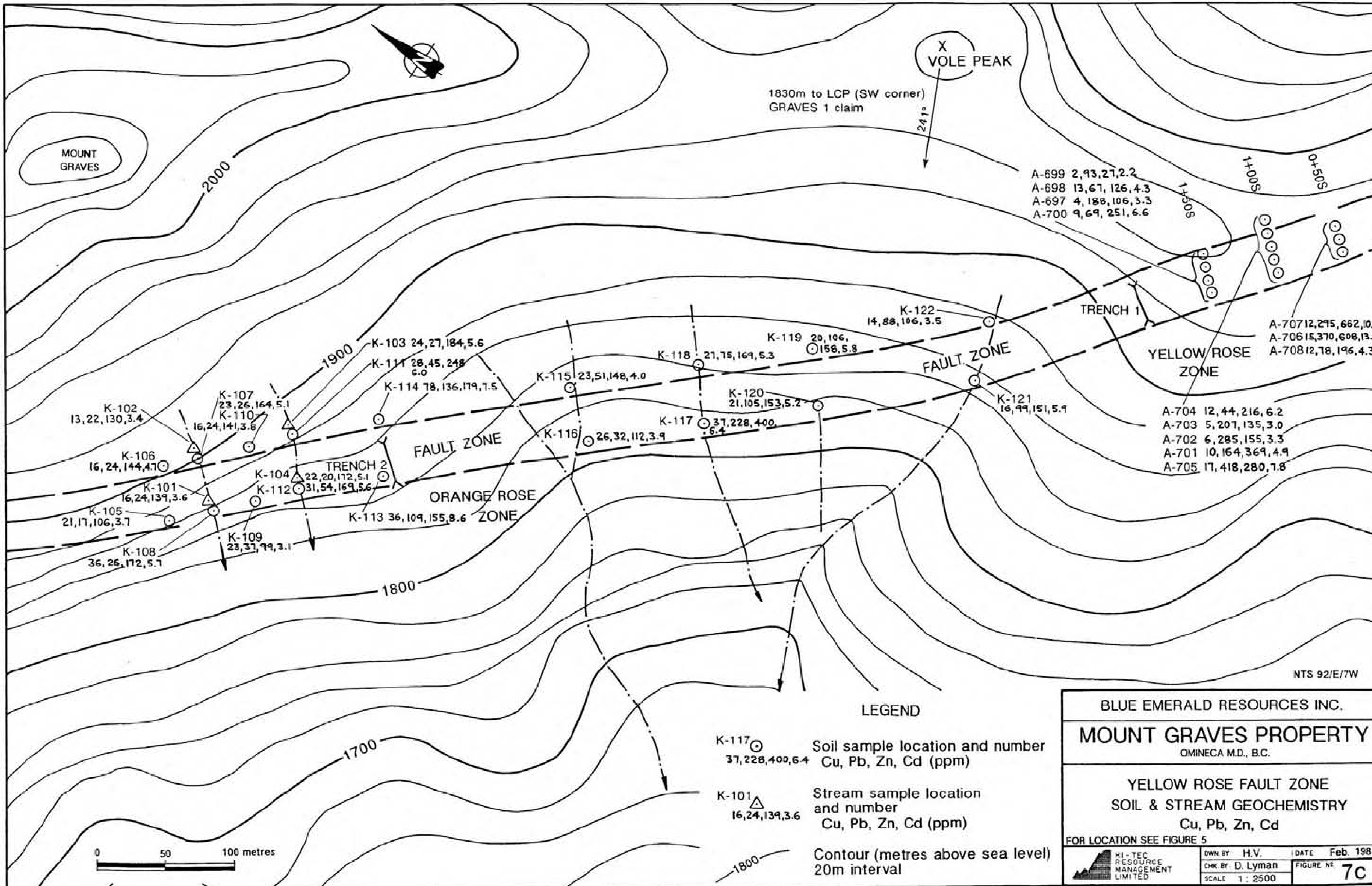
Trenching by Geostar Mining Corp. (Yeager and Ikona, 1986) on the Yellow Rose Zone had encountered gold mineralization in thin quartz veining (sample #36287, 0.306 oz/ton Au in 5 cm vein). This value was obtained at the edge of exposed bedrock, but still within the clay altered fault zone (Figure 7). The trench (now named Trench 1) was deepened and extended, but only to 25 meters length because of over-burden slumping and time limitations. Six rock channel samples (L-303 to L-308) were taken from the Trench 1 extension in and adjacent to thin quartz veining, returning values up to 960 ppb Au, 0.6 ppm Ag, 188.7 ppm Cd, 3,554 ppm Pb and 4,932 ppm Zn. Silver values are lower than those reported from the southwest end of the trench by Yeager, which ranged from 0.01 to 0.19 oz/ton Ag. Some mineral zoning may be indicated. A suspected correlation of cadmium and zinc was confirmed by a coefficient (r) of 0.80 calculated on values from the eight samples taken on the zone. Two rock grab samples (L-301 and L-302) taken from rubble on the northeast margin of the fault zone returned values up to 238 ppb Au, 0.9 ppm Ag, 55.9 ppm Cd, 1,721 ppm Pb and 4,561 ppm Zn. These grey, pyritic quartz-flooded rocks come from lenses at least 15 cm thick. Apparently at least some intense silicification is associated with argillic alteration on the northeastern side of the Yellow Rose Zone.

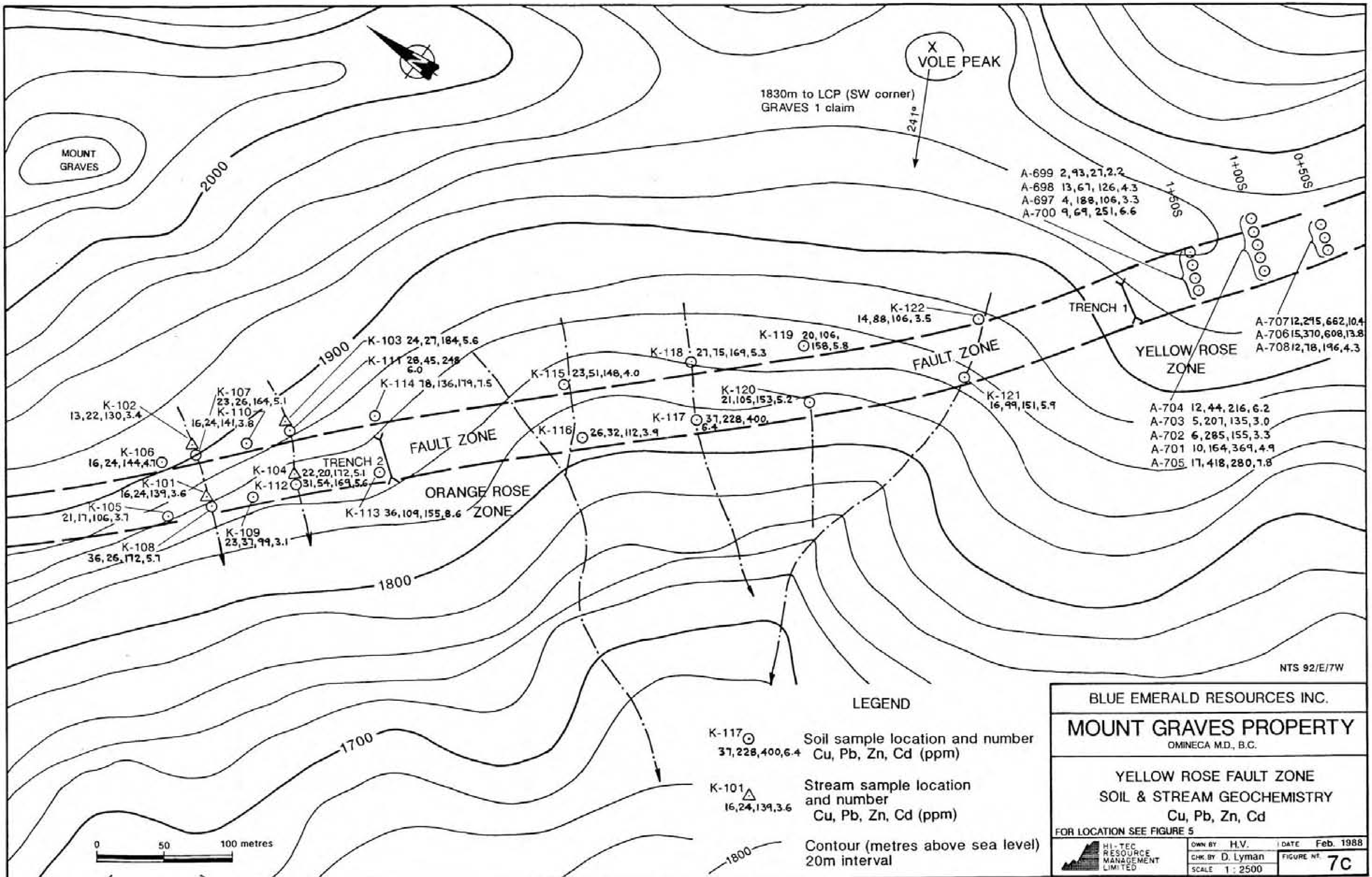
Roughly 550 m to the northwest of the Yellow Rose Zone and lying on the same 35 m-wide near vertical fault zone is an orange pyritic gossan (Figure 7a). This second gossan, named the Orange Rose Zone, had not been sampled before, and returned (samples L-309 to L-314) up to 23 ppb Au, 2.9 ppm Ag, 185 ppm As, 159 ppm Pb and 126 ppm Zn, in rock chip and channel samples from outcrop and trenching (Trench 2). The samples were taken from thin, moderately to highly silicified andesite lenses with up to 5% disseminated pyrite.

