

2525

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2525 MAP.....

103 P / 13 W
GEOLOGICAL REPORT ON

STARBIRD MINES LTD. (N.P.L.) PROPERTY

PORTLAND CANAL AREA

BRITISH COLUMBIA

BY

A. C. A. HOWE INTERNATIONAL LIMITED

W. G. TIMMINS, P. ENG.

Vancouver, British Columbia.
Report No. 243

October 28, 1969.

C O N T E N T S

	<u>PAGE NO.</u>
SUMMARY	i
INTRODUCTION	ii
PROPERTY	2
LOCATION AND ACCESS	3
TOPOGRAPHY AND CLIMATE	4
HISTORY AND PREVIOUS WORK	4
REGIONAL GEOLOGY	6
GEOLOGY OF THE PROPERTY	7
ECONOMIC GEOLOGY	8
CONCLUSIONS AND RECOMMENDATIONS	13
ESTIMATE OF COSTS	14
CERTIFICATE	15
CERTIFICATE OF ASSAY	At rear
ASSAY RESULTS	At rear
MAPS	At rear
#1-Claims Location Map: 1" = 1500'	
Plan of Workings	
#2 Geology, Old Portland Canal	
Mining Company property: 1" = 100'	
#3- <i>Plan of Workings</i>	

SUMMARY

Starbird Mines Ltd. (N.P.L.) has acquired a property located south of Glacier Creek about 3½ miles north of the town of Stewart, British Columbia.

The property is underlain by argillites and limestones of the Bitter Creek Formation in which shear zones containing silver, lead, and zinc mineralization occur.

The main vein is a quartz-filled fissure which appears to have considerable lateral extent and depth. A section of this vein was mined and some ore-grade material concentrated by means of a 50 ton mill in 1910.

Recent work has confirmed that this zone appears to be the only structure of interest on the property and should be further explored and tested to find other zones of concentration by means of diamond drilling.

A diamond drilling programme is recommended at an estimated cost of \$40,700.

INTRODUCTION

A three man crew consisting of field geologist, prospector and assistant investigated the property held by Starbird Mines Ltd. (N.P.L.), located about 4½ miles north of the town of Stewart, British Columbia, between July 22, 1969, and August 6, 1969.

The party consisted of Mr. P. P. Griggs, Mr. R. Burrell and Mr. R. Schumacher.

Since the topography is extremely precipitous, a camp was airlifted by helicopter to the east end of the property on the Bill mineral claim, and later moved to the Little Joe Crown Granted claim.

From these two locations, all old workings in the area were examined and sampled. The remainder of the property was traversed, paying particular attention along streams since most of the ground is heavily vegetated and overburden covered, and outcrop is exposed mainly in the stream beds.

An attempt to trace the Little Joe vein structure along strike to the north was inconclusive.

Additional claims have been staked on behalf of Starbird Mines Ltd., however registration of three claims namely the Bill, Lu and Julie claims is in doubt.

PROPERTY

The property consists of three Crown Granted mineral claims, twelve located mineral claims, (three of these are in doubt), and seven fractional mineral claims as listed below:

<u>Crown Granted Mineral Claims</u>	<u>Lot</u>
Gypsy	416
Little Joe	873
Lucky Seven	874
<u>Located Mineral Claims</u>	<u>Record Number</u>
Glacier King	32295
Beth	32296
Ed	32297
Alyce	32298
Ann	32299
Dora	32300
Ron	32301
<u>Recently Staked Located Mineral Claims</u>	<u>Record Number</u>
Verne	
Bob	
Bill	(Ownership in doubt)
Lu	(Ownership in doubt)

Recently Staked Located Mineral Claims

Record Number

Julie (Ownership in doubt)

Fractional Mineral Claims

Record Number

Vic Fr.

Frank Fr.

Su Fr.

32302

Cat Fr.

Kitten Fr.

Jules Fr.

John Fr.

LOCATION AND ACCESS

Approximate co-ordinates: - 56°N 130°W

The claim group is located on Glacier Creek about four miles northeast of the town of Stewart, British Columbia.

