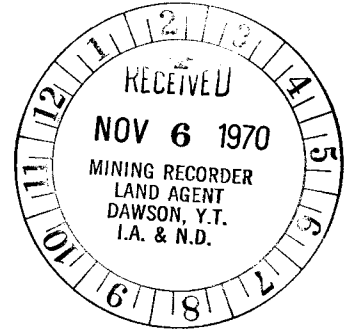


LIVGARD CONSULTANTS LTD.

1331 MARINE BUILDING
VANCOUVER 1, B.C.



REPORT

ON THE

WALKER CLAIMS

Fisher Creek Antimony Property

Dawson, Yukon Territory



This report has been examined by the Geological Evaluation Unit, and is recommended to the Commissioner to be considered as representation work in the amount of \$1000.00

R. G. Rudhan
Resident Geologist or
Resident Mining Engineer

Considered as representation work under
Section 33 (2) Yukon Quartz Mining Act.

[Signature]
Commissioner of Yukon Territory

060246

TABLE OF CONTENTS

	<u>PAGE NO.</u>
INTRODUCTION	1
LOCATION	1
SUMMARY AND RECOMMENDATIONS	2 - 3
TOPOGRAPHY	4
CLAIMS	4
REGIONAL GEOLOGY	5
MAGNETICS	6
CLAIM GEOLOGY	7 - 9
ECONOMIC GEOLOGY	10 - 13
ASSAYS	14 - 16
PHOTO GEOLOGY	17 - 19
ECONOMIC CONSIDERATION	20
WORK RECOMMENDATIONS	21 - 23
COSTS	24 - 25
CERTIFICATE	26
APPENDIX - INVOICE & RECEIPTS	
- ASSAY SHEET	

LOCATION MAP

CLAIM AND GEOLOGY MAP WITH PHOTO-INTERPRETATION

INTRODUCTION

The writer was asked to examine and report on an occurrence of stibnite at the headwater of Fish Creek in the Yukon, by Mr. Jim Hanna of Whitehorse, Y. T. Mr. Hanna is interested in the property and has some claims in the area. The property was examined and mapped on the 2nd of September 1970.

LOCATION

The occurrence is located twelve (12) miles up Fish Creek (also called Antimony Creek) a tributary to the North Klondike River. It is 40 air miles NE of Dawson City, Yukon Territory.

Dempster Highway is the closest road access being 12 miles away along the North Klondike River.

SUMMARY AND RECOMMENDATIONS

Antimony occurrences on Fish Creek were examined in September 1970 and the geology on/and surrounding the Walker claims was mapped. A photo-interpretation was later carried out on photographs covering the area.

The main mineralization was found to occur in a veinzone over one mile long with widths of 9 feet up to a possible 25 feet. The mineralization consists of stibnite in silicified lenses within the vein. The exposed part of the vein occurs in a syenite intrusive. Lenses of limey sediments enclosed in chert on the western edge of the claims contain disseminated finegrained stibnite.

The extension of the veinzone has been traced on aerial photographs into the sedimentary rocks to the south and appears to occur on the flank of an anticlinal structure. Other possible veinzones and faulting was also located on the photographs

It is recommended that the extensions of the veinzone be staked and that further prospecting be carried out to examine other possible veins and disseminated mineralization. A bulldozer should be moved in to the property to carry out trenching along the vein.

A rough road should be cut to the property at the same time.

If the veinzone is found to carry economine values in the cat trenches, a program of underground exploratory drifting is recommended. The drifting should advance 800 feet. It should be accomplished in two months.


The cost of stage one is estimated to be \$32,200.00 and of stage two, \$62,744.00.

TOPOGRAPHY

The north central part of the Walker claim group is occupied by a peak reaching over 6,500 feet in elevation. From the peak, the terrain slopes very steeply down to all sides to a relatively flat-laying broad creek bottom on the south end of the claims.