A southeasterly extension of the Yellow Rose Zone (Figures 7b and 7c) was tested with three soil sample crosslines spaced 50 m apart, measuring from Trench 1 along the Yellow Rose Fault. Deep soil samples (samples A-697 to A-708), collected at 60 cm depth, from tan to white clays similar to those in Trench 1, returned values ranging from 5 to 20 ppb Au, 0.3 to 5.9 ppm Ag, 187 to 1287 ppm Ba, 2.2 to 13.8 ppm Cd, 44 to 418 ppm Pb and 27 to 662 ppm Zn. Similar to Trench 1 rock samples, a positive cadmium-zinc correlation coefficient of 0.91 was calculated for the 12 soil samples on the Yellow Rose Zone. Because of this high correlation



MOUNT GRAVES
VOLE PEAK
1830m to LCP (SW corner)
GRAVES 1 claim
241°
2000
1900
1800
1700
1+50S
1+00S
0+50S
A-699 5,0.3,2
A-698 5,0.9,5
A-697 15,0.4,1
A-700 5,0.6,16
TRENCH 1
A-707 10,2.6,12
A-706 20,3.4,3
A-708 10,1.0,2
YELLOW ROSE ZONE
A-704 10,2.1,11
A-703 15,0.9,4
A-702 10,1.1,11
A-701 5,1.6,11
A-705 15,5.9,18
K-122 10,2.5,26
K-119 5,2.7,53
FAULT ZONE
K-118 5,0.9,36
K-115 5,1.7,18
K-121 5,2.7,27
K-120 5,2.3,57
K-117 35,1.9,32
K-116 10,1.4,14
K-103 5,0.8,11
K-111 10,1.1,14
K-114 5,2.2,55
K-107 5,1.2,10
K-110 10,0.7,9
K-102 5,0.3,1
K-106 5,0.9,4
FAULT ZONE
TRENCH 2
K-104 5,0.8,9
K-112 15,1.2,19
K-101 5,0.6,7
ORANGE ROSE ZONE
K-105 15,0.3,2
K-113 5,2.5,167
K-109 5,0.7,19
K-108 5,1.2,17
NTS 92/E/7W
LEGEND
K-117 5,1.1,3 Soil sample location and number
Au ppb, Ag ppm, As ppm
K-101 5,0.6,3 Stream sample location and number
Au ppb, Agppm, As ppm
1800 Contour (metres above sea level)
20m interval
0 50 100 metres
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
YELLOW ROSE FAULT ZONE
SOIL & STREAM GEOCHEMISTRY
Au, Ag, As
FOR LOCATION SEE FIGURE 5
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY H.V.
DATE Feb. 1988
CHK BY D. Lyman
FIGURE NO. 7b
SCALE 1 : 2500


VOLE PEAK
1830m to LCP (SW corner)
GRAVES 1 claim
241°
MOUNT GRAVES
2000
1900
1800
1700
A-699 2,93,27,2.2
A-698 13,67,126,4.3
A-697 4,188,106,3.3
A-700 9,69,251,6.6
1+50S
1+00S
0+50S
TRENCH 1
A-707 12,295,662,10.4
A-706 15,370,608,13.8
A-708 12,78,196,4.3
YELLOW ROSE ZONE
K-122 14,88,106,3.5
K-119 20,106,158,5.8
K-118 27,75,169,5.3
FAULT ZONE
K-103 24,27,184,5.6
K-111 28,45,248,6.0
K-114 78,136,179,7.5
K-115 23,51,148,4.0
K-120 21,105,153,5.2
K-121 16,99,151,5.9
K-117 37,228,400,6.4
K-116 26,32,112,3.9
A-704 12,44,216,6.2
A-703 5,207,135,3.0
A-702 6,285,155,3.3
A-701 10,164,369,4.9
A-705 17,418,280,7.8
K-107 23,26,164,5.1
K-102 13,22,130,3.4
K-110 16,24,141,3.8
K-106 16,24,144,4.1
FAULT ZONE
TRENCH 2
K-104 22,20,172,5.1
K-112 31,54,169,5.6
K-101 16,24,139,3.6
K-105 21,17,106,3.7
K-109 23,37,99,3.1
K-108 36,26,172,5.7
K-113 36,109,155,8.6
ORANGE ROSE ZONE
0 50 100 metres
NTS 92/E/7W
LEGEND
K-117 37,228,400,6.4 Soil sample location and number Cu, Pb, Zn, Cd (ppm)
K-101 16,24,139,3.6 Stream sample location and number Cu, Pb, Zn, Cd (ppm)
1800 Contour (metres above sea level) 20m interval
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
YELLOW ROSE FAULT ZONE
SOIL & STREAM GEOCHEMISTRY
Cu, Pb, Zn, Cd
FOR LOCATION SEE FIGURE 5
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY H.V.
CHK BY D. Lyman
SCALE 1 : 2500
DATE Feb. 1988
FIGURE No. 7C


MOUNT GRAVES
VOLE PEAK
1830m to LCP (SW corner)
GRAVES 1 claim
241°
2000
1900
1800
1700
1+50S
1+00S
0+50S
A-699 2,93,27,2.2
A-698 13,67,126,4.3
A-697 4,188,106,3.3
A-700 9,69,251,6.6
A-707 12,295,662,10.4
A-706 15,370,608,13.8
A-708 12,78,196,4.3
TRENCH 1
YELLOW ROSE
ZONE
A-704 12,44,216,6.2
A-703 5,207,135,3.0
A-702 6,285,155,3.3
A-701 10,164,369,4.9
A-705 17,418,280,7.8
K-122
14,88,106,3.5
FAULT ZONE
K-121
16,99,151,5.9
K-119 20,106,
158,5.8
K-118 27,75,169,5.3
K-120
21,105,153,5.2
K-117 37,228,400,
6.4
K-115 23,51,148,4.0
K-116 26,32,112,3.9
K-103 24,27,184,5.6
K-111 28,45,248
6.0
K-114 78,136,179,7.5
K-107
23,26,164,5.1
K-110
16,24,141,3.8
K-102
13,22,130,3.4
K-106
16,24,144,4.1
K-101
16,24,139,3.6
K-105
21,17,106,3.7
K-108
36,26,172,5.7
K-109
23,37,99,3.1
K-104 22,20,172,5.1
K-112 31,54,169,5.6
TRENCH 2
FAULT ZONE
ORANGE ROSE
ZONE
K-113 36,109,155,8.6
NTS 92/E/7W
LEGEND
K-117
37,228,400,6.4
Soil sample location and number
Cu, Pb, Zn, Cd (ppm)
K-101
16,24,139,3.6
Stream sample location
and number
Cu, Pb, Zn, Cd (ppm)
1800
Contour (metres above sea level)
20m interval
0
50
100 metres
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
YELLOW ROSE FAULT ZONE
SOIL & STREAM GEOCHEMISTRY
Cu, Pb, Zn, Cd
FOR LOCATION SEE FIGURE 5
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY H.V.
CHK BY D. Lyman
SCALE 1 : 2500
DATE Feb. 1988
FIGURE Nº 7C

and anomalous lead and zinc values, mineralization in Trench 1 and on the southeast extension are probably related. The anomalous silver values may be related to mineralization from an intersected system in the South Bowl or from a part of the Yellow Rose Zone not intersected by Trench 1.

The fault zone from Trench 1 on the Yellow Rose Zone to Trench 2 on the Orange Rose Zone (Figures 7b and 7c) was tested with reconnaissance stream and soil sampling (samples K-101 to K-122). The method was to take a sample in the fault zone near the downhill side, which is marked by a slope break and greener vegetation. A second sample was taken 40 m uphill above the fault zone, and analyses of the two samples compared. No clear-cut contrasts are found in the eleven sample pairs collected. The best contrast is between samples K-117 and K-118:

Above Fault		On Fault	
K-118	5.0 ppb Au	K-117	35.0 ppb Au
	0.9 ppm Ag		1.9 ppm Ag
	75.0 ppm Pb		228.0 ppm Pb
	169.0 ppm Zn		400.0 ppm Zn

Some anomalous values associated with gossans in the Vole Peak vicinity may be expected on the southwestern slopes.

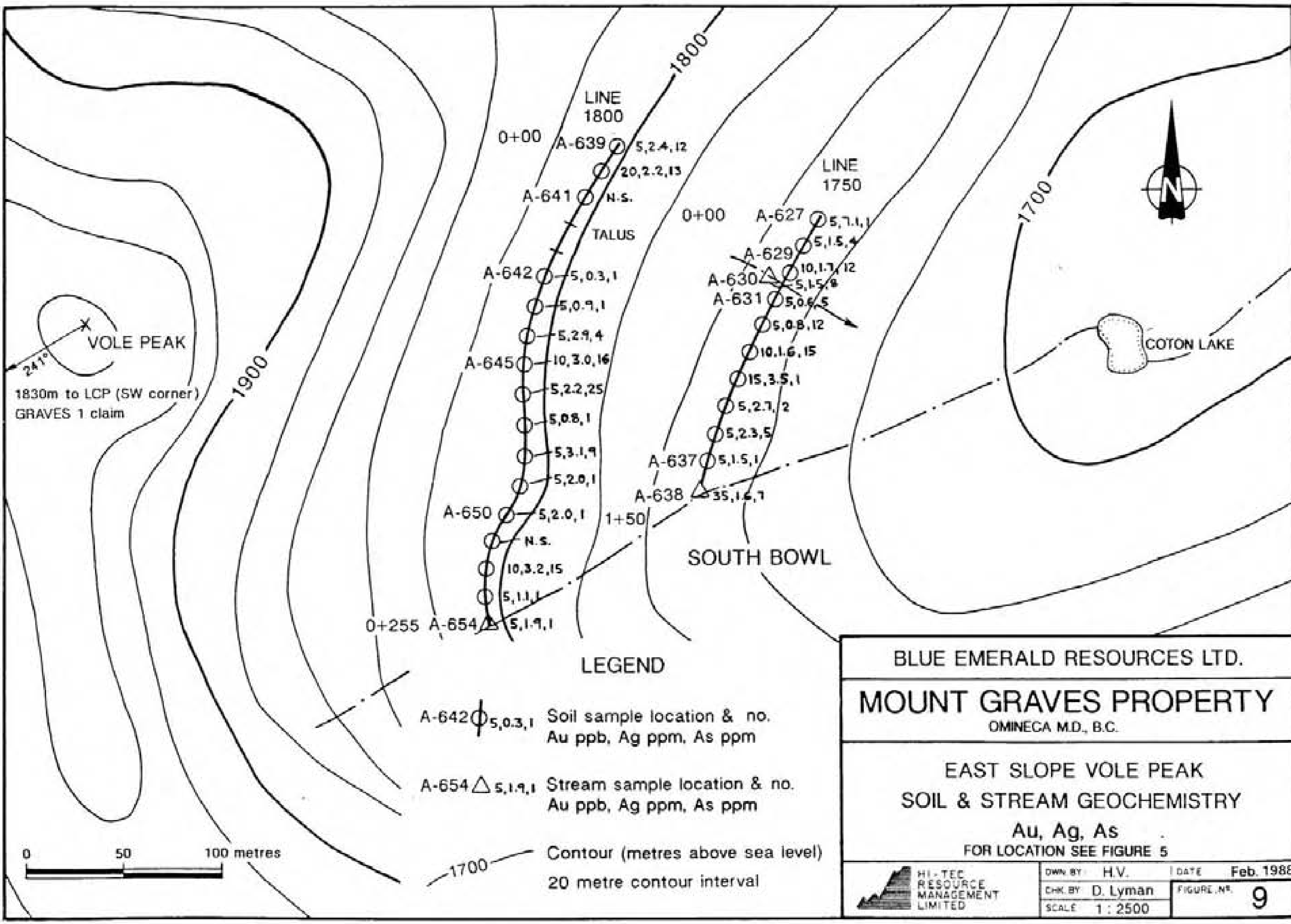
4.6 East Ridge and Lake Fault Zone Geochemistry

