Box 6

Memo from J. B. Gammon

6415 - 64th Street, Delta, B.C.

INTER-OFFICE MEMORANDUM

DATE: June 10, 1981

TO: C. M. H. Jennings

COPIES TO: J. J. McDougall, I. L. Elliott

FROM: J. B. Gammon

SUBJECT: E. Specogna / Canamin Resources Property, Victoria Mining Division, B. C.

The owner of this property is well regarded by Falconbridge. In this instance he has formed a company, raised money through the Vancouver Stock Exchange and carried out an initial exploration programme. There are three main objects of interest on his property:

1) A hematite zone located at a karstic unconformity between limestones and overlying clastic rocks. The hematite is gold bearing and has been the subject of drilling campaigns in 1980 and 1981. The prospector regards this zone as the most promising, the money was raised mainly to test its potential and any deal would probably involve fairly stiff terms. This writer considers the hematite zone to be of minor interest.

2) Underlying the hematite zone is a succession of limestones and volcanics. These could be the lateral equivalent of the host rock for the volcanogenic deposit of Western Mines. In outcrop and drill core there are encouraging indications of copper-zinc-gold mineralization associated with this succession. Information has been obtained virtually as a by-product of the programme assessing the overlying gold bearing hematite. More work is definitely needed to elucidate the potential of this zone. It would be difficult to option this without including the gold-in-hematite mineralization.

3) The tracing of copper rich float in the northern part of the claim group lead to the discovery of copper-silver mineralization associated with a shear zone in volcanics. Little work has been done on this showing and Specogna would probably be prepared to option it on reasonable terms.

A consultant is currently preparing a report on work to date. We have requested a copy from Specogna and will see if the basis for a deal can be arrived at on terms which are not too onerous. This report is intended to provide a background reference on the current status of the property.

J B Gammon

McDougall and Elliott spent a day on the property in July 1980 and saw the drilling in progress on the main showing and inspected the newly discovered copper mineralization. As a result of Simmons', and others, interest in the underlying sulphide zones the drilling was being extended down below the hematite associated mineralization. McDougall commented that the holes were not deep enough to adequately test this zone but felt that the sulphide mineralization was related to replacement adjacent to cross-cutting structures and that the hematite could represent a lenticular gossan overlying this mineralized structure. He and Elliott climbed up to inspect the newly discovered copper mineralization and concluded that it was associated with a near vertical fracture system in volcanics underlying the younger sediments. They also visited a coal showing discovered in sandstones above the unconformity.

S. N. Charteris reviewed the current situation in a Toronto office memo of August 7th 1980 and recommended making a deal on the property if possible.

Elliott collected samples from the volcanic host to the "new" copper showing and submitted them to Thornhill for petrographic examination. In a September 1980 report Muir confirms that they represent the interior and chilled margin respectively of a pillow in lavas of basaltic composition.

McDougall met with Specogna in October 1980 and obtained a rough summary of the drilling campaign. He attempted to negotiate a deal but Specogna still wished to continue on his own. McDougall helped in arranging for a drill contractor for the 1981 work.

In March 1981 McDougall again visited the property to see the results of the 1981 drill programme, which was then underway. He collected samples from the property which were forwarded to Thornhill for examination. The results of this study were summarized in Mineralogy Report #1188 of April 6th 1981. McDougall was able to pass on the main findings to Specogna and also helped arrange for some geophysical work to be carried out on the property.

In April 1981 Specogna forwarded a representative sample of the sulphide zone encountered in the 1981 drilling. This was forwarded to Thornhill for examination. Specogna was still not interested in any option arrangement.

Mineralogy Report #1192 of May 7th 1981 reported on the sulphide sample and was provided to Specogna. The continuing help and encouragement provided to Specogna seems to have paid off when he called Ivor Elliott in late May to indicate that he may be interested in making a deal on the property. As a result of this contact McDougall and Gammon made a short visit to see the properties and core on May 27th 1981.

The drilling results were not collated and no systematic data of any kind seemed to be available on the property. Specogna has indicated that he will provide us with a copy of his geologists' report which is currently under preparation. On receipt of this it is our intention to try and arrange concrete terms for an option agreement.

C. The Property

I) Location

The property is located approximately 5 kilometres north of the Fourth Lake in the Nanaimo River drainage and 55 kilometres by road west of Cassidy, British Columbia (Fig. 1). Of this distance, 27 kilometres are paved public road, 10 kilometres are paved logging road and 9 kilometres are all weather gravel logging road. The logging roads in the areas are maintained by Crown Zellerbach Co. Ltd. Road access to the property is good.

II) Topography and Climate

Topography on the property varies from moderate to rugged with elevations ranging from 640 m. to 1348 m.

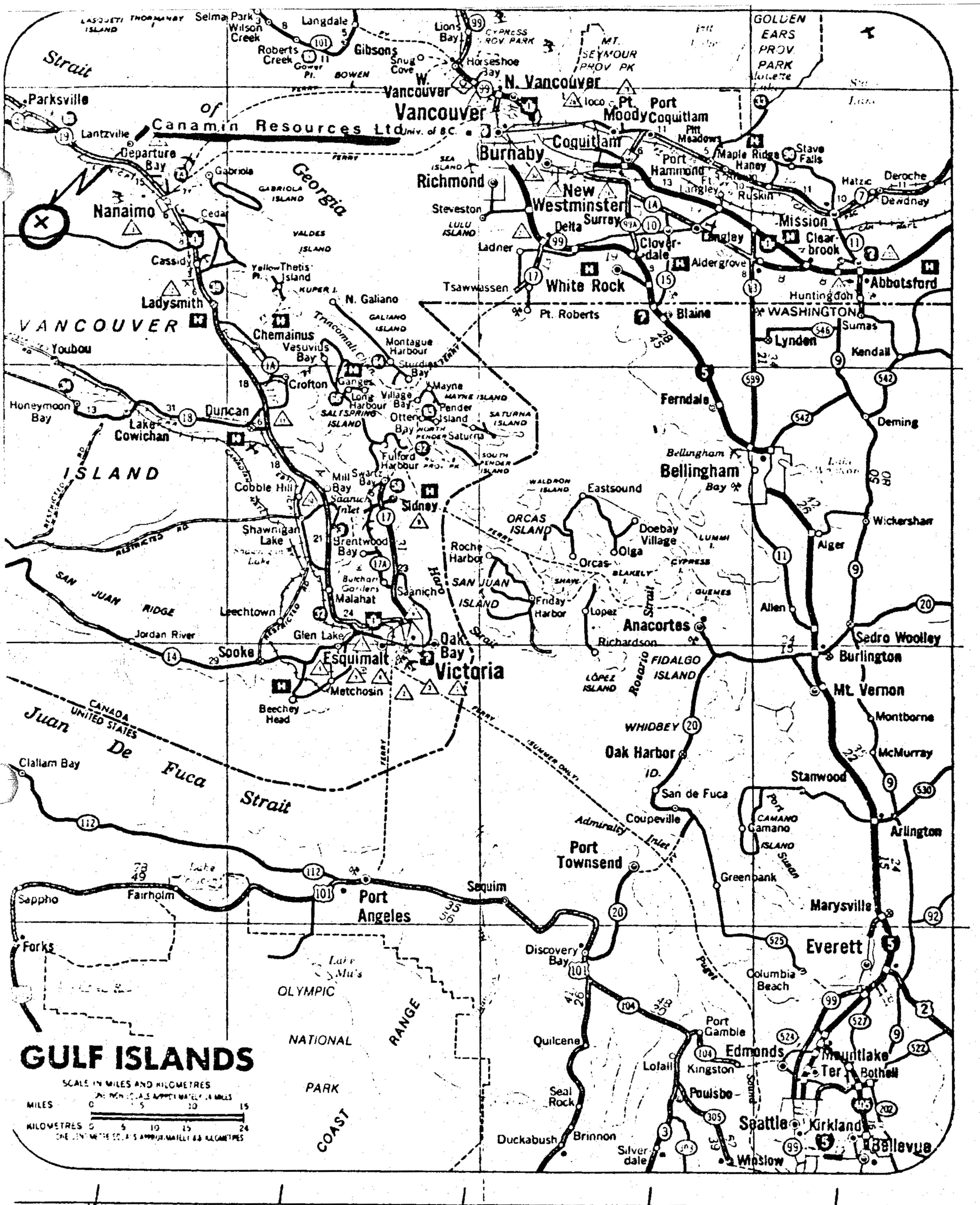
The property is heavily forested with spruce, hemlock, fir, and cedar, all of commercial value. Logging is currently in progress and reportedly much of the western portion of the property will be logged off during the next three years.

The climate is typical west coast rain forest with hot dry summers and cool wet winters. Snow fall is termed moderate, however, snow packs of up to 2.4 metres have been reported on the higher elevations.

III) Local Resources

Adequate industrial water can be obtained from the small streams on the property to supply current diamond drilling needs.

Provisions are readily available in Nanaimo, British Columbia, approximately 60 kilometres east of the property.



CANAMIN RESOURCES LTD

LOCATION MAP

Fig. 1

James F. Bristow

IV) Claims Held

The current Canamin Resources Ltd. property consists of the following 123 recorded claims (Fig. 2).

Claim Name	Units	Record Date	Record No.	Valid To
Villata	8	Sept. 15/76	105	Sept. 15/80
Villata A	2	Sept. 15/76	104	Sept. 15/83
Villata C	2	Jan. 10/77	133	Jan. 10/83
Villata D	2	Jan. 10/77	134	Jan. 10/83
Specogna Copper	20	March 17/80	557	March 17/81
WO 1	3	May 30/80	626	May 30/81
WO 2	6	March 17/80	558	March 17/81
WO 4	18	Dec. 31/79	498	Dec. 31/80
WO 5	18	Dec. 31/79	501	Dec. 31/80
WO 6	20	Dec. 31/79	499	Dec. 31/80
WO 7	10	Dec. 5/78	321	Dec. 5/80
Min	6	May 30/80	627	May 30/81
Wolfram 3	8	March 9/79	344	March 9/81
Total	123			

D. Regional Geology

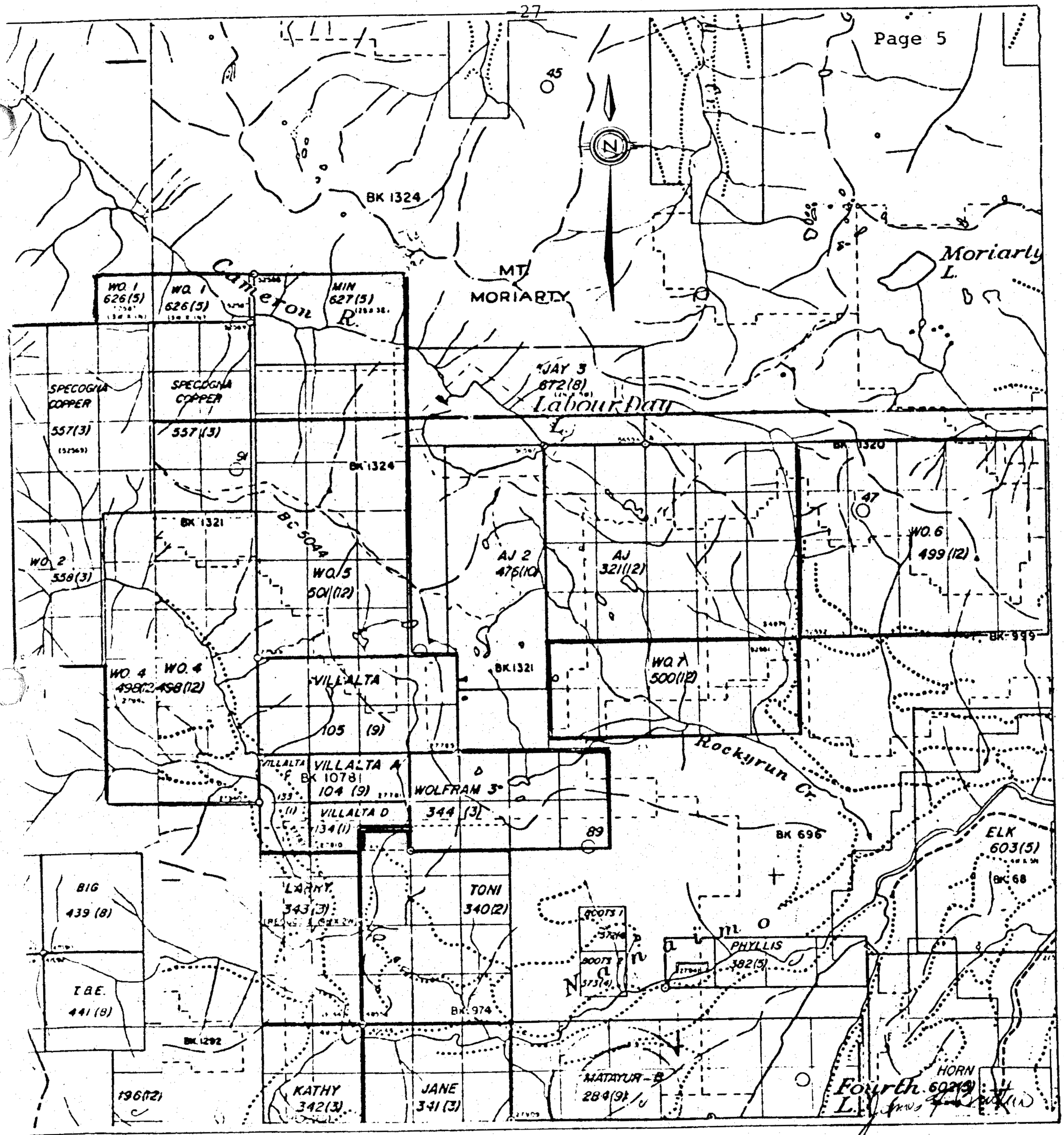
The recently published geological map of the property (GSC Paper 79-30, 1980) is shown in Figure 3 and suggests a complex geological history. The property appears to straddle at least one regional northwest trending fault and several northeast trending cross faults. The regional fault brings the westerly trending, steeply dipping Palaeozoic sequence of the Sicker Group into contact with the Triassic Vancouver Group and overlying, flatter Cretaceous sediments and Tertiary intrusives. The regional distribution of the Palaeozoic rocks of Vancouver Island is shown on Fig. 4.

