92B/12W

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An Evaluation of the Valentine Mountain Gold Property

for

Valentine Mountain Gold Ltd.

by

Garratt Geoservices Ltd.

GARRATT GEOSERVICES

Victoria Mining Division
N.T.S. 92 B/12W, 92C/9E
Latitude 48° 32'N
Longitude 123° 54'W

G.L. Garratt, P.Geol., F.G.A.C.
November 14, 1986

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1. Introduction

The author was contracted by Valentine Mountain Gold Ltd. of Vancouver, B.C. to review an extensive data package on the Valentine Mountain Gold prospect, held by Beau Pre Explorations Ltd., of Victoria, B.C. The property, located near Sooke, B.C., was visited by the author on October 30, 1986. Extensive literature and exploration data pertaining to the property were carefully reviewed and evaluated and included a recent (May 1986) review (including a recommended exploration program) by Dr. G.R. Peatfield of Minequest Exploration Associates Ltd. Vancouver, B.C. This report summarizes these data sets and reviews the exploration potential of the property, concluding with a recommended work program.

The property is underlain by deformed and metamorphosed volcanic and sedimentary rocks of the Leech River complex, which comprises an allochthonous, fault-bound block that is unrelated to its surrounding terranes. The area has been intruded by granitic to dioritic sills and dykes which are believed to be synchronous with metamorphiam and deformation; these events are interpreted to have concluded around 39 to 41 Ma. Subsequent shearing, related to the east-west trending Leech River fault, further affected the terrain.

Quartz-vein systems, consisting of discrete veins and en-echelon masses are localized along fold and shear structures, and generally follow the east-west regional geologic trend. Gold-bearing veins within these systems have been explored since their discovery in 1976, and this work has included extensive trenching, sampling and some 1800 meters of diamond drilling. Gold occurs as fine particles to spectacular aggregate masses in quartz veins and, occasionally in wall rock to the veins. Determining an average grade has proven problematic due to the free occurrence of the gold, but a review of sampling data would suggest that grades of 0.2 to 0.5 ounces per ton, with local zones of 2 to 4 ounces per ton, across widths exceeding one meter, might be expected. The tonnage potential for the discovery zone is estimated at 500,000 to 750,000tons.

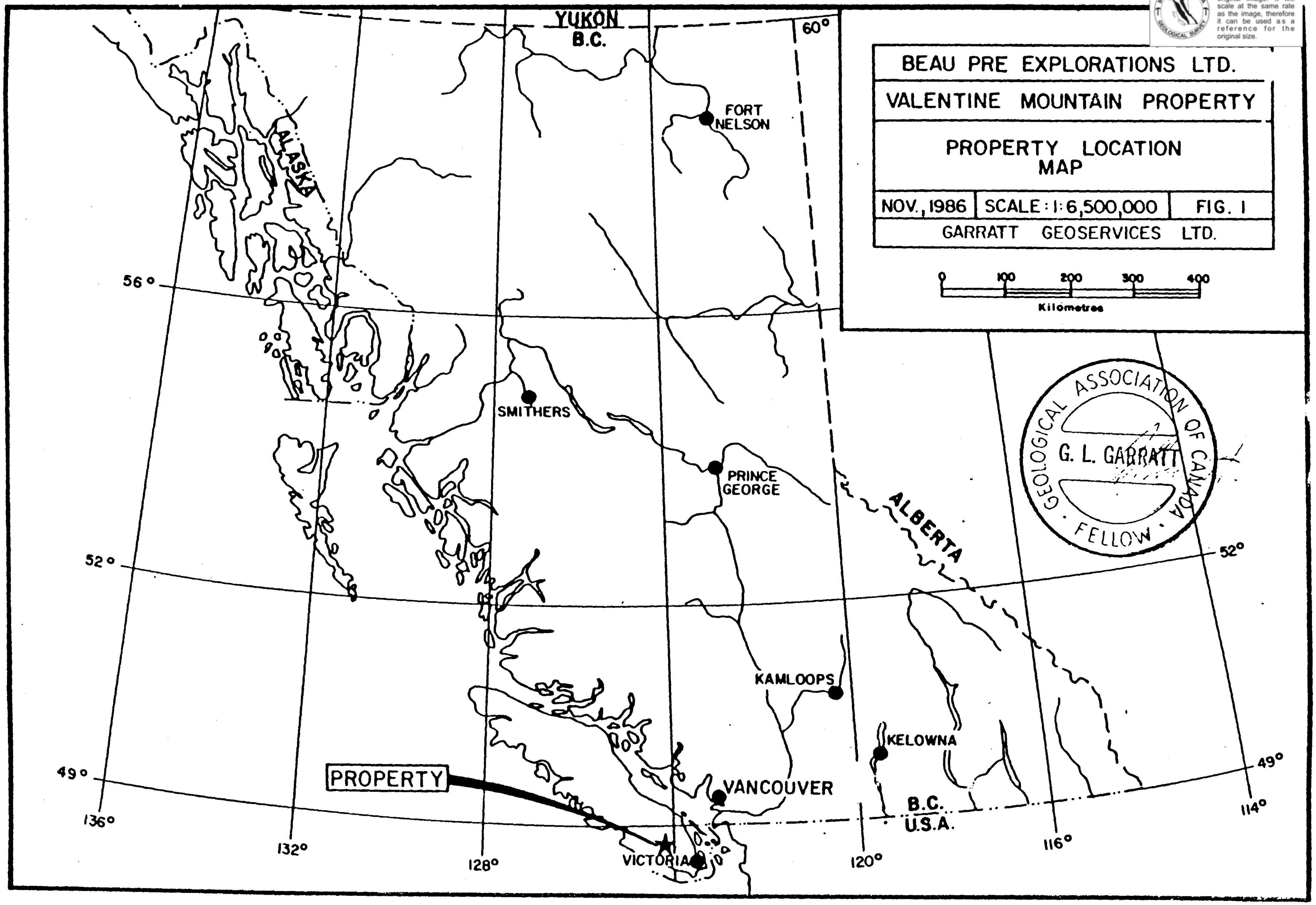
Reconnaissance exploration indicates that on strike systems occur and would enhance the tonnage potential dramatically; other anomalous areas have also been indicated and will require follow-up exploration. The mineralization appears to fit a quartz-vein shear zone classification that compares favourably with world class mines, though the limited amount of detailed work on the Valentine Mountain property precludes direct comparison to other deposits.

A two phase exploration program, designed to further test the discovery zone, its strike extensions and to advance reconnaissance exploration of this large property, is recommended. The Phase 1 program would require an expenditure of approximately $321,450.00. Phase 2 would entail delineation drilling, more detailed property exploration and preliminary bulk sample testing, and would be implemented on the basis of successful results in Phase 1.

2. Location, Access and Physiography

The property is located approximately 42 kilometers west of the City of Victoria and 19 kilometers north of the town of Sooke, on Vancouver Island, British Columbia. The Bear Creek and Diversion Reservoirs bound the property on the south, and Valentine Mountain lies on the central portion of the property which is in N.T.S. map sheets 92 B/12W and 92 C/9E at latitude 48^{o} 32' N and longitude 123^{o} 54' W. B. C. Highway 1A and Sooke Road lead from Victoria to Sooke, from which an all-weather gravel road accesses the property. Logging roads access most of the property though some may require the use of four-wheel drive vehicle. The main logging road access has weekday travel restrictions and permission from the logging operator is required for access to certain gated areas.

The property lies along the Insular Mountain Range, with local elevations ranging from 400 to 980 meters. The principal drainages are Walker Creek, Tripp Creek, Valentine Creek, Jordan River and West Leech River. All but the West Leech River flow to the south where the Jordan River continues southwesterly; the West Leech River drains southeasterly into the Leech River system. These drainages are fast flowing and susceptable to dramatic rises during the rainy season.


BEAU PRE EXPLORATIONS LTD.
VALENTINE MOUNTAIN PROPERTY
PROPERTY LOCATION MAP
NOV., 1986
SCALE : 1: 6,500,000
FIG. I
GARRATT GEOSERVICES LTD.
0 100 200 300 400
Kilometres
YUKON
B.C.
60°
ALASKA
FORT NELSON
56°
SMITHERS
PRINCE GEORGE
ALBERTA
52°
52°
KAMLOOPS
KELOWNA
VANCOUVER
VICTORIA
PROPERTY
49°
49°
B.C.
U.S.A.
136°
132°
128°
120°
116°
114°
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Heavy conifer forest would typically cover the area but much of this has been clear-cut logged, leaving a predominant cover of second growth with some logging slash areas as yet unseeded or recently cut. The property is ammenable to year-round work, though a nine to ten month season is more reasonable due to moderate snowfall conditions.

3. Ownership

The Valentine property comprises thirty-five claims totalling two hundred and fifty-four units; additionally, ten placer leases are held on the Jordan River, Bear Creek and Valentine Creek (see Figure 2). These claims are as follows:

Claim Name	#	Units	Record Date	Group Name	Group Date	Expiry
BLAZE #1	47	1	21 Jun'76	BLAZE	12 May'83	1988
BLAZE #2	53	2	12 Jul'76	BLAZE	12 May'83	1988
PEG #1	77	1	22 Feb'77	PEG	12 May'83	1988
PEG #2	90	1	24 May'77	PEG	12 May'83	1988
PEG #3	91	1	24 May'77	PEG	12 May'83	1988
PEG #4	92	1	24 May'77	PEG	12 May'83	1988
BLAZE #3	124	12	3 Oct'77	BLAZE	12 May'83	1988
PEG #5	144	1	20 Mar'78	PEG	12 May'83	1988
PEG #6	145	1	20 Mar'78	PEG	12 May'83	1988
BO #1	188	1	14 Sep'78	BO	22 Aug'79	1988
BO #2	189	1	18 Sep'78	BO	22 Aug'79	1988
BO #3	190	1	18 Sep'78	BO	22 Aug'79	1988
BO #4	191	1	18 Sep'78	BO	22 Aug'79	1988
BO #6	278	1	17 Sep'79	Ungrouped		1988
BLAZE #4	370	3	26 May'80	BLAZE	12 May'83	1988
BPEX #1	461	20	6 Feb'81	BLAZE	12 May'83	1988
BPEX #2	462	18	6 Feb'81	BLAZE	12 May'83	1988
BPEX #3	463	1	6 Feb'81	BLAZE	12 May'83	1988
BPEX #4	492	3	6 Mar'81	BLAZE	12 May'83	1988
BPEX #5	493	1	6 Mar'81	BLAZE	12 May'83	1988
BPEX #6	494	1	6 Mar'81	BLAZE	12 May'83	1988
BPEX #10	495	18	6 Mar'81	PEG	12 May'83	1988
BPEX #11	507	8	2 Apr'81	BLAZE	12 May'83	1988
BPEX #12	508	14	2 Apr'81	PEG	12 May'83	1988
BPEX #7	591	8	5 Oct'81	BLAZE	12 May'83	1988
BPEX #9	665	16	16 Sep'82	BLAZE	12 May'83	1988
BPEX #8	670	15	21 Sep'82	PEG	12 May'83	1988
JORDAN GOLD 1	731	10	24 Dec'82	JORDAN GOLD 1	16 Mar'84	1986
JORDAN GOLD 2	732	14	24 Dec'82	JORDAN GOLD 1	16 Mar'84	1986
JORDAN GOLD 3	733	14	24 Dec'82	JORDAN GOLD 1	16 Mar'84	1986

Claim Name	#	Units	Record Date	Group Name	Group Date	Expiry
JORDAN GOLD 5	737	18	11 Jan'83	JORDAN GOLD 5	16 Mar'84	1987
LUSTER #2	742	18	19 Jan'83	JORDAN GOLD 5	16 Mar'84	1987
LUSTER #1	747	2	31 Jan'83	Ungrouped		1987
P.C. #4	820	18	7 Apr'83	Ungrouped		1987
P.C. #1	817	8	7 Apr'83	Ungrouped		1987

Originally staked and held by Beau Pre Explorations Ltd. of 1027 Pandora Street, Victoria, B. C., the claims are held under option by Valentine Mountain Gold Ltd.