The East Ridge Zone in the northeast corner of the Graves 1 claim was sampled by Great Western Petroleum Corp. geologists on traverse along the 1650 meter contour (Caira 1982). Soil sample values up to 50 ppb Au, 8.2 ppm Ag, 1600 ppm Pb and 495 ppm Zn, and rock chip sample values up to 30 ppb Au, 2.7 ppm Ag, 335 ppm Pb and 211 ppm Zn were obtained in the vicinity of gossans and associated pyritic silicified andesite. During the 1987 program four rock samples were taken from pyritic silicified vein rock and andesite vein margins where an ENE-trending vertical fault zone up to 20 m wide crosses the ridge crest (Figure 8). One sample (L-319) of 25 cm thick grey quartz-flooded vein rock with 3 to 5% disseminated pyrite returned values of 290 ppb Au, 55.6 ppm Ag, 419 ppm Pb and 412 ppm Zn. One additional sample (L-323) taken in pyritic, partly silicified agglomerate at a flow boundary yielded up to 23 ppb Au, 0.3 ppm Ag, 508 ppm Pb, 107 ppm Zn and 3628 ppm Ba.

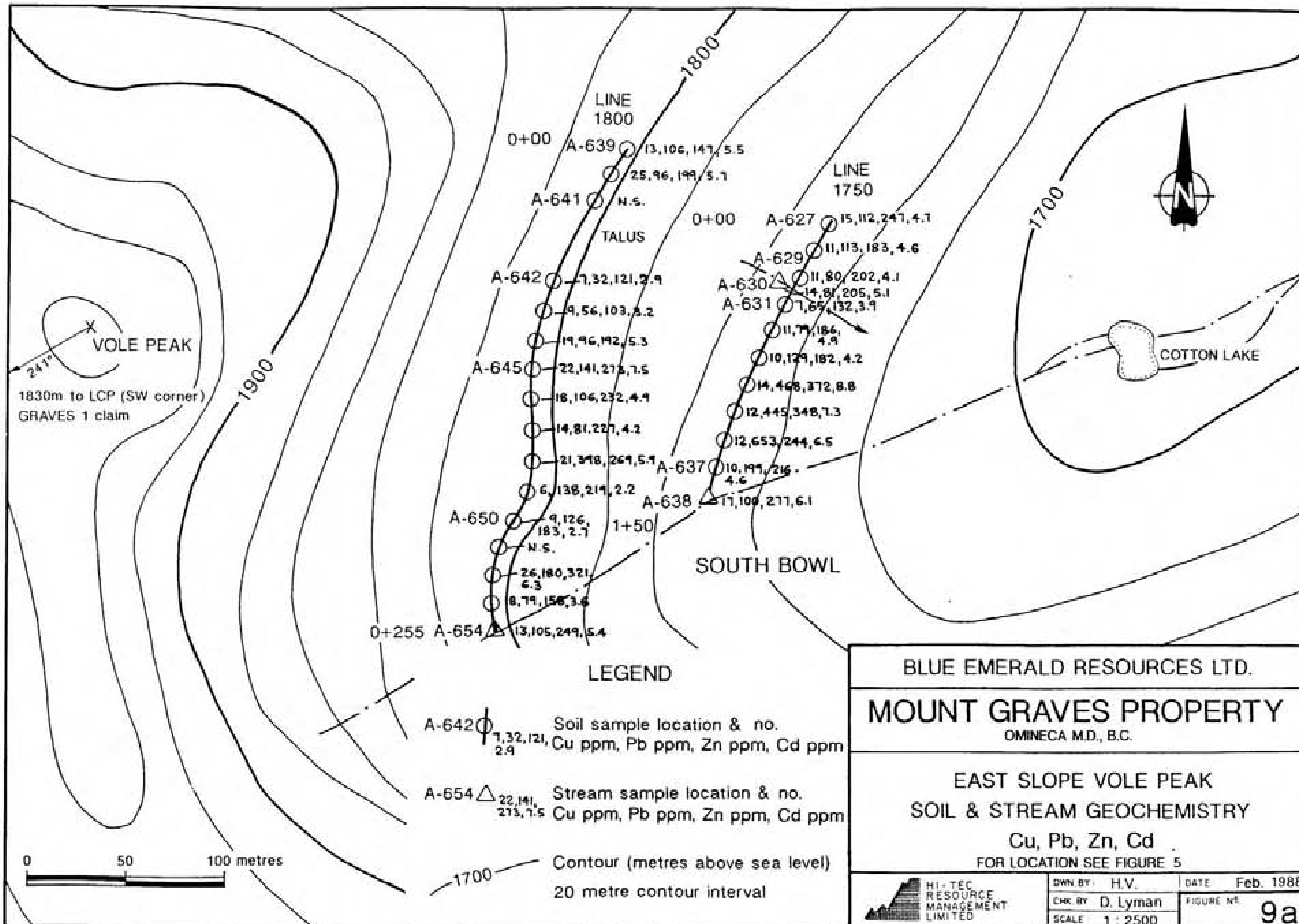
On the Lake Fault Zone, samples of quartz veining along one of the faults cutting andesite porphyry flows returned values up to 56 ppb Au, 6.2 ppm Ag, 218 ppm Pb and 267 ppm Zn. The source of float containing higher base metal concentrations was not found.

4.7 East Slope Vole Peak Geochemistry

Traverses along the 1850 meter and 1650 meter contours by Great Western Petroleum geologists in 1981, returned several anomalous soil samples on the east slope of Vole Peak in the South Bowl (Caira 1982). Soil values up to 85 ppb Au, 8.4 ppm Ag, 345 ppm Pb and 615 ppm Zn were reported. During the current program (Figures 9 and 9a) two short follow-up traverses collecting soil on 15 m spacing were made on the 1800 meter and 1750 meter contours. Samples were taken from 60 cm depth or greater using soil augers, except in very rocky ground. Analysis of the soils (samples A-627 to A-654) returned values up to 35 ppm Au, 7.1 ppm Ag, 653 ppm Pb and 372 ppm Zn. A small area of lead values greater than 400 ppm can be outlined on the 1750 contour traverse. No related mineralization was found in the limited outcrop in the vicinity.



LINE 1800
0+00
A-639
5,2.4,12
20,2.2,13
A-641
N.S.
TALUS
A-642
5,0.3,1
5,0.9,1
5,2.9,4
A-645
10,3.0,16
5,2.2,25
5,0.8,1
5,3.1,9
5,2.0,1
A-650
5,2.0,1
N.S.
10,3.2,15
5,1.1,1
0+255
A-654
5,1.9,1
1+50
LINE 1750
0+00
A-627
5,7.1,1
5,1.5,4
A-629
10,1.7,12
A-630
5,1.5,8
A-631
5,0.6,5
5,0.8,12
10,1.6,15
15,3.5,1
5,2.7,2
5,2.3,5
A-637
5,1.5,1
A-638
35,1.6,7
SOUTH BOWL
1800
1900
1700
VOLE PEAK
241°
1830m to LCP (SW corner)
GRAVES 1 claim
COTON LAKE
N
LEGEND
A-642 5,0.3,1 Soil sample location & no.
Au ppb, Ag ppm, As ppm
A-654 5,1.9,1 Stream sample location & no.
Au ppb, Ag ppm, As ppm
1700 Contour (metres above sea level)
20 metre contour interval
0 50 100 metres
BLUE EMERALD RESOURCES LTD.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
EAST SLOPE VOLE PEAK
SOIL & STREAM GEOCHEMISTRY
Au, Ag, As
FOR LOCATION SEE FIGURE 5
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY: H.V.
DATE Feb. 1988
CHK. BY D. Lyman
FIGURE Nº 9
SCALE 1 : 2500