D i) Nitinat Formation

This is the lowermost formation within the Sicker Group.

The formation is present throughout the Cowichan-Horne Lake Uplift from Horne Lake to Saltspring Island and is most widely exposed in the structurally and topographically highest middle part of that belt in the Nitinat headwater region. No outcrop of the formation is known in the Buttle Lake and Nanoose uplifts or the more northerly exposures of Sicker rocks.

The rocks of the Nitinat Formation are predominantly basic volcanic rocks. Where original texture is preserved they are seen to be massive flows in part, but more commonly flow-breccia composed of fragments of dark green metabasalt with black pyroxene phenocrysts and black or white anygdules. Brecciated textures are most conspicuous on deeply weathered, old glaciated surfaces where fragments stand in relief and are of different colour than the matrix. The breccias and less common massive lavas are in places interbedded with medium grained basaltic tuff, but distinct bedding or flow banding is rare.



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MINERAL CLAIM LOCATION MAP VICTORIA M. D.

92 / F

FIG. 2.

Scale: 1:50,000

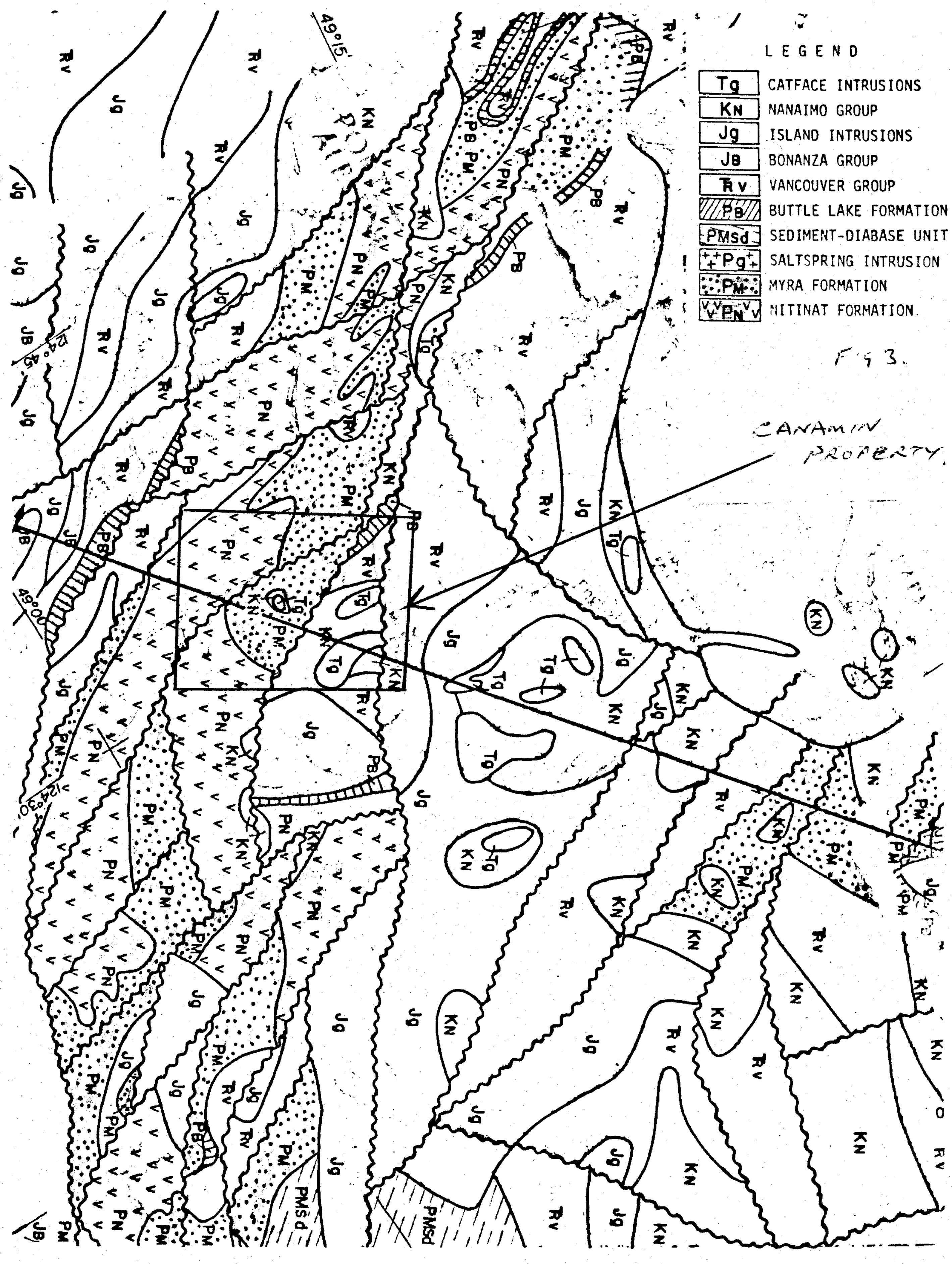

LEGEND
Tg CATFACE INTRUSIONS
KN NANAIMO GROUP
Jg ISLAND INTRUSIONS
JB BONANZA GROUP
Rv VANCOUVER GROUP
PB BUTTLE LAKE FORMATION
PMsd SEDIMENT-DIABASE UNIT
Pg SALTSPRING INTRUSION
PM MYRA FORMATION
PN NITINAT FORMATION
CANAMIN PROPERTY
49°15'
49°00'
124°45'
124°30'

Fig 3.

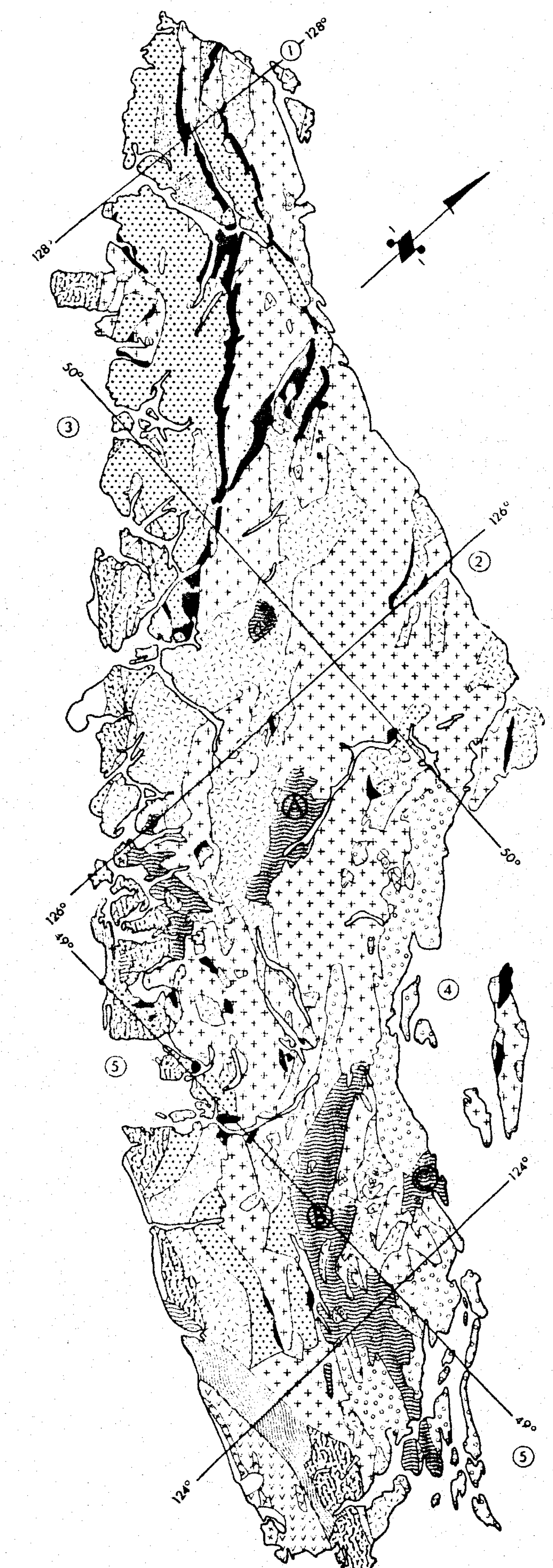


Figure 4

Geological sketch map of Vancouver Island.

LEGEND

CARMANAH GROUP		MIDDLE TERTIARY
CATFACE INTRUSIONS		EARLY TO MIDDLE TERTIARY
METCHOSIN VOLCANICS		EARLY TERTIARY
NANAIMO GROUP		LATE CRETACEOUS
QUEEN CHARLOTTE GROUP	KYUQUOT GROUP	LATE JURASSIC TO EARLY CRETACEOUS
LEECH RIVER FORMATION	PACIFIC RIM COMPLEX	LATE JURASSIC TO EARLY CRETACEOUS
ISLAND INTRUSIONS		EARLY AND (?) MIDDLE JURASSIC
BONANZA GROUP		EARLY JURASSIC
VANCOUVER GROUP: PARSON BAY FORMATION	QUATSINO FORMATION	LATE AND (?) MIDDLE TRIASSIC
VANCOUVER GROUP: KARMUTSEN FORMATION		LATE AND (?) MIDDLE TRIASSIC
SICKER GROUP		PALEOZOIC
METAMORPHIC COMPLEXES		JURASSIC AND OLDER

① ALERT BAY – CAPE SCOTT, 92 L – 102 I (G.S.C. PAPER 74–8)

② BUTE INLET, 92 K (IN PREPARATION), O.P. MAP 345

③ NOOTKA SOUND, 92 E (IN PREPARATION)

④ ALBERNI 92 F (G.S.C. PAPER 68–50)

⑤ VICTORIA, 92 B, C (FIELD WORK IN PROGRESS: SEE G.S.C. PAPERS 75–1A, p. 21–26 : 76–1A, p. 107–111, 77–1A, p. 287–294.)

A — BUTTLE LAKE UPLIFT

B — COWICHAN – HORNE LAKE UPLIFT

C — NANOOSE UPLIFT

MILES

0 20 40

Pillow basalts are rare in the Nitinat Formation but are exceedingly common in the Karmutsen Formation. Distinguishing features in the Nitinat are pyroxene phenocrysts and general shear foliation.

The only known base of the Nitinat Formation are gabbroic rocks, that partly intrude and partly underlie it. In addition the formation is largely shearfolded and cut by many faults and has no marker beds. Bearing in mind these uncertainties the original thickness, based on widths of exposures, is estimated at about 2000 m.

Nitinat volcanics are intimately related to medium-to coarse-grained uralite gabbro and diorite. Although contact relations are rarely visible these rocks very probably represent comagmatic feeder dykes, sills and magma chambers of the volcanics. They are medium - to coarse-grained diorite with relict diabasic texture.

Metamorphism of the volcanics is varied and complex and probably occurred in several stages. Low-grade metamorphism to epidote-actinolite-chlorite-albite rocks appears to be most common. Thermal metamorphism near intrusions has resulted in amphibolite-grade rocks.

Nitinat volcanics are to a large extent shear-folded and commonly exhibit steeply dipping axial plane surfaces with gently plunging axial lineations. Foliated and lineated metamorphic fabrics are generally consistent in attitude within individual outcrops and far more prominent than original flow and bedding planes.

D ii) Myra Formation

The largest ore desposits known in the Sicker Group are the Western Mines Lynx and Myra properties, which in 1977 produced 632,075 g. of gold, 34,909,727 g. of silver, 2,856,881 kg. of copper, 3,356,196 kg. of lead, 18,607,822 kg. of zinc and 72,139 kg. of cadmium. Total production of the Mount Sicker mines, 1898-1907 , was 1,107,285 g. of gold, 22,954,974 g. of silver and 8,653,780 kg. of copper. Understandably many exploration programs have been conducted by various mining companies in the hope of finding other similar deposits. The two known deposits and adjacent mineral showings are now generally considered to be Kuroko-type exhalite massive sulphide deposits, related to the rhyolitic or rhyodacitic volcanics of the Myra Formation. The coarse breccias are inferred to be close to the former volcanic vent and to the sulphides that issued from it.

So far these have only been found in the vicinity of Western Mines near Buttle Lake.

The formation overlies the Nitinat Formation, possibly with minor unconfirmity. The name is taken from Myra Creek, where the formation is the host of the massive sulphide deposits, being worked by Western Mines Ltd. The mine is in the Buttle Lake Uplift, where the Nitinat Formation is not exposed and where the Myra, directly overlain by the Buttle Lake Formation, is the dominant formation of the Sicker Group. In the Cowichan - Horne Lake Uplift the formation can, in a general way, be divided into a southern and a northern belt, both broken into segments by faults. The northern belt leads from Chipman Creek via Sicker Mountain and Mapple Mountain to the middle part of Saltspring Island and includes a small separate area in the Nanaimo River headwaters region.

Massive and agglomeratic flows of the Nitinat Formation are succeeded by massive tuffs with local banding and heterogeneous volcanogenic breccias. The base of the Myra Formation is defined at the first appearance of bedded volcanoclastic rocks. Maroon and grey volcaniclastic greywacke, grit and breccia with crude general layering commonly form the basal part. These clastic rocks appear to have a stratigraphic position between massive Nitinat volcanics and more or less thinly layered volcaniclastic rocks of the Myra Formation. It is tentatively concluded that they represent a fossil regolith indicating an unconformity between the two formations.

