

3520

93K/7E, 8W
GEOLOGICAL REPORT

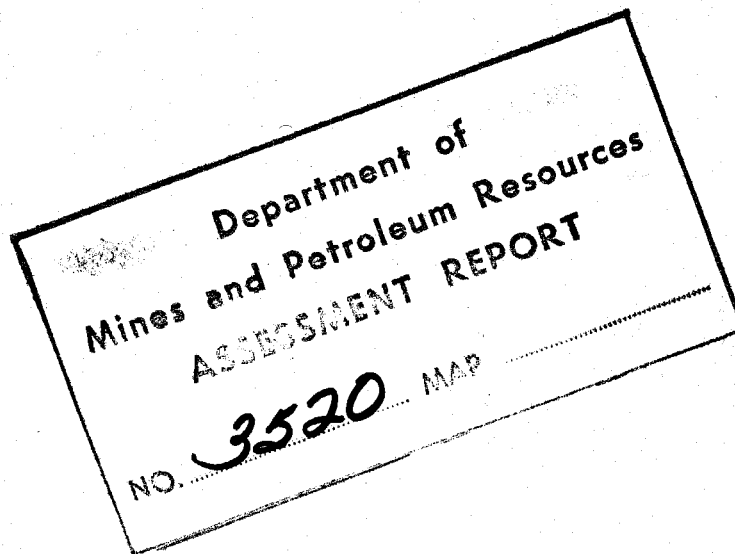
SNOWBIRD GROUP (#2589)

Fort St. James, Omineca, B.C.
(Lat. 54°28'N; Long. 124°30'W)

by William Heshka

For: Consolidated Shunsby Mines Limited
Dr. Franc. R. Joubin (In Trust)

July 6th to October 23rd, 1971



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A. INTRODUCTION

This report is the result of 3 months of work done on the Snowbird group of claims and surrounding area. The work was recommended by A. F. Roberts in his report of November 30, 1970, and supplementary report of July 25, 1971.

The purpose of the work was to investigate the anomalous areas indicated in the preceding year by a geo-chemical survey. In conjunction with the investigation of the anomalies the program was extended to map the geology to extend the length of the known mineralization and to assess the advisability of proceeding with the diamond drilling program provisionally recommended in the above-referred to A. F. Roberts report.

B. LOCATION AND ACCESS

The property is located on the west shore of Stuart Lake, about eleven miles west of Fort St. James, or alternatively about 14 miles by road along the south shore of Stuart Lake, in the Omineca Mining District of British Columbia.

Access can be gained by the above mentioned road, by boat or by air from Fort St. James.

C. OWNERSHIP

The Snowbird Group consists of 27 claims held under option by Consolidated Shunsky Mines Limited, Suite 418, 170 Bloor Street West, Toronto, Ontario, and registered in the name of Dr. Franc. R. Joubin (in Trust). The 27 claims are:

<u>Name</u>	<u>Record No.</u>	<u>Expiry Date</u>	<u>Registered</u>
Campsite	1896	Nov. 5, 1973	Franc. R. Joubin)
Ebba	1897	Nov. 5, 1973	" "(in Trust)
Graybird	1898	Nov. 5, 1973	" " "
Topside	1899	Nov. 5, 1973	" " "
Snowbird	1900	Nov. 5, 1973	" " "
Shaft Fraction	8723	Oct. 20, 1972	" " "
Bay 1 and 2	64566/7	Aug. 13, 1972	" " "
Bay 4 to 8 inc.	79034/8	Aug. 8, 1972	" " "
Bay 11 - 20 "	79039/48	Aug. 8, 1972	" " "
Bay 21 + 22	103195/6	Sep. 3, 1972	" " "
Bay 23+24 Fr.	229779/80	Oct. 20, 1972	" " "
	(tag No.)		

D. TOPOGRAPHY

Relief on the property is in the order of 300 feet. Steep hills alternate with relatively flat valleys oriented

in a general north-westerly bearing. The whole area is overgrown by alders and ash in the valley and by pine, spruce, poplar and ash on the hillsides. Much of the area is covered by windfalls resulting from a forest fire of some 30 years ago. Outcrops are found on the hill tops and on the sharp slopes where overgrowth and overburden are at a minimum.

E. TABLE OF FORMATIONS

- (a) Clay, gravel and boulders
- (b) Argillite, shale and andesite
 - (1) Chert and quartzite
- (c) Diorite
- (d) Serpentine, Serpentinization and Carbonatization
- (e) Mineralization

(a) Clay, Gravel and Boulders

The overburden is composed mainly of clay. Isolated narrow horizontal beds of poorly formed gravel add some variety to the clay formation. Boulders are rare and widely separated, but are found in the gravel beds. They appear to be of local origin. Steep slopes of the outcropping hills suggest that the overburden is of considerable thickness in the valleys.