CLAIMS

The claims described in this report are the Walker # 1 - 6. These claims are in the name of ^{BURKHARD} F. Burkhardt of Dawson City. They are in good standing till November 15, 1970. Other claims in the group are the Sandow # 1 - 4, Jim # 1 - 4, Babe # 1 - 4, and the Pika # 1 - 4. These claims are in the names of ^{HILLGREEN} Hillgreen, J. Hanna, and P. J. Collins and are all in good standing till July and August 1971. Another group of claims, the A. J. # 2 - 7, 15 - 17, 19, 35, 36, 39, 41 and 42, are located $\frac{1}{2}$ mile NW and belong to Conwest Exploration. They are in good standing till 1972.



REGIONAL GEOLOGY

(G.S.C. Report 62-7 Map 13-1962 Dawson, Y.T.)

The property lies 12 - 14 miles north of the Tintina Trench, a continuation (En echelon) into the Yukon of the Rocky Mountain Trench, an expression of one of North Americas major structural features. Six miles to the northwest, an extensive thrust fault strikes north easterly and dips southeast.

Three main map units underlay the area. To the north is found Unit 3, of Pre-cambrian and/or Cambrian age. Unit 3 is characterized by gritty quartzite, quartz-pebble conglomerate and maroon and green shale. The structure is extremely complex with isoclinal folding and northward thrusting very common. Unit 9 is Ordovician or Silurian in age and consists mainly of interbedded black chert and argillite. On the contact of these two units is a roughly circular intrusive body, Unit 21, probably of Cretaceous age consisting of hornblend-syenite.

MAGNETICS

The G. S. C. aerial magnetic map of the area shows the sedimentary rocks to be of low magnetic intensity. The southern half of the intrusive stock is highly magnetic while the northern half gives lower readings.

CLAIM GEOLOGY

The property covers an area of hornblende-syenite to the northeast, black shale and quartzite to the west and chert to the south. The black shale and quartzite is probably part of Unit 3 and the chert part of Unit 9 as described in G.S.C. paper 62-7. The intrusive body consists of two variations of syenite. The main type contains about 90% feldspar which is dull grey greasy looking and of medium grain size. Occasional phenocrysts of K-feldspar occur throughout. The phenocrysts may be up to $\frac{1}{2}$ in. in size. It is difficult to ascertain the relative amounts of orthoclase and plagioclase feldspar in hand specimens. About 8-10% hornblend and up to 2% biotite occurs in the rock. The mafic minerals are medium grained and none aligned.

A few specks of accessory pyrrhotite were noted.

A second phase of syenite occurs as irregular masses or lenses within the predominant type. This second phase stands out as the surface is strongly oxidized. The rock type contains 93-95% finegrained grey greasy and yellow brown (oxidized) feldspar (and again a classification of the feldspar is difficult). The rock contains 2 - 4% mafic minerals - hornblend and biotite - with hornblend predominating.

1 - 3% finegrained pyrrhotite finely disseminated causes the brown weathered surface of the rock. Occasional specks of chalcocopyrite were noted. The intrusive occurs on Walker # 1 and # 3 and on the north half of Walker # 2 and # 4 claims.

Chert of Unit 9 (G.S.C. 13-1962 Dawson) lies south and southwest of the intrusive.

The chert is finegrained dense, grey-cream and grey-blue coloured. Occasional fragments (?) of feldspar were noted in the chert and brecciation has taken place on the border to the intrusive. Finely disseminated finegrained sulphides occur in the brecciated areas. The sulphides are pyrite and possibly pyrrhotite and chalcopyrite.

Strong fracturing has taken place in the chert. The most pronounced fracture direction is parallel to the intrusive contact, that is northwesterly striking with a vertical dip. Other weaker fractures dip at 30° west.

No reliable strike and dip could be obtained on the bedding.

Within the chert small lenses of silicified limey rock stand out highly oxidized on the surface. These lenses are thought to occur in the bedding plane in which case the chert would strike $N 35^{\circ} E$ and dip vertically.