Widely banded tuff and breccia, not necessarily of primary volcanic origin, succeed the maroon and green breccia. Locally fine and coarse breccias containing diverse subangular fragments of Nitinat Formation volcanic rocks, including uralite prophyry, varying in size from less than 1 to about 30 cm, form part of the unit.

A sequence of light and dark banded feldspathic tuff and argillite forms the next higher unit of the Myra Formation. In its upper part the unit includes sections of black, thick bedded to massive, argillite.

Thin tuff layers commonly show nontectonic slump folds and loadpockets. The tuffs are fine- to medium-grained rocks and fine grained rocks have dark grey to black, fresh surfaces, Weathered surfaces are light grey and buff and show inclusions of darker coloured argillite lenticles and lenses.

In the vicinity of the Canamin property the Sicker Group rocks are reported to be more strongly deformed than in the southern section of the Cowichan - Horne Lake uplift. The Myra Formation is largely composed of isoclinally folded rocks, mostly convered to chlorite or sericite schist. These form the host rocks for the Mount Sicker Mines which were in production between 1898 and 1907 with a later period of activation as the Twin "3" Mine. There are currently being investigated by SEREM who are reported to have spent nearly a million dollars on drilling the deposits.

The Buttle Lake Uplift, and in particular the Myra Creek area with the Lynx, Myra and Price mineral deposits of Western Mines Ltd. is designated the type area for the Myra Formation. Detailed stratigraphy of the formation is obscured by complex structure and limited exposures beyond the workings.

According to Western Mines geologists the Myra Formation, as exposed in the mine is composed of varied, mainly volcaniclastic rocks. They range from very fine grained , thin bedded and cherty tuffs to thick bedded lapillistone and coarse breccia. They are predominantly heterolithic with fragments of basic, intermediate and acidic volcanic rocks, mixed in widely varying proportions. Volcaniclastic beds adjacent to ore zones commonly contain clasts of rhyolite and ore. There are some dark green flows, tuffs and breccias of basic composition and in some instances the ore is underlain by a rhyolitic volcaniclastic bed and overlain by a mafic flow. Beds of black argillite and argillaceous tuff are present locally at various stratigraphic levels but have little lateral continuity.

D iii) Buttle Lake Formation

The upper part of the Sicker Group is composed mainly of clastic sediments including argillite, siltstone, chert, greywacke and calcarenite. These beds are intruded by many sills of commonly plagiophyric diabase. The calcareous beds, with or without interbedded argillite and greywacke, are mapped separately as the Buttle Lake Formation. Elsewhere, as in the eastern part of the Cowichan - Horne Lake Uplift, interbedded argillite and siltstone, interlayered with basic sills but without carbonate are referred to as the Sediment-Sill Unit. The unit may be coeval with the Buttle Lake Formation or somewhat older and could also correlate in part to the upper sedimentary rocks in the Myra Formation.

The sediments of the unit are generally thinly bedded, turbidite-like, massive argillite and siltstone that are much silicified and show conspicuous dark-light banding on joint faces. Silicification is in part diagenetic but in part probably due to contact reaction with the enclosed diabase sills.

In the Buttle Lake region limestone, up to 150 m thick, forms the top of the Sicker Group and is overlain paraconformably by basaltic rocks of the Karmutsen Formation. It was named Buttle Lake Formation by Yole, following an earlier suggestion by Gunning (1931). Sparse brachiopods, bryozoans and microfossils indicate late Paleozoic age. Several northwest striking belts of correlative limestone with interbedded chert and siltstone are present in the Cowichan - Horne Lake Uplift.

D iv) Vancouver Group (Karmutsen Formation)

The Vancouver Group overlies the Sicker Group and also appears to be less intensely folded. In general the several thousand metres of basaltic lavas exhibit gentle monoclinal and domal structure. However, during recent fieldwork vertical, sheared sequences of Karmutsen pillow lava were noted that seemed to conform to the attitude of "underlying" Myra or Buttle Lake formations.

The main distinction used in field mapping for differentiating between the Karmutsen and the Nitinat volcanics would seem to be the fresher appearance of the former with less shearing, metamorphism and preservation of primary structures such as pillows.

D v) Nanaimo Group

This late Cretaceous series of clastic rocks covers much of eastern Vancouver Island (Fig. 4). They have been mapped as ocurring in the vicinity of the Canamin property.

E. Regional Correlation

The Paleozoic complex that underlies Vancouver Island and has been incorporated into the Sicker Group is the remnant of a middle to late Paleozoic volcanic arc terrane that appears to have a northern continuation in St. Elias Mountains of Yukon and Wrangell Mountains of Alaska. This western Insular Belt of the Canadian Cordillera is believed to have originated farther south and to have been emplaced in its present geographic position in Jurassic or Early Cretaceous time.

The possibility exists that the trancated Paleozoic euogeosyncline and arc terrane of California were shifted northward and incorporated in the western part of the northern Cordillera.

The Shasta District of East Klamath Mountins is about 1000 km distant from central Vancouver Island. Although tectonic correlation between the two regions is uncertain they may have been in separate parts of the same Paleozoic volcanic belt. Both areas are distinguished by polymetallic massive sulphide deposits related to acid volcanism and extrusion or shallow intrusion of rhyolite and coarse grained quartz porphyry. In both regions too the acid volcanics are preceded by basic volcanics, largely converted to greenstone, and are followed by clastic and carbonate sediments with fossils indicating Pennsylvanian and Permian age (Table 1).

Table I

Vancouver Island	Shasta District
Buttle Lake Formation Bedded to massive calcarenite, crinoidal limestone. chert; calcareous siltstone; 150-450 m Middle Pennsylvanian to Early Permian	**McCloud limestone** Thin- to thick-bedded fossiliferous limestone with chert nodules; 150-800 m Early Permian and (?) Lake Pennsylvanian
Sediment-sill Unit Bedded argillite, siltstone, chert; diabase sills	**Kennett Formation** Siliceous siltstone, tuff; thick lenses of limestone in upper part; 0-12 m; Middle Devonian
Myra Formation Bedded siliceous siltstone, argillite, rhyodacite tuff and breccia, quartz prophyry; 600-900 m Late Devonian to Early Mississippian	**Balaklala Rhyolite** Porphyritic and non-porphyritic rhyolite and rhyolitic pyrhoclastic rocks; 300 m±; Middle Devonian
Nitinat Formation Basaltic uralite-porphyry, agglomerate and pillow lava, actinolite-chlorite-albite schist.	**Copley Greenstone** Greenstone, keratophyre, pyroclastic rocks.

F. Geology of the Canamin Property

Consideration of the stratigraphic successions described above and reference to Fig. 3 shows some of the problems inherent in interpreting the geology of the property. The faulted juxtaposition of rocks of different ages but similar lithologies makes correlations extremely difficult. It is clear that a detailed and thorough job of mapping the geology is required as a first priority to understanding the relationship of the mineralized showings to each other and to their regional setting.

It is considered premature, at this point, to give Formational names or stratigraphic ages to the various rocks involved.

However the fact that Myra Formation, which hosts the Western Mines and Sicker Mountain deposits, is mapped in the vicinity certainly adds to the interest of the property.

G. The Hold-Hamatite Mineralization

It was this mineralization which first attracted Specogna's attention. This is showing No. 1 on Fig. 5. The panoramic view from the helicopter in Fig. 6 shows the cleared area where drilling has taken place. The unconformably overlying clastic rocks form a clear feature running in from the northwest. Most of the drilling has taken place in the cleared area in the foreground. The associated, underlying sulphide mineralization is exposed in the wooded slopes below the cleared area. Figures 7, 8 and 9 show the appearance of the hematite in the vicinity of the unconformity.

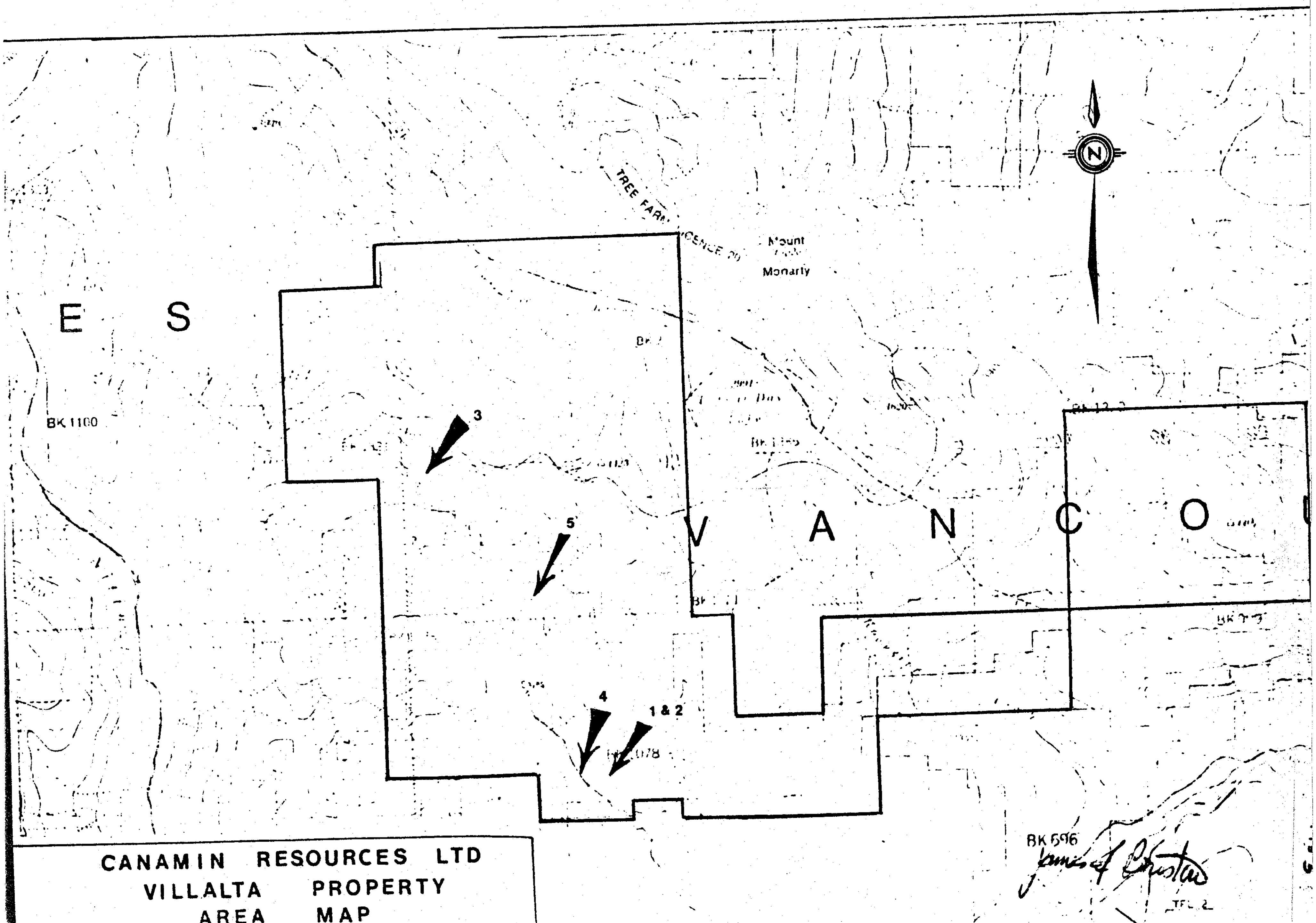
Figure 10 gives the locations of the holes drilled in 1980. The six holes were all drilled vertically, at a reported cost of $35,000. The main results are summarized below:

DDH-80-V-1	0-11.13m	Chert and conglomerate
	11.3-44.20m.	Limestone with sulphides (py - cpy)
	44.2-44.81m.	Massive pyrite
	44.81-47.55m.	Feldspar porphyry dyke
	47.55-52.12m.	Siliceous siltstone, brecciated and contorted. Minor py on fractures.

The limestone section gave gold values in the 0.018 to 0.084 oz/st Au range.

DDH-80-V-2	0-12.80m.	Hematite
	12.80-38.86m.	Limestone
	38.86-39.17m.	Siliceous siltstone
	39.17-50.60m.	Limestone
	50.60-53.34m.	Grey chert.

The 12.8m. section of hematite averaged 0.071 oz/st gold. The best section was from 9.75 - 10.36 m. which ran 0.532 oz/st gold 1.08 oz/st silver. Copper and zinc values were present throughout, but nowhere exceed 0.5%.



CANAMIN RESOURCES LTD
VILLALTA PROPERTY
AREA MAP

Figure 6 Area of showings 1 and 2. The location of the main unconformity running into the cleared area from the northwest is indicated.