The best mode of access to the property is by helicopter, however a well worn pack trail from a point about 3½ miles along the road from Stewart, at the junction of Bear River and Glacier Creek, may be travelled on foot about 2 miles to the Little Joe Crown Granted claim.

The town of Stewart is situated at the head of the Portland Canal about 120 miles north of Prince Rupert,

British Columbia, and on the B.C.-Alaska border.

Stewart may be reached daily by Trans-Provincial Airlines from Prince Rupert and is also serviced weekly by Northland Navigation ship.

TOPOGRAPHY AND CLIMATE

Elevations range from approximately 500' AMSL at the west end of the property on Glacier Creek, to about 4,000' AMSL on the Bill claim at the east end of the property. The portals of the old Portland Canal Mining Company located on the Little Joe Crown grant are at an elevation of 2,400' AMSL and about 2,000' above Glacier Creek.

The property is steep, very rugged and heavily forested and overburden covered.

The climate is typical of the northern coast range with heavy rainfall during the summer season and extreme snowfall in winter. Temperatures however, are generally mild, Stewart being the most northerly ice-free port in North America.

HISTORY AND PREVIOUS WORK

A considerable amount of work was done during the early part of the century and particularly between

1907 and 1914 in the area.

The Portland Canal Mining Company carried out most of the work, and drove three tunnels with connecting raises, stoped some areas and sunk several open cuts and test pits on the Little Joe and Lucky Seven Crown granted claims.

By 1910, a 50 ton mill had been erected at the Bear River and was in operation on an intermittent basis. The ore was conveyed from the mine workings to the mill by means of an aerial tramway. Power was supplied by means of a plant utilizing water from Glacier Creek. All necessary buildings had been erected, however no buildings or equipment are now usable, and in most cases no longer exist.

During 1914, Portland Canal Tunnels Ltd., drove an adit at an elevation of 319' AMSL, from a point opposite the mill in a general direction of S 70° E. The adit was driven a distance of 3671', and is approximately 2200' vertically below the Little Joe workings of the Portland Canal Mining Company.

Four vein structures were intersected by this adit which are assumed to correspond to the four veins located in the Stewart property to the north. The most easterly vein on the Stewart and a vein at 3610' from the portal in

the Portland Canal Tunnel were assumed to correlate with the Portland Canal Mining Company vein structure on the Little Joe claims.

In the area of the Bill mineral claim, six adits were driven into the side of the mountain in a general southerly direction. The adits ranged in length from 20 feet to 600 feet and were driven during the early part of the century.

In the Bear River Valley area, production was small and was attained mainly from the Portland Canal, Red Cliff, Dunwell, and Porter Idaho mining properties.

REGIONAL GEOLOGY

References: G. Hanson, G.S.C. Memoir 159, 1929.

R. G. McConnell, G.S.C. Memoir 32.

The area is underlain by the Bitter Creek Formation of early Mesozoic age. This Formation consists of argillites, quartzites, limestones, tuffs and lava. To the west the Bear River Formation consisting of tuff, breccia, intermediate flows with interbedded argillite and limestone, overlies the Bitter Creek Formation.

To the southeast of the property is a large plug of augite porphyry, or augite syenite. The sedimentary

sequence is intruded by a dike of similar material running northeast, north of Glacier Creek and swelling and turning to a north-south direction at the creek. This dike runs through the Little Joe and Gypsy Crown granted claims.

The Coast Range Intrusives occur one mile southwest of the old Portland Canal Mining Company workings and two miles to the northwest of the same location. These rocks are mainly of the granodiorite variety.

GEOLOGY OF THE PROPERTY

The property is underlain by the Bitter Creek Formation consisting of ferruginous argillites and minor interbedded limestone. The argillites are thinly bedded with iron staining common along bedding planes.

The limestone beds are usually less than four inches in thickness, are dark buff in colour and exceedingly hard.

All rocks strike approximately N 20° W and have varying dips from 30° to 90° to the west.

The sediments are cut by several shear zones striking about N 24° W with vertical dips. Quartz and calcite veins and stringers containing copper, lead and zinc mineralization occur within these zones.

ECONOMIC GEOLOGY

The main zone on the property is the zone mined by the Portland Canal Mining Company.