The limey lenses were found relatively close to the intrusive contact however, and may therefore not be representative as to the attitude of the majority of the chert on the claim-ground.

The limey lenses contain disseminated stibnite in small amounts. The stibnite is fine grained and needle like.

The chert is found on Walker # 5 and # 6, and on the southern half of # 2 and # 4 claims excepting a small corner of Walker # 4 which is underlain by Unit 3.

Close to the western border of the claims is found black and green shale. Weak metamorphism has developed some phyllite and chlorite particularly on weakly developed shistosity surfaces. Further west outside the claim boundary is found interbedded quartzite, shale and limestone. The quartzite and limestone beds show dark brown weathering. The bedding attitude is a N 65°E strike and a 40° southerly dip.

These rocks are designated as Unit 3 by G.S.C. map 13-1962 Dawson, and are described as being overlain apparently accordantly by the cherts of Unit 9 (previously described rocks). It is also suggested that there may be a gradational contact between the two units. These conclusions could certainly not be drawn from the geology in the claim area as the attitudes and rock types of the units are indicated to be very different. The proximity of the intrusive contact has, however, obscured the relationship.

ECONOMIC GEOLOGY

The mineralization on the property occurs as two types - mineralization in a fault or shear zone and mineralization disseminated in limey lenses.

The veinzone crosses the claimgroup diagonally. It strikes N 70°E and dips at 70° northwest. The width of the zone on Walker # 4 MC where the full width is exposed, is 9 feet and on Walker # 1 MC it seems to be 25 feet wide but the veinzone is here filled with rubble and the exact width can not be ascertained. The veinzone can be traced downhill to the southwest and northeast by a topographical depression and oxidized rubble to the edge of the claim boundary and extensions of the vein can be inferred further southwest by a linear extension occupied by a small creek. The total length of veinzone on the claim ground is about 4,500 feet and the elevation difference on the vein on the claim ground is about 2,000 feet from 4,500 feet to 6,500 feet. Outside the claim boundary the vein is indicated to continue down to an elevation of 4,000 feet.

The mineralization occurs mainly in silicified areas, lenses or veins within the veinzone. The silicification consists of very finegrained quartz arranged so as to give a banded appearance, and on the walls quartz crystals, 3 millimeter long, are arranged perpendicular to the wall in a comb structure. Vugs lined with quartz crystals are also found. This points to a low temperature of formation. The mineralization in the silicified areas consists exclusively of stibnite. The stibnite makes up from 30% to 80% of the silicified rock. The surface is oxidized and leached out to a depth of 1 centimeter. A reddish-purple earthy antimony oxidation product occurs sparsely on oxidized surfaces. At a high point on the vein on Walker # 4 MC. in intrusive rock where the vein zone outcrops over a width of 9 feet, silicified rock occupies two bands of one foot and 6 in. in width containing about 50% stibnite indicating a grade over the 9 feet of better than 5% antimony. The remainder of the material in the veinzone consists of highly altered feldspar which easily crumbles into an oxidized sandy composition.

Some stibnite was noticed disseminated in parts of the feldspar next to the silicified areas. Stibnite was the only sulphide noted in the vein.

On the walls of the veinzone are several inches of mud indicating strong movement. Little alteration of the wall rock was noted. Minor amount of trenching traces the vein and the mineralization about 100 feet southwest where it is covered by slide rock. Small and large (2') pieces of float have been found along the extensions of the veinzone to the boundary of the claims. This is however a down-hill slope and the source cannot be ascertained. For about 2/3 of its length on the claims, the vein lies in the intrusive rock, which by the mineralized outcrops is indicated to be a favourable host rock. On the southern 1,500 feet extension of the vein, it enters the chert of Unit 9. There is no obvious reason why these cherts should not be equally favourable.

