

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

11,667

part 1  
of 2

DIAMOND DRILLING REPORT

for

SULPHURETS 83 GROUP, SULPHURETS PROPERTY

Mineral Claims: Ice 4, Ice 5, Red River, Red River 2,  
Red River 3, Red River 6, Tedray 10,  
Tedray 12, Tedray 14, Tedray 20, Tedray 22

SKEENA MINING DIVISION  
104B/8E  
56°30'N, 130°15'E

Claims Owned by: Granduc Mines Limited (NPL) and  
Esso Resources Canada Limited

Operated by: Esso Minerals Canada  
600-1281 W. Georgia St.  
Vancouver, B.C.  
V6E 3J7

Report by: Walter Melnyk

Submitted: October 15, 1983

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MAPS

Sulphurets Property Location 1:250,000

Location Map of Claims 1:50,000

Drill Hole Location 1:10,000

### INTRODUCTION

This report documents diamond drilling for vein-type gold and silver mineralization in the southern portion of the Sulphurets property on the Red River claims. Assessment work is filed for holes 96 to 105.

### LOCATION

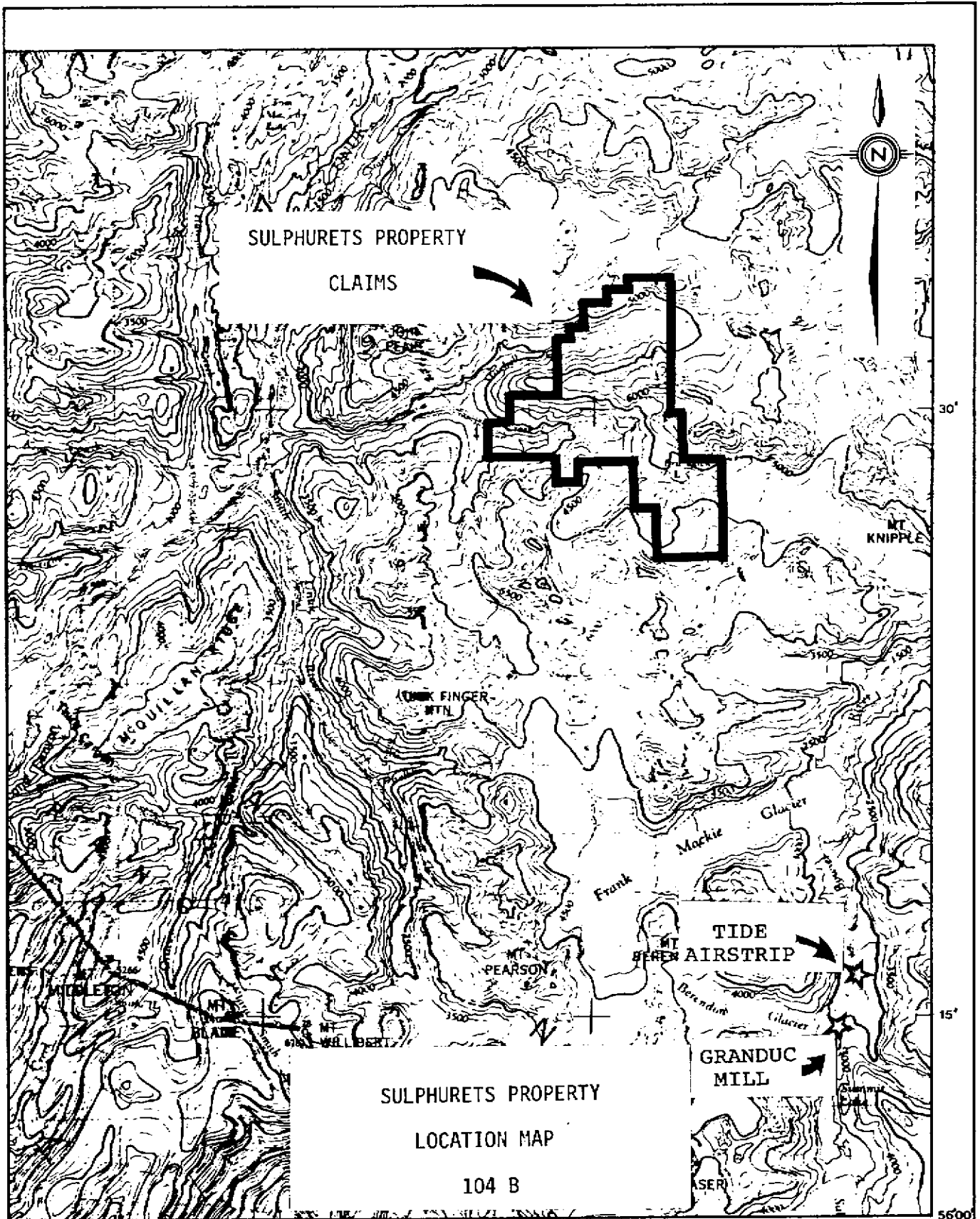
The Sulphurets property is located approximately 65 km northwest of Stewart, B.C. and 20 km north of the Granduc Mine. It is at the headwaters of Mitchell and Sulphurets Creeks. The property is centered at 56°30'N and 130°15'E. It covers parts of 104B/8E, 8W, 9E, 9W.