This zone occurs as a quartz-calcite filled fissure in argillites dipping about 30° to the west with a general northerly strike. The zone contains inclusions of host rock ranging from pebble size to boulder size giving the vein a brecciated appearance.

Mineralization occurs in the form of massive pyrite, tetrahedrite, galena and sphalerite, however there appears to be a segregation as normally galena and sphalerite do not occur in the same specimen. There is a suggestion that galena is later than sphalerite.

A description of the Portland Mining Company workings and ore zones is given in the B. C. Minister of Mines report of 1910 and the following excerpt is quoted in A. C. A. Howe International report No. 91, will be repeated here for the purpose of finalization.

"Mine. - The mine workings are at an elevation of about 2,400 feet above sea-level, and consist of three tunnels with connecting raises, as shown on the accompanying plan.

The lowest, or No. 3 tunnel, is the working tunnel, the tramway there going directly to the bunkers at the upper terminal of the aerial tramway. This tunnel, in October, 1910, was in about 500 feet and follows in on the vein which is mineralized all the way; but what is considered pay-ore was only struck at about 100 feet in, from which point it apparently continues to the face, although the tunnel in a couple of places seems, in the driving, to have run away from the ore. From this level a raise has been put up to the No. 2 tunnel, and this acts as an ore-chute from the upper levels.

The No. 2 tunnel is about 55 feet vertically higher than No. 3, the vein dipping at an angle of about 30 degrees and was in about 200 feet, with a raise being put up to the No. 1 tunnel, and which, in October, was almost through. At about 25 feet in from the portal the tunnel entered on pay-ore, in which it has continued to the face.

The No. 1 tunnel is about 40 feet higher than No. 2, and has been driven about 180 feet and developing pay-ore for its entire length, the face being in such ore. At one point in the driving the tunnel was deflected to the right and ran out of the ore-shoot, but, upon being brought back to the original course, picked up the ore again.

Above the No. 1 tunnel several open-cuts, sunk on the outcrop, have disclosed pay-ore indicating that this ore-shoot continues for at least 350 feet to the south of the portal of No. 1 tunnel. The development work on this ore-shoot, as stated, would seem to indicate an ore-shoot at least 350 feet long, developed below the outcrops, along the plane of the vein for a distance of about 400 feet; the thickness of the pay-ore has been estimated by the management as averaging about 5 feet, this figure being, in the opinion of the writer, under the mark, rather than over it. Should the ore-shoot prove to be as long in the tunnels as the open cuts directly above them seem to indicate, this would argue an amount of ore from present development sufficient to keep the present mill busy for three years. The faces of all the tunnels were found to be in ore which was apparently richer than the average of the ore shoot.

The monthly average assay for September of the face of No. 2 tunnel is reported as being: Gold \$5.20; silver 61 oz., lead 2.5 per cent; and of face of No. 3 tunnel, about, gold \$4.00; silver 15 oz.; lead 4 per cent. These values vary from month to month, and are quoted merely as an indication of the grade of ore met with".

No major faulting has been noted on the property, however two major northerly striking faults occur to the west of the claims running through the old Dunwell Mine. It appears that the argillites were later intruded by dikes which follow the faults and shear zones. Most of the ore-bearing shears are in contact with fine grained dikes.

The Little Joe zone (old Portland Canal Mining Company workings) is in contact with a dike of quartz diorite composition.

The main zone is reported to be about 3,000' in length. The claims have been mapped in the area of the workings, however since overburden is extensive, the various showings cannot be correlated.

A quartz vein structure has been located between S-1 (filled in shaft) and trench 2, to the northwest of the old workings (see map at rear), but it is not known if this is an extension of the main zone, or a separate structure.