4. Economic Considerations

The Valentine Mountain property lies close to a well developed infrastructure containing a large population base, an ample hydroelectric power supply and short distance to ocean shipping. The immediate area of the claims supports logging operations and is essentially non-populated, allowing a minimum impact on local land use. The Bear Creek and Diversion Reservoirs were originally constructed for power supply to the Victoria area but eventually this system was replaced and became a back-up utility; apparently maintenance of these reservoirs is not being undertken due, in part, to cutback measures implemented by B. C. Hydro. While ample water supply exists on the property, it is likely that the reservoirs could be used as well.

While part of the objective of present exploration is to discover a bulk tonnage gold deposit which would allow low-cost, probably open pit, mining, it is likely that an underground mining situation would be envisaged, causing minimal surface area disturbance. More than adequate useable land area is contained within the property to allow any form of mining operation with a minimum of environmental impact.

Detailed exploration covers a small portion of the property, and this work has outlined a zone of quartz-vein systems carrying free gold that has been traced in detail along a 350 meter strike. Prospecting, pitting and diamond drilling indicates that this zone shows the potential to exceed

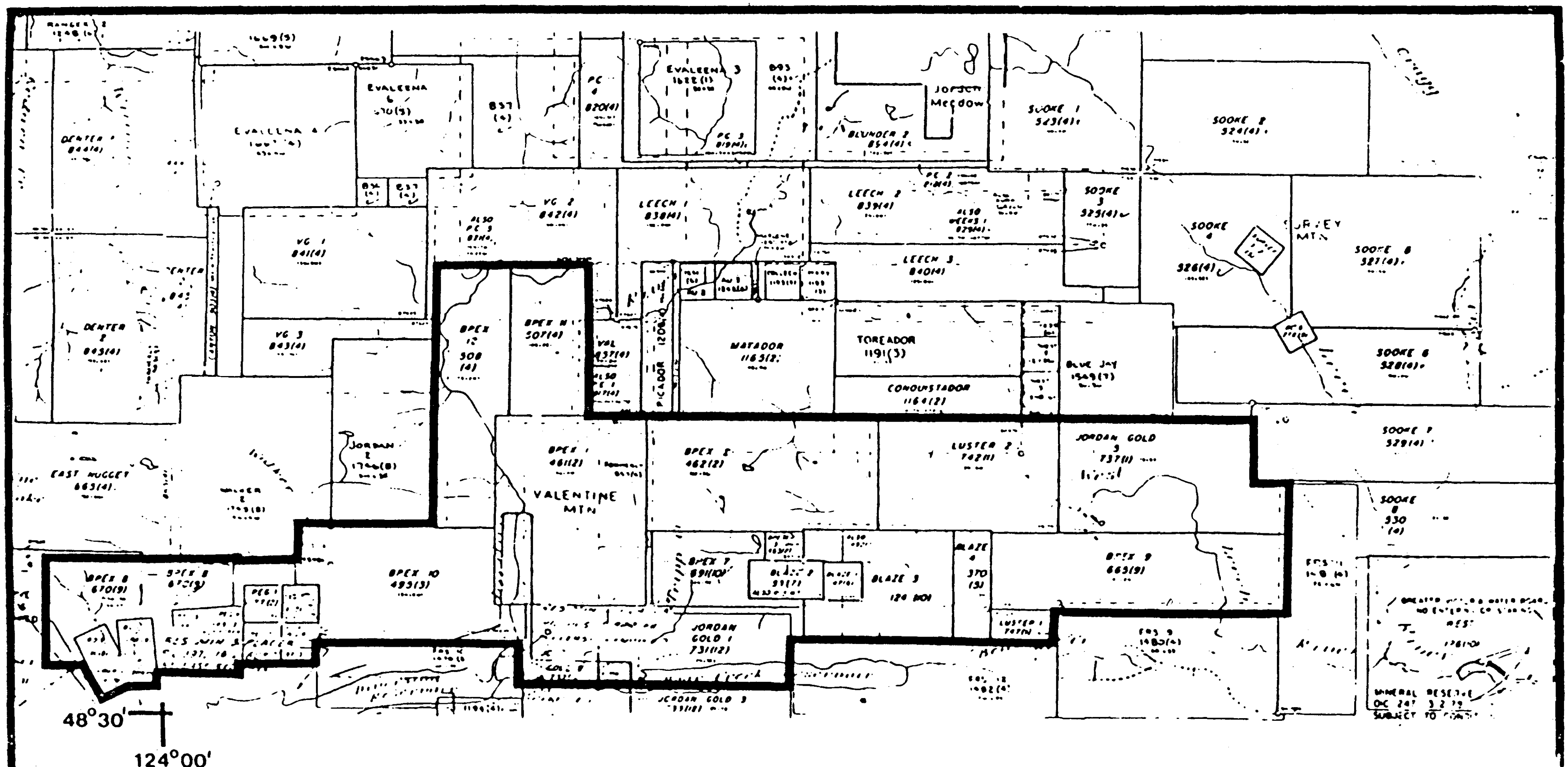

FIG. 2

BEAU PRE EXPLORATIONS LTD

VALENTINE MOUNTAIN PROPERTY

CLAIM LOCATION MAP

NTS 92B/12W, 92C/9E

NOV, 1986 VICTORIA MD

GARRATT GEOSERVICES LTD

Scale approx 1 67,923

0 500 1000 2000
Metres

inches 0 1
0 1 2 centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

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a strike length of 3,000 meters. Extensive sampling in the discovery zone indicates that grades of 0.1 to several ounces per ton can be encountered across widths of at least one meter. Vein systems are developed within zones of up to 70 meters width. Difficulties in analytically obtaining an 'average' grade have been encountered, and are believed due to the free and 'pockety' nature of the gold. Sampling would suggest, however, that values in the range of 0.2 to 0.5 ounces per ton might be expected across widths amenable to underground mining, and that zones of considerably higher grade could be expected.

The Valentine Mountain property might well be classified as a vein and shear zone gold deposit, showing characteristics similar to deposits reported to occur in the Meguma Group, Nova Scotia, the Yellowknife Supergroup, N.W.T. the Ballarat-Bendigo Districts, Australia (Thorpe, 1984), and to the Kolar deposit, India (Narayanaswami, et al, 1966). Direct comparisons between deposits or to deposit models is never without debate, and the Valentine Mountain occurrence is far from being well defined. General characteristics however, may be useful in comparing to mined deposits such that exploration opportunities will not be overlooked, and that an indication of the size and grade potential may be considered. The Canadian examples are apparently small (Goldenville - 550,000 tonnes at 12g (0.35 opt.)Au), but world class large deposits are reported in Australia (Ballarat-Bendigo) and India (Kolar-40 million tonnes; 23 million ounces produced). The geologic environment at the Kolar deposits appears to be very similar to the Valentine property with quartz-gold vein systems localizing in shears within and adjacent volcanic originated amphibolites, enclosed in a series of gneisses, quartzites and "autoclastic conglomerate", and intruded by syntectonic granitic plutons and post-tectonic quartz-veins, dolerite, gabbro and pegmatite dykes. Similarly, the Kolar exhibits a tremendous strike length and vertical dimension to the deposits (5 miles, 10,000 feet respectively) (Narayanaswami, et al, 1966).

Given the early stage of exploration at the Valentine Mountain property, the ore controls and geology indicate a large tonnage deposit potential. This potential, considering the occurrence of gold-quartz systems along a 3,000 meter strike, could reach several millions of tons. The discovery zone has received the only detailed exploration on the property and while the grade of the occurrence is poorly defined, it is evident that a strong and persistent quartz-vein system underlies the area. The dimensions of this system have been roughly defined over an area of 350 meters by 70 meters and to a depth of 165 meters. The veins and vein networks within this zone pinch and swell from a few centimeters to a few meters characterizing their shear and fold structure localization, comparable to the Kolar where ore shoots or lodes are reported to average 5 to 6 feet in width, and up to 50 feet across in folded areas (Narayanaswami, et al, 1966). It is evident that several lodes likely occur within the discovery zone, of which the 36 and A systems have been tested. Considering these dimensions, a minimum target tonnage for the discovery zone can be inferred to range from 500,000 to 750,000 short tons, assuming the presence of two shoots and the following dimension parameters:

Lode width - 6 feet (1.82 m) depth (minimum) - 500 feet (152.4 m)
Strike length - 1000 feet (304.8 m) to 1500 feet (457.2 m)
Tonnage factor - 12 cu. ft./ton

These figures represent an extrapolation from limited data, and are given to show the potential of the discovery zone. The potential for the discovery of similar zones at depth, below the levels of present testing, and along strike is good, as indicated by the local and regional persistence of the quartz-vein systems, and multiplies this target tonnage to define an exploration potential for several millions of tons. The Valentine Mountain property, therefore, exhibits a strong potential for the discovery of an economically viable deposit.