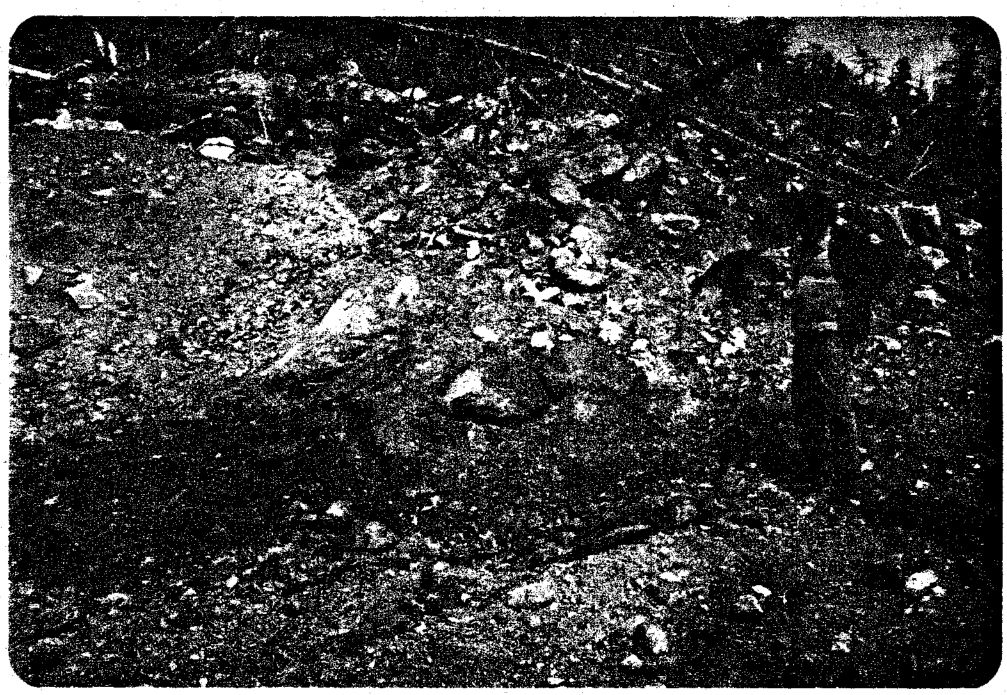


Figure 7 Original outcrop of hematite material under the unconformity. It was this area, sampled by J. J. McDougall that ran better than 1 oz/t gold.

Figure 8

Figure 9

Bulldozed area showing hematite gossan in foreground and massive weathering clastics above the unconformity.

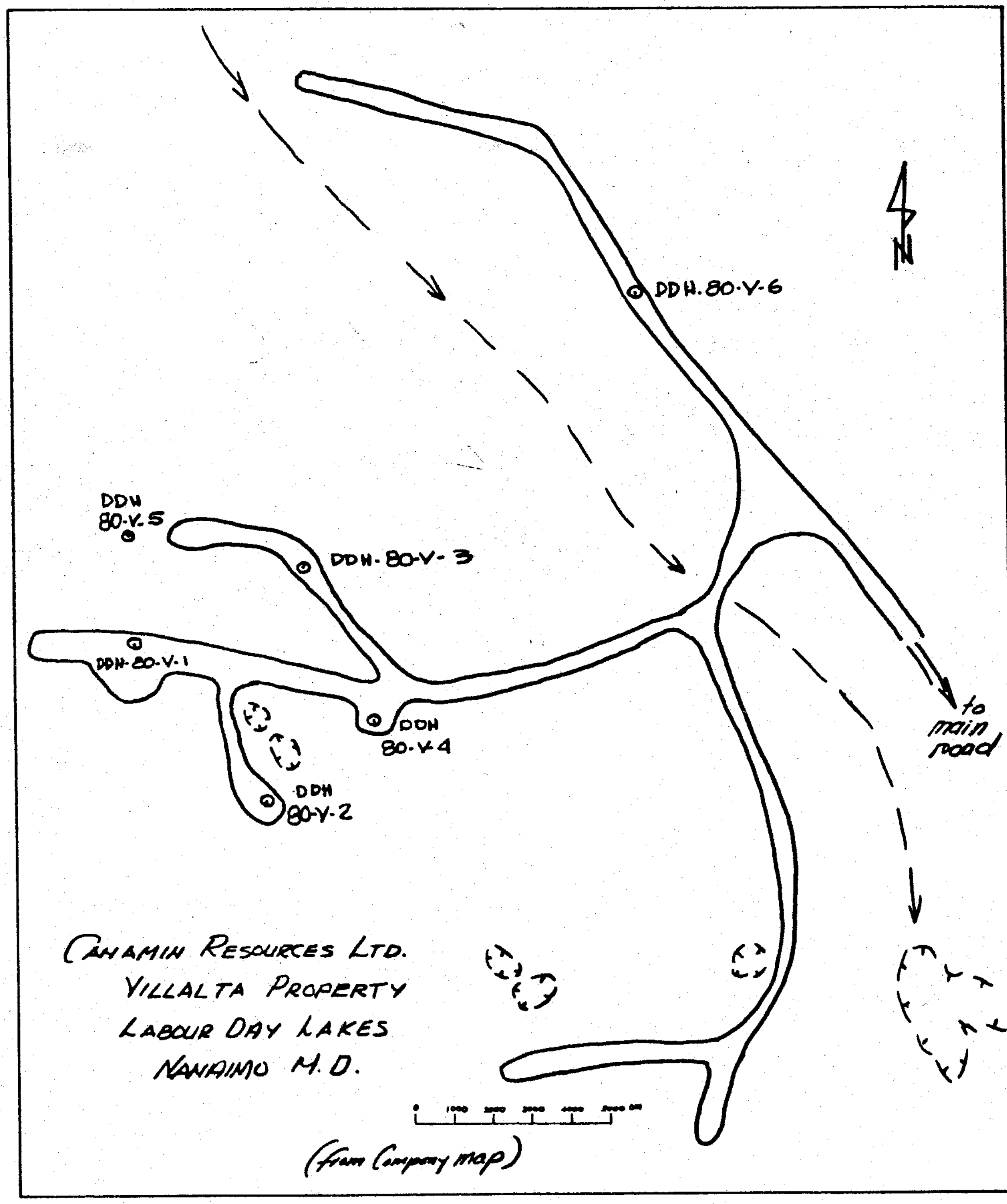

N
DDH.80-V-6
DDH
80-V-5
DDH-80-V-3
DDH-80-V-1
DDH
80-V-4
DDH
80-V-2
to
main
road
Canamin Resources Ltd.
Villalta Property
Labour Day Lakes
Nanaimo M.D.
0
1000
(from Company map)

Fig 10

DDH-80-V-3	0-3.51m.	Overburden
	3.51-12.19m.	Hematite
	12.19-20.73m.	Limestone
	20.73-25.91m.	Brecciated chert
	25.91-27.43m.	Lamprophyre dyke
	27.43-87.48m.	Limestone (with thin lamprophyre dyke)
	87,48-92.05m.	Grey chert
	92.05-94.18m.	Argillite

Gold was less than 0.02 oz/st throughout the hematite. One section of hematite (9.75 - 10.06 m.) had chalcocite deposited in vugs and ran 1.66% Cu and 0.54 oz/st silver.

DDH-80-V-4	0-3.66m.	Hematite
	3.66-20.12m.	Limestone

No interesting values reported.

DDH-80-V-5	0-2.44m.	Overburden
	2.44-22.68m.	Conglomerates and breccia
	22.68-30.48m.	Lamprophyre dyke
	30.48-37.64m.	Limestone
	37.64-44.81m.	Feldspar porphyry dyke
	44.81-74.22m.	Grey chert
	74.22-82.30m.	Siltstone and argillite.

No interesting values reported.

DDH-80-V-6	0-34.75m.	Conglomerate
	34.75-39.32m.	Hematite
	39.32-59.14m.	Hematite and altered limestone, brecciated and sulphide bearing.
	59.14-96.32m.	Limestone with sulphides (py,po,cpy).

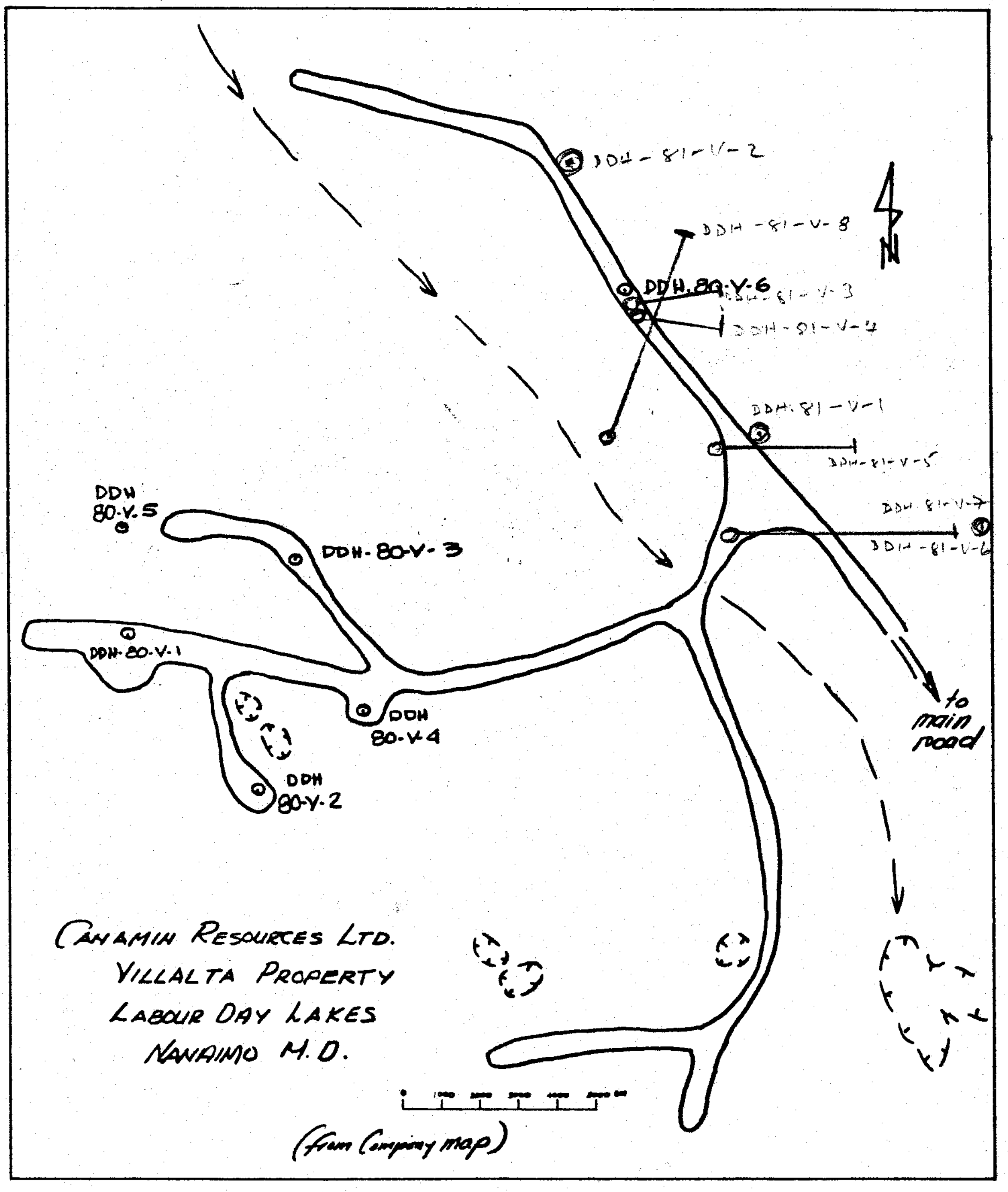
The best assay reported from the hematite zone ran 0.228 oz/st gold over 0.77 metres. One of the sulphide sections within the limestone (80.77 - 81.08 m.) ran 3.676 oz/st gold, 0.56 oz/st silver, 0.76 % copper and 7.65% Zn.

The results of the 1981 drilling campaign have not yet been collated. No plans, sections, logs or assay results are available. However Figure 11 is a rough sketch showing the locations of the 8 holes drilled in 1981 as reported by Specogna.

Holes 81-V-1 is drilled vertically and reportedly intersected the hematite zone and several sulphide horizons in the underlying limestone.

Hole 81-V-2 was also vertical and only intersected a narrow section of hematite. Sulphides were encountered in the limestone and there were also tuffs and lamprophyres in the sequence.

Hole 81-V-3 was drilled to the northeast at -60^{o} and intersected minor hematite. The limestone section was less siliceous and unmineralized.



DDH-81-V-2
DDH-81-V-8
N
DDH.80-V-6
DDH-81-V-3
DDH-81-V-4
DDH-81-V-1
DDH-81-V-5
DDH-81-V-7
DDH-81-V-6
DDH 80-V-5
DDH-80-V-3
DDH-80-V-1
DDH 80-V-4
DDH 80-V-2
to main road
Canamin Resources Ltd.
Villalta Property
Labour Day Lakes
Nanaimo M.D.
(from Company map)

Fig 11.

Hole 81-V-4 was drilled to the east at -60° and intersected healthy sulphide sections in the limestone. Massive sphalerite is visible at the contact between "andesite" and the limestones. The andesite section is for 80 feet immediately below the hematite gossan and overlying the limestone.

Hole 81-V-5 was drilled to the east at -70°, hematite was not particularly strong but sulphides in the limestone are strongly developed between 297 and 425 feet.

Information on the remaining holes is completely lacking.

The drilling to date indicates a zone of hematite with a lateral area of about 30 metres by 110 metres with a maximum thickness of 14 metres. Gold values are erratic. Thornhill has examined representative samples and included that it could represent a gossan but that an iron-formation origin could not be ruled out.

Figure 12 shows an outcrop of the overlying clastic formation. Figures 13, 14 and 15 show the unconformable contact in drill core. Figure 16 shows hematite rich breccia surrounding limestone fragments below the unconformity and supports the theory that the zone developed as a gossan from weathering of sulphides within the limestone section at a time of karstic development. This palaeokarst feature has been fossilized at the unconformity with the, rapidly deposited, overlying clastic formation.

Present day karstic development is shown in Figure 17.

H. Sulphide Mineralization below the gold hematite zone (No. 2 on Fig. 5)

This has been partly touched on in the above discussion since it is mainly known from the drilling of the hematite zone. Some of the best gold values have been obtained in this environment as well as encouraging zinc, silver and copper values. The potential of this zone appears to be more attractive both on the basis of grade and potential tonnage.

Of major priority is a detailed examination and correlation of all drilled sections particularly with reference to host rock origin. While limestones are clearly present, some indications of associated volcanic rocks of both basic and acidic composition have been encountered.