Two samples taken from trench 2 resulted in the following assays:

Sample No.	Location	Type	Width	%Cu	%Pb	%Zn	oz/ton	
							Au	Ag
5447	Trench 2	Chip	3.0'	.03	2.05	.10	0.02	0.5
5448	Trench 2	Chip	3.0'	.04	.07	.10	0.01	0.2

Additional sampling of the old workings gave the following results:

Sample No.	Location	Type	Width	%Cu	%Pb	%Zn	oz/ton	
							Au	Ag
5436	Adit No. 7 above portal	Chip	5.0'	.02	.17	.80	.02	2.8
5437	Adit No. 7 across face	Chip	5.0'	.01	.07	.21	.01	4.4
5438	Adit No. 7 face of cross drift	Chip	5.0'	.03	1.00	2.70	.02	2.3
5439	Adit No. 7 ore bin No. 1	Grab		.01	2.97	.67	.20	17.5
5440	Adit No. 9 across portal	Chip	6.0'	Tr.	Tr.	.15	.02	1.0
5441	Cross section No.1 before blast	Chip	3.0'	.01	Tr.	.18	Tr.	Tr.
5442	Cross section No.1 after blast west half	Chip	3.0'	.01	Tr.	.21	Tr.	Tr.
5443	Cross section No.1 after blast east half	Chip	3.0'	.01	Tr.	.26	Tr.	Tr.

The veins intersected in the Portland Canal tunnel 2,200' below the main workings indicate depth potential, but, there is sufficient data to correlate them with known veins exposed at surface, particularly as far away as the

Little Joe, and since the zone appears to have a southerly plunge. There is however, no reason to suspect that the zones do not have good lateral extent.

Trench 1, located on the southeast extension, contains similar mineralization and a sample across 1.0' assayed 33.0 oz/ton Ag, .22 oz/ton Au, 1.83% Pb, 1.00 % Zn.

The adits in the area of the Bill mineral claim are not considered to be of interest since the veins are very narrow, do not appear to have continuity, have extremely difficult access, and generally low assay results obtained.

CONSLUSIONS AND RECOMMENDATIONS

During the early part of the century, some vein material was processed by a 50 ton mill, indicating ore-grade material. Recent sampling has indicated, somewhat erratic but interesting values in silver, lead and zinc.

The main vein appears to have considerable lateral extent, and depth potential is good. It has been found that because of extensive overburden cover zones cannot be examined or followed closely.

Further exploration of the main vein by diamond drilling as a means of outlining other concentrations of

mineralization and testing for grade is warranted.

The diamond drilling recommended in A.C.A. Howe International report No. 91, October 6, 1967, should be increased to a 2,000' programme and a series of holes drilled west of the old workings along the strike of the zone.

The drill holes would be in the order of 200 to 300 feet in depth.

ESTIMATE OF COSTS - Phase I

Mobilization, demobilization, moves etc.	\$ 10,000.00
Diamond drilling - 2,000' @ \$10/ft	20,000.00
Camps, groceries, extra equipment etc.	2,000.00
Local helicopter service	1,000.00
Engineering, supervision etc.	4,000.00
Contingency @ 10%	<u>3,700.00</u>
	\$ 40,700.00

- Phase II

Detailed diamond drilling programme dependent on results of first phase, 5,000' estimated	50,000.00
Contingency @ 10%	<u>5,000.00</u>
	\$ 55,000.00

TOTAL ESTIMATED COST \$ 95,700.00

Respectfully submitted,

A. C. A. HOWE INTERNATIONAL LIMITED,



W. G. Timmins, P. Eng.

DATED AT VANCOUVER, B.C. THIS 28th DAY OF OCTOBER, 1969.

C E R T I F I C A T E

I, W. G. Timmins, of the Municipality of Coquitlam in the Province of British Columbia, hereby certify that: -

1. I am a resident of British Columbia and my address is 909 Runnymede Avenue, Coquitlam, B.C.
2. I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario.
3. I am a member of the Association of Professional Engineers of British Columbia.
4. I have no interest, direct or indirect, in the property or securities of Starbird Mines Ltd. (N.P.L.), nor do I expect to receive any such interest.
5. This report is based on a report to me by P. P. Griggs, two personal visits to the property, and a study of government maps and publications.



W. G. Timmins, P. Eng.

DATED AT VANCOUVER, B.C. THIS 28th DAY OF OCTOBER, 1969.

CERTIFICATE OF ASSAY

TO A.C.A. Howe International Ltd.
401 - 543 Granville Street
VANCOUVER, B.C.

August 12, 1969

Lab No. 95

Starbuck

I hereby certify THAT THE FOLLOWING ARE THE RESULTS OF ASSAYS MADE BY US UPON THE HEREIN DESCRIBED SAMPLES.