LINE 1800
0+00
A-639 13,106,147,5.5
25,96,199,5.7
A-641 N.S.
TALUS
A-642 7,32,121,2.9
9,56,103,3.2
19,96,192,5.3
A-645 22,141,273,7.5
18,106,232,4.9
14,81,227,4.2
21,398,269,5.9
6,138,219,2.2
A-650 9,126,183,2.7
1+50
N.S.
26,180,321,6.3
8,79,158,3.6
0+255 A-654 13,105,249,5.4
LINE 1750
0+00
A-627 15,112,247,4.7
A-629 11,113,183,4.6
A-630 11,80,202,4.1
14,81,205,5.1
A-631 7,65,132,3.9
11,79,186,4.9
10,129,182,4.2
14,468,372,8.8
12,445,348,7.3
12,653,244,6.5
A-637 10,199,216,4.6
A-638 17,100,277,6.1
SOUTH BOWL
1800
1900
1700
VOLE PEAK
241°
1830m to LCP (SW corner) GRAVES 1 claim
COTTON LAKE
N
LEGEND
A-642 7,32,121,2.9 Soil sample location & no. Cu ppm, Pb ppm, Zn ppm, Cd ppm
A-654 22,141,273,7.5 Stream sample location & no. Cu ppm, Pb ppm, Zn ppm, Cd ppm
1700 Contour (metres above sea level) 20 metre contour interval
0 50 100 metres
BLUE EMERALD RESOURCES LTD.
MOUNT GRAVES PROPERTY
OMINECA M.D., B.C.
EAST SLOPE VOLE PEAK
SOIL & STREAM GEOCHEMISTRY
Cu, Pb, Zn, Cd
FOR LOCATION SEE FIGURE 5
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN. BY: H.V.
CHK. BY: D. Lyman
SCALE: 1 : 2500
DATE: Feb. 1988
FIGURE Nº 9a

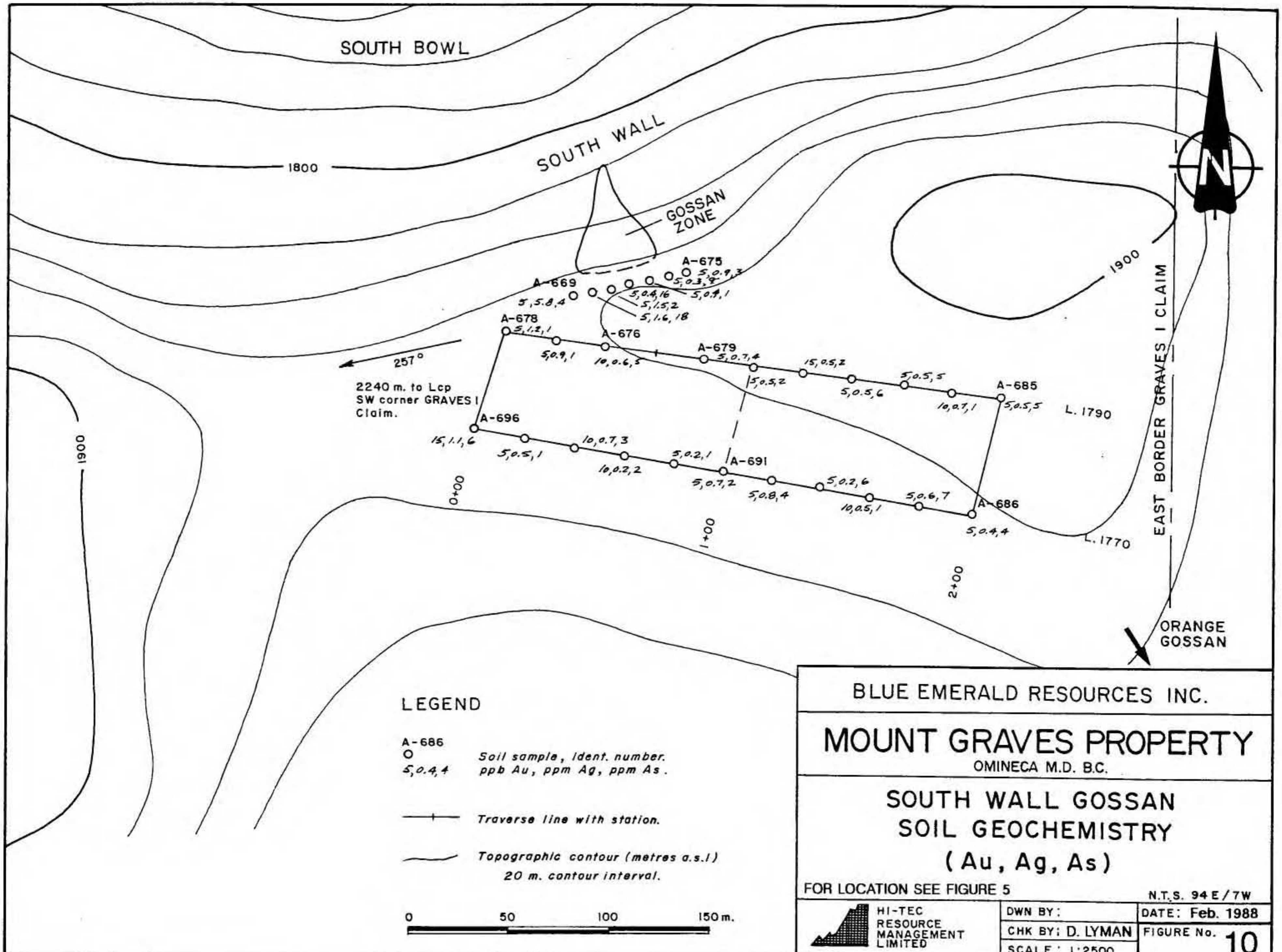
4.8 South Wall Gossan Geochemistry

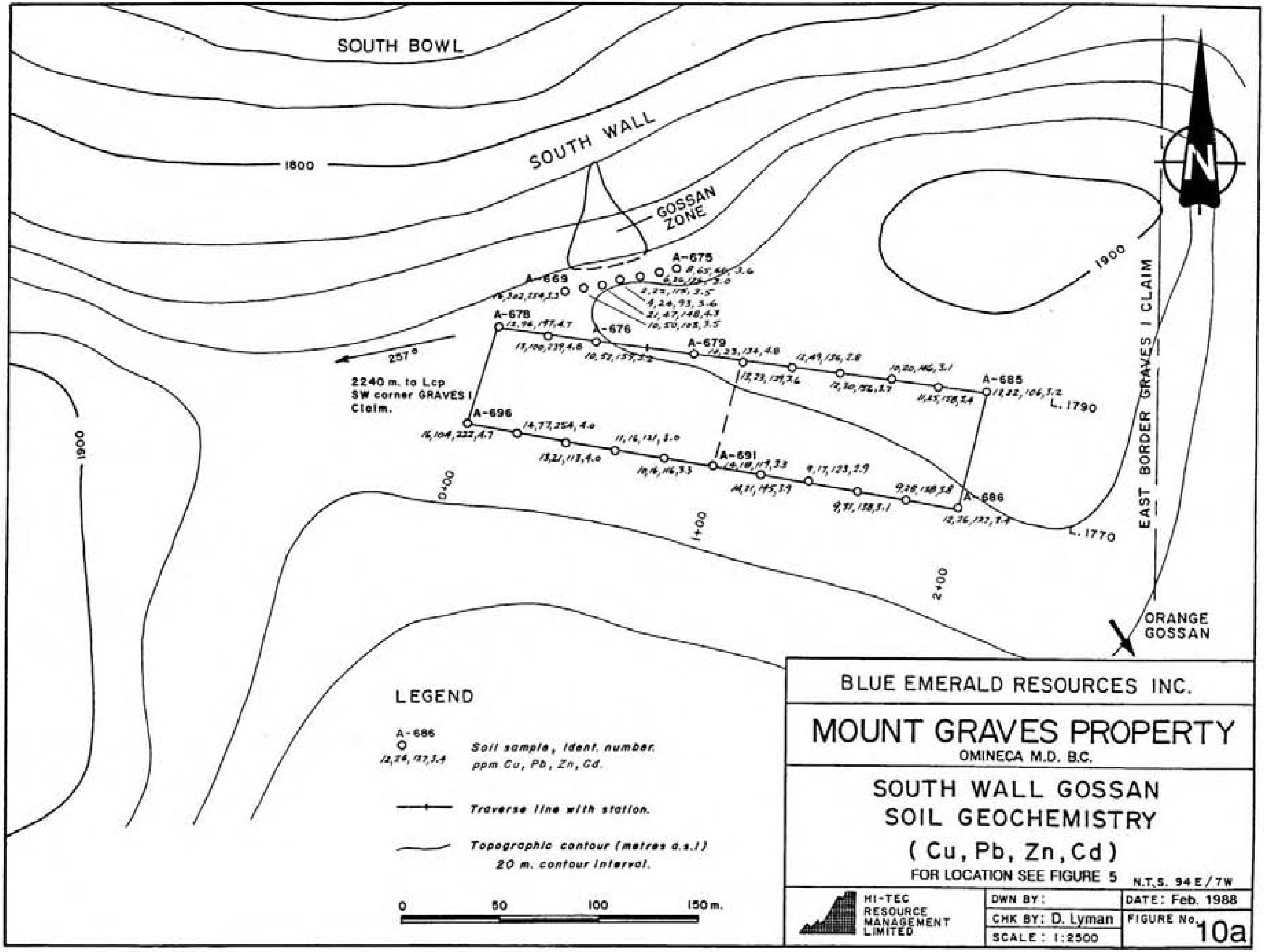
In 1981, Great Western Petroleum geologists noticed the South Wall gossan near the rim of the southernmost cirque (South Bowl) on the Graves 1 claim. Rock sampling along the ridge above the gossan produced near background values of up to 5 ppb Au, 1.8 ppm Ag, 70 ppm Cu, 19 ppm PB and 174 ppm Zn (Caira 1982). However, soil sampling on the 1650 contour in the South Bowl below the gossan produced values of up to 80 ppb Au, 3.7 ppm Ag, 265 ppm Pb and 522 ppm Zn.