5. History

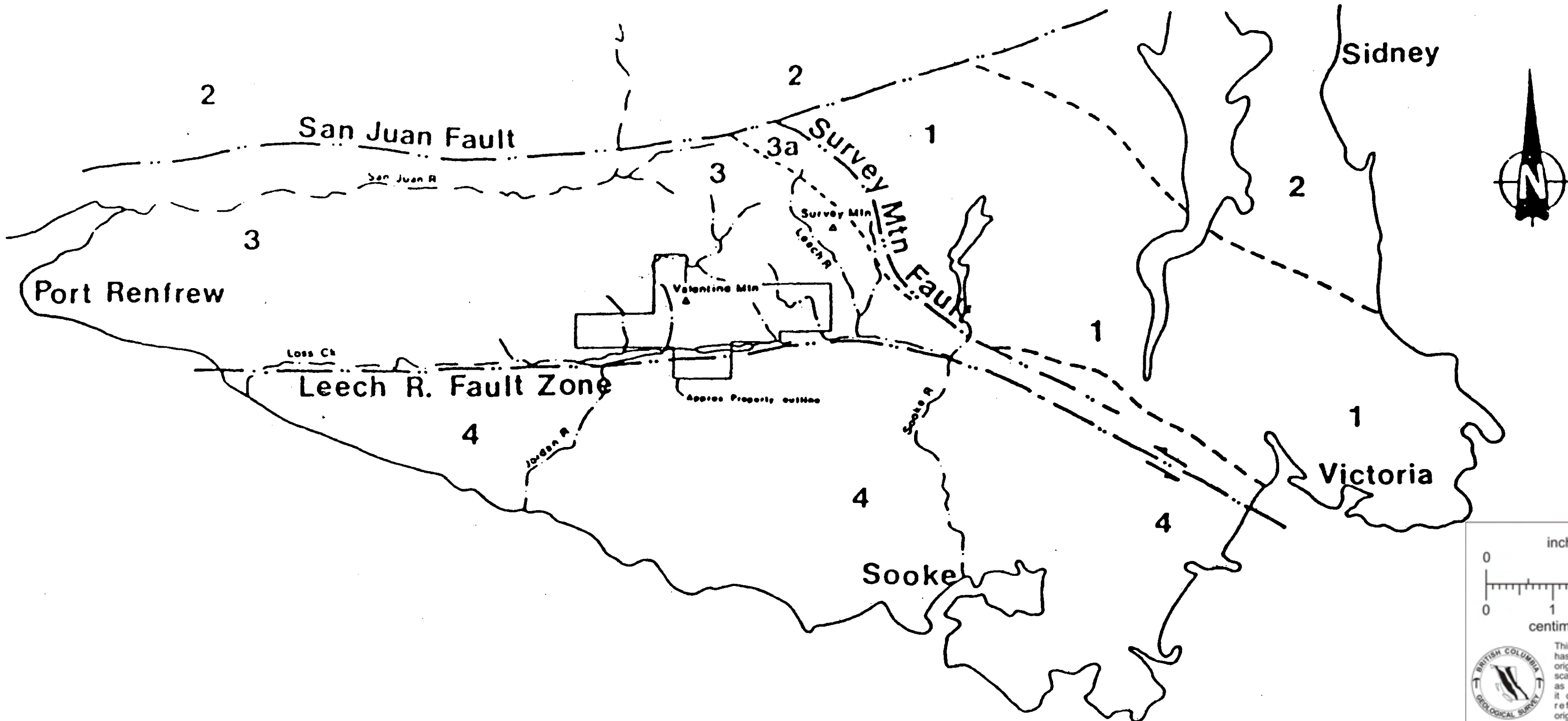
A small gold rush followed the discovery, in 1864, of placer gold on a fork of the Sooke River, some ten kilometers east of the property. Placer production has been estimated as being from $100,000.00 to $200,000.00 during the 1864 to 1866 rush.

In 1966 a Mr. Fred Zorelli, involved in logging operations on the east slope of Valentine Mountain, discovered free gold in a rock turned up by a tractor. Mr. Zorelli mentioned this discovery to Robert Beaupre and Alec Low, who were prospecting the area. These latter individuals subsequently discovered, by prospecting, gold mineralization of the "A vein", in 1976. In the period 1976 to 1980, Beau Pre Explorations undertook prospecting, trenching and rock sampling, including bulk sampling. During 1977 and 1978, L. H. Fairchild undertook a mapping program leading toward his M.Sc. thesis at the University of Washington, and a portion of his thesis area is covered by the property. In 1979 and 1980 limited grid-based soil sampling was carried out in the discovery area, as well as further trenching and sampling. Regional prospecting and silt sampling, followed by detailed prospecting and sampling were undertaken by Beau Pre Explorations Ltd. in 1981. In 1982 further trenching and sampling were undertaken, again by Beau Pre, primarily in the discovery area. During 1983 the property was geologically mapped at a scale of 1:7200 and thirteen diamond drill holes were completed in the discovery area, totalling approximately 1,828 meters (1294 m NQ; 534 m NQ). An airborne magnetometer and VLF-EM survey, totalling 370 line kilometers was conducted in 1984 over the entire property. In 1985, Falconbridge Limited optioned the property and carried out a program of trenching and sampling in the discovery area; this option was terminated following the acquisition and re-structuring of Falconbridge by Kidd Creek Mines Ltd., in early 1986.

Beau Pre Explorations are presently undertaking trenching on the 36 and adjacent veins and contracted Minequest Exploration Associates Ltd. of Vancouver to undertake a heavy mineral stream sediment sampling program; the results of these programs are pending. Dr. G. R. Peatfield, of Minequest, visited the property in May, 1986, and subsequently undertook a review of the available property data, which resulted in a summary report that has aided the author in compiling this present study.

6. Regional Geology

The Valentine Mountain property lies within the Leech River Complex, an east-west trading fault-bound block comprised of metamorphosed sedimentary and volcanic rocks (Fairchild and Cowan, 1982) (see Figure 3). The complex contrasts with rocks of adjacent terrains which consist of:



Scale approx 1:384,615

km

LEGEND

4 LOWER TO MIDDLE EOCENE METCHOSIN VOLCANICS, BASALT FLOWS, BRECCIAS AND PYROCLASTICS; RELATED SOOKE GABBRO; AND OVERLYING SOOKE FM. CLASTIC SEDIMENTARY ROCKS.

3 LEECH RIVER COMPLEX - METAMORPHOSED PELITIC ROCKS, SANDSTONE AND MINOR VOLCANIC ROCKS, CHERT AND CONGLOMERATE; PROBABLY LATE JURASSIC TO CRETACEOUS. 3A - VOLCANIC MEMBER.

2 PALEOZOIC TO JURASSIC STRATA (WRANGELLIA TERRANE?); INCLUDES PARTS OF SICKER, KARMUTSEN AND BONANZA GROUPS AND RELATED INTRUSIVE ROCKS

1 PALEOZOIC AND MESOZOIC IGNEOUS AND SEDIMENTARY ROCKS, MOSTLY METAMORPHOSED; INCLUDES PALEOZOIC WARK DIORITE AND COLQUITZ GNEISS, METAVOLCANIC ROCKS, AND JURASSIC ISLAND INTRUSIONS.

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VALENTINE MOUNTAIN PROPERTY

LOCATION MAP AND REGIONAL GEOLOGY

Plan	Drawn GRP	May 86	FIG. 3
Data GRP	NTS 92B,C		

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Paleozoic to Jurassic volcanic and plutonic rocks separated at the northern boundary of the complex by the San Juan fault; eastward, the Paleozoic Colquitz gneiss and Wark diorite occur along the Survey Mountain fault and; to the south the Leech River fault separates the early Eocene Metchosin Formation of volcanics and related intrusions as well as the Sooke Gabbros. The Leech River fault is considered by Fairchild and Cowan to be comprised of two to four subparallel, linear and steeply dipping faults that are interpreted to be left-lateral strike-slip faults which were active after metamorphism and deformation of the Leech River complex, and were involved in the placement of the complex as an allochthonous block with respect to the surrounding terranes.

The Leech River complex comprises metamorphosed pelites, sandstones and volcanics that have been metamorphosed to low-pressure greenschist to amphibolite facies (andalusite-staurolite-biotite) during two deformational stages. Deformation and metamorphism were accompanied by composite foliated to non-foliated sills and dykes of granitic to dioritic composition and related later pegmatites and quartz-tourmaline veins; the conclusion of these events has been dated at 39-41 Ma. The two deformational events resulted in "macroscopic east-plunging folds and related coaxial, mesoscopic linear structures, parasitic folds, and axial plane cleavages". (Fairchild and Cowan, 1982).

Retrograde metamorphism has been documented by Grove (1984), Wingert (1984) and Read (1986) and is postulated to overprint earlier metamorphic events. Grove (1984) suggests a relationship between this retrograde event and the Leech River shear-fault event. Gold mineralization, with accessory pyrite or arsenopyrite and associated quartz and quartz-calcite veining, appears to belong to the superimposed, later and lower grade, metamorphic event (Read, 1986). Peatfield (1986) suggests a possible "pre-folding decollement, as suggested by the apparent repetition of the amphibolite units on the nose the anticline" (east of Valentine Mountain).

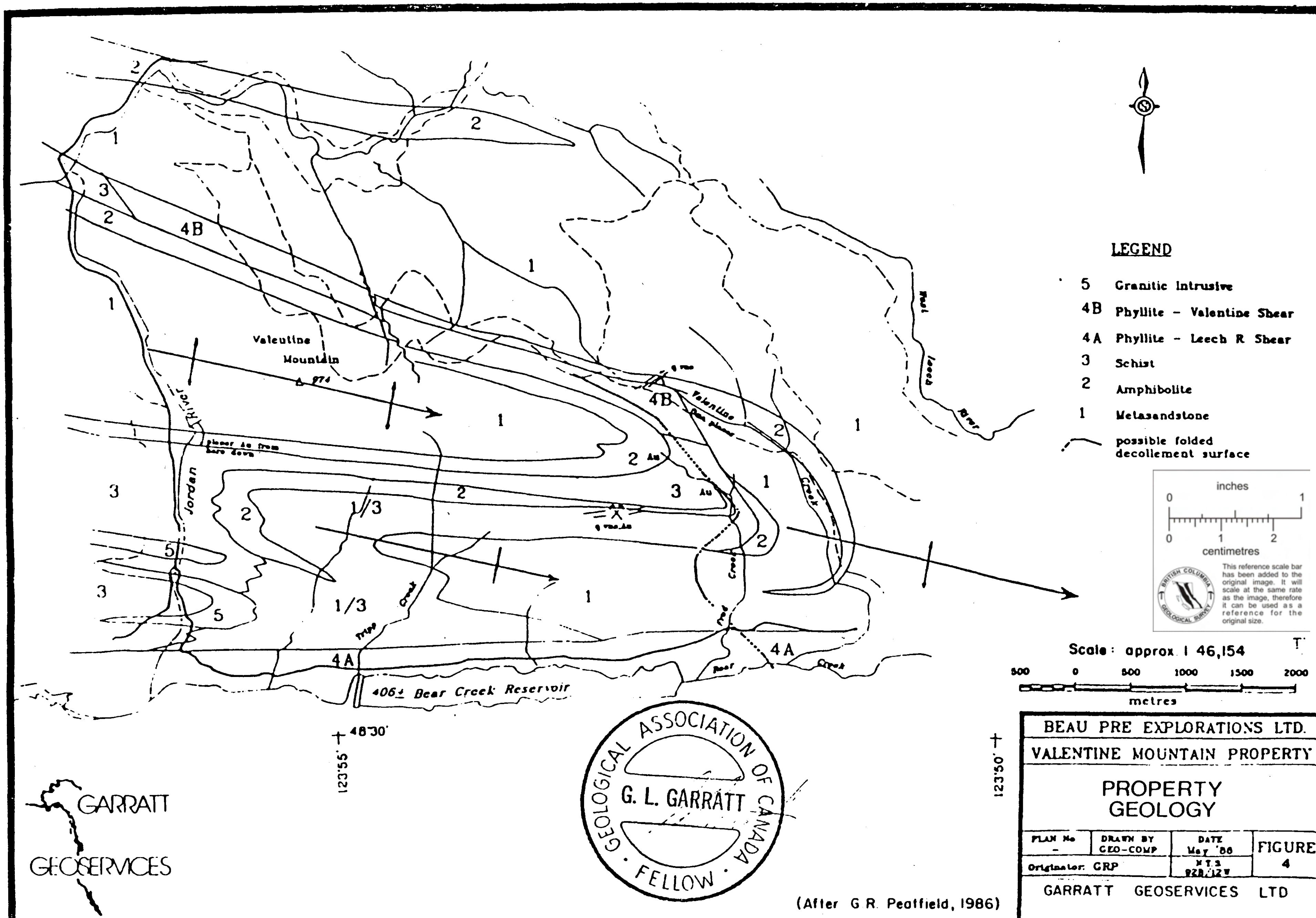
7. Property Geology

The geology decribed herein is a summary derived from the work and publications of: Fairchild (M.Sc. Thesis, 1979); Fairchild and Cowan (1982); Grove (1984) and; Wingert (B.Sc. Thesis 1984) (see Figure 4). It appears that while the property has been mapped well on a regional scale, detailed work is lacking. The property mapping was undertaking by Grove and Wingert at a scale of 1:7200, though an outcrop map has not been provided to determine the true resolution of this mapping. A review of field mapping notes indicates that the 1:7200 geology map has been summarized to some degree and while presenting a good overview of the underlying geology, does not incorporate sub-divisions of units, small dyke or shear zone locations, nor mineral occurrences. The dramatic local variations imposed by metamorphism was the probable reason for presenting the gross lithologic pattern, as opposed to a more confusing array of schist varieties. For the purpose of this report, however, the map and related reports provide a very good view of the geologic environment.