MARKED	GOLD		SILVER	COPPER	LEAD	ZINC					TOTAL VALUE PER TON (2000 LBS.)
	Ounces per Ton	Value per Ton	Ounces per Ton	Percent	Percent	Percent	Percent	Percent	Percent		
5426	trace	---	0.1	0.03	trace	0.31					
5427	trace	---	0.3	0.03	0.05	0.44					
5428	0.06	\$2.10	31.1	0.15	0.80	0.72					
5429	trace	---	0.1	0.03	0.07	0.15					
5430	0.01	0.35	7.8	0.05	0.24	0.21					
5431	trace	---	3.3	0.02	0.07	0.41					
5432	0.01	0.35	0.2	0.01	0.17	0.10					
5433	trace	---	0.4	0.02	0.17	0.10					
5434	trace	---	3.4	0.13	trace	0.10					
5435	0.01	0.35	7.5	0.04	0.41	1.88					
5436	0.02	0.70	2.8	0.02	0.17	0.80					
5437	0.01	0.35	4.4	0.01	0.07	0.21					
5438	0.02	0.70	2.3	0.03	1.00	2.70					
5439	0.20	7.00	17.5	0.01	2.97	0.67					
5440	0.02	0.70	1.0	trace	trace	0.15					

Cont'd on page 2...

NOTE:

Rejects retained one month.
Pulps retained three months
unless otherwise arranged.

Gold calculated at \$ 35.00 per ounce

J. C. Burgess
Registered Assayer, Province of British Columbia

CERTIFICATE OF ASSAY

TO A.C.A. Howe International Ltd.

Cont'd from page 1...

I hereby certify THAT THE FOLLOWING ARE THE RESULTS OF ASSAYS MADE BY US UPON THE HEREIN DESCRIBED SAMPLES.

MARKED	GOLD		SILVER	COPPER	LEAD	ZINC					TOTAL VALUE PER TON (2000 LBS.)
	Ounces per Ton	Value per Ton	Ounces per Ton	Percent	Percent	Percent	Percent	Percent	Percent		
5441	trace	---	trace	0.01	trace	0.18					
5442	trace	---	trace	0.01	trace	0.21					
5443	trace	---	trace	0.01	trace	0.26					
5444	0.10	\$3.50	0.5	0.03	0.10	2.16					
5445	0.22	7.70	33.0	0.09	1.83	1.00					
5446	0.01	0.35	0.2	0.01	trace	0.10					
5447	0.02	0.70	0.5	0.03	2.05	0.10					
5448	0.01	0.35	0.2	0.04	0.07	0.10					

NOTE:

Rejects retained one month.
Pulps retained three months
unless otherwise arranged.