During the 1987 program, one man-day was spent collecting soil samples on three short lines to test the ground on the cirque rim directly over the gossan and to test a possible connection to another gossan 350 m southeast along the east border of the Graves 1 claim (Figures 10 and 10a). Directly over the gossan (samples A-669 to A-675) values were returned up to 5 ppm Au, 5.8 ppm Ag, 302 ppm Pb and 254 ppm Zn. The remaining lines, run roughly along the 1990 and 1970 meter contours (samples A-678 to A-696) on the south slope of the ridge, produced values up to 15 ppb Au, 1.1 ppm Ag, 4.8 ppm Cd, 104 ppm Pb and 254 ppm Zn. The highest precious and base metal results lie down slope to the south of the South Wall gossan, and no connection with the other gossanous area to the southeast is apparent from the above results.

5.0 DISCUSSION AND CONCLUSIONS

The Mt. Graves property has been the subject of gold exploration since 1980 because of its proximity to the Lawyer, Baker and Shasta properties, and because of similarities in mineralization and alteration to those properties. Forster (1984), in an M.Sc. thesis, detailed these similarities and provided fluid inclusion evidence placing the property within a favourable environment for precious


SOUTH BOWL
SOUTH WALL
1800
GOSSAN ZONE
1900
A-675
5,0.9,3
5,0.3,8
5,0.4,1
A-669
5,5.8,4
5,0.4,16
5,1.5,2
5,1.6,18
A-678
5,1.2,1
A-676
5,0.9,1
10,0.6,5
A-679
5,0.7,4
15,0.5,2
5,0.5,2
5,0.5,5
5,0.5,6
10,0.7,1
A-685
5,0.5,5
L. 1790
257°
2240 m. to Lcp
SW corner GRAVES I
Claim.
A-696
15,1.1,6
5,0.5,1
10,0.7,3
10,0.2,2
5,0.2,1
A-691
5,0.7,2
5,0.8,4
5,0.2,6
10,0.5,1
5,0.6,7
A-686
5,0.4,4
L. 1770
0+00
1+00
2+00
EAST BORDER GRAVES I CLAIM
N
ORANGE GOSSAN
LEGEND
A-686
5,0.4,4
Soil sample, ident. number.
ppb Au, ppm Ag, ppm As.
Traverse line with station.
Topographic contour (metres a.s.l)
20 m. contour interval.
0
50
100
150 m.
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D. B.C.
SOUTH WALL GOSSAN
SOIL GEOCHEMISTRY
(Au, Ag, As)
FOR LOCATION SEE FIGURE 5
N.T.S. 94 E / 7W
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY:
CHK BY: D. LYMAN
SCALE: 1:2500
DATE: Feb. 1988
FIGURE No. 10



SOUTH BOWL
SOUTH WALL
GOSSAN ZONE
1800
1900
1790
1770
A-669
A-675
A-678
A-676
A-679
A-685
A-696
A-691
A-686
257°
2240 m. to Lcp SW corner GRAVES I Claim.
0+00
1+00
2+00
EAST BORDER GRAVES I CLAIM
ORANGE GOSSAN
N
LEGEND
A-686
12,24,127,3.4
Soil sample, ident. number. ppm Cu, Pb, Zn, Cd.
Traverse line with station.
Topographic contour (metres a.s.l.) 20 m. contour interval.
0 50 100 150 m.
BLUE EMERALD RESOURCES INC.
MOUNT GRAVES PROPERTY
OMINECA M.D. B.C.
SOUTH WALL GOSSAN
SOIL GEOCHEMISTRY
(Cu, Pb, Zn, Cd)
FOR LOCATION SEE FIGURE 5
N.T.S. 94 E/7W
HI-TEC RESOURCE MANAGEMENT LIMITED
DWN BY:
CHK BY: D. Lyman
SCALE: 1:2500
DATE: Feb. 1988
FIGURE No. 10a

and base metal deposition based on epithermal gold models. Control of alteration and mineralization is exercised primarily by profound high-angle faulting, but on the property, some channeling of mineralizing fluids has also been accomplished by extensive quartz feldspar porphyry dykes and less permeable andesite flows. Easterly to northeasterly high-angle faulting also hosts mineralization, commonly at or near intersection with northwesterly-trending faults.

Geochemical anomalies reported by Kowall (1984), Caira (1982) and Yeager & Ikona (1986) were generally confirmed during the 1987 program by trenching, and rock and soil sampling results. Mapping and trenching on the GWP zone has indicated a favourably mineralized southwestern extension along strike that should be tested by drilling. Mapping also indicates a probable northeast extension. Sampling and mapping on the Yellow Rose Zone indicates that northerly and southerly extensions may exist along a steep northwesterly-trending shear zone. Mapping and sampling on the East Ridge Zone has demonstrated that steep faulting and an overlying, relatively impermeable andesite flow control mineralization. The Lake Fault Zone is associated with quartz-galena-sphalerite veining, and deserves additional prospecting. Several other anomalous zones and gossans merit further prospecting.

6.0 RECOMMENDATIONS

The following program is recommended for the next stage of exploration:

1. Drilling should be conducted on southwesterly and northeasterly extensions of the mineralized quartz breccia zone of the GWP zone. This drilling should be completed during the period of mid-June to mid-July to

take advantage of limited water from snow melt in the upper GWP cirque.

2. Simultaneous to drilling, geophysical surveying, minimally a ground VLF-EM and magnetic survey, and further mapping and trenching should be conducted on the GWP zone to define extensions. Detailed land survey techniques should be used to locate all work past and present in this area and to establish elevation controls.

3. Additional trenching, mapping, and rock and soil sampling are required on the Yellow Rose and East Ridge Zones to define mineralized areas and structural controls.

4. Further mapping, prospecting and sampling are required to evaluate the Lake Fault and the South Wall areas.

A cost estimate for the above proposed program is included in Appendix I.

Respectfully submitted,

HI-TEC RESOURCE MANAGEMENT LTD.

David A. Lyman,
Geological Engineer

February 29, 1988

7.0 REFERENCES

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APPENDIX I

Estimated Cost of Proposed Program

Project Preparation		$ 1,500.00
Mobilization/Demobilization		10,000.00
Personnel		
1 Project Geologist		
20 days @ $275.00/day	$5,500.00	
2 Geological Technicians		
20 days @ $225.00/day	9,000.00	
1 Geophysical Technician		
3 days @ $250.00/day	750.00	
		15,000.00
Diamond Drilling (all inclusive)		
500 m @ $150.00/m		45,000.00
Helicopter Transport - 20 hours @ $550.00/hr		11,000.00
Trenching and Survey equipment rental		3,000.00
Geophysical Equipment Rental		2,000.00
Geochemical Analyses - 350 samples @ $11.20		3,920.00
Camp Equipment Rental - 20 days @ $80.00/day		1,600.00
Domicile - 63 man days @ $30.00/day		1,890.00
Field Supplies		3,500.00
Report Costs		4,500.00
Project Supervision and Engineering		5,500.00
		$108,660.00
10% Contingency		10,866.00
	TOTAL:	**$119,526.00**

APPENDIX II

STATEMENT OF COSTS

BLUE EMERALD RESOURCES INC. - MT. GRAVES PROPERTY
Project 87BC030
September 2 to 18, 1987

Project Preparation		$ 1,500.00
Salaries		
D. Lyman, Project Geologist 17 days @ $375.00/day	$6,375.00	
A. Cooper, Field Technician 17 days @ $200.00/day	3,400.00	
K. Curry, Field Technician 17 days @ $200.00/day	3,400.00	
M. Carson, Field Technician 13 days @ $200.00/day	2,600.00	
		15,775.00
Supervision		
J.P. Sorbara, Geologist 4 days @ $500.00/day		2,000.00
Domicile - 68 man days @ $50.00/day		3,400.00
Mobilization/Demobilization		12,029.66
Support Flights, Helicopter 2 hrs.		1,174.75
Camp Rental - 17 days @ $250.00/day		4,250.00
Field Equipment Rental - 17 days @ $100.00/day		1,700.00
Geochemical Analysis - 12 element ICP, F.A. Au		
116 soil samples @ $10.90/sample	$1,264.40	
10 stream samples @ $10.90/sample	109.00	
57 rock samples @ $15.25/sample	869.25	
		2,242.64
Radio Rental - 17 days @ $30.00/day		510.00
Assessment Report		4,500.00
		49,082.06
19% Project Management Fee		9,217.94
J.P. Sorbara & Associates Engineering Report		2,500.00
	TOTAL:	**$60,800.00**

APPENDIX III

Statement of Qualifications

STATEMENT OF QUALIFICATIONS

I, DAVID A. LYMAN, of Vancouver, British Columbia, certify that:

1. I am employed as a geologist by Hi-Tec Resource Management Ltd., 1500 - 609 Granville Street, Vancouver, British Columbia.

2. I graduated in 1969 from The Colorado School of Mines with the degree of Geological Engineer.

3. I have 18 years of experience as a geologist in mineral exploration in Alaska, Canada, the Western United States and Mexico.

4. I have neither received nor expect to receive any financial interest, direct or indirect, in the property examined in this report or any property within a 10 km radius.

5. This report is based on examinations I personally conducted and work I supervised during August and September 1987, and on geological reports and maps from government, company, and consultant sources, and other professional literature.

David A. Lyman, Geological Engineer

February 29, 1988

APPENDIX IV

Rock Sample Descriptions

ROCK SAMPLE DESCRIPTIONS

Sample #	Sample Type*	Width (cm)	Rock Description
L-301	G	float	Grey pyrite quartz-flooded porphyry (?) lens with thickness of at least 15 cm indicated.
L-302	G	float	As L-301, tight silicified rock with no oxidation.
L-303	C	30	Footwall selvage of Yeager sample #36287 (see Figure 7), broken, partly-altered andesite.
L-304	C	50	Hanging wall selvage, as L-303, broken, manganese oxide staining.
L-305	C	50	Footwall selvage of thin quartz vein, broken, partly clay-altered andesite, trace chalcopyrite.
L-306	C	45	Hanging wall selvage, as L-305.
L-307	C	1-2	Open quartz vein, no sulfides.
L-308	C	40	Shattered black rusty andesite (?)
L-309	C	40	Highly silicified porphyry (?), 1-3% very fine grained euredral disseminated pyrite, distinct pink-red oxide on surface.
L-310	C	20	Highly silicified porphyry in broken lens, 1-3% pyrite, rusty fractures.
L-311	C	40	As L-310, tightly silicified.
L-312	R	100	Greenish partly-silicified andesite porphyry, approx. 1% euhedral disseminated pyrite, very fine quartz-calcite veinlets, rubble.
L-313	R	150	Yellow to red-brown oxidized andesite porphyry (?), very siliceous with 1-5% euhedral disseminated pyrite, calcite fracture filling and veinlets.