Figure 18 is Barry Simmons' original geological sketch of the area showing his interpretation of an acidic volcanic association. Figure 19 is his sketch of the mineralized ourcrops. Some of the rocks described from the holes as grey cherts may be volcanic related and the feldspar-porphyry dykes are an interesting indication. Figure 20 is Jimmy McDougall's interpretation of the area and lends weight to his comment that the recent drilling campaign has not really been extended deep enough to adequately test the sulphides associated with the volcanics lower in the Sequence.

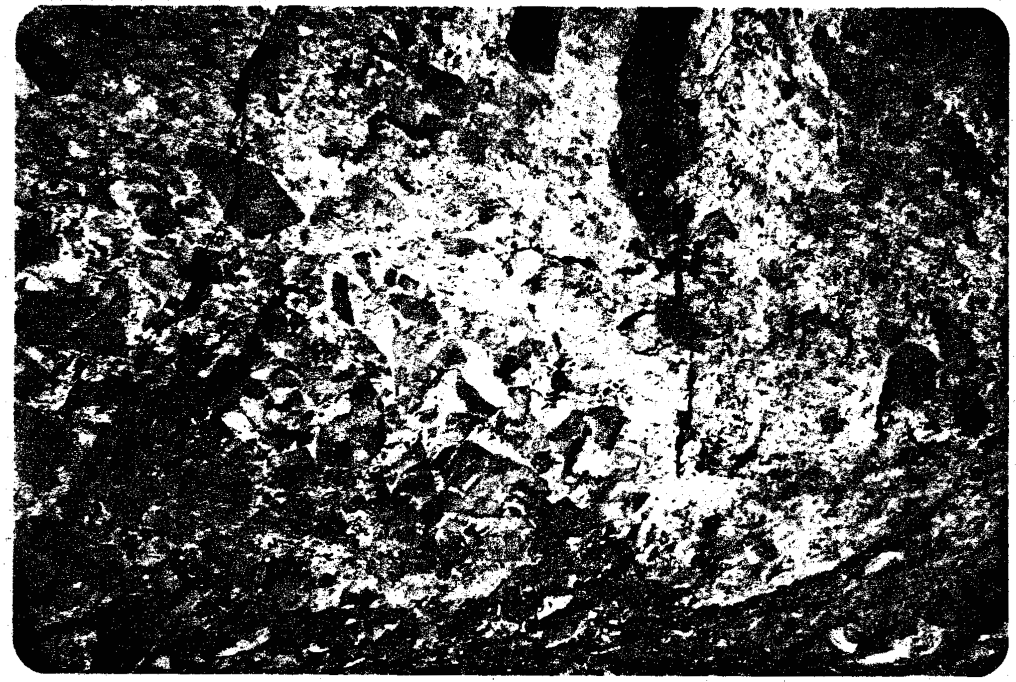


Figure 12 Outcrop of clastic rock unconformably overlying the hematite mineralization.

Figure 13 Drill core showing contact between overlying clastics and the hematite zone.

Figure 14 Core box beyond hammer shows the clear contact between overlying clastics and the friable hematite zone.

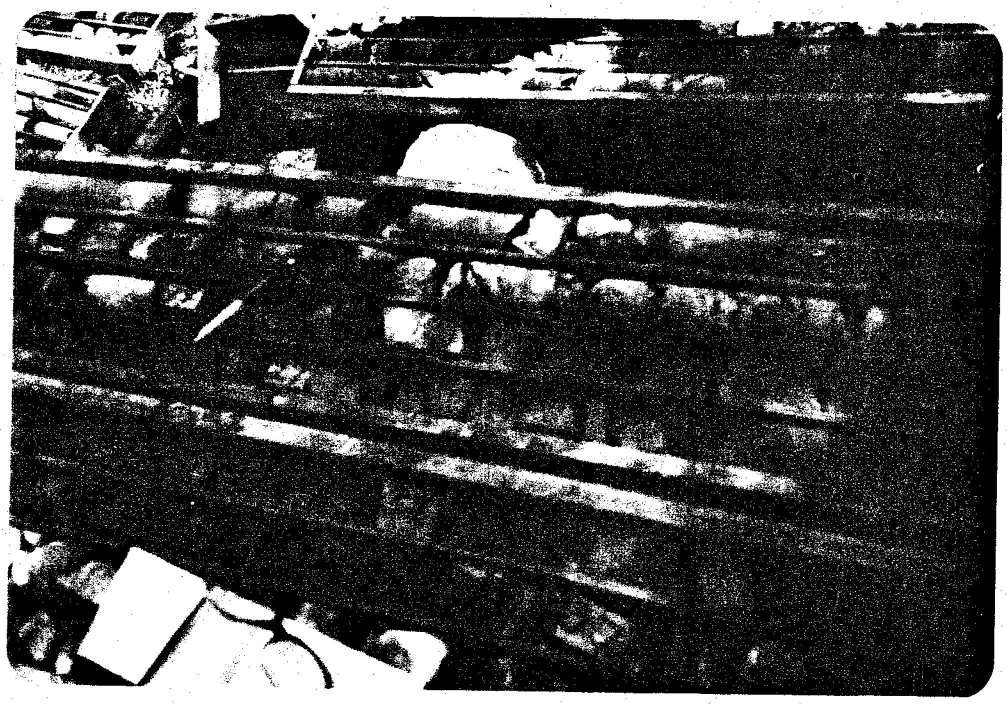


Figure 15 The unconformity occurs at the pen. In this example the hematite zone is more massive and cemented.

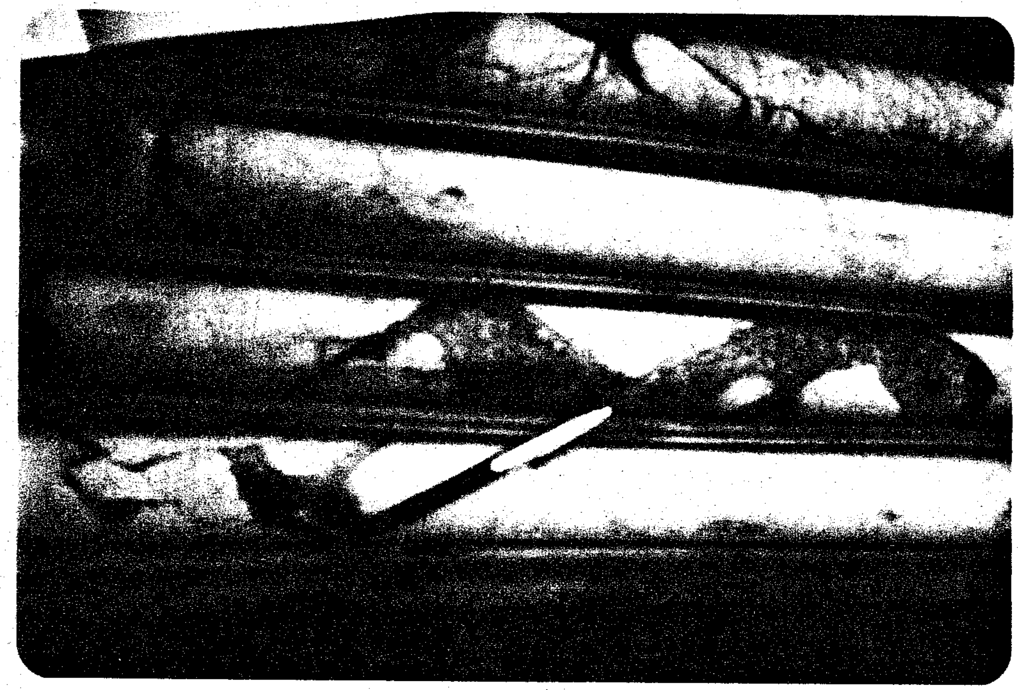


Figure 16 Hematite rich breccia surrounding large fragments of limestone below the massive hematite mineralization (DDH-81-V-8).

Figure 17 Karstic sink holes developed in limestone close to the exhumed unconformity.

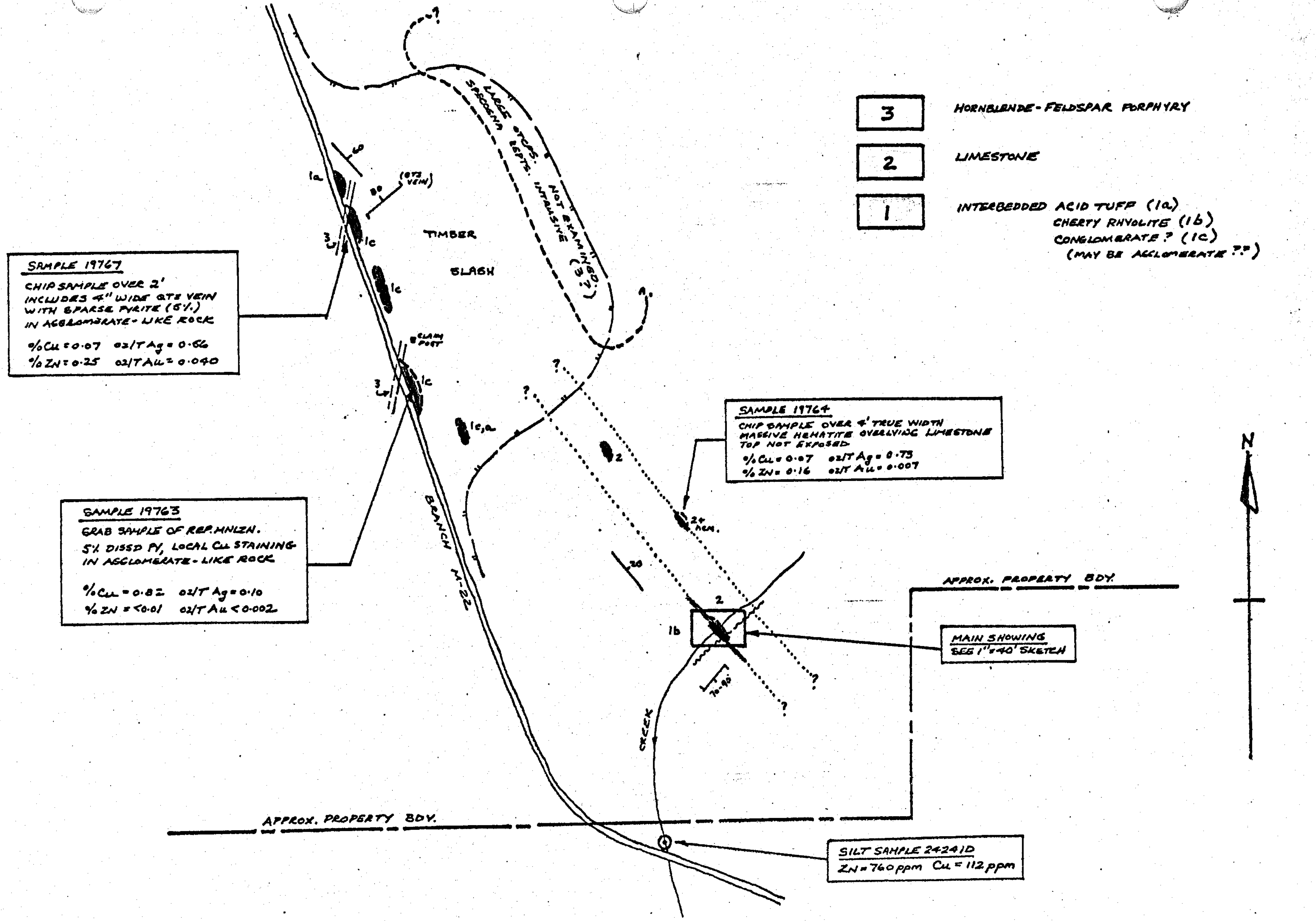


FIGURE 18

VILLALTA CLAIMS - SOUTH PART

GEOLOGICAL SKETCH

APPROX SCALE: 1" = 400'