(b) Argillite, Shale and Andesite

These sedimentary volcanic series are of the Cache Creek group of the Pennsylvanian age. They consist mainly of alternating bands of andesite tuffs, shale and andesite in thicknesses of 1 inch to 50 feet. Andesite predominates in the eastern portion of the property with chert in the centre and the shale-argillite towards the west. Subsequent folding which sheared the weaker members was followed by impregnation of quartz which interlaced the whole area with a network of quartz stringers from $\frac{1}{2}$ inch to 2 feet wide. These stringers of quartz are mostly parallel to the strike and dip of the bedding.

(1) Chert and Quartzite

The sedimentary series grades to chert in the central portion of the property. At its graditional margins the chert is black and interbedded with argillite and/or shale in thicknesses averaging two inches. Toward the centre of the chert

zone the argillite is absent and the chert assumes a lighter colour. On the northern extension of the chert horizon there is a marked increase in the crystallization and a gradation to quartzite with minor shales. A small outcrop of chert to the north-west of the old mine workings is associated with andesite but its appearance resembles the chert of the large central chert zone.

(c) Diorite

Diorite occurs in 3 locations. The first is on the north end of the exposed mineralized vein of the old workings. It outcrops in a vertical dyke about 10 feet wide and exposed for a length of 300 feet, striking east-west. The second occurrence is near the south end of Kasaan Bay, where it outcrops as an oblong plug 60 feet by 100 feet with a small dyke of 40 feet by 2 feet protruding south of the plug. Both of these outcrops are medium-grained, light coloured, distinctly crystalline and of predominantly plagioclase composition. The third location of diorite is on the north-east boundary of the claims. This occurrence appears to form larger masses and is of different composition from the first two occurrences. It is a mottled dark green colour and indistinctly crystalline. It is composed predominantly of hornblende or pyroxene.

(d) Serpentine, Serpentinization and Carbonatization

Serpentine and alterations by or of serpentine are most apparent in the main fault zone that traverses the property. The serpentine occurs in lenses up to 10 feet wide with concurrent serpentinization extending to the shale and andesite within the zone. Serpentinization of andesite has occurred around a peridotite plug about $\frac{1}{4}$ mile north of the property. The halo of serpentinization extends outward in decreasing intensity and reaches into the northern limits of the claim group where it is confined almost exclusively to the andesite member.

A small area of serpentinization also occurs south of the property boundary in an area of brecciated andesite.

In the main fault zone the serpentinization of the host rock was followed by complete carbonatization. The carbonates have altered all the members of the main fault zone and penetrated fractures in the surrounding formations. The indigenous chromite in the serpentine has been altered to form pariposite and combined with the magnesium-iron to form an ankeritic carbonate.

M — ANKERITIC K On the north east corner of the property adjacent to the diorite an irregular shaped outcrop of highly carbonatized andesite occurs in contact with the sheared sediments.

Later fracturing of this carbonatized andesite gave rise to a network of black calcite stringers. Within 200 feet to the south a zone of carbonatized sediments about 100 feet wide strike parallel to the sedimentary formation. It is mostly ankeritic, medium grained carbonate that weathers to a buff colour.

South of the property boundary a faulted outlier of serpentized andesitic breccia is also carbonatized.

(e) Mineralization

Mineralization by iron sulphides is predominantly concentrated on the peninsula area to the north-east end of the claim group. Concentrations of sulphides up to 10% occur in random patches or zones in the shale that adjoins or overlies the carbonatized andesite. This condition is present over the area of one half claim. Minor amounts of sulphides also occur in certain shale horizons, well exposed along the shore of Kasaan Bay. Pyrite also occurs in the main fault zone associated with the mariposite and ankeritic carbonates.

Stibnite and gold, the two economic minerals, are concentrated in two parallel quartz-mariposite-carbonate veins within the main serpentized and carbonatized fault structure. Many quartz stringers are randomly oriented between the veins and in the footwall of the fault, but they contain negligible minerals. The mariposite member of the fault contains small crystals of chromite and to a lesser degree specks of tetrahedrite ("gray copper"). Where associated with the mariposite and quartz, the pyrite commonly indicates values in gold. Stibnite is mostly confined to the quartz member as massive fracture fillings or as a fine dissemination.

A different type of mineralized vein is located on the north end of the exposed carbonate-antimony-gold vein. In a cross fault that strikes N10°E, approximately at right angles to the main carbonate vein, and cuts across the argillite series, lenses of massive stibnite, up to 10 inches wide, were found, extracted and shipped as crude ore, according to old (1940-50) reports. The foot wall of this cross-fault may be seen to contain specks of gray copper and some sparsely disseminated stibnite.