About 300 feet west of the veinzone in the cherts of Unit 9, limey beds or lenses have been mineralized with fine needle like crystals of stibnite finely disseminated. The half a dozen lenses noted are only a few feet in length and a few inches wide laying 4 to 5 feet apart. This is not of economic significance in itself but does indicate that replacement type mineralization should be looked for. Masses, lenses or dykes of fine-grained syenite are irregularly distributed through disseminated pyrrhotite and minor chalcopyrite. They are not thought to be of economic significance.

The mountain on which the claims are located and the nearby creek are named Antimony Mtn. and Antimony Creek indicating that the area has been known for some time to contain antimony. Oral reports of other veins and much float suggest that the area is favourable for this type of mineralization and should be carefully prospected.

ASSAYS

Sample 24462:	Sb	35.83%
	As	.05%
	Pb	.01%
	Bi	Tr
	Au	Tr

The sample was taken from a silicified zone about 1 foot wide. Its content of stibnite was estimated at the time to be 65%. The significant results on this assay are, however, the low content of common impurities. A concentrate of 45 to 60% antimony containing less than 0.2% combined arsenic, lead, bismuth can be marked easier than most antimony concentrates.

Sample 24463:	Sb	0.73%
	As	0.21%
	Pb	0.03%
	Bi	Tr

The sample was taken from the felspar in the veinzone which contains some disseminated stibnite. The antimony content is lower than expected and the arsenic higher. The reason for the higher arsenic content is unknown but two explanations are offered. It is noted that the arsenic values are higher in all oxidized samples and it is thought that the oxidation process may have deposited secondary arsenic minerals in this oxidized zone.

A second explanation may be that the high antimony low arsenic zones represent a separate stage of mineralization.

Sample 24464:	Sb	0.24%
	As	0.15%
	Pb	0.04%
	Bi	Tr

This sample was taken from the highly oxidized sandy fraction of the vein zone. It indicates that antimony occurs at least in small amounts throughout the whole veinzone.

Sample 24465:	Sb	4.29%
	As	0.15%
	Pb	0.01%
	Bi	Tr

This sample was taken from the limey silicified lenses or beds within the chert. The high antimony assay is considered to be very significant and an exploration program with a view to finding replacement type mineralization is thought to be definitely warranted.

Sample 24466:	Sb	0.15%
	As	0.06%
	Pb	0.05%
	Bi	Tr

This sample was taken from brecciated chert which contained minor sulphides. The values are not considered significant. Another sample was taken by Mr. J. Hanna from the highgrade antimony mineralization; this assayed

Sb	44%
Pb	Tr
Au	.02 oz/Ton
Ag	.20 oz/Ton
As	.05%

This confirms the purity of the antimony mineralization. Samples from other claims in the area are reported to carry up to one oz/Ton gold. That type of mineralization may, however, carry more arsenic.

PHOTO-GEOLOGY

Photographs A 13135 - 80 to 82 and 64 to 67 were obtained from the Air-photo Division, Department of Energy, Mines and Resources, Ottawa, Ontario. These photographs cover the claims and surrounding area including the major portion of the valley where a road to the property would be located.

The scale of the photographs is approximately one mile per inch.

A study of the photographs has revealed several linear topographic expressions of primary interest as well as structural features inferred from apparent and actual bedding strikes and dips.

The vein zone observed on the ground stands out very clearly on the photographs. It extends 1-3/4 miles from Walker Creek to an area north of Antimony Mtn., where it may be faulted off.

A possible faulted portion of the vein extends from the Sandow claims to the AJ claims over a distance of another 1-3/4 miles. Other possible parallel veins occur. The strongest of these possible veins crosses Jim # 3 and #4 claims. Other weaker expressions lie largely between both faulted portions of the main veins and the possible vein of the Jim claims.

The strike of these linear features is N 60 - 65° E corresponding to Strikes measured in the field of N 55° E and n 70° E. The dip is very steep, probably more than the 70° NW measured in the field. Another set of fractures strikes N 13 - 34° W and appears to be vertical.