7.1 Lithologies

Mapping has divided the geologic section into three main lithologic types with a fourth member included as a structurally deformed and metamorphosed variety of other rock types (phyllites). These include: amphibolites, metasandstones, metapelites and phyllites.

7.1.1 Amphibolites: The amphibolite units are believed to be representative of two rock types: porphyritic basalt and intercalated crystal tuff with occasional flattened volcanic bombs. These primary features are relict in areas of low metamorphic grade and disappear in the predominantly higher grade areas where the amphibolites are characterized as fine grained schistose rock with compositional layers. Wingert (1984) describes the mineralogic composition of the amphibolites as ranging from "actinolite-chlorite rich to hornblende-biotite rich containing quartz, feldspar and accessory calcite, epidote, sphene, apatite, tourmaline and opaques . . . Boudinaged quartz-plagioclase-epidote lenses are another characteristic feature . . .". Fairchild (1979) suggested that "the high proportion of quartz



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VALENTINE MOUNTAIN PROPERTY

PROPERTY GEOLOGY

PLAN No	DRAWN BY	DATE	FIGURE
-	GEO-COMP	May '86	4
Originator: GRP		N.T.S. 92B/12W	

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in amphibolite facies rocks and the abundance of magnetite in greenschist rocks suggests that metavolcanic rocks were probably dacitic to andesitic rather than basaltic."

The amphibolites show a relatively high competency and lateral continuity, rendering them very useful as markers. These units may be locally tourmalinized and have been observed to be altered to a dark banded hornblende-rhodonite variety. Magnetite and pyrite disseminations are reported as common occurrences.

7.1.2 Metasandstones: These units generally comprise massive, poorly bedded rocks that are easily mappable. Grove (1984) describes the metasandstone as follows: "These rocks are typically buff weathering with a weak to strong foliation defined by fine grained biotite. The recrystallized matrix comprises a fine to very fine grained mosaic of quartz and feldspar with accessory apatite, sphene and occasional muscovite and pyrite. Hornblende, actinolite, garnet, epidote and K-feldspar are irregularly present as incipient to fine grained disseminations in most of the dominantly biotitic gneisses. An unusual texture imported to the gneisses by close spaced biotite rich layers has been termed 'wood grain' sandstone because of the distinctive appearance . . . The thickest metasandstone section, called the Valentine sandstone by Fairchild (1979), is exposed along Jordan River where it forms most of the steep slopes and high ridges on Valentine Mountain. Although massive, discrete layers and lenses of metapelites, and occasional sedimentary breccia mark primary bedding . . . In composition these biotite gneisses or metasandstones are typically quartz-rich (20 - 30%) with low to moderate amounts of biotite and hornblende."

7.1.3 Metapelites and Phyllites: This classification comprises the schists and phyllites which have received the greatest attention in relation to the study of regional metamorphic grade. The phyllites have been described by Wigert (1984) as two types: low grade metamorphic, in the northern and eastern regions of Valentine Mountain, and; retrograde metamorphic, on the south side of Valentine Mountain along the Leech River fault. "The mineralogic composition of the phyllites ranges from biotite-sericite-quartz to biotite-sericite-chlorite-quartz with accessory epidote, apatite and graphite . . . In retrograde phyllites relict textures of amphibolite grade metamorphism are prominent." (Wingert, 1984). Grove (1984) argues that "much of the apparently lower grade chlorite-biotite-garnet schist is the result of progressive, and probably repeated, retrograde deformation.", and relates this development to ". . . extensive regional shearing related to the major east-west San Juan and Leech River shear zones and the conjugate southeasterly Floodwood Creek, Survey Mountain and Cragg Creek shears."

The schists are described by Wingert (1984) as ". . . characterized by graphite, range in colour from light to dark grey. They are thinly laminated and contain deformed ptygmatic quartz veinlets. The main foliation is outlined by quartz-biotite compositional layers and fine graphite streaks. Graphite also outlines an earlier foliation which is visible in helictic porphyryoblasts of staurolite and biotite. The minerals of these schists include biotite, garnet, staurolite, andalusite and quartz with accessory apatite, chlorite, sphene, muscovite, tourmaline and opaques. Opaque minerals include graphite, pyrite, arsenopyrite and pyrrhotite."

Grove (1984) and Fairchild and Cowan (1982) mention the occurrence of coarse, recrystallized quartz lenses and veins that are notably conformable. Fairchild and Cowan believe these have an origin as cherts and Grove notes their presence as dominantly within andalusite-garnet schists in the Valentine Mountain area.

7.2 Intrusives

Foliated and unfoliated granitic to dioritic intrusives occur dominantly as sills, paralleling foliation or fold structures, some being apparently folded. Non-foliated intrusives are less common and Fairchild and Cowan report a trondhjemite of this type in the Jordan River Canyon. Wingert noted that cross-cutting dykes tend to be fine grained diorites. The intrusions appear to cluster from the Jordan River westward and conform to the region of highest metamorphic grade. Fairchild and Cowan (1982) describe the dominant sill types as biotite and muscovite orthogneisses; Wingerts' field notes describe small mafic and gabbroic dykes which are otherwise unreported. Some sills display enclosed blocks of schist.

"Small pegmatite dykes and sills, typically 1m or less wide, are apparently related to the large composite sills. They generally fall into two major compositional categories: quartz-feldspar-green muscovite pegmatite or quartz-feldspar-tourmaline-(green muscovite) pegmatite." (Fairchild and Cowan, 1982). Wingert (1984) adds minor amounts of garnet and gahnite to the mineralogy and notes their prominence in the Walker Creek area.

Three quartz vein varieties appear to have been identified, including two deformed sets and one undeformed. These latter sets are reported to be the host for the gold mineralization and range from 1 to 50 centimeters in thickness though Read (1986) indicated a gold bearing deformed quartz vein in sample DDH6/676B. Gold bearing veins constitute the discovery showings, now exposed in exposed in the A, 36, 1 and 2 trenches as discrete single veins to en-echelon swarms, and have been noted as far west as the Jordan River area. Minor amounts of disseminated pyrite, chalcopyrite, and arsenopyrite and local blebs to seams of spectacular coarse free gold have been observed in these veins and associated fractures. Gold smears and slicken sides have been noted on vein walls or fracture surfaces. Quartz veins are a common occurrence along dyke boundaries and silification has been reported along many sandstone-amphibolite contacts (Wingert-field notes, 1983). Quartz-tourmaline veins are not uncommon and are prevelent in the pegmatite area, noted above.

7.3 Metamorphism

Extensive regional studies have been undertaken, through field mapping and hand specimen and thin section reports, on regional metamorphism, and the following is a summary taken from those works (Fairchild, 1979; Fairchild and Cowan, 1982; Grove 1982 and 1984; Wingert, 1984; Read, 1986). The metavolcanics show two metamorphic grades: greenschist, characterized by chlorite-epidote with actinolite, albite and magnetite; amphibolite, characterized by hornblende-epidote-quartz-plagioclase. Two metamorphic events are indicated by the metamorphic assemblages in the pelitic rocks. Isograds have been located to define four metamorphic grades, transgressing greenschist to amphibolite facies, and these, with their mineralogic affiliations are as follows:

chlorite zone - muscovite-chlorite (northeast of the map area)
biotite-chlorite zone: with muscovite-quartz
garnet-biotite-chlorite zone: with muscovite-quartz
andalusite-staurolite biotite: with sparse muscovite and moderate garnet

The andalusite-staurolite-biotite assemblage defines the highest grade of metamorphism and centres about the coincidence of the large volume of intrusive sills along the Leech River fault; metamorphic grade decreases north and northeasterly from this area. It has been concluded that the co-existence of staurolite and andelusite indicates a first phase andalusite-grade event followed by a second, retrograde, metamorphic event which produced staurolite and altered andalusite; these events aerially overlap and allow only one isograd to be defined. These two events are believed to be synchronous with two deformational events, and concluded prior to the end of the second deformation, as evidence by D_2 crenulations on retro-graded alteration of andalusite.

Read (1986) studied polished thin sections of rocks from the bottom of drill hole 6 and defined a propylitic alteration characterized by chlorite-sericite (muscovite)-calcite-quartz-albite associated with deformed, gold (-chalcopyrite, pyrite, arsenopyrite) bearing, quartz-calcite veins, which is superimposed on the originally amphibolite facies host schist.

7.4 Structure

Fairchild and Cowan (1982) describe a two phase deformation, comprising isoclinal F_1 refolded by F_2 resulting in cylindrical folds which are generally asymmetric-open in the north and progressively symmetric-closed to the south. The axial trace is approximately east-west, plunging 25-30 degrees east and the dominant foliation is F_2 axial planar, and steeply north dipping. Wingert (1984) describes megascopic fold structure as: the Valentine antiform with its hinge at the peak of Valentine Mountain; the Valentine synform, south of Valentine Mountain and; the Walker Creek antiform, to the southwest. In the area of the Valentine property F_1 penetrative features are apparently rarely evident, having been transposed to the F_2 structures. Parasitic mesoscopic folds, boudins, crenulation cleavages and transposed fragmental ptymagtic quartz veins are features of the second deformation (Wingert, 1984).

Peatfield (1986) suggests a pre-folding decollement to explain the apparent repetition and loss of symmetry in the occurrence of amphibolites to the east of Valentine Mountain, in the nose of the plunging Valentine antiform (see Figure 4). Post-folding fault systems are poorly documented in the property area and only major regional faults have been discussed by previous workers. Wingert (1984) depicts two minor faults trending northeasterly and northwesterly; the latter, northeast of Valentine Mountain, shows an apparent strike-slip movement in excess of 300 meters. The Leech River fault bounds the Leech River complex along the southern border of the property. Fairchild and Cowan (1982) describe this fault as ". . . a zone of two to four mappable, sub-parallel faults separating sizeable terranes of unsheared rocks belonging to the Leech River complex". These faults are said to parallel or sub-parallel the adjacent rock foliations and occur as discrete displacement surfaces, showing little effect on adjacent rocks. Wingert (1984) adds that small related shears have been observed on the property and locally produced mild mylonitization and granulation, resulting in more friable rocks. The Leech River fault is interpreted as post-dating regional metamorphism (Fairchild and Cowan, 1982).

7.5 Mineralization

Reports of mineralization on the Valentine property almost exclusively deal with the occurrence of free gold and related minor sulphide occurrences. Most notably, the discovery area (crossed hammers - Figure 4) has been reviewed by several authors including: Lisle, 1980; Noel, 1980; Grove, 1982 and 1984; Falconbridge Ltd. - Chandler, 1985 and; Peatfield, 1986. Additionally, sampling reports by Beau Pre Explorations Ltd. and other interested exploration companies are available. The discovery area has been extensively trenched, exposed and sampled, primarily by Beau Pre Explorations Ltd. and Falconbridge Ltd. Beau Pre undertook diamond drilling in this region (13 holes, 1828 meters) in 1983, and limited soil sampling in 1979 and 1980 (99 samples).