F. SUMMARY OF GEOLOGICAL EVENTS

1. Deposition of andesite, shale and argillite with a change of environmental conditions during deposition of chert.
2. Uplift and folding of strata due to regional pressure from the west. Consequent shearing of weaker members of the strata and impregnations of quartz into fissures, fractures and bedding planes.

3. The upthrust of the Mt. Nielsp range one mile to the west causing main N.W. fault fracture and few local minor movements in the E.W.-direction. Continued impregnation of quartz. The uplift of diorite in the north-west corner and injection of iron sulphides.
4. Intrusion of peridotite plug north of the property and subsequent intrusion of serpentine into main fault zone. Serpentinization of host rock. Continued injection of quartz.
5. Intrusion of plagioclase diorite dykes.
6. Continued injection of quartz into main fault zone combined with pyrite and gold and gray copper. More movement on main fault.
7. Carbonatization of serpentinized rocks and other areas. Formation of mariposite. Continued impregnation by quartz, its fracturing and filling of those late fractures by stibnite. More movement within main fault.

G. OBSERVATIONS AND CONCLUSIONS

The sedimentary volcanic group provided the original setting for geological occurrences which are evident in the mapping program. They are oriented in a N.W. direction and dip westerly. The basic rock ridge, one mile to the west of the claims, was a probable factor in major folding and faulting of the andesite-shale-argillite series. Post fault intrusions by peridotite and serpentine filled the existing weak zones. Diorite, quartz and carbonate injections followed bringing with them the minerals, chromite, pyrite, tetrahedrite, gold and antimony, probably in that order.

It is concluded, after observing the geology, that the main fault, along a short section of which all the exploration activity has centered, is a long, wide and probably deep structure. It could contain much more of the same quality of minerals found to date.

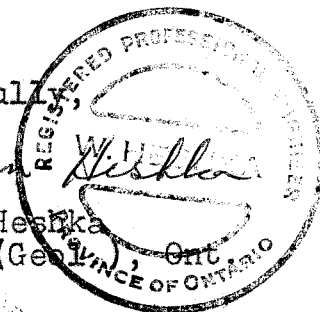
There is some evidence, geological and geochemical, which indicates that other mineralized sections could be expected under the heavy overburden to the west of the known mineralized area.

Respectfully,

William Heshka

William Heshka
P. Eng. (Geology), Ont.

Toronto, Ontario
November 25, 1971



J. ACKNOWLEDGEMENTS

Snowbird Antimony - Analysis and Economics, Oct. 19, 1950
Joseph T. Mandy, M.E., Ph.D.

Geological Report, Stuart Lake Antimony Property,
Omineca M.D., British Columbia, Feb. 27, 1951
by Franc. Joubin, P. Eng., Ont. & B.C.

Compilation Map 907A, Fort St. James, B.C.
1" = 6 miles, 1946
B.C. Department of Mines & Petroleum Resources

Report on the Stuart Lake Antimony Prospect,
Nov. 30, 1970 (July 25, 1971)
by A. F. Roberts, P. Eng., B.C.

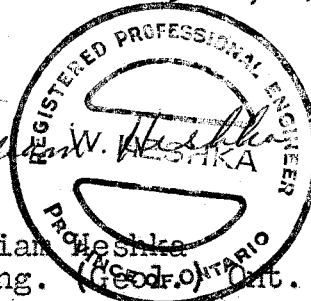
K. Qualifications of Writer

As required under Chapter 244, paragraph 44, of the Mineral Act of British Columbia,

I hereby state that

1. I have a Bachelor of Arts degree in Geology and Economics from the University of British Columbia (1958);
2. I am a registered member of the Association of Professional Engineers of Ontario;
3. I have prospected and practiced geology for 15 years;
4. I have 3 years of practical experience in underground mining and 5 years of engineering experience on the staff of an operating mine;
5. That I have no direct nor indirect interest, nor do I expect to receive any interest, directly or indirectly, in the properties or securities of Consolidated Shunsby Mines Limited;
6. I served as resident geologist in charge of work performed on the Snowbird Group (#2589) during period July 1st to October 31st, 1971.

William V. Hestka
REGISTERED PROFESSIONAL ENGINEER
W. HESTKA
PROF. SHUNBY
P. Eng. (Geod.) Ont.

A circular seal for a Registered Professional Engineer in Ontario. The seal features a large stylized 'S' in the center. The text 'REGISTERED PROFESSIONAL ENGINEER' is written around the top inner edge, and 'PROF. SHUNBY' is written around the bottom inner edge. The name 'W. HESTKA' is written across the center of the seal, and 'P. Eng. (Geod.) Ont.' is written below the seal.