Bedding attitudes indicated on the photographs are N 40° E with a 50 - 60° SE dip in the south central area of the map to N 70° E with a 50 - 60° NW dip in the southwestern part of the map and a N 85° W strike and 40° S dip in the central western area of the map. The structure could be interpreted as consisting of an anticline with an axis striking about N 45° W and plunging 15 - 25° SW in the southern part of the map and a syncline with axis striking N 75° W and plunging 15 - 25° W in the western part of the map.

The valley along which the anticlinal axis would lie has irregular land features comparable to other eroded and anticlinal centres.

Rock Unit 21, the intrusive mass, can be separated from the sedimentary rocks on the photographs by a smoother surface texture and a non-directional drainage pattern. The extent of the intrusive seem to be

slightly larger than the outline on the G.S.C. map of the area. The different sedimentary rock units could not be separated on the photographs. All pertinent photo interpretation should be checked on the ground. Rock exposure on the claims may amount to about 30% of the total area.

ECONOMIC CONSIDERATIONS

The property has the potential of a large tonnage of good grade antimony ore.

The purity of the antimony mineralization is unusual and highly important. With the present shortage of antimony and large price increase this property must be of considerable interest.

With hard dense silicified lenses or masses containing maybe 30% to 80% stibnite within relatively loose feldspathic gangue, any underground development program could show a large profit by hand picking the highgrade.

WORK RECOMMENDATIONSSTAGE ONE

- (1) As photogeology and inspection on the ground suggests that the veinzone extends outside the claim boundaries claims should be staked to cover these areas. On the southwest and most important end, this could be done relatively easily by skidoo during the winter.

- (2) Reports of other veins and float in the vicinity indicate that the area is favourable for anti-mony mineralization. Other claims nearby should be investigated and open areas prospected. A two man party spending three weeks in the immediate area is recommended. They should pay particular attention to the possible veinzones spotted on the aerial photographs. Any mineralization located should be of course staked.

- (3) The property is located 12 miles following the creek valley, from the Depster Highway and an aerial inspection of the creek valley showed no difficult obstacle. It should be possible to bring a bulldozer in over loose glacial till and creek gravel. The North Klondike River must be crossed but there are relatively shallow areas

with gravel bottom which can be forded. It is recommended that a small bulldozer be taken in cutting a rough road up Fish (Antimony) Creek and up its tributary, Walker Creek, to the southwest edge of the claims.

(4) Bulldozer trenches should be cut in the bottom of the creek (tributary to Walker Creek) which lies along the indicated extention of the veinzone, and as high up the hillside as is easily feasible. This covers a distance of roughly 2,000 feet. The trenches could be cut about 200 feet apart depending on local circumstances, to give a total of 10 short cat trenches across the zone. The trenches should be mapped and sampled.

STAGE TWO

is contingent upon favourable results in the above program of Stage One.

Favourable results are considred to be location of the vein with economic grade mineralization.

A program of exploratory drifting on economic grade mineralization is recommended. 800 feet of exploratory drifting in a 7 X 8' heading should be carried out.

The following equipment will be needed:

- 600 CFM Compressor
- EIMCO 630 Mucking Machine - trackless
- Bulldozer (D7)
- Jackleggs and Rock Drills
- All tools and incidental equipment necessary
- Camp
- Scoote-crete

The smallest scoote-crete is a diesel driven machine with a 46 cu. ft. box.

The dimensions are 10'2" long, 62" wide, 48" high. The wheelbase is 83" (three wheels). It turns on an 8' radius. The maximum economic travelling distance is 1,000 feet. The purchase price is \$7,815.00 or it can be rented for \$795.00/month, (all scoote-crete information is from the dealers, Nelson Machinery, 1255 Welch Street, Nother Vancouver, B. C.) Comparable machinery of other makes have been checked on but are not considered to be as suitable for this job.