Gold calculated at \$ 35.00 per ounce

S. Burgess
.....
Registered Assayer, Province of British Columbia

A. C. A. HOWE INTERNATIONAL LTD.

MINING & GEOLOGICAL CONSULTANTS

SAMPLING REPORT

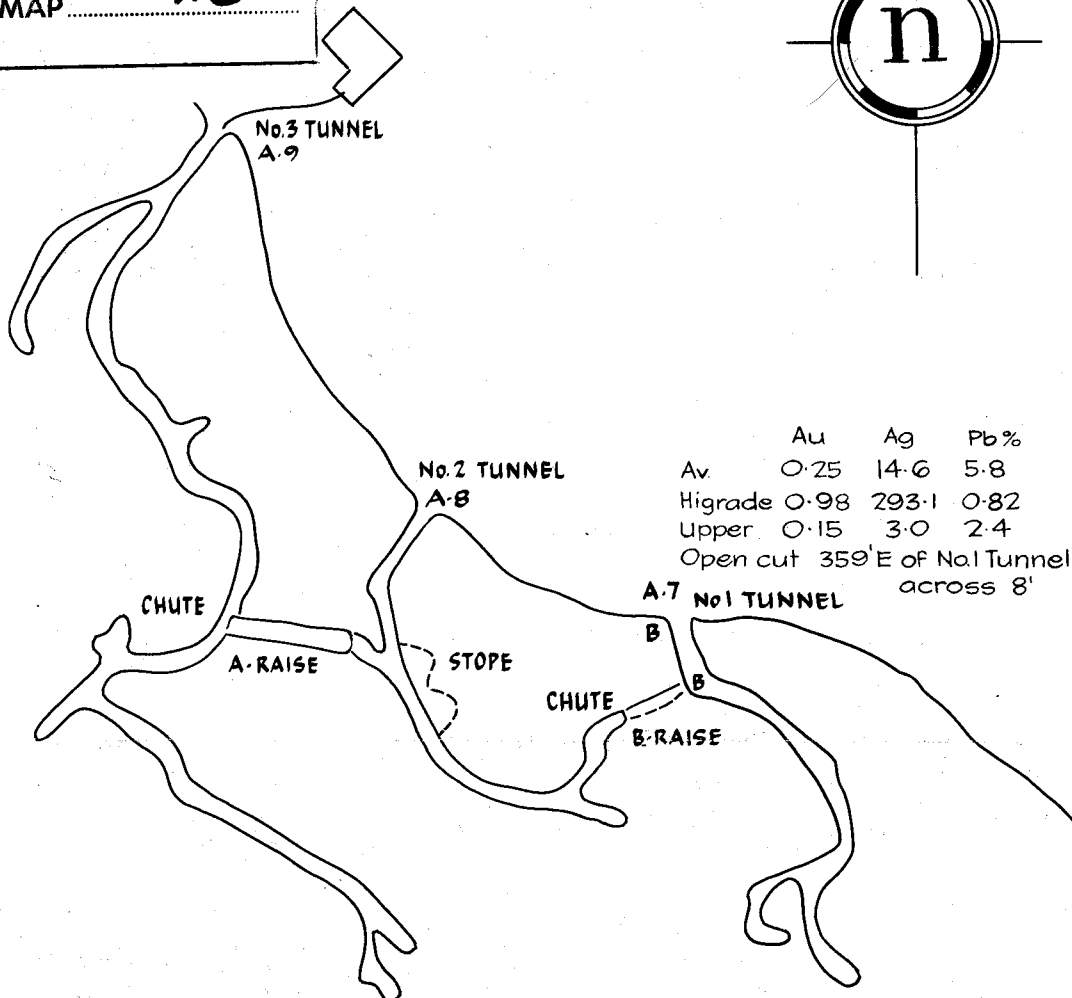
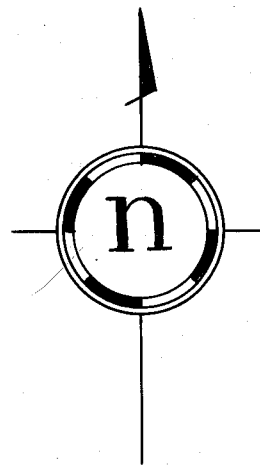
Project Starbird Mines Ltd. (N.P.L.)

Samples Sent To Crest Laboratories Via Messenger Date 7-8-69

Sample No.	Location	Type	Length	Assay					Remarks
				%Cu	%Pb	%Zn	oz/ton Ag Au		
5426-B	Adit No. 1 west wall	Chip	8"	.03	Tr	.31	0.1	Tr	
5427-B	east of portal Adit No. 1	Grab	4"	.03	.05	.44	0.3	Tr	
5428-B	above portal Adit No. 2	Chip	2'	.15	.80	.72	31.1	0.06	
5429-B	Adit No. 5 across face	Chip	1'	.03	.07	.15	0.1	Tr	
5430-B	Adit No. 4 20' from portal	Chip	3'	.05	.24	.21	7.8	0.01	
5431-B	Adit No. 4 45' from portal	Chip	2½'	.02	.07	.41	3.3	Tr	
5432-B	Adit No. 6 portal	Chip	2'	.01	.17	.10	0.2	0.01	
5433-B	qtz vein 105'	Chip	1½'	.02	.17	.10	0.4	Tr	
5434-B	qtz vein 175'	Chip	6"	.13	Tr	.10	3.4	Tr	
5435-B	Adit No. 3 above portal	Chip	1½'	.04	.41	1.88	7.5	.01	
5436-B	Adit No. 7 across back	Chip	5'	.02	.17	.80	2.8	.02	
5437-B	Adit No. 7 across face	Chip	5'	.01	.07	.21	4.4	.01	
5438-B	Adit No. 7 face of cross drift	Chip	5'	.03	1.00	2.70	2.3	.02	
5439-B	Adit No. 7 ore bin No. 1	Grab		.01	2.97	.67	17.5	.20	
5440-B	Adit No. 9 across portal	Chip	6'	Tr	Tr	.15	1.0	.02	
5441-B	CrossSection No. 1 before blast	Chip	3'	.01	Tr	.18	Tr	Tr	
5442-B	CrossSection No. 1 after blast west half	Chip	3'	.01	Tr	.21	Tr	Tr	
5443-B	CrossSection No. 1 after blast east half	Chip	3'	.01	Tr	.26	Tr	Tr	
5444-B	Trench No. 1	Chip	3'	.03	.10	2.16	.5	.10	