Toronto, Ontario
November 25, 1971

H. Summary of Work Performed on the Snowbird Group #2589

July 6, 1971 to Sept. 10, 1971; Oct. 1 - 23, 1971

1. Physically trench on geo-chem. anomalies A1, A2, A3 and other interesting areas. See A. F. Roberts report of November 30, 1970 for anomaly location.
2. Bulldozer stripping on anomalies A1 and A3 and L20N.
3. Backhoe trenching on anomaly A1 and fault extensions south.
4. Expose and compass-survey all existing diamond drill holes and co-ordinate them with exposed outcrops.
5. Cut and chain grid lines, in area of old workings, and over full extension of exposed mineralized fault.
6. Map in detail the above area by grid lines control.
7. Map geology of the whole property plus extensions north and south by air-photo control.
8. Sample newly exposed mineralized veins.
9. Soil sample by deep holes (15') in anomalous areas and extensions of main fault zone.
10. Open adit and renew old workings on Shaft Fraction claim.
11. Make geophysical traverse with E.M. instrument (Ronka 15) over anomalies and main fault on 200 foot intervals.

Assessment Expenditures Breakdown

1.	Physical trenching ; T. Neilson July 10 - 23rd, 1971, incl. 11 days @ \$20. p.day + \$8. living expense	308.00	
	T. Dominic Oct.13-14,1971 1½ days @ \$20. p.day + \$8. living expense	<u>42.00</u>	\$350.00
2.	Bulldozing; D & G Logging Co. Dates: Aug. 2nd to 6th, 1971 36½ hrs. @ \$25.00/hrs.	912.50	
	Backhoe trenching: Gale Lukehaus Date: Aug. 11, 1971 10½ hrs. @ \$14.00/hr.	147.00	
	Dates: Sept. 5 - Sept.7th,1971 26 hrs. @ \$14.00/hr	<u>364.00</u>	1,423.50
3.	Plugger rent Fort Machine Works Oct.12/13 40.00 Fuse & Powder) " " " " " 15.33 Extendable Auger) " " " July 1971 45.00 Boat & Motor Rent (Fort Machine Works) 50 days (Howie Marina Service) <u>250.00</u>		350.33
4.	Assays by T.S.L. Laboratories, 325 Howe St.Vancouver		
	<u>Report No.</u> <u>Date</u>		
	T-0811 July 29,1971	7.50	
	T-1047 Aug. 20,1971	7.50	
	V-10503 Sept. 1,1971	16.80	
	V-10711 Sept.13,1971	43.50	
	V-10714 Sept.13,1971	65.25	
	V- Sept.28,1971	69.60	
	V-10702 Sept.28,1971	65.25	
	T-1553 Oct. 14,1971	50.00	
	V-10738 Oct.25, 1971	57.00	
	V-10876 Oct. 27,1971	<u>16.80</u>	
			399.20
5.	Cut & Chain Grid Lines - F. Cappello Aug.14 - 17, 1971, incl. 4 days @ \$25. + \$8./day living expenses		<u>132.00</u>
	forward		\$2,655.03