The costs are estimated to be as follows:

STAGE I

Staking:

2 men with skidoos - 2 days	\$ 400.00
-----------------------------	-----------

Prospecting:

2 men 3 weeks	2,000.00
---------------	----------

Cat Mobilization	1,000.00
------------------	----------

Cat Access (4 X 4 vehicle road) 12 miles @ \$1500/mile	18,000.00
---	-----------

Cat Trenching	4,800.00
---------------	----------

Administration	<u>1,800.00</u>
----------------	-----------------

	\$28,000.00
--	-------------

Contingencies 15%

	<u>4,200.00</u>
--	-----------------

	<u><u>\$32,200.00</u></u>
--	---------------------------

STAGE IIDrifting: 2 shifts

- 4 miners advance 20'/Day
- 2 scoote-crete operators
- 1 serviceman-supervisor
- 1 cook

8 men @ \$60.00/Day	=	\$480.00
Services @ 80%	=	<u>384.00</u>
		\$864.00

or \$43.10/ft. Advance

800' X \$43.10	=	\$34,480.00
----------------	---	-------------

Rental 2 months:

Scoote-crete \$795.00 X 2 = \$1590.

600 CFM Compressor 3000.

EIMCO 630 Mucking Machine 2590.

3 Drills & Jacklegs 900.

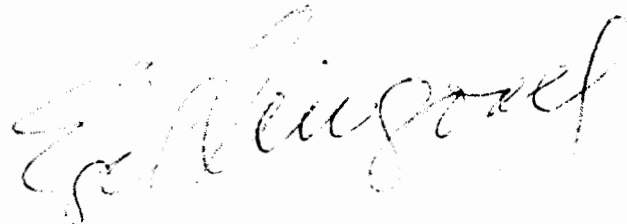
Other 1000. 9,080.00

Camp 3,000.00

Mibilization of Equipment 4,000.00

Administration & Travel 4,000.00

\$54,560.00

Contingency 15% 8,184.00\$62,744.00


LIVGARD CONSULTANTS LTD.

1331 MARINE BUILDING
VANCOUVER 1, B.C.

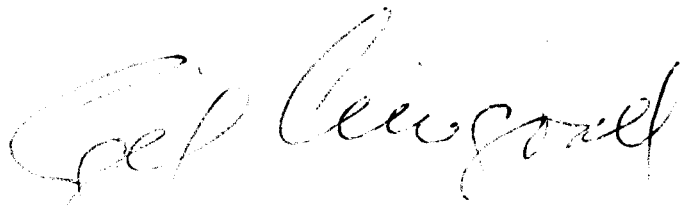
LIVGARD, B.Sc., P.ENG.