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2525 MAP #3



NOTE: A-8 lies 39 feet vertically below A-7. A-9 lies 55 feet vertically below A-8

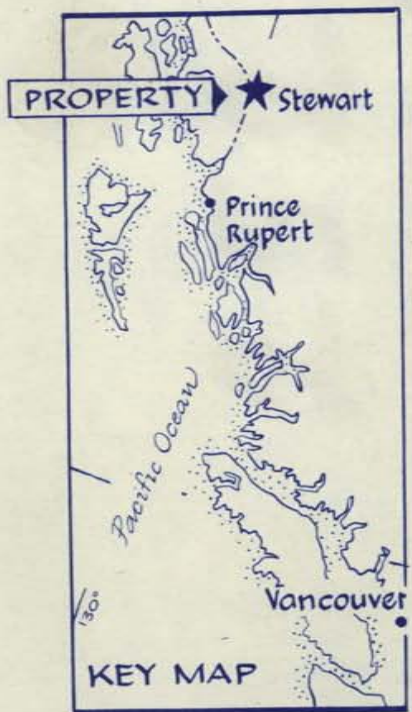
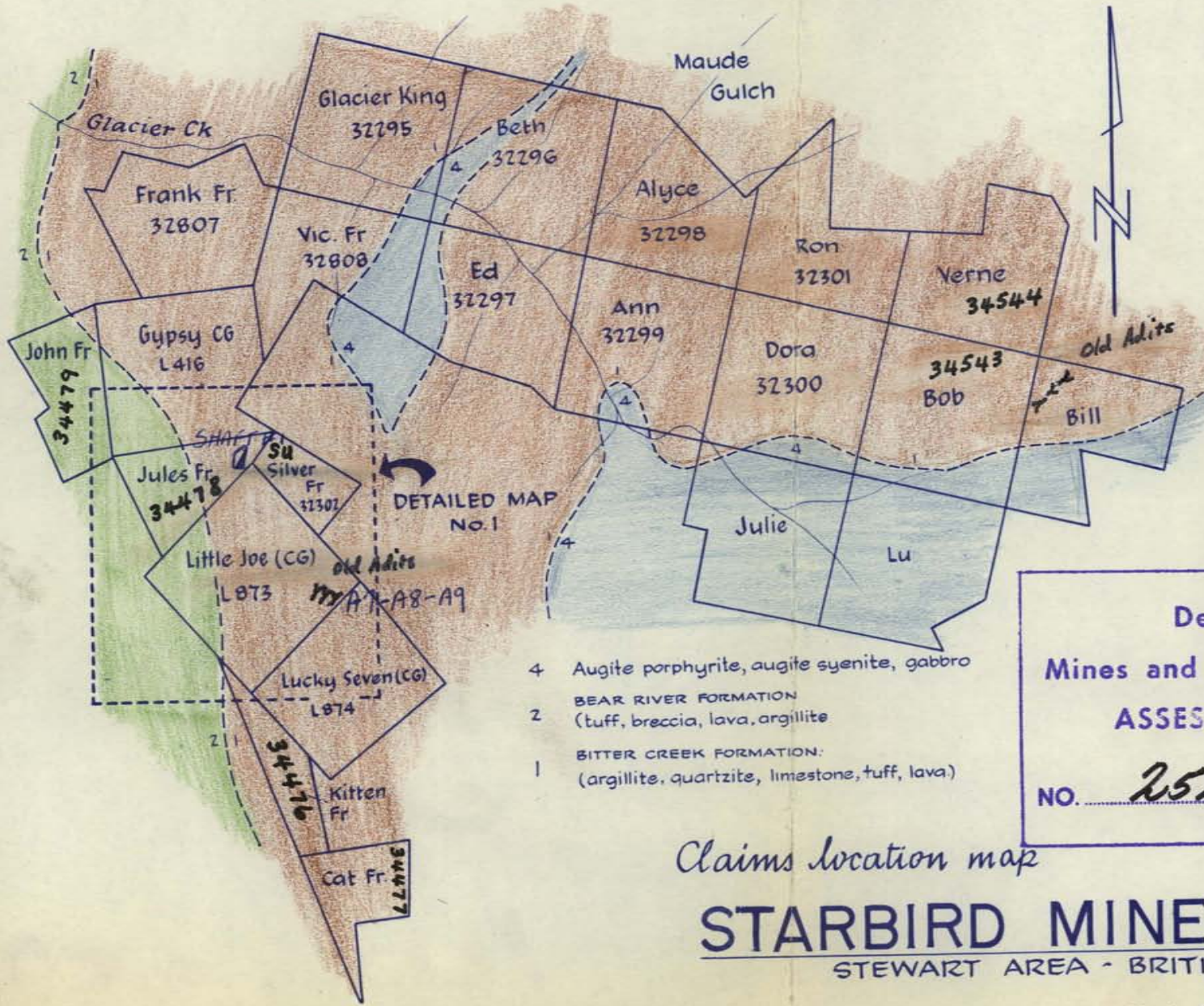