Sample #	Sample Type*	Width (cm)	Rock Description
L-314	R	200	Highly silicified porphyry with 1-3% disseminated pyrite, light to heavy oxidation depending on fracture density.
L-315	R	170	Moderate-highly silicified porphyry andesite flow (?), >1% disseminated pyrite.
L-316	R	120	Similar L-315, less silicified.
L-317	R	100	Similar L-315, less silicified.
L-318	R	100	Similar L-315, less silicified, some patches of propylitic alteration.
L-319	G	25	Grey quartz-flooded lens with 3-5% disseminated pyrite.
L-320	G	40	Rusty weathered clay-quartz fragment gouge from shear.
L-321	R	60	Moderate-heavily silicified porphyry along mineralized fault zone, 1-2% disseminated pyrite, partly oxidized.
L-322	R	80	As L-321, less silicified and pyritized fault margin.
L-323	G	40	Partly silicified agglomerate, 3-15 cm diameter rounded cobbles, cut by quartz veinlets.
L-324	R	50	Broken, partly quartz-healed andesite, partly oxidized.
L-325	R	50	As L-324, more silicified, trace galena and sphalerite.
L-326	R	2-4	Quartz vein cross-cutting fault zone, in green andesite.
L-327	R	150	Green porphyry andesite, broken with partial quartz vein healing.
L-328	R	30	Broken, partly quartz-healed andesite along fault trace. Minor pyrite and hematite.

Sample #	Sample Type*	Width (cm)	Rock Description
L-329	R	45	As L-328.
L-330	R	110	Heavily silicified andesite breccia, some quartz-feldspar porphyry fragments, galena disseminated and in breccia openings, lesser sphalerite and pyrite.
L-331	R	150	Similar L-330, repeatedly brecciated, less sphalerite and galena.
L-332	R	150	Similar L-331, partly oxidized.
L-333	R	150	Similar L-331, partly oxidized, some less silicified areas.
L-334	R	150	Moderate silicified, partly oxidized, some galena along breccia fractures.
L-335	R	150	Heavily silicified andesite and quartz-feldspar porphyry breccia, repeatedly shattered, partly healed, some oxidation 1-3% very fine grained pyrite.
L-336	R	170	Light-moderate silicified andesite breccia, 102% fine grained disseminated pyrite, quartz-feldspar porphyry intrusive breccia fragments.
L-337	R	200	Moderate-heavily silicified andesite porphyry breccia, with some intensely silicified fragments.
L-338	R	250	Similar L-337.
L-339	G	float	Silicified, pyritic andesite from 285 cm depth in Trench 4.
L-340	R	30	Heavily silicified (?), 1-2% very fine grained disseminated pyrite, very fine grained argentite? and galena in clear quartz veinlets, 1 cm oxidized rind, bedrock Trench 4.

Sample #	Sample Type*	Width (cm)	Rock Description
L-341	R	70	Moderate-heavily silicified andesite, some breccia fragments, 1-3% very fine grained disseminated pyrite after mafics, also fine grained disseminated galena and sphalerite.
L-342	R	50	Light to moderate silicified andesite, <1% disseminated pyrite.
L-343	R	90	Heavily silicified vein rock, repeatedly brecciated, 1-2% very fine grained disseminated pyrite, late stage quartz vein.
L-344	C	5-8	Rusty clay and fragment gouge from small fault, northeast-trending, sample from 25 cm length.
L-345	R	130	Similar to L-343.
L-346	R	130	Similar to L-343.
L-347	R	120	Lightly silicified porphyritic andesite, manganese staining, some fine quartz veining and disseminated pyrite.
L-348	R	120	Similar to L-343.
L-349	R	150	Intensely silicified breccia, relict texture gone, 2-5% very fine grained disseminated pyrite.
L-350	R	150	Simialr to L-343, some amethystine quartz, 3-5% very fine grained euhedral pyrite.
L-351	R	100	Similar to L-349, but more porous and leached.
A-661	R	100	Greenish andesite, moderate silicification, thin quartz veinlets trending north-south, some disseminated pyrite.
A-662	R	100	As A-661, increased silicification and pyrite.

Sample #	Sample Type*	Width (cm)	Rock Description
A-663	R	100	Moderately silicified andesite with 1-2% pyrite, brecciated along sub-faults.
A-664	R	100	Thin tight mafic dyke, little altered.
A-665	R	100	Moderate to heavily silicified andesite (?), up to 5% pyrite as dissemination and fracture filling, partly oxidized along fractures, jarosite (?) and alunite crusts.
A-666	R	100	Quartz-feldspar porphyry intrusive, 1 m from contact, unmineralized.

***Sample Type - C =** Channel Sample
R = Rock Chip Sample
G = Grab Sample

APPENDIX V

Geochemical Analytical Results

COMPANY: HI TEC RESOURCE MANAGEMENT
PROJECT NO: 87 BC 030
ATTENTION: D.A.LYMAN

MIN-EN LABS ICP REPORT
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

(ACT:F31) PAGE 1 OF 1
FILE NO: 7-1413R/P1+2
* TYPE ROCK GEOCHEM * DATE:SEPT 30, 1987

(VALUES IN PPM)	*	AG	AS	BA	CD	CO	CU	MN	MO	PB	SB	ZN	CR	AU-PPB	
L 301	G	.8	1	436	55.9	11	71	2022	2	695	4	4651	35	29	TRENCH 1 YELLOW ROSE ZONE
L 302	G	.9	1	201	25.6	16	73	3601	1	1721	3	1124	30	238	
L 303	C	.6	1	592	54.4	4	42	1080	1	213	3	3085	27	16	
L 304	C	.3	1	134	188.7	5	424	2077	1	136	2	4932	18	9	
L 305	C	.5	1	187	28.8	5	238	1458	1	3554	5	1364	63	11	
L 306	C	.3	1	123	36.0	6	26	2101	1	129	2	1864	25	6	
L 307	C	.6	3	78	7.0	2	29	471	1	899	2	400	260	960	
L 308	C	.3	1	109	16.1	10	23	1943	1	500	2	689	44	4	
L 309	C	.7	8	166	3.7	2	7	129	4	83	2	92	97	12	TRENCH 2 ORANGE ROSE ZONE
L 310	C	.8	10	233	2.8	2	5	85	4	93	1	75	71	6	
L 311	C	2.9	39	254	2.5	1	5	74	13	159	2	36	121	5	
L 312	R	.8	30	91	3.7	3	5	1254	1	40	2	126	41	6	
L 313	R	1.0	30	128	2.6	2	6	456	2	42	1	49	111	11	
L 314	R	.7	185	242	6.3	2	9	76	4	45	1	26	82	23	
L 315	R	7.6	24	625	4.3	3	16	1278	1	105	2	191	124	33	GWP AREA TRENCH 7
L 316	R	13.4	26	1431	2.4	1	15	109	1	360	3	78	144	90	
L 317	R	6.4	37	510	3.0	2	9	422	1	119	3	112	135	54	
L 318	R	7.0	41	204	3.9	3	8	819	4	119	1	186	80	62	
L 319	G	55.6	69	292	8.8	5	40	6852	11	419	3	412	120	290	EAST RIDGE ZONE
L 320	G	.7	1	111	6.0	3	6	402	1	23	2	246	75	4	
L 321	R	.2	1	113	3.8	2	6	477	1	21	3	195	106	6	
L 322	R	.2	1	58	3.8	2	5	1244	1	24	2	123	59	6	
L 323	G	.3	3	3628	3.5	5	37	1305	7	508	1	107	158	23	
L 324	R	4.0	47	406	2.5	4	26	1382	1	86	4	81	148	21	LAKE FAULT ZONE
L 325	R	5.7	78	193	5.1	4	21	2311	9	179	3	267	217	56	
L 326	R	5.4	66	77	3.7	3	20	3446	5	149	3	117	127	29	
L 327	R	6.2	101	60	5.2	3	30	8036	6	218	4	165	101	38	
L 328	R	2.7	48	70	3.0	4	12	3481	1	68	3	91	59	7	
L 329	R	3.8	22	150	3.2	5	18	2651	1	165	1	158	80	18	
L 330	R	17.6	43	197	37.0	3	135	1475	2	3396	8	3175	98	198	UPPER GWP ZONE
L 331	R	6.9	76	471	5.5	4	54	1894	7	113	5	193	130	29	
L 332	R	3.7	55	308	2.7	3	20	1444	3	82	3	88	130	12	
L 333	R	7.2	59	187	11.1	3	89	2194	6	186	3	615	274	22	
L 334	R	9.2	82	191	9.1	4	55	3708	2	134	1	468	120	40	
L 335	R	2.6	31	215	4.3	4	19	1308	1	159	3	126	174	5	
L 336	R	1.8	12	119	1.7	2	28	1265	1	66	3	81	133	4	
L 337	R	174.2	36	436	7.2	4	144	2498	1	954	3	491	149	470	
L 338	R	11.3	39	138	4.8	4	20	2418	1	161	2	197	148	37	
L 339	G	52.7	54	268	9.0	4	31	5503	1	377	6	504	92	135	TRENCH 4
L 340	R	18.9	63	152	5.8	4	14	5106	1	157	5	238	114	52	
L 341	R	461.6	50	236	373.1	6	2653	3663	6	14493	28	33791	74	3000	(UPPER GWP ZONE) TRENCH 3
L 342	R	9.0	3	146	9.9	7	125	537	3	299	1	745	97	4	
L 343	R	234.7	106	429	26.3	4	201	1505	14	1535	13	2171	185	410	
L 344	C	420.6	101	353	77.5	4	1445	5012	5	5519	14	5845	123	800	
L 345	R	43.7	60	427	16.2	4	68	1045	7	549	6	717	157	96	
L 346	R	228.5	105	325	15.5	3	341	1158	5	1846	9	1069	125	430	
L 347	R	301.2	72	607	18.7	3	319	1825	4	1781	9	1536	143	990	
L 348	R	195.6	68	407	27.5	4	277	778	6	1299	8	2212	122	840	
L 349	R	140.2	52	592	14.8	2	107	635	7	1413	7	1176	144	570	
L 350	R	451.8	41	270	19.4	3	341	243	3	3916	11	2045	124	1450	
L 351	R	503.1	42	202	25.1	4	392	778	4	3789	9	2390	119	2100	
A 661	R	27.0	85	98	9.2	4	67	2251	1	332	4	332	94	34	LOWER GWP ZONE
A 662	R	53.0	23	1223	18.2	3	251	3586	3	779	5	1105	108	215	
A 663	R	16.1	51	139	4.2	1	19	528	1	142	4	243	47	59	
A 664	R	5.2	66	471	3.6	1	22	253	1	89	5	69	96	3	
A 665	R	562.8	58	186	21.4	6	187	1844	6	697	3	1091	32	1400	
A 666	R	10.8	1	154	.9	2	5	1493	1	34	1	65	37	6	

* SAMPLE TYPE: C = CHANNEL SAMPLE, R = ROCK CHIP SAMPLE, G = GRAB SAMPLE.