Wingert (1984) and Grove (1984) suggested that undeformed quartz-veins following 60 and 80 degree fracture sets were the host to gold mineralization. Read (1986) has shown that quartz and quartz-calcite veins, associated with propylitic alteration, may be deformed and host gold.

The quartz-veins vary from massive-white to grey-glassy and combinations of these, and form thin 0.5 to 50 cm veins that may be continuous along tens of meters, to less continuous en-echelon stringer masses or discontinuous lenses. This character appears to apply to both the lateral and vertical axes. The veins are locally limonitic containing patches of abundant earthy iron oxide material or merely an amber coloured staining imparted by iron oxide. The veins may be vuggy but are generlly massive in character. Calcite is reported by Read (1986) to occur surrounding anhedral weakly strained quartz grains, or as veinlets, and locally show deformation textures; calcite has been observed on fracture surfaces. The quartz-veins may parallel or cross foliation.

Sulphides form a minor accessory to the gold-bearing quartz-veins and include in descending order of reported abundance, pyrite, arsenopyrite, marcasite, chalcopyrite, sphalerite, galena and ilmenite. Grove (1984) reports that arsenopyrite has locally been fractured and cut by fine gold. Gold occurs within the veins as tiny specks to irregular 'hackly' masses, and occasionally in wire form. Gold smears have been noted along slicken-sided fracture surfaces and as small specks in the wall rock, a few centimeters from vein material. Although no silver minerals have been noted, sample results indicate their presence.

Grove (1984) noted an apparently gold-vein associated alteration in drill core that comprises "extensive quartz, calcite and gypsum veining, spotty to vein-like K feldspar zoning, tourmalinization, epidotization and biotitization of hornblende and the attendant development of fine to coarse grained magnetite." This conforms in part with Read's propylitic alteration described from thin sections of the drill core.

It is suggested by Grove (1984) that the gold-bearing veins of the discovery area are "localized in both the hanging wall and footwall of the highly altered, 100 meter wide amphibolite band mapped as extending from the Jordan River east to Fred Creek, a distance of about 5,000 meters". The discovery of a gold-bearing quartz vein east of the Jordan River (station 10-84 Howey) indicates that the strike of the quartz-vein system may exceed at least 3,000 meters. Diamond drilling has indicated that gold-quartz veins occur at depths of at least 165 meters below surface.

Wingerts' field notes (1983) account several occurrences outside the discovery area of quartz veins or country rock with associated pyrite, marcasite or arsenopyrite, and returned ten samples carrying gold values ranging from 0.004 to 0.024 o.p.t.; these have not been followed up.

8. Geophysics

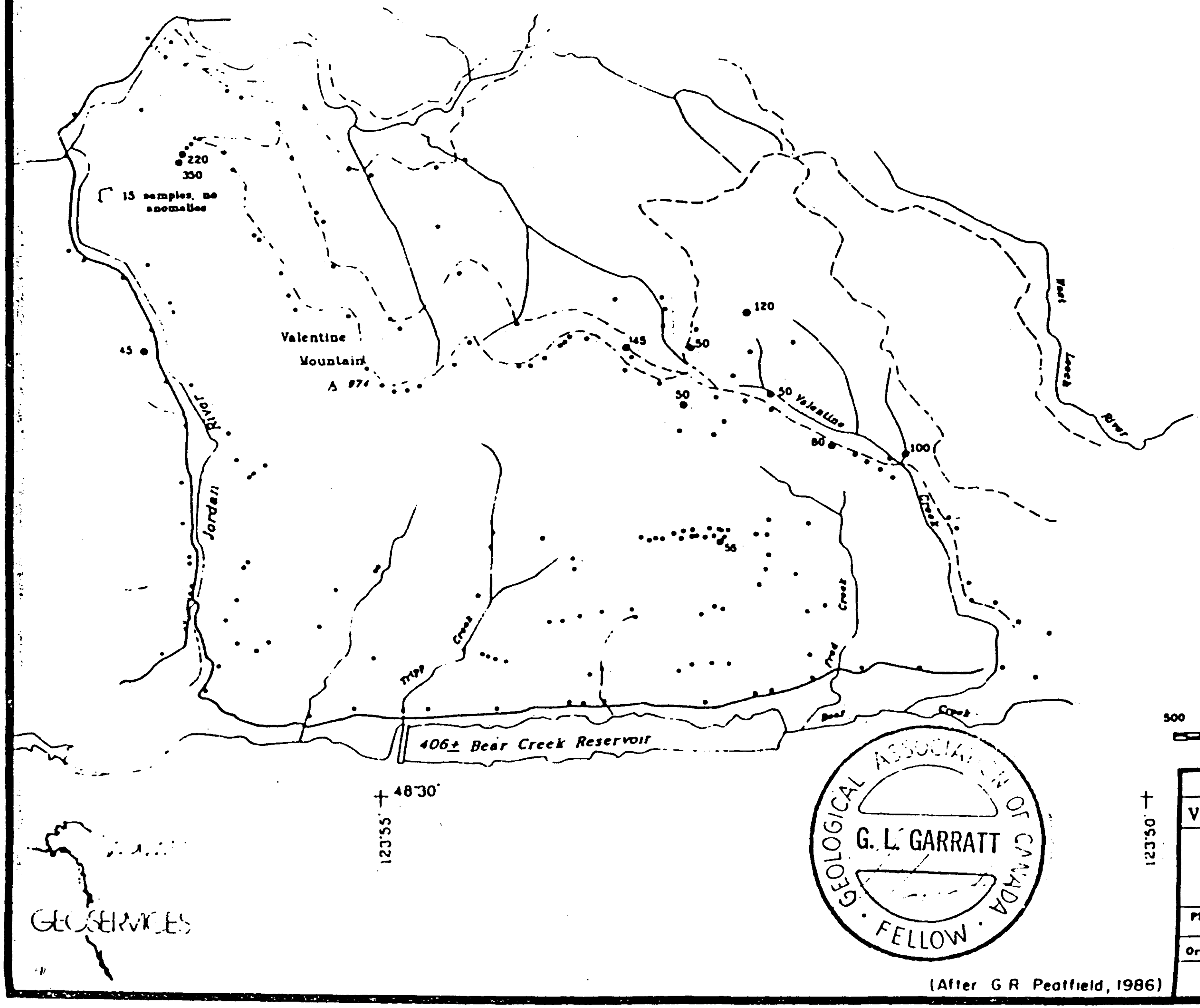
In 1984, Western Geophysical Aero Data Ltd. conducted a 2400 line-kilometer airborne magnetometer and VLF-EM survey over a large portion of the Leech River complex on behalf of several exploration clients. Approximately 370 line-kilometers were flown over the Valentine Mountain property and the results of this portion of the survey were submitted to Beau Pre Explorations Ltd. A magnetic low appears to outline the Leech River fault system and several small magnetic highs occur which are difficult to relate to the geological mapping, though some may reflect faulting. A series of small discontinuous magnetic highs and VLF-EM responses to the east and west of the Jordan River trend roughly parallel to underlying granitic dykes, though the anomalies extend beyond the mapped limits of these occurrences. A series of scattered, small northeast trending highs are tentatively interpreted by Pezzott and White (1984) as forming part of a subtly expressed regional fault system. There is no apparent indication of this from the geological map. Pezzott and White (1984) describe the VLF-EM as ". . . reflecting the suspected strike of the underlying geology, although some correlate with magnetically interpreted fault zones . . . Most of these responses are likely reflecting lithologic variations or contacts rather than discreet exploration targets."

9. Geochemistry

Beau Pre undertook a silt sampling program on the property in 1979 and 1980. The results of this sampling are displayed in Figures 5 and 6 which are summary maps produced by Peatfield (1986). Most of the anomalous As and Au sites are not coincident though one sample west of the Jordan River and two samples near the headwaters of Valentine Creek are. Au anomalies occuring along the south-facing slope between Fred Creek and to the west of the Jordan River, may reflect mineralization of the discovery zone, along strike. Anomalies at the headwaters of Valentine Creek indicate undiscovered mineralization, though a quartz-vein swarm has been reported in the vicinity (see Figure 4). Au and As anomalies scatter in a line northwesterly from the headwaters of Valentine Creek and indicate possible undiscovered mineralization on the north facing slopes northeast of Valentine Mountain. The occurrence of shear zones in phyllitic rocks and amphibolite units through this trend form a positive exploration feature.

Heavy mineral stream sediment sampling, recently undertaken by Minequest Exploration Associates Ltd. on major drainages on the property, will likely enhance the present silt sampling display and will undoubtedly require follow-up sampling and prospecting to segragate anomalous conditions within sub-basins. The heavy mineral sampling technique is a proven geochemical tool that results in a greater resolution of anomalous conditions than traditional silt sampling techniques. The results of the Minequest work are not yet available.

Soil sampling was undertaken over a limited area covering a portion of the discovery zone in 1979 and 1980. Little information exists on the soil character of the area though clay horizons locally occur and Lisle (May, 1980) states that "Soil horizons are not particularly well developed in the grid area". Gold values in soil generally range from less than 5 to 40 ppb with two samples yielding 295 and 170 ppb, the latter lying directly over the A vein. Arsenic in soils ranges in value from 1 to 24 ppm and shows no direct association with gold values, though some higher gold values do show higher arsenic values. Generally the soil values are low and form single point anomalies, though if a low threshold anomalous value were taken, two and three point anomalies with Au values of 15 to 30 ppb exist.