### ACCESS

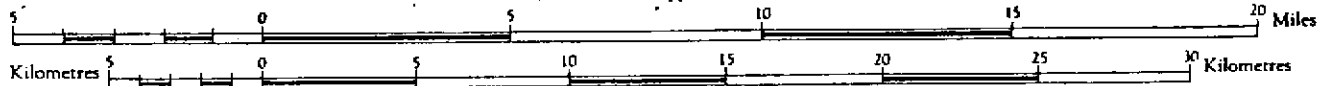
Access to the property is by helicopter from the Esso exploration camp located on the north side of Mitchell Creek about 200 m east of McTagg Creek.

### CLAIMS

The Sulphurets property consists of 243 units & including 3 fractional claims. The claims are held by Granduc Mines, Limited (NPL), Esso Resources Canada Limited.



Scale 1 : 250,000  
1 Inch to 4 Miles Approximately

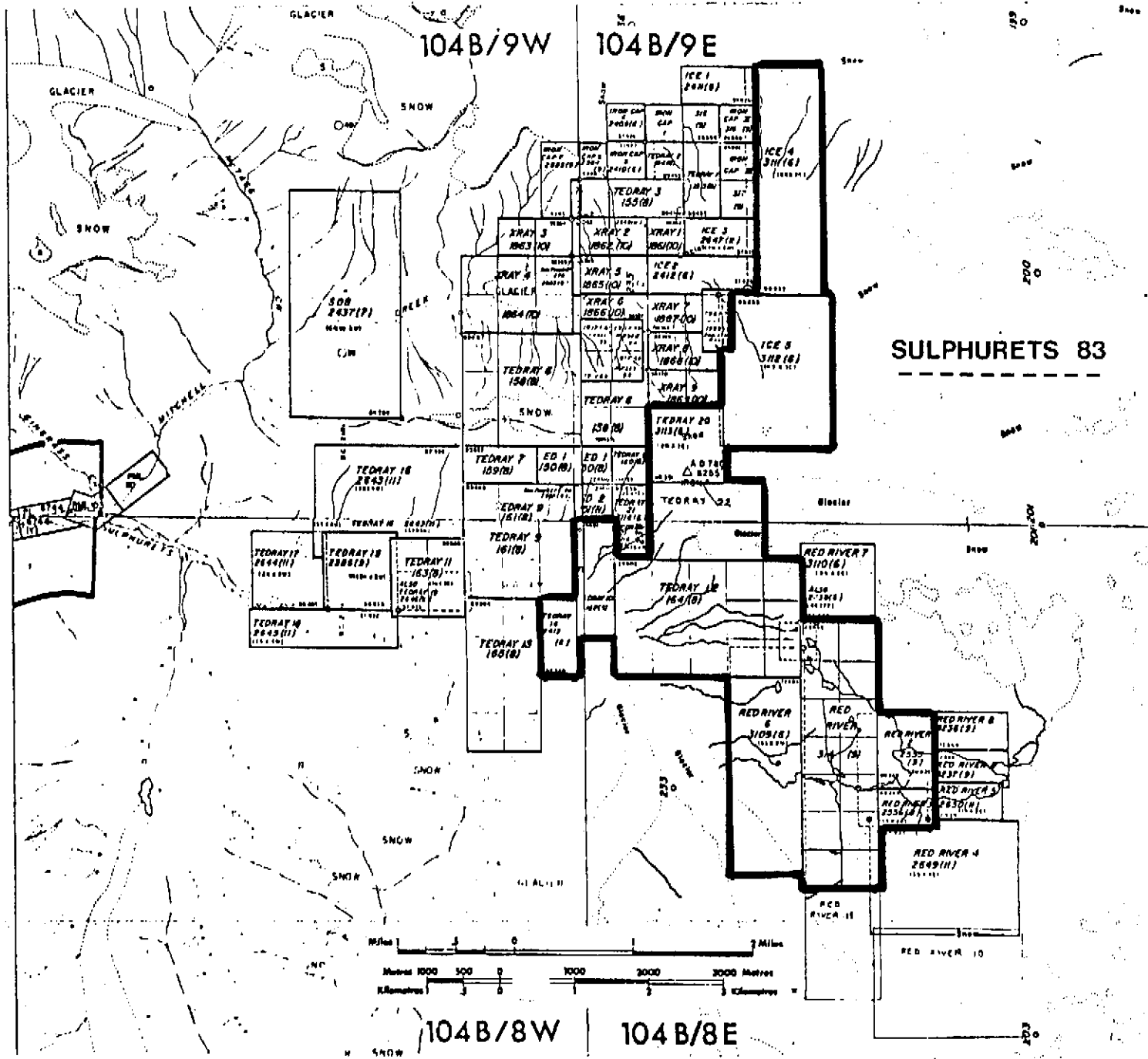


The property is being operated by Esso Resources Canada Limited. The property is being operated by Esso Minerals Canada under option from Granduc.

The following is a list of the Sulphurets property claims giving claim name, record number, number of units, record date and expiry date prior to the filing of this report. Assessment work in this report advances the expiry year on Ice 4, Tedray 22, and Tedray 14 to 1991.

<u>PROJECT</u>	<u>CLAIM</u>	<u>RECORD NUMBER</u>	<u>UNITS</u>	<u>ANNIV. DATE</u>	<u>EXPIRY DATE</u>
Sulphurets - 2153	Ed 1	150	02	Aug 26/75	1992/08/26
Sulphurets - 2153	Ed 2	151	01	Aug 26/75	1992/08/26
Sulphurets - 2153	Ice 1	2411	02	June 30/80	1991/06/30
Sulphurets - 2153	Ice 2	2412	03	June 30/80	1992/06/30
Sulphurets - 2153	Ice 3	2647	02	Nov 3/80	1992/11/03
Sulphurets - 2153	Ice 4	3111	12	June 30/81	1985/06/30
Sulphurets - 2153	Ice 5	3112	12	June 30/81	1992/06/30
Sulphurets - 2153	Iron Cap 001	315	02	Sept 7/76	1991/09/07
Sulphurets - 2153	Iron Cap 002	316	01	Sept 7/76	1991/09/07
Sulphurets - 2153	Iron Cap 003	317	02	Sept 7/76	1991/09/07
Sulphurets - 2153	Iron Cap 004	2409	01	June 30/80	1991/06/30
Sulphurets - 2153	Iron Cap 005	2410	01	June 30/80	1991/06/30
Sulphurets - 2153	Iron Cap 006	2584	02	Sept 23/80	1991/09/23
Sulphurets - 2153	Iron Cap 007	2585	02	Sept 23/80	1991/09/23
Sulphurets - 2153	Red River	314	14	Sept 15/76	1991/09/15
Sulphurets - 2153	Red River 002	2555	04	Sept 2/80	1991/09/02