BDS. April/70

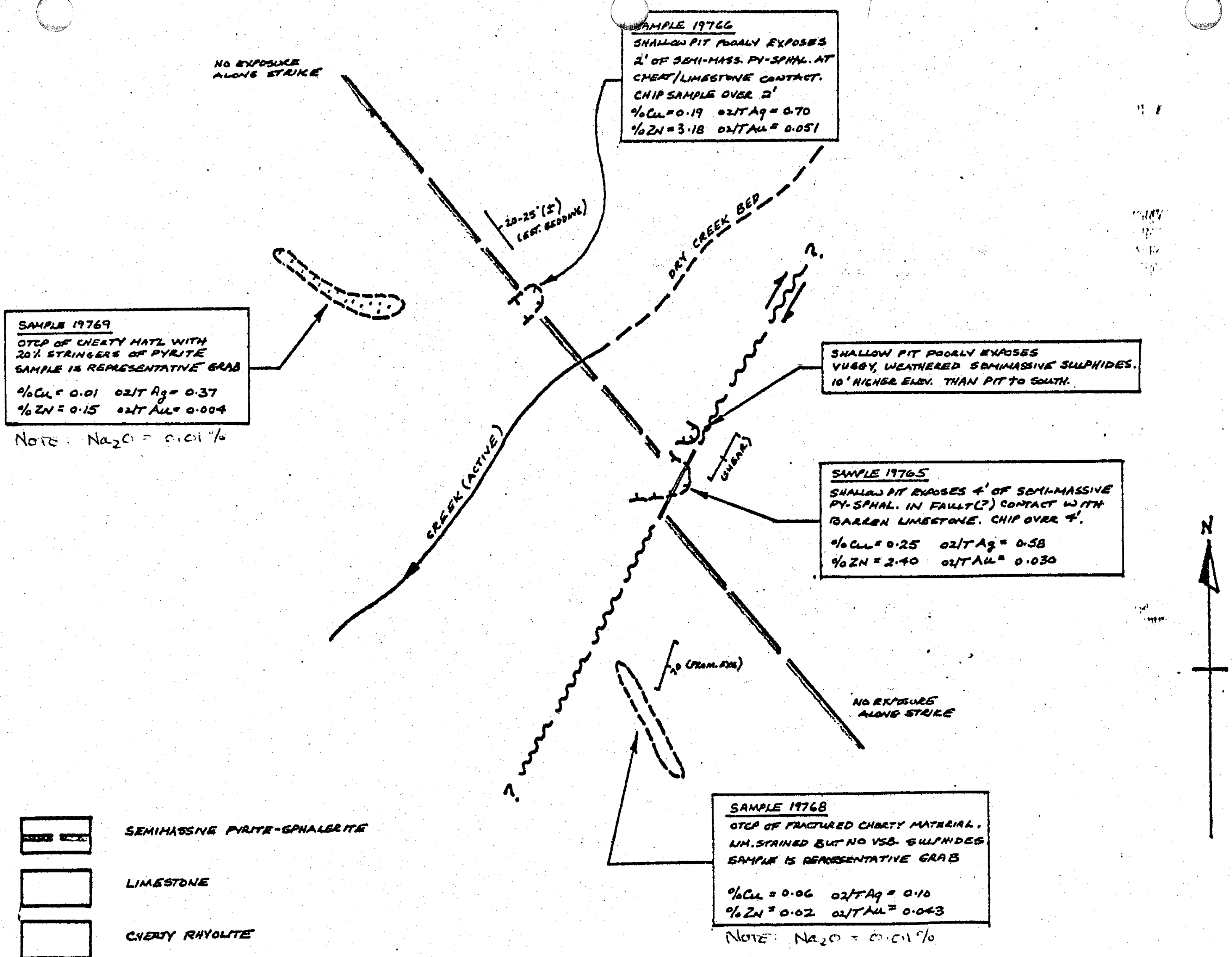


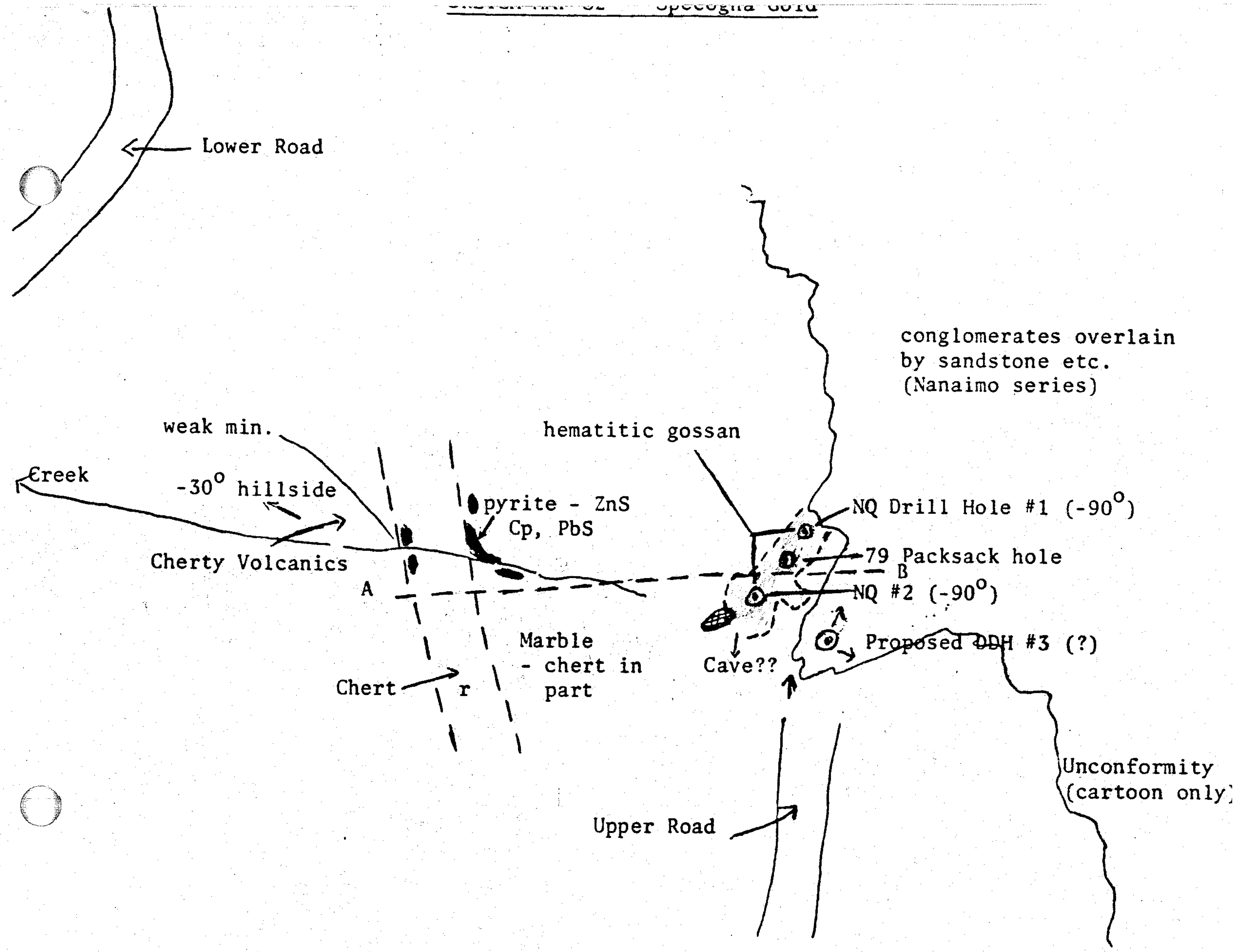
FIGURE 19

VILLALTA CLAIMS - MAIN SHOWING

GEOLOGICAL SKETCH

APPROX. SCALE: 1" = 40'

Specogna Gold



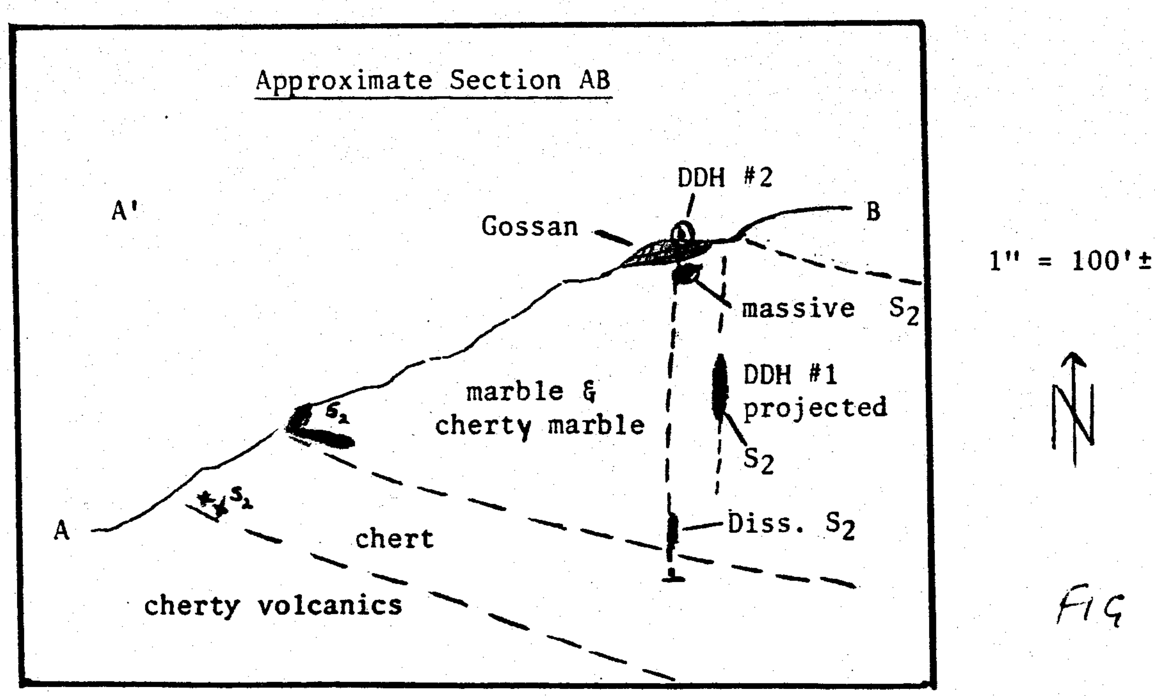


FIG 20.

Refer to Simmons 1978 Report for detail - central area

Figure 21 shows an outcrop of sulphides in the limestone beds exposed in the cliff face below the hematite zone. This gave samples which ran about 0.5 oz/st gold and 5% zinc.

Figures 21,22 and 23 illustrate the mode of occurrence of the sulphides in the limestone.

The lab description of sulphides encountered in hole V-5-81 is given below. The presence of arenopyrite and an unusual magnetite morphology are of interest. They suggest that geochemistry and magnetics could be useful exploration tools for evaluating.

Hand Sample - banded sulphides occur in a zone of strong deformation and shearing. The major sulphides apparent in hand sample are pyrite and sphalerite. They are segregated into bands consisting of granular, fine grained pyrite and massive, intergranular sphalerite. Lenticular patches of carbonate and dark intergranular silicates (chlorite ± amphibole?) form the gangue assemblage.

The volume estimates given above apply to the ranges found in all three polished sections. Textures and mineral associations are similar for each section although the proportions of sulphides differ considerably in each. Comments on each opaque mineral are as follows:

Pyrite occurs in aggregates of euhedral to subhedral grains. Some layers are quite massive with only ~5% intergranular gangue and sulphides, but the majority of layers have up to 20% interstitial gangue and sulphides.

Arsenopyrite occurs mainly as clusters of subhedral and euhedral broken grains in sphalerite. Occasional isolated grains occur within the massive bands of pyrite.

Sphalerite shows streaky massive development with abundant inclusions of exsolved pyrrhotite and chalcopyrite. Deformation textures are exhibited by flow lines of inclusions in the sphalerite. The sphalerite also encloses irregular blebs of galena, arsenopyrite and rounded partly replaced grains of pyrite.

Pyrrhotite, galena and chalcopyrite occur as discrete patches as well as exsolution blebs in sphalerite. They often form the matrix to granular pyrite and fill shatter cracks in broken pyrite crystals.

Magnetite shows unusal textures and relationships. It is closely associated with sphalerite and forms a matrix to the granular pyrite. Coarse grained patches of the oxide show unusual radial textures.

Only one grain of native silver was observed in PS-7566. It is only 15 um in diameter and is enclosed in gangue.

Figure 21 Sulphides in limestone

Figure 22 DDH 81-V-4. Massive phyrrhotite with minor pyrite and chalcopyrite in limestone.

Figure 23   Sulphides in limestone section. Note irregular replacement type contacts at bottom of picture and sulphide - limestone contact paralleling the core axis near the top of the picture.

I. The "new" copper showing

As road building continued further north within his claim group Specogna located copper bearing boulders several miles north of his hematite showing. He traced them up the main valley side and was able to locate a side creek which appeared to be the source. Prospecting on the steep cliffs he located locally impressive mineralization in outcrop. Grab samples run better than 6% copper and 11 oz/st silver with gold around 0.10 oz/st. This is showing No. 3 on Figure 5.

The mineralized outcrops are located in the vicinity of a waterfall at the top of a steep, 1000 foot high cliff. This locality is indicated in Figures 24 and 25 which gives an indication of the associated topography!

The cliff is capped by unconformably overlain clastic sedimentary rocks which may represent the Cretaceous Nanaimo Formation. These are shown in Figure 26, which is also of interest since it gives an indication that the vertical shearing associated with the most impressive copper mineralization also continues into the overlying sediment.

The actual unconformity between these clastic rocks and the underlying volcanics is well exposed in the creek. It appears to be occupied by a finer grained sandstone horizon. This is shown in Figure 27.

The volcanic host to the mineralization is well exposed just below the unconformity where pillow structures are visible (Figures 28 and 29). Ivor Elliott collected samples from this locality and J. E. Muir's description of their petrography was as follows:

" Microscopic examination of PTS's 5828 and 5829 prepared from portions of samples L and R respectively confirms their volcanic origin. Each has been affected by moderate to strong sericitization, carbonatization, silicification and chloritization. Sample L was undoubtedly collected from a pillow margin. The rim portion consists of microphenocrysts of sericitized lath-like feldspar together with fragments of the interior portion of the pillow scattered throughout a chlorite (devitrified glass) matrix. The interior of the pillow consists of microphenocrysts of sericitized feldspar and chloritized orthopyroxene (?) imbedded in a finer grained, leucoxene-rich, highly silicified quench-textured matrix. Late-stage calcite veinlets criss-cross the sample. Sample R possesses the same assemblage as L, but it is much more equigranular, contains a higher proportion of altered feldspar laths and is more intensely carbonatized. Chlorite and quartz no longer form a somewhat continuous matrix but, are, instead, delegated to an interstitial role. Since the chemical compositions of the two samples are similar (see Table I attached), and sample R appears from its texture to have been more slowly cooled than L, then sample R mostly likely represents the core area of a pillow from the same eruption. The primary mineralogy of the samples as implied by the pseudomorphs now present suggests that both were originally basaltic in composition."

The appearance of the mineralized zone is shown in Figures 30, 31, 32, 33 and 34.

J. J. McDougall's geological interpretation sketch of the showing is enclosed as Figure 36. Fresh blasting, to the south of the waterfall, along strike has confirmed the presence of copper sulphides at the same stratigraphic horizon away from the main zone of shearing. Samples were collected from this area but the results are not yet to hard.

Presunka made some reconnaissance VLF profiles along the cliff top and obtained a strong anomaly over the eastwards projection of the main shear zone.