Note:

results of 1981 program
Arsenic analyses (in ppm) on minus-80 mesh fraction of silt (o = < 40ppm)
Analyses by Bondar-Clegg and Co Ltd., by colourimetry

Scale: approx 1:46,154

500 0 500 1000 1500 2000
metres

BEAU PRE EXPLORATIONS LTD.			
VALENTINE MOUNTAIN PROPERTY			
SILT SAMPLE RESULTS As			
PLAN No –	DRAWN BY GEO-COMP	DATE May '88	FIGURE 5
Originator: GRP		N.T.S. 92B/12W	
GARRATT GEOSERVICES LTD			

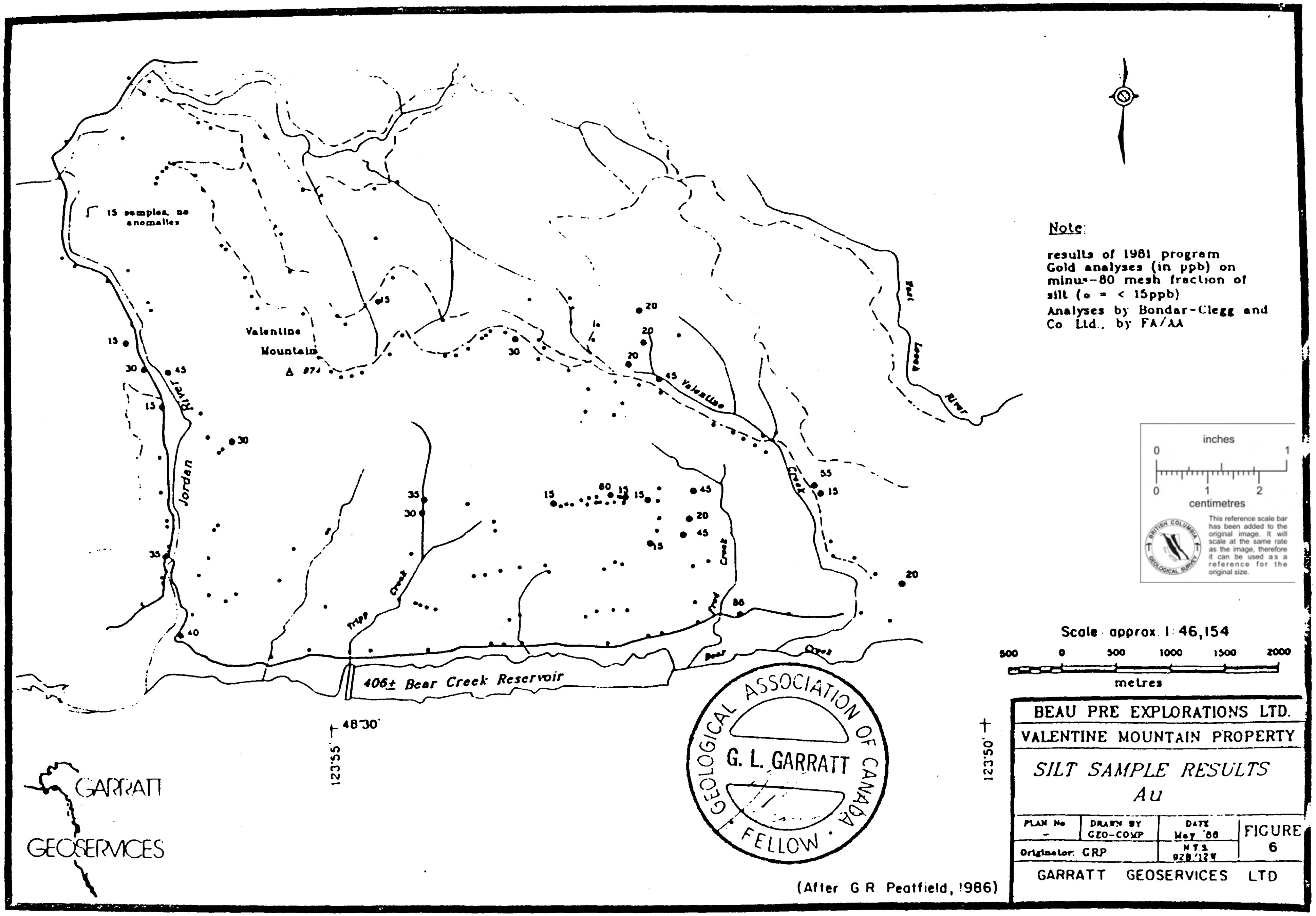
(After G R Peatfield, 1986)

GEOLOGICAL ASSOCIATION OF CANADA
G. L. GARRATT
FELLOW

inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

BRITISH COLUMBIA GEOLOGICAL SURVEY


15 samples, no anomalies
Valentine Mountain
874
Jordan River
Valentine Creek
Tripp Creek
Bear Creek
406± Bear Creek Reservoir
West Leech River
48°30'
123°55'
123°50'
Note:
results of 1981 program
Gold analyses (in ppb) on
minus-80 mesh fraction of
silt (o = < 15ppb)
Analyses by Bondar-Clegg and
Co Ltd., by FA/AA
inches
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This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
BRITISH COLUMBIA GEOLOGICAL SURVEY
Scale approx. 1: 46,154
500 0 500 1000 1500 2000
metres
GEOLOGICAL ASSOCIATION OF CANADA
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FELLOW
GARRATT GEOSERVICES
BEAU PRE EXPLORATIONS LTD.
VALENTINE MOUNTAIN PROPERTY
SILT SAMPLE RESULTS
Au
PLAN No -
DRAWN BY GEO-COMP
DATE May '86
N.T.S. 92B/12W
FIGURE 6
Originator: GRP
GARRATT GEOSERVICES LTD
(After G R Peatfield, 1986)

These data are to be expected from the vein hosted "pockety" mineralization as gold dispersion from these veins would be expected to be a local phenomenon. All single point anomalies should, therefore, be followed up.

Beau Pre Explorations Ltd. recovered seven panned concentrates from bars on the Jordan River. Six of these were taken at fifty meter intervals northward from the bridge crossing the Jordan River at the 18.5 mile mark of the Jordan River Main road (near the granitic intrusives on Figure 4). These samples comprised concentrates of twelve pans each and returned assays ranging from 8.356 to 10.550 o.p.t. Au. The seventh sample (of six pans) was taken a further 0.5 miles up river and yielded 0.293 o.p.t. Au. This sampling confirms the presence of placer gold in the Jordan River and may confirm the importance of weak silt anomalies on tributaries to the Jordan.

Reconnaissance rock chip sampling of quartz-veins was undertaken by Wingert while mapping in 1983. Eleven samples returned gold values from 0.004 to 0.015 o.p.t considering the nature of the gold mineralization on the property and analytical problems, any indication of the presence of gold implies an anomalous condition and deserves follow-up. These samples should be considered, for exploration purposes, as being geochemically anomalous. Similarly, an exposure of sheared, gossanous and siliceous amphibolite carrying pyrite, arsenopyrite and quartz veinlets was sampled by a student in 1984. This outcrop lies near a westerly flowing tributary of the Jordan River that joins the river where the amphibolite can be seen to transect a sharp curve in the river, on Figure 4; two samples chipped across one meter each, returned values of 0.007 and 0.013 o.p.t. Au. This appears to lie north of an anomalous stream silt which returned 30 ppb Au, and supports the anomalous condition of the area, though it is not known what the source of the silt anomaly may be.

10. Diamond Drilling Results

Thirteen diamond drill holes were completed in 1983, totalling approximately 1828 meters of NQ and BQ core. Eleven of these holes were placed in the discovery zone, between Trench 36 and A Trench, a strike distance of approximately 350 meters (see Figures 7 and 9). Drill hole FC-1 is located approximately 950 meters east of A Trench, in an area where narrow visible gold-bearig quartz stringers yielded assays greater than one ounce per ton gold. Hole 21 is located approximately 290 meters westerly from the 36 Trench.

Figure 8 (Peatfield, 1986) is a cross-section showing the projection of drill holes in the 36 Trench area. These holes were drilled to test the continuity, at depth and along strike, of the 36 and associated veins. It is apparent that gold bearing veins persist at depth, at least to 82 meters, in the case of the 36 vein, and to 165 meters, as shown by the intercept of visible gold at the bottom of hole 6. Drill logs indicate that quartz-veins parallel and cross foliation, though data concerning vein attitudes is often lacking and the interpolation of veins relative to surface exposures is somewhat speculative. It is apparent however, that a vein system exists below the 36 Trench area, to some depth. An intercept of 0.49 meters of 7.55 o.p.t. gold near the top of hole 6 (at 35.96 to 36.45 meters) indicates that high grade gold of the tenor observed in surface exposures occurs at depth, and idicates the presence of a vein not exposed on surface. The grade given for this intercept is an average of several analysis and sampling techniques which resulted in assays of 4.74 to 9.1 o.p.t. Au; the average result for silver was 0.5 o.p.t. This zone is described by Grove (1984) as "metasandstone and schist with 40% grey quartz as lenses parallel to foliation (45^{o}) with 5 flecks of visible Gold; marcasite and arsenopyrite."

A second significant intercept from the discovery zone drilling occurs at the bottom of hole 6 where 1.52 meters graded 0.094 o.p.t. Au and 0.04 o.p.t. Ag. This intercept at 204.83 to 206.35 meters was described by Grove as "altered amphibolite with extensive quartz-vein, quartz breccia and marcasite." Visible gold was noted in both the above intercepts and this was confirmed by Peatfield (1986). The intercept at the bottom of hole 6 was studied in polished thin-section, by Read (1986) and he described a propylitic alteration with irregular quartz and calcite lenses and veins that "obliterate the original amphibolite facies metamorphic assemblage". Hole 6 was not continued due to difficult drill conditions. This intercept indicates

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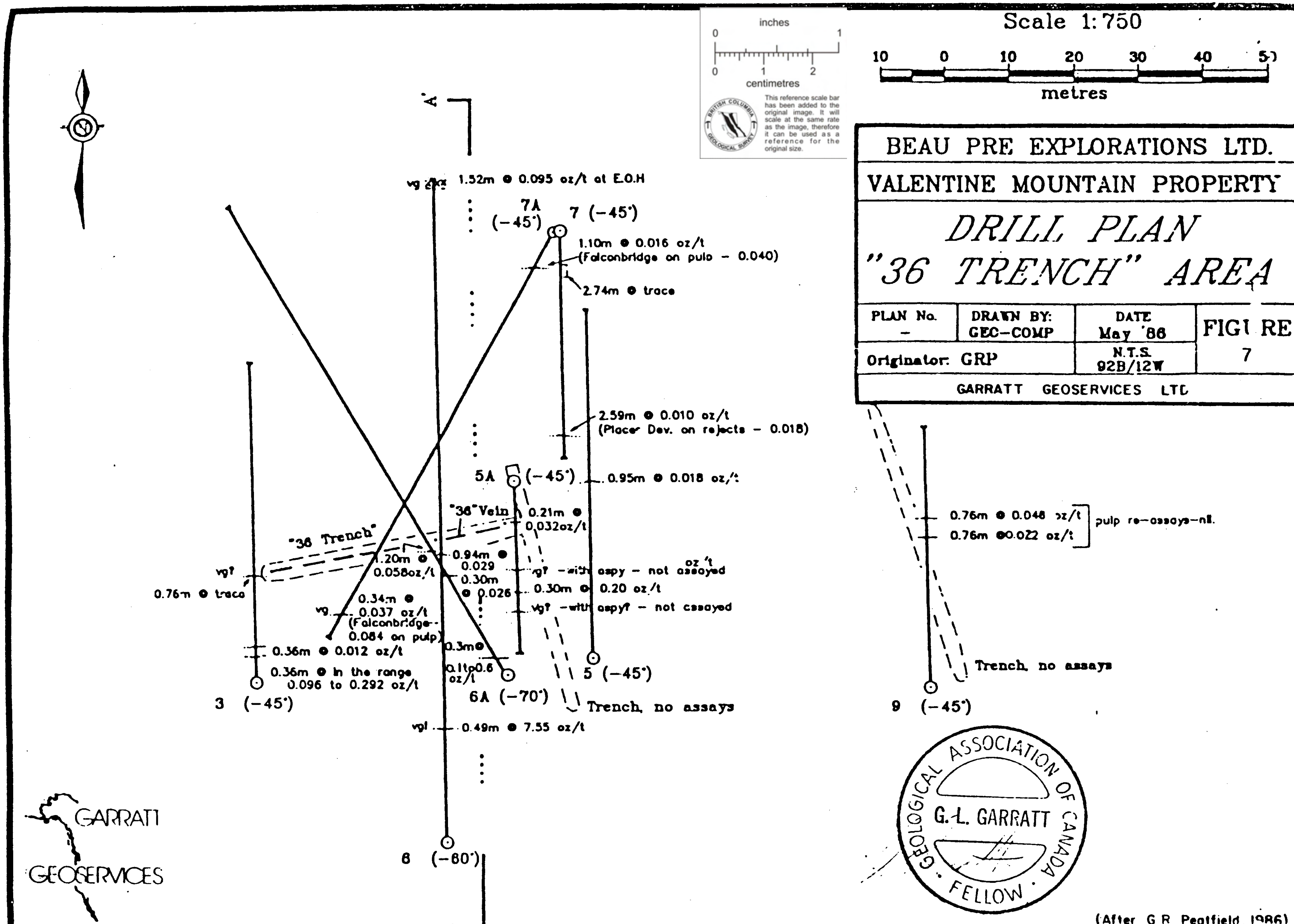
VALENTINE MOUNTAIN PROPERTY