forward

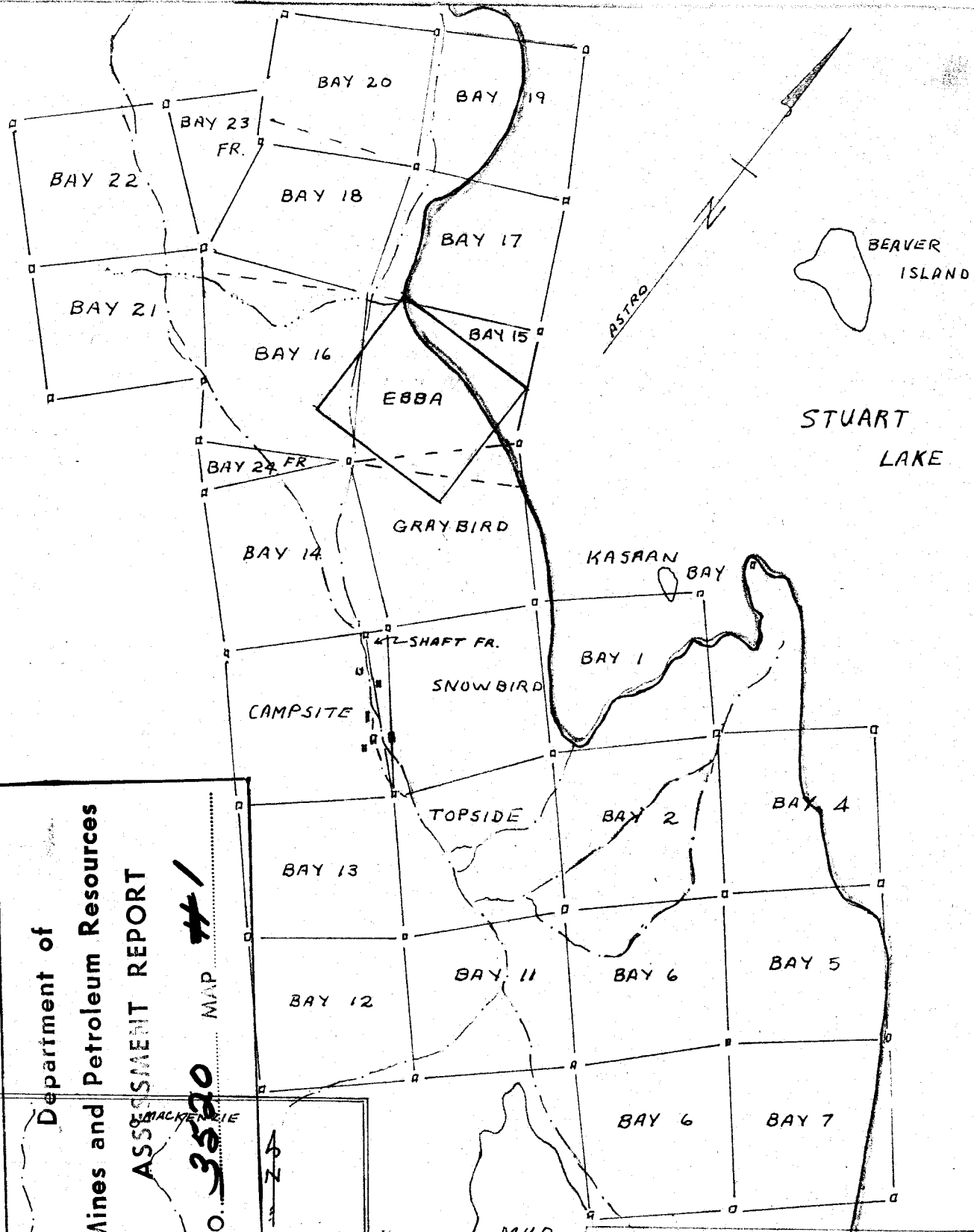
\$2,655.03

6. Map Geology, Soil Sample E.M.Recon.(Ronka-15)
Survey, Trench, Supervise, etc.
July 6th - Sept.10th, 1971, Oct.1 - 23,1971
W. Heshka, 2 months @ \$1,000./month plus
\$8.00/day living expenses

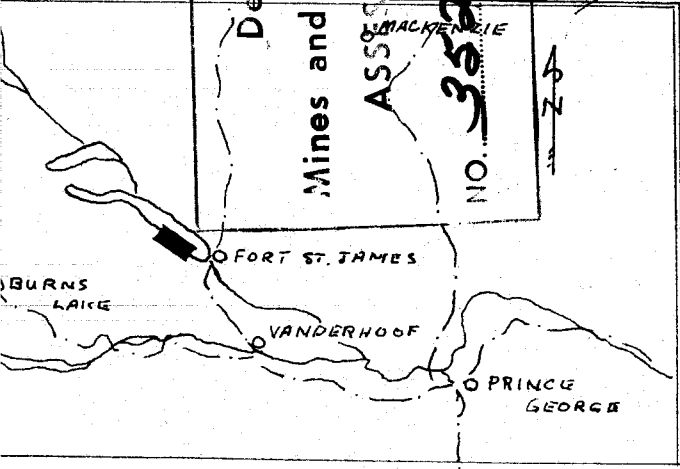
2,480.00

Total Expenditure

\$5,135.03



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3520 MAP #1



CONSOLIDATED SHUMSBY MINES LTD
SNOWBIRD CLAIM GROUP
FORT ST. JAMES - B.C.
OMINECA MINING DISTRICT.
SCALE 1" = 1320' NOV 1971
W HESHKA