Sulphurets - 2153	Red River 003	2556	02	Sept 2/80	1991/09/02
Sulphurets - 2153	Red River 004	2649	12	Nov 3/80	1991/11/03
Sulphurets - 2153	Red River 005	2650	02	Nov 3/80	1991/11/03
Sulphurets - 2153	Red River 006	3109	12	June 30/81	1991/06/30
Sulphurets - 2153	Red River 007	3110	04	June 30/81	1991/06/30
Sulphurets - 2153	Red River 008	3236	02	Sept 29/81	1992/09/29
Sulphurets - 2153	Red River 009	3237	02	Sept 29/81	1992/09/29
Sulphurets - 2153	Red River 010	3516	12	July 12/82	1992/07/12
Sulphurets - 2153	Red River 011	3517	06	July 12/82	1992/07/12
Sulphurets - 2153	Sulphurets 1 Fr.	2582		Sept 23/80	1991/09/23
Sulphurets - 2153	Sulphurets 2 Fr.	2583		Sept 23/80	1991/09/23
Sulphurets - 2153	Sulphurets 3 Fr.	2648	01	Nov 3/80	1991/11/03
Sulphurets - 2153	Tedray 001	153	02	Aug 26/75	1991/08/26
Sulphurets - 2153	Tedray 002	154	01	Aug 26/75	1991/08/26
Sulphurets - 2153	Tedray 003	155	03	Aug 26/75	1991/08/26
Sulphurets - 2153	Tedray 006	158	15	Aug 26/75	1992/08/26
Sulphurets - 2153	Tedray 007	159	02	Aug 26/75	1992/08/26
Sulphurets - 2153	Tedray 008	160	01	Aug 26/75	1992/08/26
Sulphurets - 2153	Tedray 009	161	09	Aug 26/75	1992/08/26
Sulphurets - 2153	Tedray 010	162	03	Aug 26/75	1992/08/26
Sulphurets - 2153	Tedray 011	163	04	Aug 26/75	1991/08/26
Sulphurets - 2153	Tedray 012	164	15	Aug 26/75	1991/08/26
Sulphurets - 2153	Tedray 013	165	08	Aug 26/75	1992/08/26
Sulphurets - 2153	Tedray 014	2413	02	June 30/80	1985/06/30
Sulphurets - 2153	Tedray 015	2586	04	Sept 23/80	1991/09/23
Sulphurets - 2153	Tedray 016	2643	12	Nov 3/80	1991/11/03
Sulphurets - 2153	Tedray 017	2644	04	Nov 3/80	1991/11/03
Sulphurets - 2153	Tedray 018	2645	04	Nov 3/80	1991/11/03
Sulphurets - 2153	Tedray 019	2646	02	Nov 3/80	1991/11/03
Sulphurets - 2153	Tedray 020	3113	04	June 30/81	1992/06/30
Sulphurets - 2153	Tedray 021	3114	02	June 30/81	1992/06/30
Sulphurets - 2153	Tedray 022	3574	8	Oct 06/82	1983/10/06