DRILL PLAN "36 TRENCH" AREA

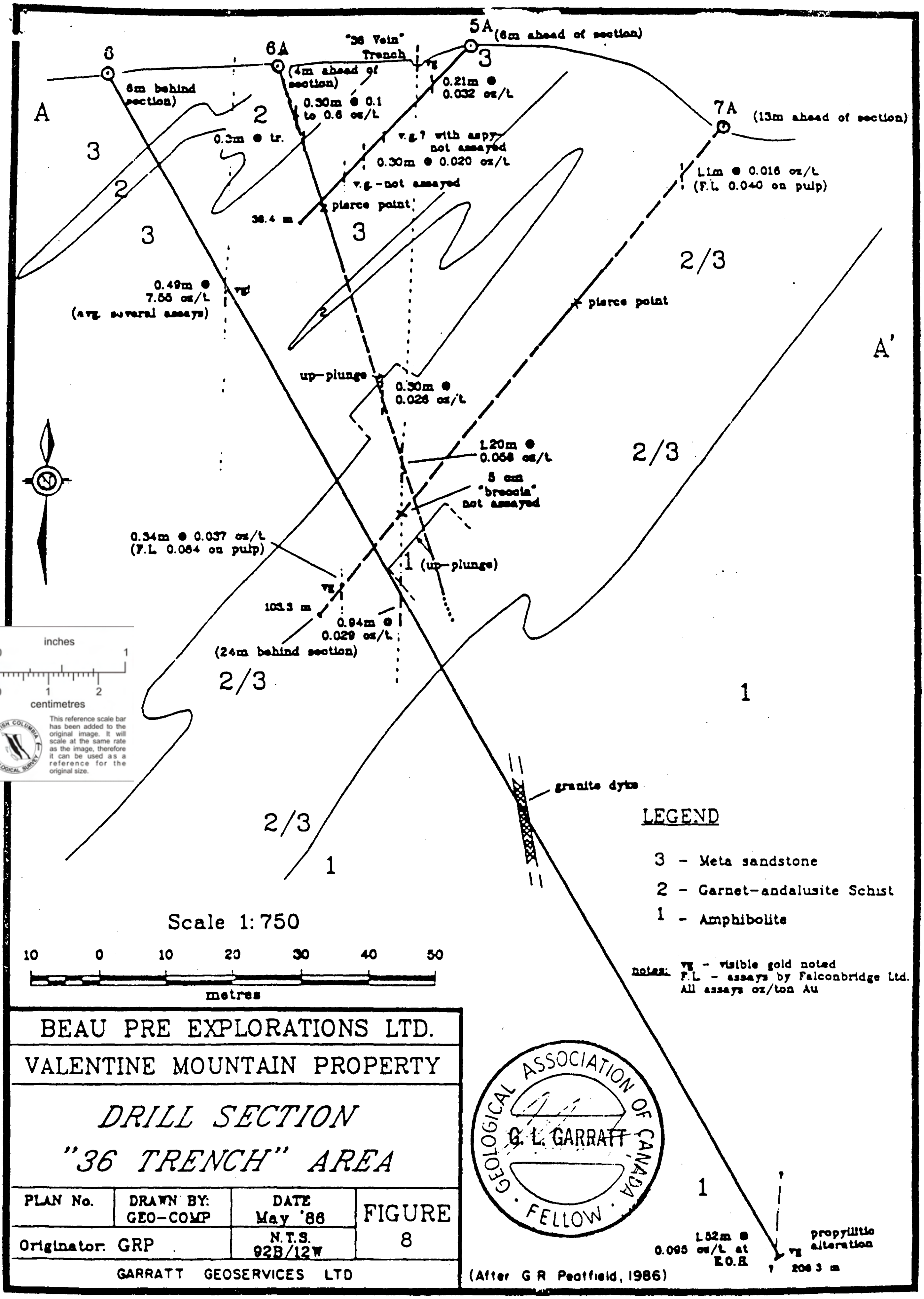
PLAN No.	DRAWN BY:	DATE	FIGURE
-	GEC-COMP	May '86	7
Originator: GRP		N.T.S. 92B/12W	

GARRATT GEOSERVICES LTD

Scale 1:750



(After G R Peatfield 1986)



A
A'
6
6m behind section)
6A
(4m ahead of section)
"36 Vein" Trench
5A (6m ahead of section)
7A (13m ahead of section)
vg
0.21m ● 0.032 oz/t
0.30m ● 0.1 to 0.6 oz/t
0.3m ● tr.
v.g.? with aspy-not assayed
0.30m ● 0.020 oz/t
v.g.-not assayed
36.4 m
pierce point
1.1m ● 0.016 oz/t (F.L. 0.040 on pulp)
0.49m ● 7.56 oz/t (avg. several assays)
pierce point
up-plunge
0.30m ● 0.026 oz/t
1.20m ● 0.058 oz/t
5 cm "breccia" not assayed
0.34m ● 0.037 oz/t (F.L. 0.064 on pulp)
1 (up-plunge)
103.3 m
0.94m ● 0.029 oz/t
(24m behind section)
granite dyke
3
2
3
2
3
3
2/3
2/3
2/3
2/3
1
1
1
inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
BRITISH COLUMBIA GEOLOGICAL SURVEY
LEGEND
3 - Meta sandstone
2 - Garnet-andalusite Schist
1 - Amphibolite
notes: vg - visible gold noted
F.L. - assays by Falconbridge Ltd.
All assays oz/ton Au
Scale 1:750
10 0 10 20 30 40 50
metres
BEAU PRE EXPLORATIONS LTD.
VALENTINE MOUNTAIN PROPERTY
DRILL SECTION
"36 TRENCH" AREA
PLAN No.
DRAWN BY: GEO-COMP
DATE May '86
FIGURE 8
Originator: GRP
N.T.S. 92B/12W
GARRATT GEOSERVICES LTD
GEOLOGICAL ASSOCIATION OF CANADA
G. L. GARRATT
FELLOW
1.52m ● 0.095 oz/t at E.O.H.
vg
propylitic alteration
206.3 m
(After G R Peatfield, 1986)

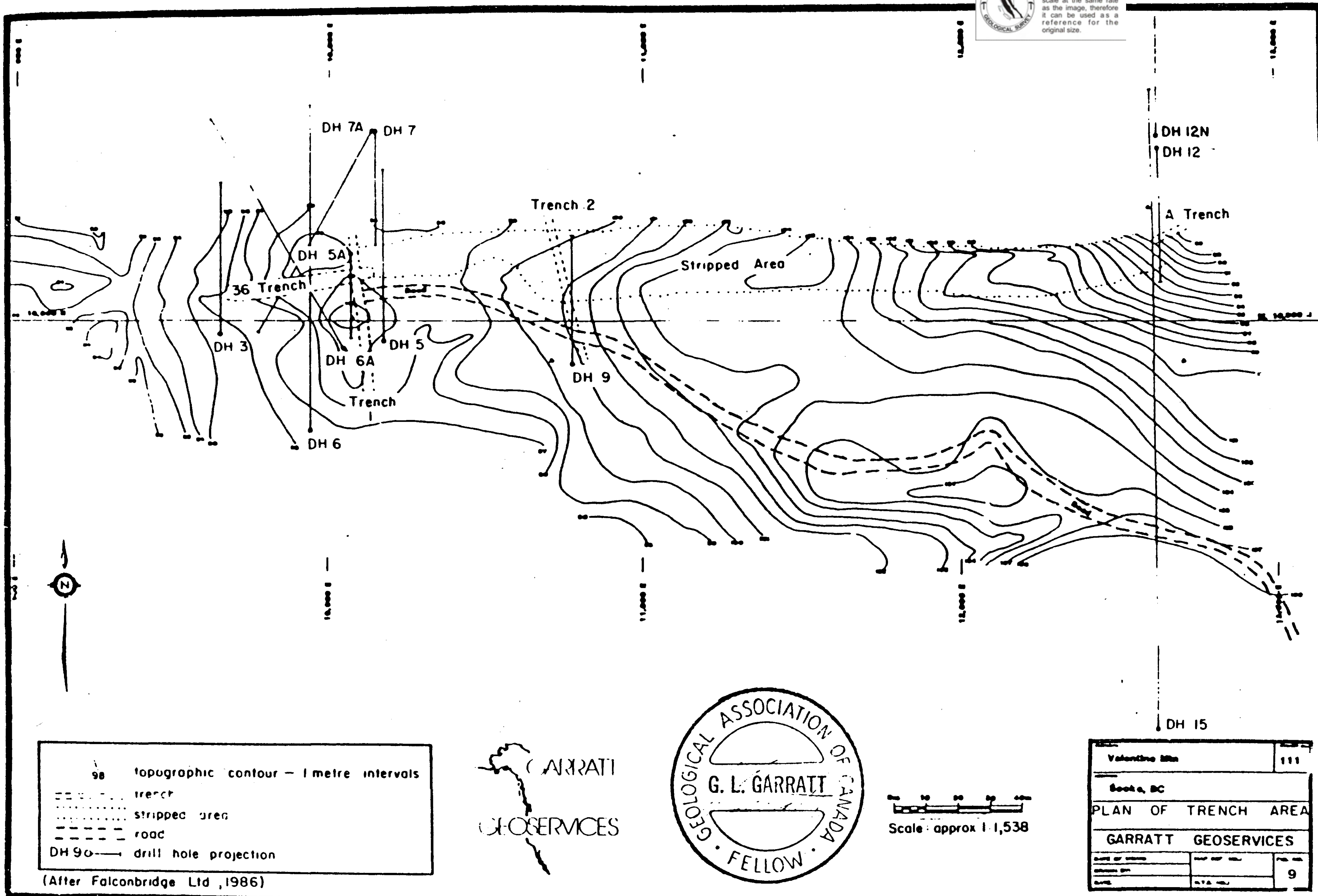
a significantly thick zone of mineralization that may be of different character than previously observed.

Peatfields cross-section (Figure 8) shows several other gold values of sub-economic grades (0.02-0.058 o.p.t.); two of these (holes 5A, 7A) carried visible gold and at least two visible gold occurrences appear not to have been sampled. These occurrences indicate the problem of obtaining reliable assay results where free gold occurs, as well as the problems that may be incurred by sampling too selectively. Further discussion of sampling and assaying difficulties including a review of selected results will be undertaken in section 12. The step-out holes, FC-1 and 21, encountered similar low-grade intercepts and visible gold occurrences, indicating the probable continuance of the discovery zone vein system along strike to the east and west, respectively.