2525

Plan of Workings

STARBIRD MINES LTD

STEWART AREA - BRITISH COLUMBIA



- 4 Augite porphyrite, augite syenite, gabbro
- BEAR RIVER FORMATION
2 (tuff, breccia, lava, argillite)
- BITTER CREEK FORMATION:
1 (argillite, quartzite, limestone, tuff, lava)

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. 2525 MAP #1

Claims location map

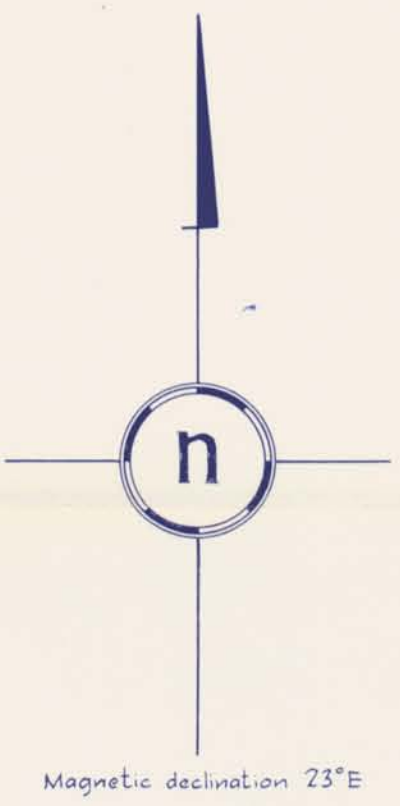
STARBIRD MINES LTD
 STEWART AREA - BRITISH COLUMBIA

Scale: 1 in to 1500 ft

A.C.A HOWE INTERNATIONAL LTD

2525

Shaft No. 1



~Legend~

- Quartz-porphry Intrusive
- Ferruginous argillites

- 5446 - Sample location & number
- F - Fir trees
- P - Pine trees

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2525 MAP #2

NOTE: Between S-1 & Tr. No. 2 a two foot thick quartz vein was encountered along the stream bed. Veinlets of quartz, from two inches to one-sixteenth of an inch, ran parallel to the main vein but these tended to pinch and swell.

STARBIRD MINES LIMITED (N.P.L.)
STEWART AREA - BRITISH COLUMBIA

GEOLOGY

OLD PORTLAND CANAL MINING CO. PROPERTY

ACA HOWE INTERNATIONAL LTD.



2525