COMPANY: HI-TEC RESOURCES
PROJECT NO: 87 BC 030
ATTENTION: J.WARREN

MIN-EN LABS ICP REPORT
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

(ACT:F31) PAGE 1 OF 2
FILE NO: 7-1413/P1+2
* TYPE SOIL GEOCHEM * DATE:SEPT 29, 1987

(VALUES IN PPM)	AG	AS	BA	CD	CO	CU	MN	MO	PB	SB	ZN	CR	AU-PPB	
A 601	.4	1	328	3.8	6	28	1142	1	33	3	125	6	5	
A 602	.3	1	188	3.9	5	17	828	1	30	4	105	5	5	
A 603	.4	1	227	3.5	5	17	915	1	29	4	131	6	5	
A 604	.5	1	266	3.5	6	17	1042	1	35	1	135	7	10	
A 605	.6	1	223	3.3	5	20	1265	1	37	4	133	7	5	
A 606 40M	.9	4	305	3.7	6	23	992	2	36	5	134	6	5	
A 607 STREAM	7.0	32	790	9.3	8	50	6067	4	181	6	302	1	5	
A 608 40M	.1	3	303	2.8	4	13	927	1	22	3	110	5	5	GWP
A 609	.8	3	313	4.5	6	26	1476	1	29	5	117	3	5	GRID
A 610	.8	1	215	3.3	6	20	1038	1	31	5	114	5	10	
A 611	.5	1	299	4.2	7	25	1205	1	34	5	121	2	5	
A 612	.7	1	249	3.9	5	19	1609	1	35	3	118	6	5	
A 613	.9	7	260	3.6	4	21	934	2	33	4	111	4	5	
A 614 STREAM	4.8	8	588	5.0	6	51	2174	2	121	5	289	3	5	
A 615	.6	1	346	4.1	6	20	1106	1	36	5	113	4	5	
A 616 40M	.1	1	341	3.7	5	17	1248	1	31	3	106	6	5	
A 617	.3	3	317	3.5	5	20	1124	1	35	5	123	7	10	
A 618 15cm depth	.9	26	529	4.3	7	38	1395	1	26	3	130	1	5	
A 619 60cm "	.4	1	318	3.6	7	33	1239	1	25	5	85	1	5	
A 620 120cm "	.9	6	275	4.8	9	37	1361	1	21	6	95	2	5	TRENCH
A 621 15cm "	1.2	1	417	4.4	7	38	1156	1	26	6	102	4	5	4
A 622 60cm "	.5	1	353	4.8	8	37	1420	1	24	1	88	1	5	
A 623 120cm "	.8	3	265	4.2	8	34	1259	1	21	1	87	2	5	(GWP
A 624 180cm "	4.7	8	385	5.6	9	39	2090	1	85	2	162	1	10	ZONE)
A 625 240cm "	323.0	121	909	34.4	13	180	12191	12	2491	10	2509	9	630	
A 626 285cm "	126.3	82	692	27.2	13	92	9779	6	1126	4	1795	6	300	
A 627	7.1	1	373	4.7	4	15	2312	1	112	1	247	2	5	
A 628	1.5	4	286	4.6	4	11	2722	1	113	1	183	4	5	
A 629 20M	1.7	12	585	4.1	3	11	2539	2	80	3	202	1	10	
A 630 20M STREAM	1.5	8	448	5.1	4	14	2643	1	81	1	205	2	5	
A 631	.6	5	348	3.9	1	7	1120	1	65	4	132	1	5	
A 632 40M	.8	12	469	4.9	4	11	3733	1	79	4	186	1	5	
A 633	1.6	15	554	4.2	4	10	3069	1	129	5	182	1	10	
A 634	3.5	1	587	8.8	5	14	6496	2	468	2	372	1	15	EAST
A 635 40M	2.7	2	583	7.3	5	12	7535	2	445	1	348	1	5	SLOPE
A 636	2.3	5	811	6.5	5	12	9536	2	653	2	244	3	5	
A 637	1.5	1	447	4.6	3	10	3514	2	199	2	216	1	5	VOLE
A 638 STREAM	1.6	7	536	6.1	5	17	3098	2	100	2	277	2	35	PEAK
A 639 40M	2.4	12	847	5.5	8	13	9136	2	106	3	147	10	5	
A 640	2.2	13	838	5.7	6	25	3456	1	96	1	199	3	20	
A 642 20M	.3	1	160	2.9	4	7	2027	1	32	4	121	1	5	
A 643 20M	.9	1	325	3.2	5	9	3719	1	56	1	103	4	5	
A 644 40M	2.9	4	204	5.3	6	19	3351	1	96	2	192	5	5	
A 645	3.0	16	515	7.5	8	22	6282	2	141	2	273	12	10	
A 646 40M	2.2	25	771	4.9	5	18	3631	2	106	5	232	1	5	
A 647	.8	1	429	4.2	3	14	1840	2	81	4	227	6	5	
A 648	3.1	9	2508	5.9	3	21	9237	2	398	3	269	5	5	
A 649	2.0	1	367	2.2	1	6	1918	1	138	1	219	1	5	
A 650	2.0	1	861	2.7	1	9	1036	2	126	4	183	1	5	
A 652	3.2	15	633	6.3	5	26	3137	4	180	1	321	1	10	
A 653	1.1	1	423	3.6	3	8	2732	1	79	1	158	1	5	
A 654 STREAM	1.9	1	546	5.4	4	13	3416	1	105	1	249	1	5	
A 659	79.6	79	715	16.3	18	241	6330	5	1206	6	990	1	540	TRENCH
A 660	76.9	72	786	15.2	16	230	5376	4	1125	6	916	1	610	5
A 669	5.8	4	427	3.3	1	16	622	2	302	2	254	1	5	
A 670	1.6	18	539	3.5	3	10	4515	1	50	1	103	1	5	SOUTH
A 671 40M	1.5	2	663	4.3	5	21	5330	1	47	1	148	2	5	WALL
A 672	.4	16	302	3.6	2	4	1757	1	24	1	93	2	5	GRID
A 673	.4	1	610	3.5	3	2	2433	1	22	4	115	1	5	
A 674	.3	9	458	3.0	2	6	2301	1	36	1	136	2	5	

COMPANY: HI-TEC RESOURCES
PROJECT NO: 87 BC 030
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MIN-EN LABS ICP REPORT
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