11. Trenching Results

Beau Pre undertook the completion of two trenches, on the A and 36 veins, in the discovery area. Sampling by Beau Pre (including Low minerals) has been carried out sporadically between 1976 and 1986. A good portion of this sampling involved chip sampling along the strike of veins, to determine their grade and continuity, though some channel sampling and, significantly, bulk sampling have also been completed. Grove (1984) reports on sampling in the 36 Trench, these are assumed to represent continuous chip samples across the noted intervals:

Trench Location (from E end of Trench)	Position	Sample Width	Ag oz/T	Au oz/T
	Foot Wall	46 cm	0.07	0.410
2 meters	Vein	17 cm	3.85	34.950
	Hanging Wall	61 cm	0.16	0.852
	Foot Wall	36 cm	0.56	0.005
10 meters	Vein	3 cm	2.27	33.200
	Hanging Wall	37 cm	0.79	3.845
	Foot Wall	46 cm	0.10	0.142
20 meters	Vein	18 cm	0.03	0.003
	Hanging Wall	50 cm	0.02	0.090
	Foot Wall	48 cm	0.01	0.010
30 meters	Vein	13 cm	0.12	0.328
	Hanging Wall	37 cm	0.10	0.003


DH 7A
DH 7
DH 12N
DH 12
Trench 2
A Trench
DH 5A
36 Trench
Stripped Area
DH 3
DH 6A
DH 5
DH 9
Trench
1
DH 6
DH 15
98
topographic contour – 1 metre intervals
trench
stripped area
road
DH 9
drill hole projection
(After Falconbridge Ltd, 1986)
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GEOSERVICES
GEOLOGICAL ASSOCIATION OF CANADA
G. L. GARRATT
FELLOW
Scale: approx 1:1,538
Valentine Mtn
111
Sooke, BC
PLAN OF TRENCH AREA
GARRATT GEOSERVICES
9

Of interest here are the high variability of values within both the vein and host rocks. It is apparent that while gold may be erratically dispersed in the veins, dispersion into the wall rocks may also occur sporadically. By length averaging these samples, an average grade of approximately 2.24 o.p.t. Au and 0.355 o.p.t. Ag across an average width of 1.03 meters is indicated. Length averages for the four chip sample sites are:

Trench Location	Width	o.p.t. Ag	o.p.t. Au
2 meters	1.24 m	0.63	5.36
10 meters	0.76 m	0.739	3.18
20 meters	1.14 m	0.05	0.097
30 meters	0.98 m	.058	0.049
(Length) Averaged	1.03 m	0.355	2.24

It is also apparent that with higher gold values, higher silver values will likely be encountered. Highly variable sample results from specimens displaying visible gold make the quantitative use of these averages as reliable grade estimates problematic. This will be discussed further in the following section, though it is important to note that the inclusion of spectacular free gold can significantly enhance the average grade and if sampling or lab preparation resulted in the non-inclusion of a representative proportion of this gold, the results may not reflect average grade and could be significantly less.

A number of grab or chip samples of vein or wallrock have been taken by Beau Pre and a host of exploration companies in the discovery area. While this sampling does not represent a consistent controlled approach, the results tend to confirm the above listed variability in that values range from 0.003 to 1.5 o.p.t. Au in both veins and adjacent wallrock, including both the main 36 and A veins, as well as a number of smaller veins in the vicinity (e.g. 2,3650, south veins).

Four separate bulk sample tests have been completed in the discovery area, principally by Beau Pre Explorations Ltd. The data pertaining to these is as follows:

No.	(Mo/Yr) Date	Treatment Facility	Dry Weight lbs. (kg)	Cu(%)	Pb(%)	Zn(%)	As(%)	Silica (%)	Ag (o.p.t.)	Au (o.p.t.)
1.	7/79	Asarco, Tacoma	775 (335.54)	0.11	--	0.01	0.08	84.8	0.21	0.27
2a.	3/84	Cominco, Trail	223 (101.15)	0.01	0.10	0.10	0.01	66.9	0.60	4.821
2b.	3/84	Cominco, Trail	296 (134.26)	0.01	0.10	0.10	0.01	89.4	1.25	18.447
2c.	7/84	Cominco, Trail	4159 (1886.52)	0.01	0.17	0.10	0.01	73.7	2.25	0.210
2d.	7/84	Cominco, Trail	3287 (3758.98)	0.05	1.10	0.40	0.01	84.5	18.60	0.348

No.	Date (Ma/Yr)	Treatment Facility	Treatment Method	Dry Weight lbs. (kg.)	Recovery-Au-Ag Ag	Au	Ag (o.p.t.)	Result	Au (o.p.t.)
3.	11/85	Bondar-Clegg	Tabling	42.087 (19,091)	458.5 mg	8746.53 mg	0.70		13.362
4.	8/86	Sando Ind.	Gravitation	300 (136.08)		24.494 g		head tails	5.557 0.311

Sample 1, shipped to the smelter in Tacoma, was obtained from the A vein and the South vein (50 feet south of A vein); this sample was predominantly quartz-vein material. Sample 2a and 2b are from the 36 Trench: 2a comprised the fines resultant from sluicing an estimated 5 tons of material mucked from the trench; 2b comprised grab samples of vein and wallrock taken along the length of the trench after blasting but prior to excavation. Samples 2c and 2d are from a small 3 foot (0.91m) trench excavated from the last 15 feet (4.57m) at the east end of the 36 trench: 2c comprised fine material shovelled from the trench bottom and; 2d comprised the bulk of material excavated from this trench. Samples 3 and 4 were derived from a 300 lb. (136.08 kg) sample that was obtained by mucking out the A trench; subsequently, 42.087 lbs (19.09kg) of this sample were sent to Bondar-Clegg for a tabling test and then the pulp, reject and gold-silver beads were re-combined with the original sample and shipped to Sando Industries in Victoria where they were run through a gravitational recovery process.

Samples 2c and 2d would appear to be the most representative type of sample taken for determining a grade estimation across a given wdith of vein and country rock. These samples are large and as such remove sampling bias from the result. Sample 2a, essentially a concentrated sample, indicates the need to include the finer material, created during trenching, in a sample, as it would appear that gold particles become liberated during the trenching process. Sample 2b may have been biased, considering the high value, toward vein material, but could be indicative of the expectation that individual bulk samples may contain gold pockets and return high grade values. Samples 3 and 4 may show a sampling bias in that spectacular free gold occurred in the A trench and may have concentrated in the trenchbed material that comprised this sample; again this indicates a need to include all material when bulk sampling freshly trenched zones. Sample 1 represents selective sampling and indicates that vein material is not homogenously mineralized with spectacular free gold, but should still yield significant value.

The bulk sampling outlined above is limited in scale and could be considered as an orientation sampling that indicates the viability of a bulk sampling program if carried out in a thorough manner. The average grades indicated by this sampling are somewhat speculative, considering the small data set and sampling procedures, but show that economic gold values, in excess of 0.2 - 0.3 o.p.t. Au) can be obtined across widths of at least one meter, and that high grade ores, possibly containing 4 to 5 o.p.t. Au, might occur locally. This result, when compared to the trench chip-sampling listed earlier, indicates that average grades, resultant from a combination of high grade pockets and low grade vein and wallrock material, may be of economic tenor.

In 1985, Falconbridge Ltd. carried out a program that resulted in the completion of Trenches 1 and 2, overburden stripping between the 36 and

A Trenches, and a comprehensive chip-panel and vein sampling program in the trenches. This work was undertaken with the objective of outlining areas for bulk sampling (Chandler, 1985). The Trenching Program involved: mucking and cleaning out 45 meters of the 36 trench; cutting Trench 1, immediately east of Trench 36 and Trench 2, 60 meters east of Trench 1, to 2 meters deep and 50 meters long, across the strike of the veins; cleaning and mucking 11 meters of A Trench; stripping and washing to bedrock a 250 meter by 30 meter area between Trenches 1 and A. "In most cases sampling procedure consisted of individual vein channels with separate narrow wallrock channels on both sides of veins. Panel-type chip samples of lateral or intervening hostrock supplemented the vein sampling." (Chandler, 1985) It has been reported that visible gold was segregated from vein samples before assay and Peatfield (1986) suggests that this might explain at least one case where a 10 cm by 1m sample of wallrock assayed much higher than the adjacent 6 cm by 1m of vein (6.58 vs. 2.13 g 1 tonne respectively). Sample results for Trenches 1 and 2 are not available, while the Trench 36 and A sample results are complete.

The results of the Falconbridge sampling were somewhat discouraging. Averaging of the results, by using the area (length times width) of the sample panel or chip zone, by Falconbridge gave the following results:

	Description	Length (m)	Width (m)	Au (g/tn)	Au (o.p.t.)
A Trench:	North vein	11.0	0.02	67.29	1.951
	North vein & wallrocks	11.0	0.16	9.18	0.266
	South vein	9.0	0.04	18.11	0.525
	South vein & wallrocks	9.0	0.20	4.71	0.136
	South vein & North splay	12.0	0.04	16.69	0.484
	S. vein & N. splay & wallrocks	12.0	0.20	4.10	0.118
	South vein & South splay	12.0	0.04	16.70	0.484
	S. vein & S. splay & wallrocks	12.0	0.17	4.34	0.125
36 Trench:	West 36 vein	15.0	0.05	0.16	0.004
	Middle 36 vein	7.0	0.06	5.30	0.153
	East 36 vein	12.7	0.08	0.30	0.008
	West 36 vein & wallrocks	15.0	0.15	0.27	0.007
	Middle 36 vein & wallrocks	7.0	0.16	2.72	0.078
	East 36 vein & wallrocks	12.7	0.17	0.26	0.007

High samples in the A Trench veins attained a peak of 629.96 g/tonne (18.268 o.p.t.) where the north vein averaged 67.29 g/tonne (1.951 o.p.t.) along 11 meters. Vein samples in the 36 Trench peaked at 19.6 g/tonne (0.568 o.p.t.). Samples identified as carrying visible gold returned assay values of 0.05 (0.001 o.p.t.) to 0.45 g/tonne (0.013 o.p.t.) though these were all panel samples in which severe dilution with non-mineralized host rock would explain the low assay values. With the exception of only one sample in A Trench, all the panel samples returned less than 1 g/tonne, the anomalous panel returned an assay of 3.10 g/tonne (0.089 o.p.t.) with a reassay of 6.90 g/tonne (0.200 o.p.t.), grading higher than adjacent vein and vein-wallrock. It would seem that the sampling method utilized may not have been adequate in recovering pockets of free gold, or, if spectacular gold samples were omitted from vein samples, then the results would seem appropriate. The A Trench vein and wallrocks could be estimated from this sampling to carry approximately 0.5 ounce/ton gold. The 36 Trench vein and wallrock sampling indicates that while visible gold was observed to occur, these occurrences were either not of sufficient size to affect the grade significantly, or were omitted from the sampling.

12. Sampling and Assaying

The above review of trench sampling displayed the variability of the occurrence of gold within quartz-veins and their adjacent wallrocks. It seems evident that bulk sampling may be the only method to adequately sample the mineralization for determining average grades. Re-assaying of pulps and rejects from drill core and trench chip samples, as well as various tests of preparation and analysis techniques have been undertaken in an effort to determine the reliability of assaying to adequately determine gold grades. Of particular interest is the coincidence, in many cases, of visible gold and low assay returns.

Fourteen samples were selected for review from re-assay data obtained primarily from Falconbridge drill core analyses. By assaying two to seven sub-samples it is evident that an average variation in results of approximately 1.8 can be expected (e.g. a range of 1g to 1.8g assays from one