Continuation of a geophysical programme (horizontal - loop or, I.P. and V.L.F.) followed by drill testing would probably be the best way to evaluate this showing.

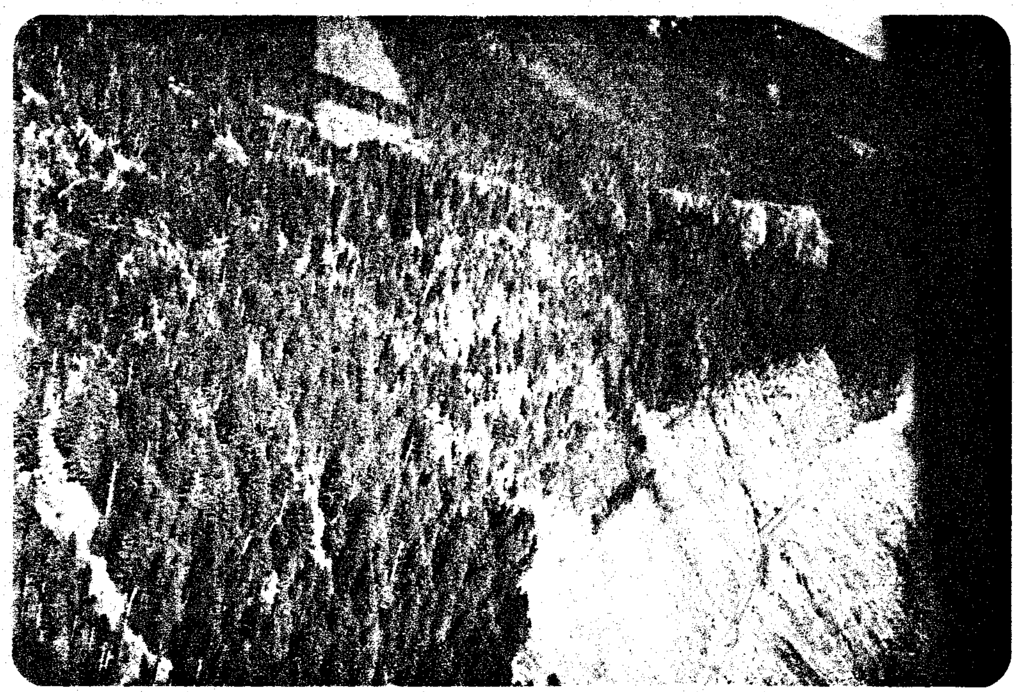


Figure 24 Looking south.

Figure 25 Looking north.

Position of Specogna copper showing in headwater of Creek on a steep 1000 foot high cliff.

Figure 26 Clastic rocks overlying the copper bearing volcanic sequence. The vertical fracture may represent a continuation of the shear zone associated with the copper mineralization in the underlying volcanic rocks.

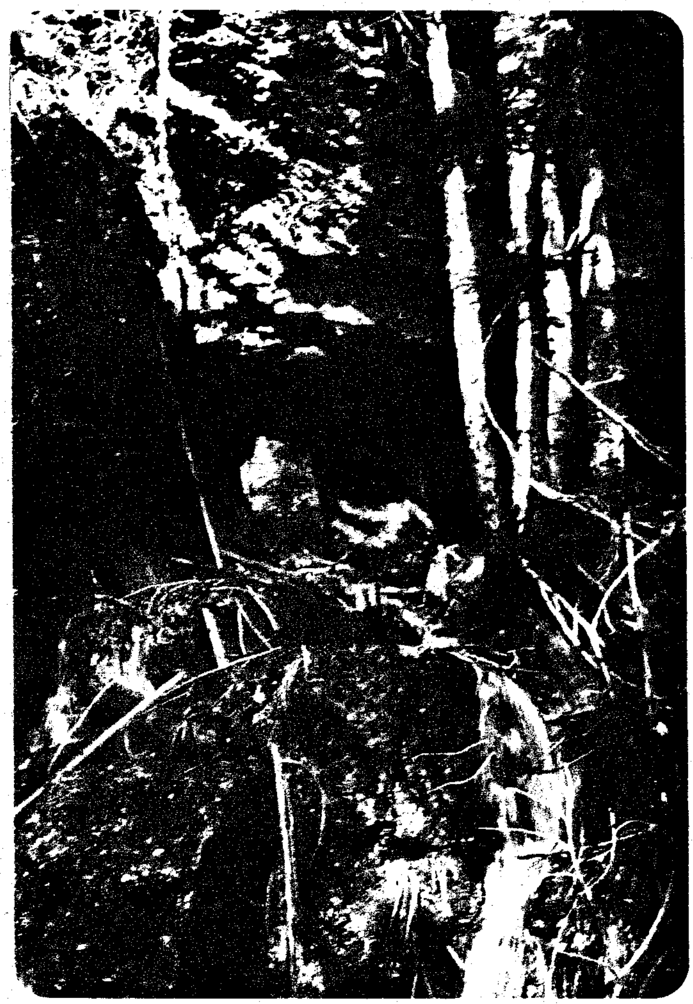
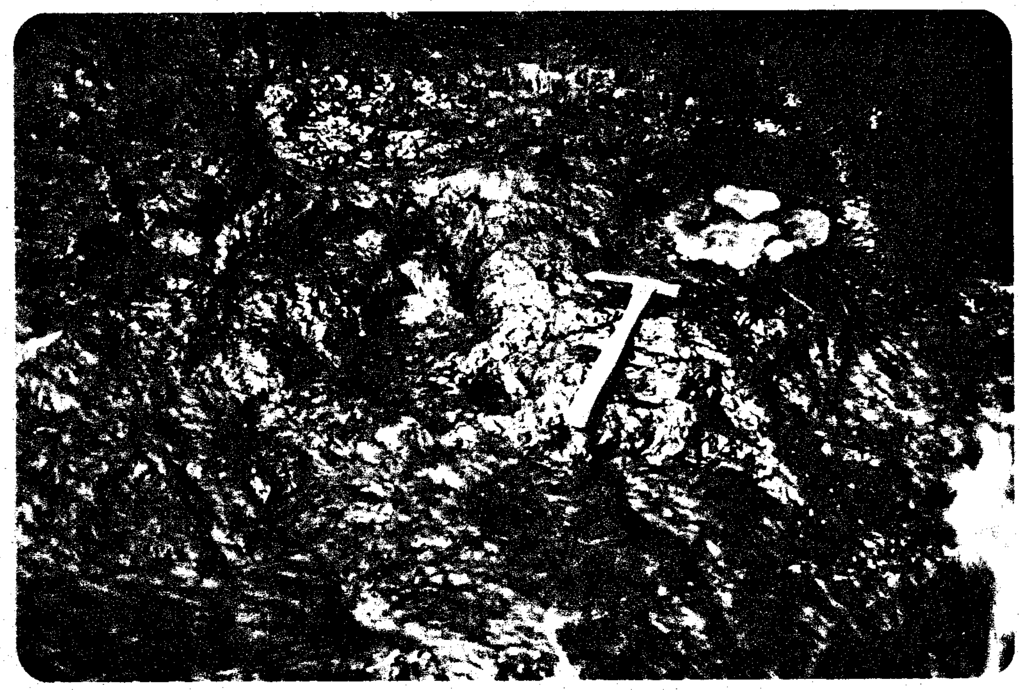
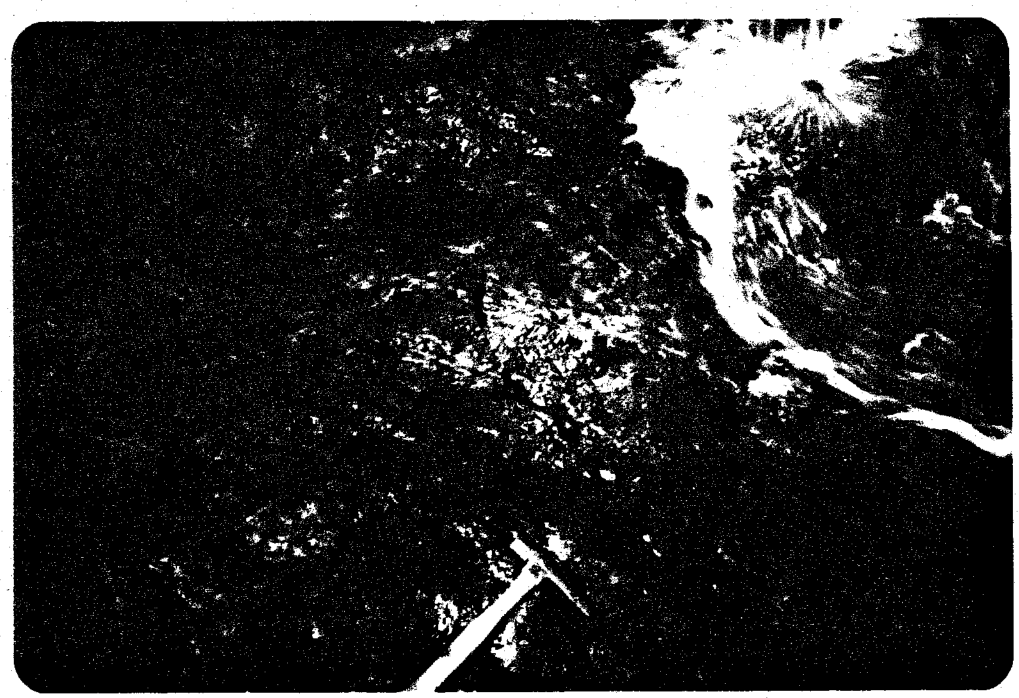


Figure 27 Unconformity between coarse clastics and volcanic sequence, occupied by a sandstone horizon.





Figures 28 and 29   Pillow structures in volcanic rocks immediately below the unconformity.

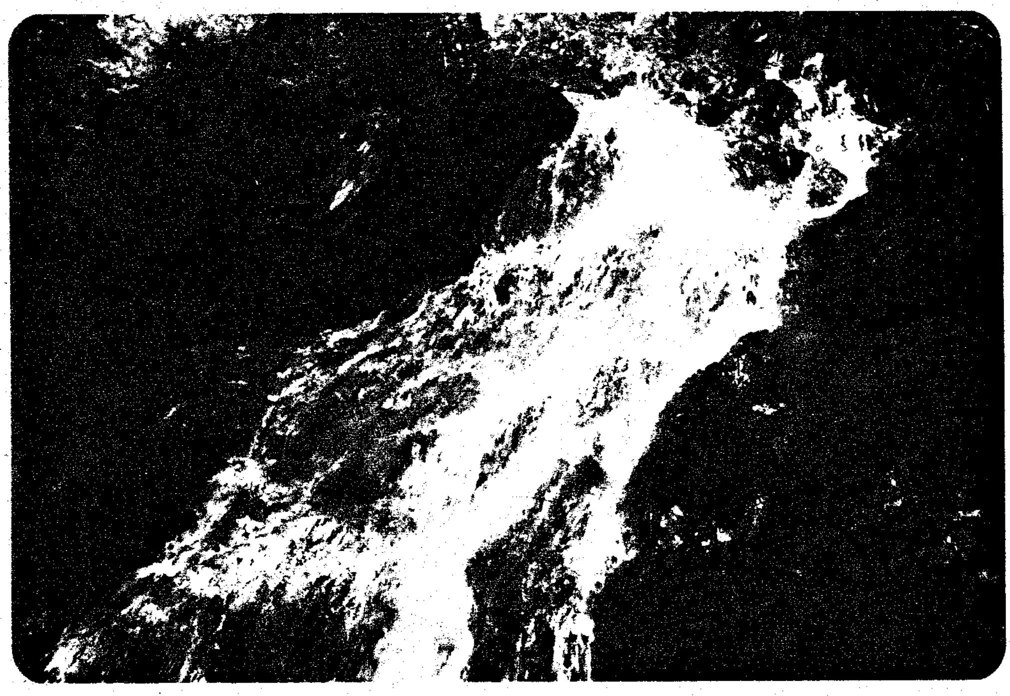


Figure 30 Main showing with rusty weathering outcrops along vertical shear zones.