3520

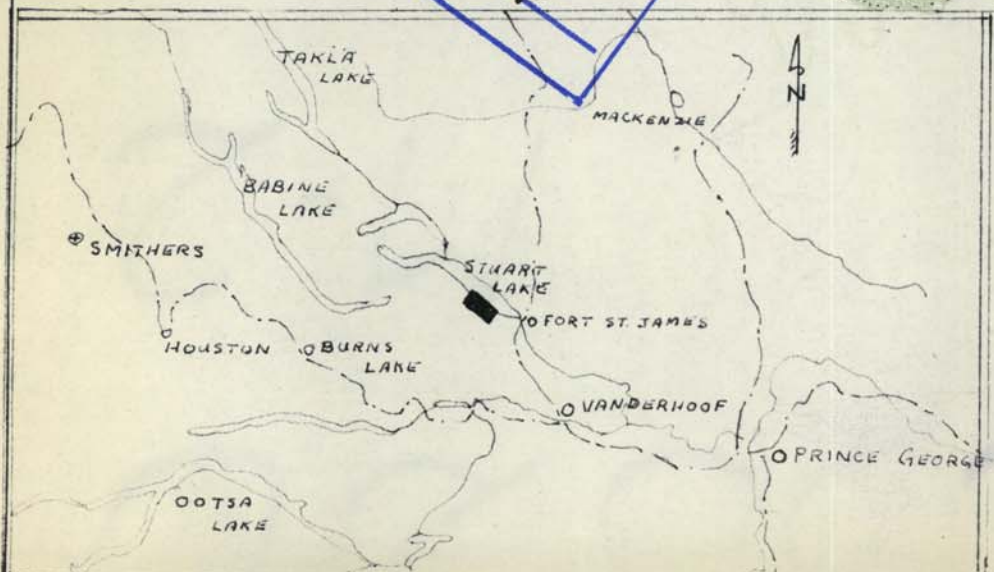
M-2

- S-C SERPENTINE; SEPENTINIZATION
ECARBONATIZATION
- SH SHALE
- A-SH ANDESITE - SHALE
- ARG ARGILLITE - SHALE
- CH CHERT
- DIO DIORITE
- Sb-Au-Py