CERTIFICATE

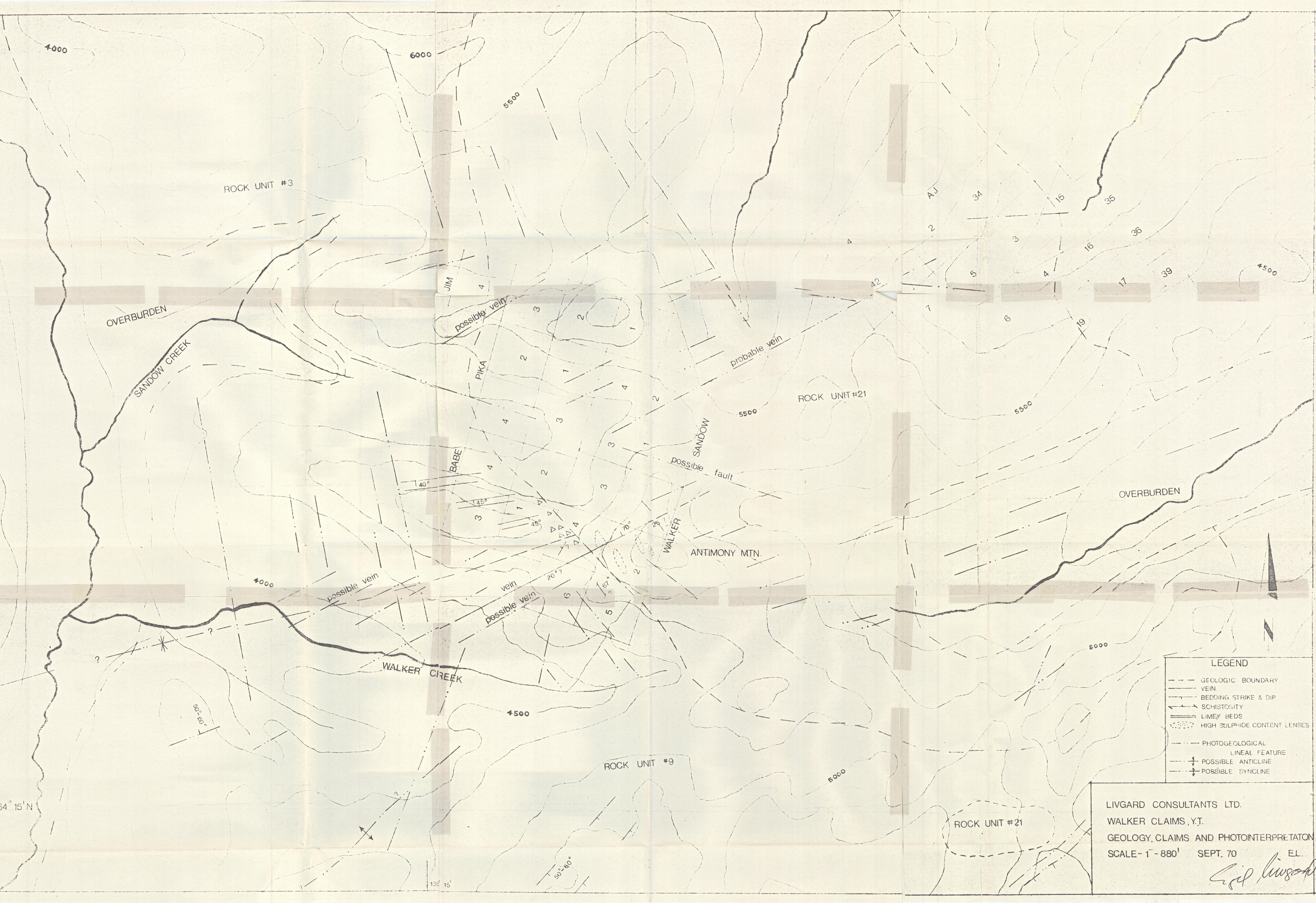
I, EGIL LIVGARD, with business and residential addresses in Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geological engineer.
2. I am a graduate of the University of British Columbia, B. Sc., 1960, Geological Sciences.
3. I am a Member of the Association of Professional Engineers of the Province of British Columbia.
4. From 1960 to 1970, I was engaged in mining and exploration geology in Canada and Norway.
5. I have not received, nor do I expect to receive any interest, directly or indirectly, in the properties described herein, or in the properties or securities of any company to which these properties may be sold.

DATED at Vancouver, British Columbia, this thirteenth day of October, 1970.



Egil Livgard, B. Sc., P. Eng.
Vancouver, British Columbia.



LEGEND

	GEOLOGIC BOUNDARY
	VEIN
	BEDDING STRIKE & DIP
	SCHISTOSITY
	LIMEY BEDS
	HIGH SULPHIDE CONTENT LENSES
	PHOTOGEOLOGICAL LINEAL FEATURE
	POSSIBLE ANTICLINE
	POSSIBLE SYNCLINE

LIVGARD CONSULTANTS LTD.
 WALKER CLAIMS, Y.T.
 GEOLOGY, CLAIMS AND PHOTOINTERPRETATION
 SCALE - 1" = 880' SEPT. 70

E. J. Livgard