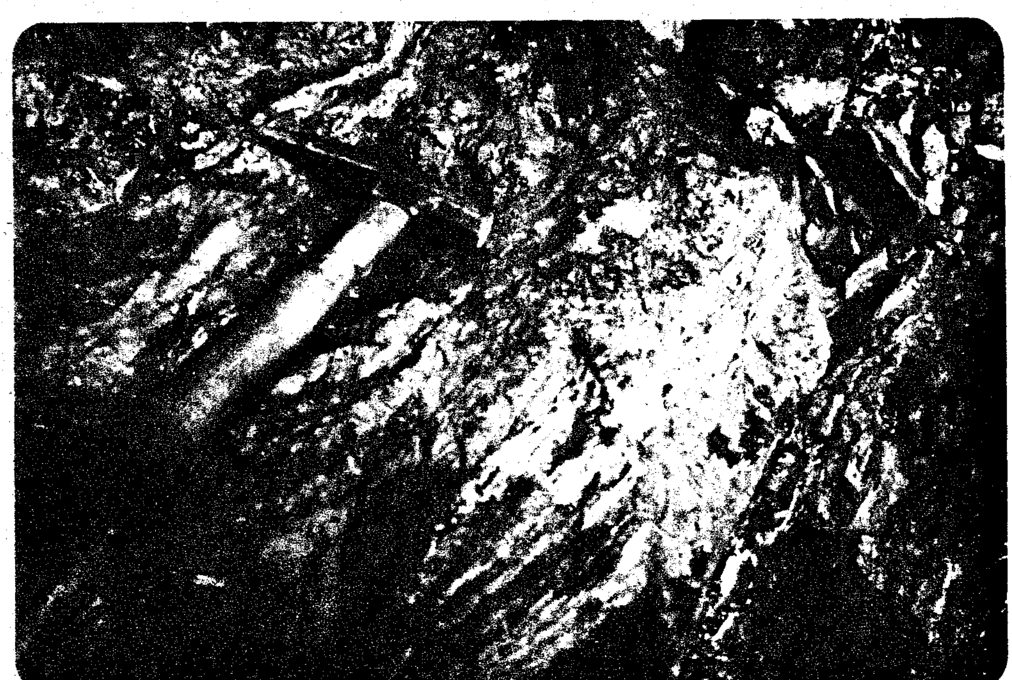
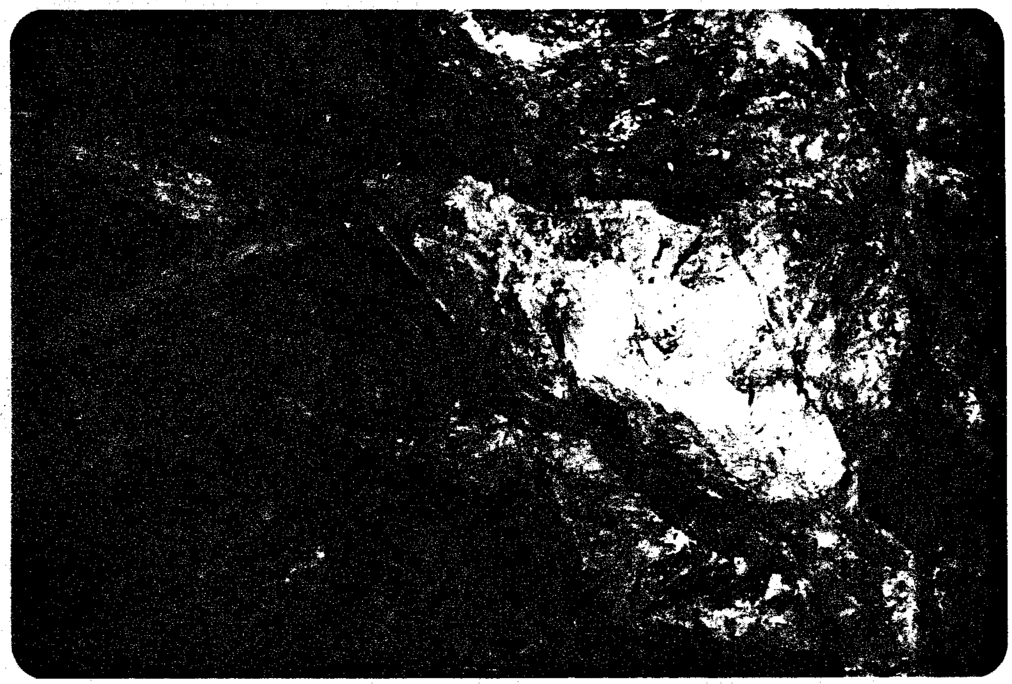


Figure 31 Spectacular chalcopyrite rich mineralization in sheared volcanics.



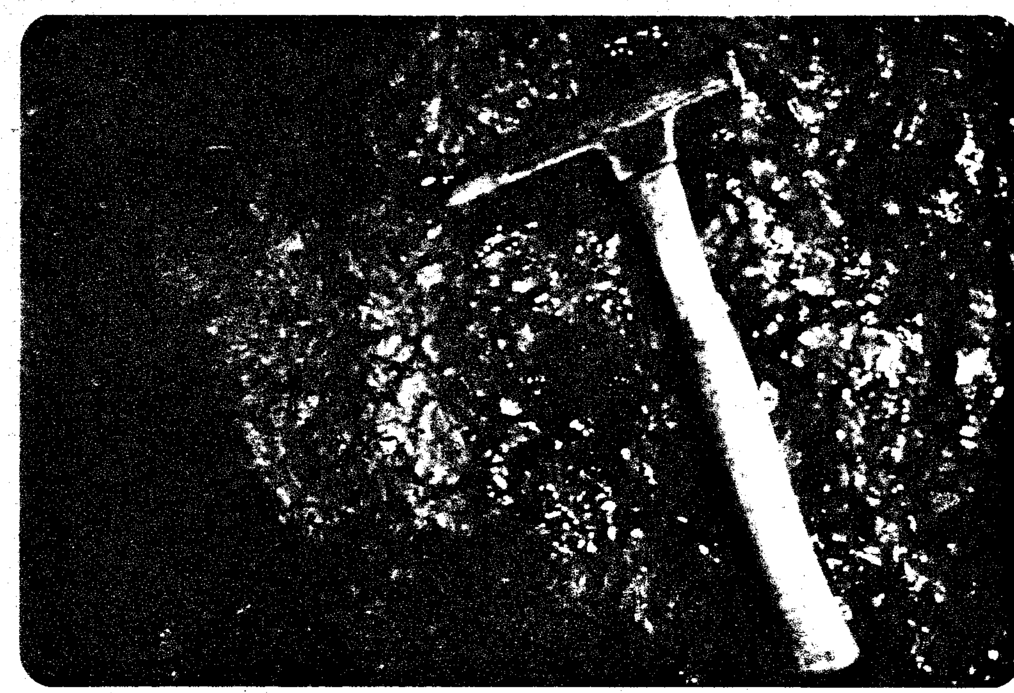
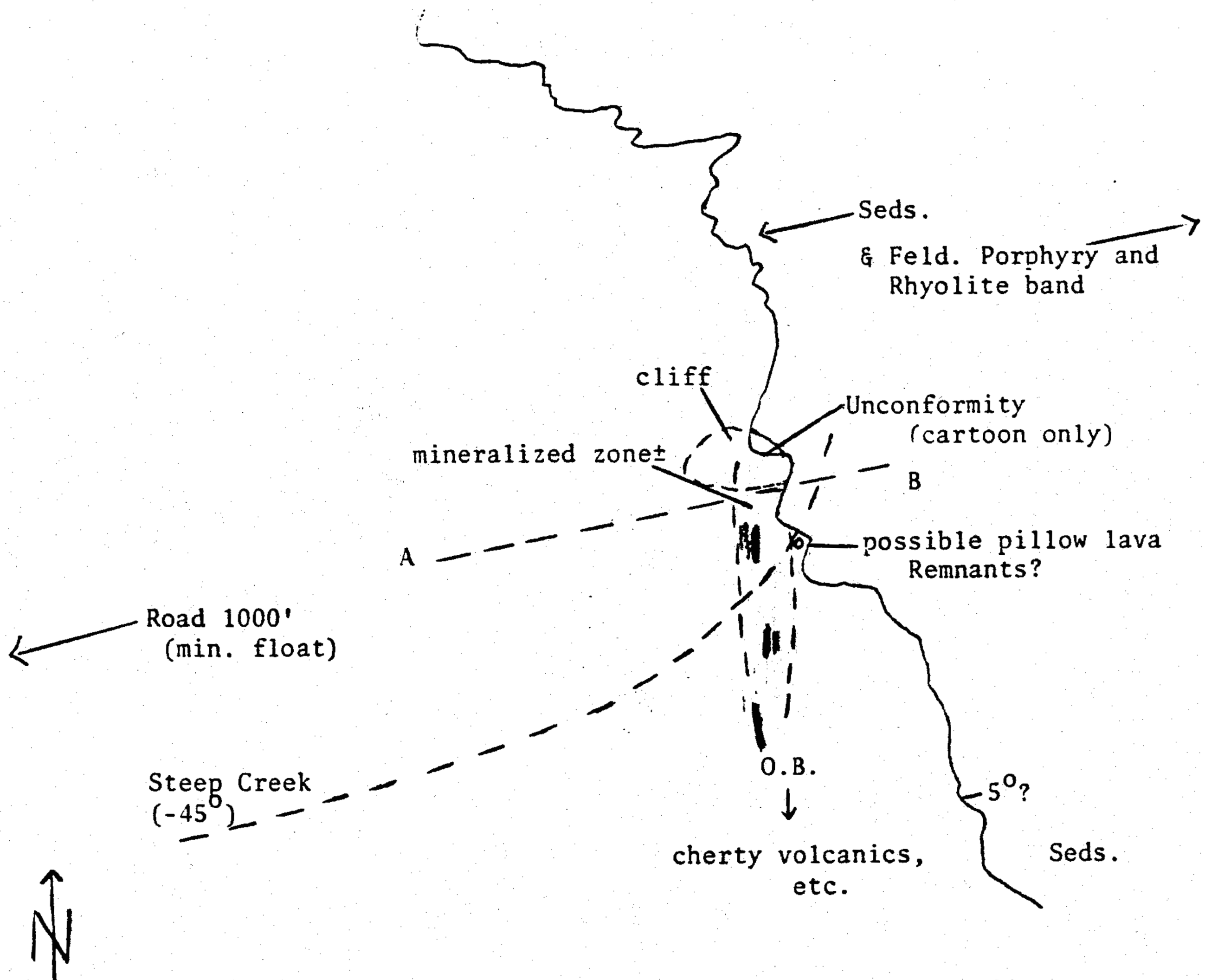


Figure 32 and 33 Chalcopyrite rich mineralization associated with shear zones in basaltic volcanics.

Figure 34 Bornite - chalcocite rich mineralization with high silver values is associated with this shear zone.

Figure 35 Mode of access to main showing.

SKETCH MAP S3 - Specogna Copper



Scale 1" = 100'±

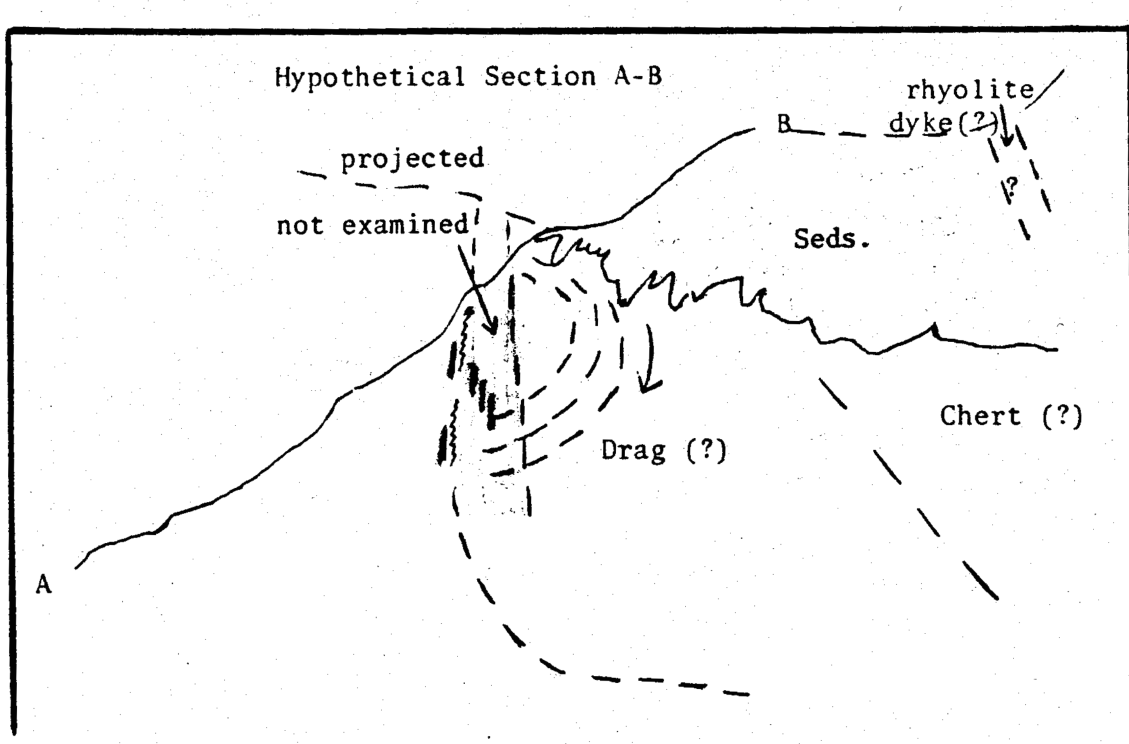


Fig. 36.

Figure 37 Looking south from road below copper showing. The unconformity appears to have been down faulted to a lower elevation.

I. Coal showing

This is showing No. 5 of Figure 5. A coal seam in sandstones above the unconformity was discovered by Specogna. Exposures are limited to a slumped area in a creek cut where the seam is only one metre thick. The coal appears highly crushed and muddy. The attitude of the underlying sandstone is $055^{o}/-20^{o}E$. Analysis of one sample gave very poor results with fixed carbon 15% on a dry basis and an ash content of 76%.

This occurrence seems to be of little interest.

J. Showing No. 4

This is located on Figure 5. Disseminated chalcopyrite is visible in a well fractured altered volcanic rock apparently associated with an 8 to 10 metre wide felsic dyke. Grades have been estimated at less than 0.2% Cu.

K. Conclusion

1) The Palaeozoic rocks, exposed in uplifts on Vancouver Island, are of interest from a metallogenetic point of view. Their possible provenance from the south, and similarities to the host succession for Mt. Shasta deposits in California would make them of interest in any event. The fact that they host the Western Mines deposit and other base metal mineralization of volcanogenic affinity makes them a prime prospecting target.

2) Several units of the Sicker Formation appear to be represented on the Canamin property in complex structural relationships. A detailed map of the property is greatly needed.

3) The base metal mineralization underlying the gold hematite gossan and the "new" copper showing are both very interesting targets that offer potential for a fruitfull exploration programme . In both cases however very careful field control by a competent geologist is called for.

4) We should attempt to deal with Specogna for the property as a whole in the first instance. If terms prove to be too steep then we should attempt to deal on the new copper showing and keep our eyes on the drilled area in the hope that time, and exhaustion of speculative funds, will make that area also available to us.