- CONTACT, ASSUMED
- ~ ~ ~ FAULT, ASSUMED
- - - ROAD
- STREAM
- OUTCROP
- MINE BUILDINGS

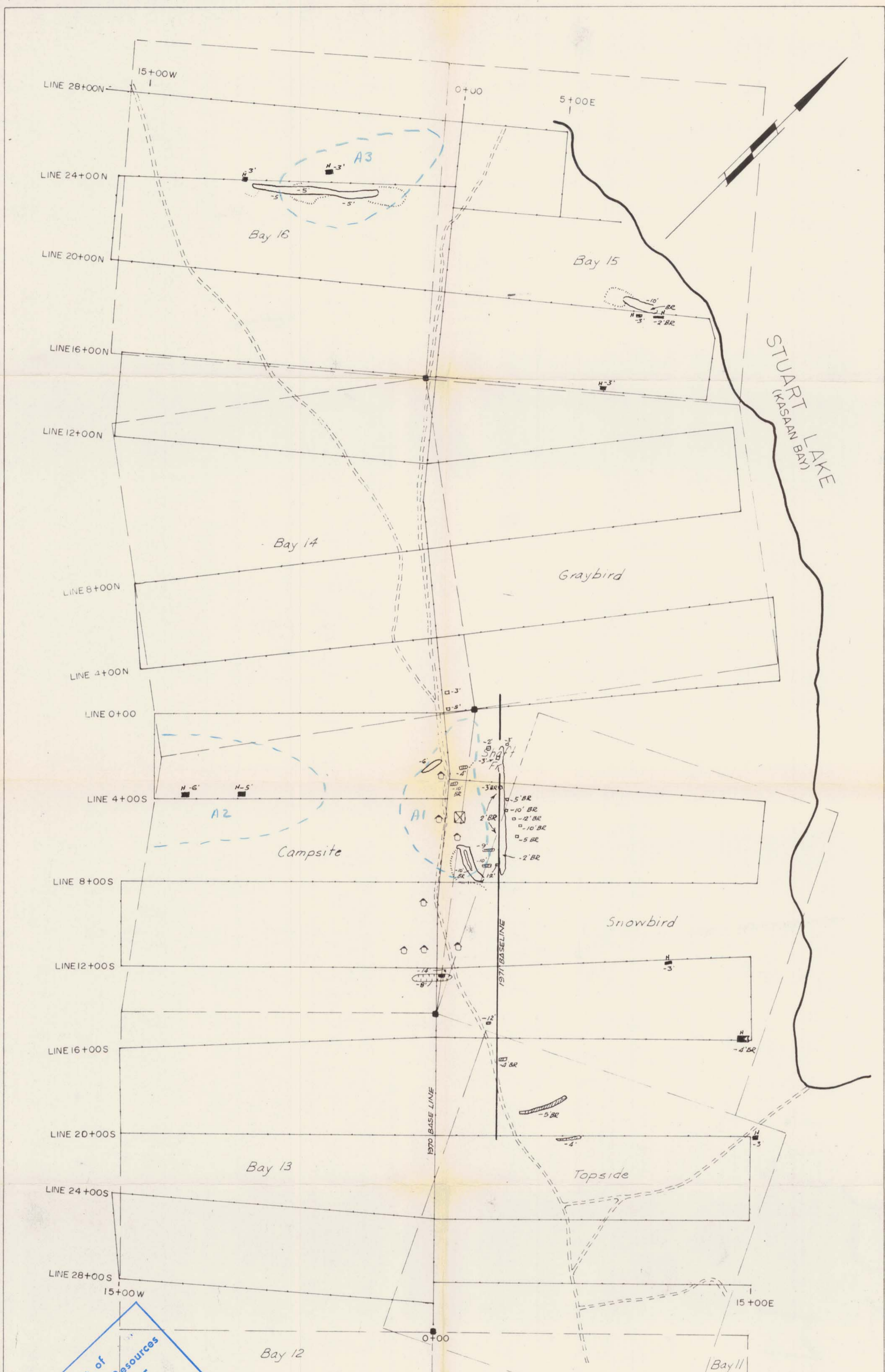
OUTCROPS AND LINEAMENTS
PLOTTED FROM AIRPHOTOS
GEOLOGY MAPPED ON LOCATION

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 No. 3520 MAP #2



CONSOLIDATED SHUNSBY MINES LTD.,
 SNOW BIRD PROSPECT.
 REGIONAL GEOLOGY
 FORT ST JAMES, OMINACA, B.C.
 SCALE 1"=1320' NOVEMBER 1971
 Done BY W. HESHKA