(ACT:F31) PAGE 1 OF 2 ESOURCES
FILE NO: 7-1413/P3+4 030
* TYPE SOIL GEOCHEM * DATE:SEPT 29, 1987 N

(VALUES IN PPM)	AG	AS	BA	CD	CO	CU	MN	MO	PB	SB	ZN	CR	AU-PPB	
A 675 40M	.9	3	398	3.6	3	8	3938	1	65	1	166	9	5	
A 676	.6	5	260	3.2	2	10	1863	2	52	1	159	4	10	
A 677	.9	1	367	4.8	3	13	3465	1	100	2	239	4	5	
A 678 40M	1.2	1	434	4.7	3	12	3650	2	96	2	197	5	5	
A 679	.7	4	150	4.8	5	10	1358	1	23	1	134	1	5	
A 680	.5	2	150	3.6	4	13	1258	1	23	5	129	2	5	
A 681	.5	2	244	2.8	4	12	2265	1	49	5	136	7	15	
A 682 20M	.5	6	174	3.7	4	12	2128	1	30	3	156	14	5	
A 683	.5	5	226	3.1	3	10	1835	1	20	1	146	6	5	SOUTH
A 684	.7	1	373	3.4	3	11	2891	1	25	1	158	4	10	WALL
A 685	.5	5	266	3.2	5	13	1294	1	22	1	106	7	5	
A 686	.4	4	152	3.4	4	12	1008	1	26	1	127	2	5	GRID
A 687	.6	7	236	3.8	3	9	2379	1	28	2	138	3	5	
A 688	.5	1	287	3.1	3	9	2285	1	31	1	138	2	10	
A 689 40M	.2	6	196	2.9	3	9	1544	1	17	1	123	1	5	
A 690	.8	4	168	3.9	5	14	1477	1	31	2	145	8	5	
A 691	.7	2	140	3.3	4	14	1232	1	18	1	119	7	5	
A 692	.2	1	94	3.3	3	10	797	1	16	1	116	2	5	
A 693 40M	.2	2	118	3.0	3	11	1127	1	16	1	121	2	10	
A 694	.7	3	118	4.0	5	13	1052	1	21	3	113	1	10	
A 695	.5	1	210	4.0	2	14	1101	2	77	1	254	1	5	
A 696	1.1	6	317	4.7	4	16	2291	2	104	1	222	1	15	
A 697	.4	1	385	3.3	1	4	283	1	188	1	106	3	15	
A 698	.9	5	646	4.3	3	13	841	1	67	3	126	1	5	
A 699	.3	2	459	2.2	1	2	72	1	93	1	27	2	5	SE
A 700 40M	.6	16	564	6.6	3	9	2047	1	69	4	251	1	5	EXTENSION
A 701 40M	1.6	11	465	4.9	4	10	2041	1	164	3	369	1	5	
A 702	1.1	11	1287	3.3	2	6	1339	1	285	4	155	1	10	
A 703	.9	4	685	3.0	2	5	684	1	207	4	135	1	15	YELLOW
A 704	2.1	11	848	6.2	8	12	3383	2	44	4	216	1	10	ROSE
A 705	5.9	18	360	7.8	5	17	6664	2	418	1	280	5	15	
A 706	3.4	3	656	13.8	8	15	4388	1	370	7	608	2	20	ZONE
A 707	2.6	12	498	10.4	8	12	3601	4	295	5	662	1	10	
A 708	1.0	2	455	4.3	5	12	1946	2	78	1	196	2	10	
K 101 20M STREAM	.6	7	303	3.6	5	16	984	1	24	2	139	5	5	
K 102 20M STREAM	.3	1	296	3.4	5	13	1166	1	22	1	130	6	5	
K 103 20M STREAM	.8	11	227	5.6	8	24	1544	1	27	4	184	3	5	
K 104 STREAM	.8	9	307	5.1	7	22	1250	2	20	2	172	11	5	
K 105	.3	2	187	3.7	5	21	1194	1	17	7	106	8	15	
K 106	.9	4	342	4.7	7	16	2490	1	24	1	144	11	5	
K 107 40M	1.2	10	292	5.1	8	23	1515	1	26	10	164	9	5	
K 108	1.2	17	339	5.7	8	36	1548	1	26	5	172	6	5	NW
K 109	.7	19	165	3.1	3	23	1413	5	37	2	99	6	5	
K 110	.7	9	325	3.8	6	16	2185	1	24	3	141	9	10	EXTENSION
K 111	1.1	14	354	6.0	6	28	1162	2	45	6	248	16	10	YELLOW
K 112	1.2	19	232	5.6	9	31	3484	2	54	5	169	18	15	
K 113	2.5	167	305	8.6	5	36	2122	12	109	23	155	8	5	ROSE
K 114	2.2	55	219	7.5	10	78	4323	3	136	9	179	14	5	ZONE
K 115	1.7	18	274	4.0	5	23	1833	2	51	5	148	8	5	
K 116	1.4	14	499	3.9	6	26	1245	2	32	3	112	7	10	
K 117	1.9	32	283	6.4	8	37	2657	4	228	5	400	11	35	
K 118	.9	36	325	5.3	6	27	2483	3	75	4	169	15	5	
K 119 40M	2.7	53	754	5.8	8	20	7478	3	106	2	158	9	5	
K 120	2.3	57	320	5.2	6	21	4425	3	105	1	153	10	5	
K 121 40M	2.7	27	681	5.9	7	16	7869	2	99	1	151	7	5	
K 122 40M	2.5	26	966	3.5	6	14	5890	2	89	2	105	11	10	
L 401	.7	1	222	2.6	4	16	1090	1	29	2	82	3	5	
L 402	.7	4	253	3.4	5	27	1080	1	29	1	62	3	5	GWP
L 403	.7	3	196	3.1	5	21	1146	1	31	2	74	1	5	GRID
L 404	.6	4	193	3.1	4	17	956	1	26	2	78	4	15	

COMPANY: HI-TEC RESOURCES
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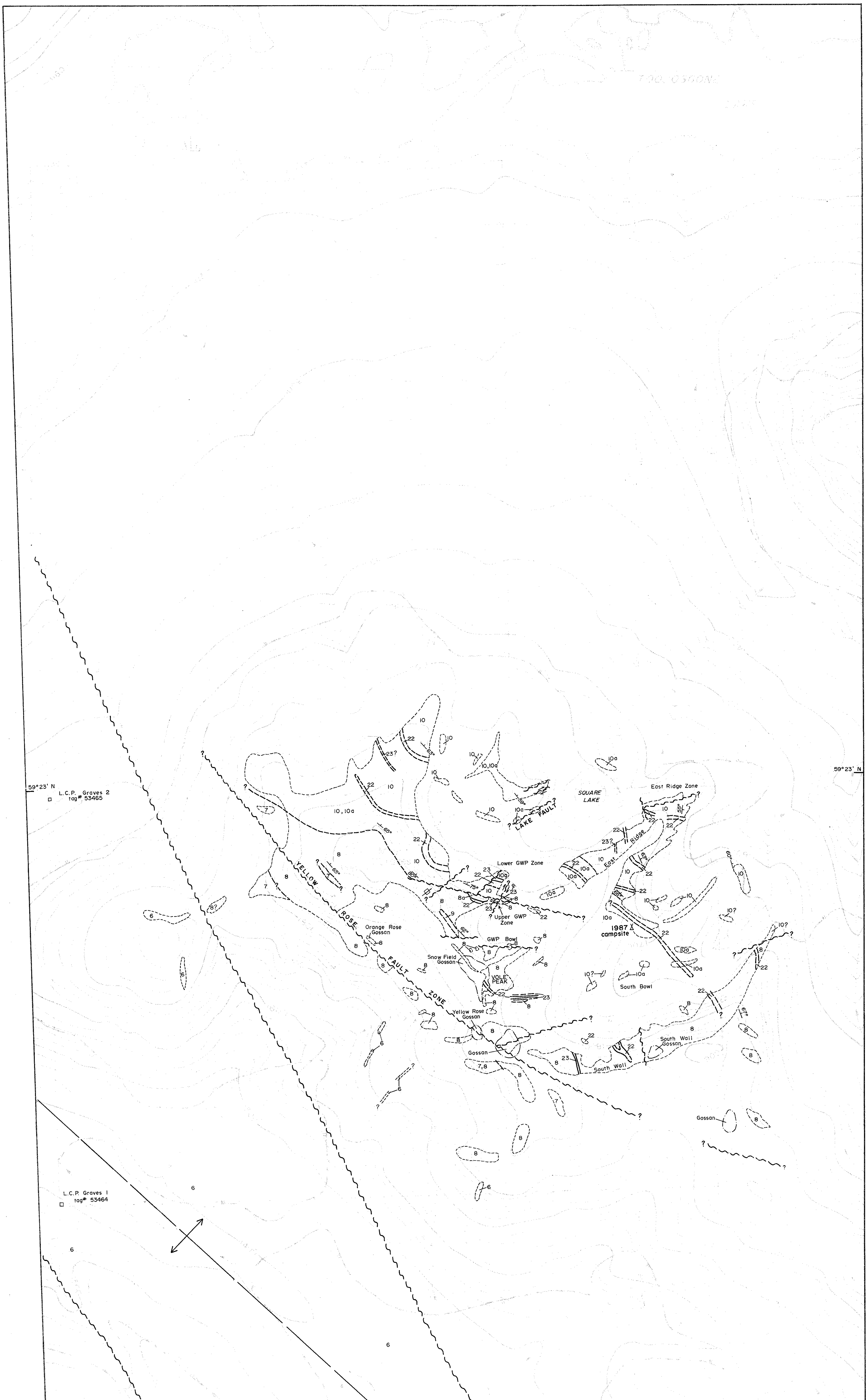
(604)980-5814 OR (604)988-4524

(ACT:F31) PAGE 1 OF 2 SOURCES
FILE NO: 7-1413/P5 030
* TYPE SOIL GEOCHEM * DATE:SEPT 29, 1987 EN

(VALUES IN PPM)	AG	AS	BA	CD	CO	CU	MN	MO	PB	SB	ZN	CR	AU-PPB
L 405	1.2	4	233	4.1	5	25	1172	1	45	2	122	7	5
L 406	1.0	1	173	3.9	4	18	596	2	25	1	108	8	5
L 407	1.4	3	265	4.1	6	27	1036	1	34	3	111	7	10
L 408	.7	8	203	3.9	5	19	767	1	28	1	106	6	5
L 409	1.1	5	195	2.7	6	18	870	1	31	3	91	5	15
L 410 STREAM	5.1	35	670	6.7	7	43	3816	3	122	3	222	2	10

GWP
GRID



LEGEND

(modified from Forster, 1986)

- Geologic contact, dashed where inferred.
- Fault, queried where location uncertain
- Fault with lateral movement
- Bedding attitude with dip
- Jointing, vertical, inclined
- Outcrop
- Altered area

EARLY TO MIDDLE JURASSIC
Hazelton Group

10	Maroon to brown pyroxene andesite flows, minor crystal and lapilli tuff and agglomerate between flows
10a	Green hornblende plagioclase porphyry flows
9	Brown to grey greywacke and siltstone
8	Grey to green hornblende porphyritic andesite flows, minor tan to brown andesite tuffs
8a	Maroon to purple porphyritic basalt
7	Brown to maroon, greenish welded to partly-welded andesite and pumics lapilli breccia

INTRUSIVE ROCKS

TERTIARY (?)

23	Pyroxene andesite dykes (mafic dykes), calcite-filled amygdules

EARLY TO MIDDLE JURASSIC

22	Quartz-feldspar porphyry (rhyolite) dykes

MIDDLE JURASSIC

6	Quartz Monzonite

GEOLOGICAL BRANCH
ASSESSMENT REPORT

17,326

0 50 100 250 500 750
metres

BLUE EMERALD RESOURCES INC.

MOUNT GRAVES CLAIMS
OMINECA M.D., B.C.

PROPERTY GEOLOGY

HI-TEC RESOURCE MANAGEMENT LIMITED

DWN. BY:	DATE: FEB. 1988
CHK. BY: D. A. LYMAN	FIGURE Nº 4
SCALE: 1:5,000	