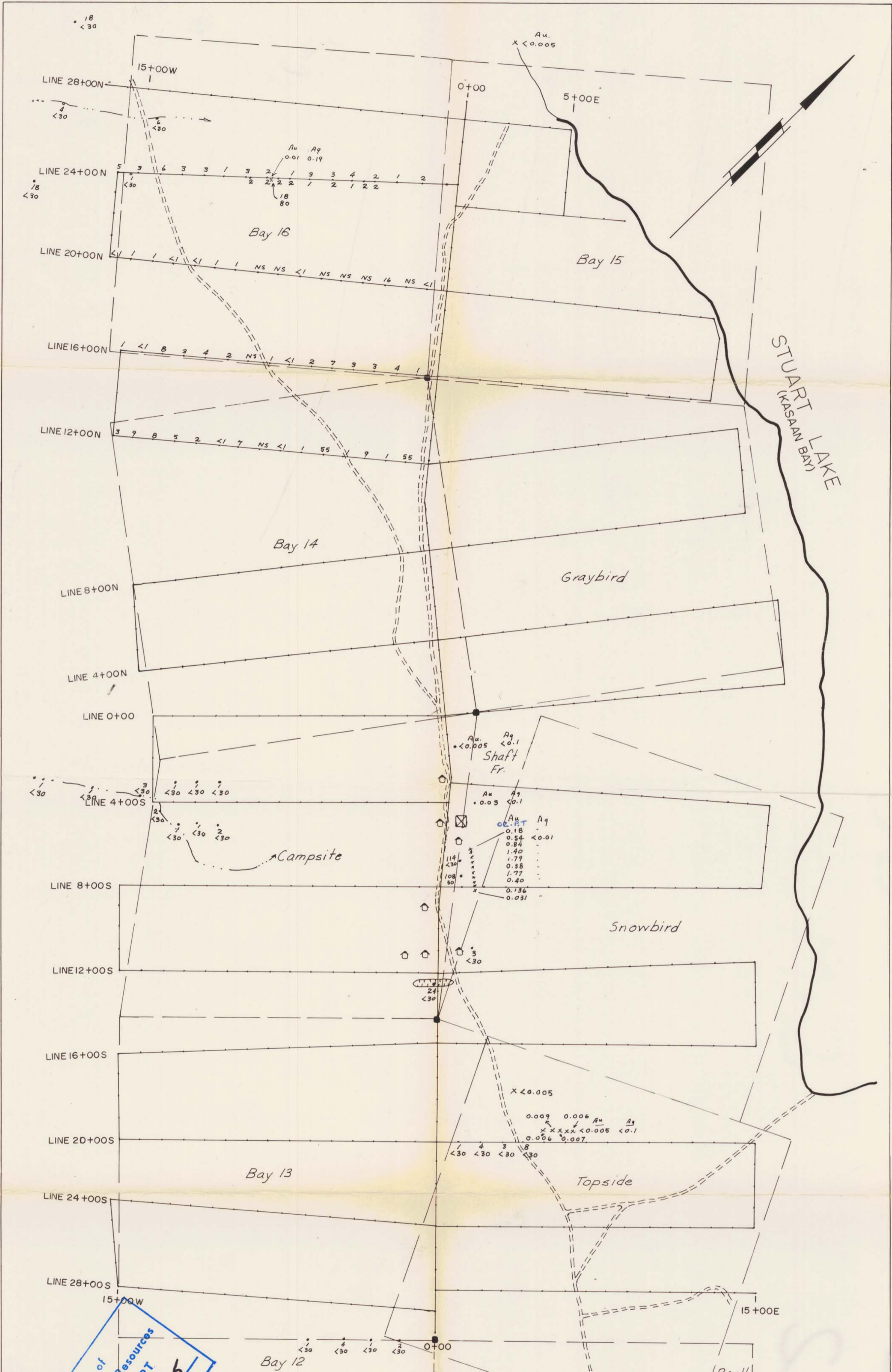
TRENCH LOCATIONS

SNOWBIRD GROUP STUART LAKE, B.C.
 CONSOLIDATED SHUNSBY MINES LIMITED
 DEC. 1970 SCALE: 1"=300' DWG. NO.: GC-70-114
 LOCATION PLAN
 APPROVED

NOTE:-

- SURVEY LINES & STATIONS
- CLAIM POST
- CLAIM LINE
- ROAD
- ⊠ BUILDING
- ⊠ OLD WORKINGS
- TRENCH
- TRENCH-BULLDOZER
- " BACKHOE
- " MANUAL
- 5' AVERAGE DEPTH
- BR. BEDROCK
- GEO-CHEM ANOMALY

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 Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. 3520 MAP #4



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 NO. 3520 MAP # 5

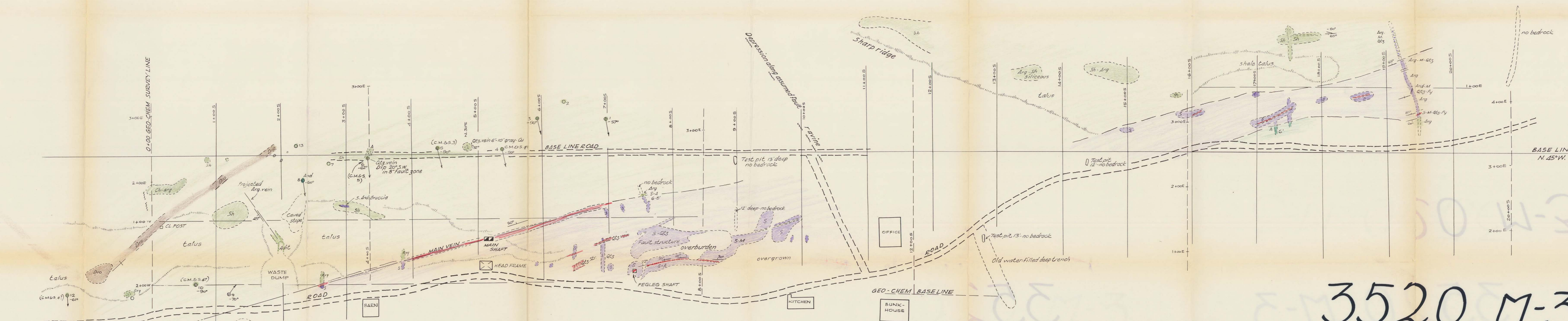
GEO-CHEM SOIL SAMPLES, 1971
 CONSOLIDATED SHUNSBY MINES LIMITED
 DEC. 1970 SCALE: 1" = 300' DWG. NO. - GC-70-114
 LOCATION PLAN
 APPROVED.....

NOTE:-

- SURVEY LINES & STATIONS
- CLAIM POST
- CLAIM LINE
- ==== ROAD
- ⊠ BUILDING
- ⊞ TRENCH
- ⊞ OLD WORKINGS
- x ROCK SAMPLE LOCATION Au & Ag in oz. per ton.
- GEO-CHEM STATION, 4 Sb in PPM
Au in PPB

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ASSESSMENT REPORT
NO. 3520 MAP #3

TOP OF HILL (100' ABOVE DRILL BASE LINE)
APPROX.



PHYSICAL FEATURES	LEGEND
⊕ D.D.H. bearing	S Serpentine (serpentinization)
○ D.D.H. ?	Arg Argillite
□ Claim posts	Sh Shale
Talus	And Andesite
≡ Shear	Dio Diorite
~ Fault	Q Quartz, stringer, vein
--- Trench	M Mariposite, (carbonatization)
○ Pit	Py Pyrite
--- Road	Ch Chert
--- Contact	

3520 M-3

--- Geochem Base line and grid
--- Shaft section reference only base line and grid

CONSOLIDATED SHUNSBY MINES LIMITED
SNOWBIRD GROUP
STUART LAKE, OMINECA, B.C.
GEOLOGY & DRILL HOLES
MAIN VEIN AREA

SCALE: 1" = 50'
DRAWN BY WM. HESHKA
NOV 10, 1971