<u>PROJECT</u>	<u>CLAIM</u>	<u>RECORD</u> <u>NUMBER</u>	<u>UNITS</u>	<u>ANNIV. DATE</u>	<u>EXPIRY DATE</u>
Sulphurets - 2153	Xray 001	1861	01	Oct 12/79	1991/10/12
Sulphurets - 2153	Xray 002	1862	02	Oct 12/79	1991/10/12
Sulphurets - 2153	Xray 003	1863	02	Oct 12/79	1990/10/12
Sulphurets - 2153	Xray 004	1864	06	Oct 12/79	1990/10/12
Sulphurets - 2153	Xray 005	1865	02	Oct 12/79	1991/10/12
Sulphurets - 2153	Xray 006	1866	02	Oct 12/79	1990/10/12
Sulphurets - 2153	Xray 007	1867	02	Oct 12/79	1992/10/12
Sulphurets - 2153	Xray 008	1868	02	Oct 12/79	1992/10/12
Sulphurets - 2153	Xray 009	1869	02	Oct 12/79	1992/10/12





HISTORY

The first recorded work on bedrock mineral prospects in the Sulphurets Creek area was done in 1935. The property was explored by prospecting, some magnetometer surveying and drilling by Newmont Mining Corporation from 1959 to 1962. Granduc Mines, Limited (NPL) has done trenching, diamond drilling, mapping and lithogeochemical sampling from 1967 to 1977.

Esso Minerals Canada has explored the Sulphurets property from 1980 to 1983. Exploration in 1980 concentrated on Mo and Mo-Cu-Au-Ag areas and quartz-pyrite-Au-Ag veins in the northeastern portion of the property. Exploration in 1981 concentrated on zones of low-grade disseminated Au along the north side of Sulphurets Glacier and two areas around Brucejack Lake were also drilled. Exploration in 1982 and 1983 was confined to Au and Ag-bearing vein systems in the Brucejack Lake area at the southern end of the property.

SUMMARY OF COSTS

1. Fuel costs are the cost of fuel plus cartage to the Granduc mill site and transportation to camp by helicopter.
2. Helicopter costs for the contract 5000 are the contract rate plus fuel consumed. The helicopter hourly cost is \$520.00 per hour based on a \$400.00 per hour rate and an average fuel cost of \$120.00 per hour.
3. Camp costs are estimated at \$30.00 per man-day as follows:

Total camp cost was estimated at \$75,000.00 in 1980. The camp is being used for about 100 days per field season over three years. The daily camp costs is therefore \$250.00. Groceries plus delivery and expediting cost about \$6,000.00 per month or \$200.00 per day. Total camp, room and board costs are thus \$450.00 per day. There are normally 15 men employed in camp so the cost per man-day is \$30.00.

4. Camp support costs are \$190.00 per day based on a cook-first aid attendant at \$100.00 per day and room and board at \$30.00 per day for cook, helicopter pilot and helicopter engineer.

COST STATEMENT

Drilling of diamond drill holes 96 to 105,  
Aug. 4 to Sept. 1, 1983.

4433.5 feet at \$15.00/ft.	\$ 66,502.50
Fuel, 800 gallons at \$3.60/gal.	2,880.00
Helicopter, 55.0 hr. at \$520/hr.	28,600.00
Assays, 343 at \$16.50	5,659.50
Core boxes, 225 at \$4.75	1,068.75
Geologist, 29 days at \$130.00	3,770.00
Assistant, 29 days at \$50.00	1,450.00
Room and board, 261 man-days at \$30.00	7,830.00
Camp support costs, 29 days at \$190.00	5,510.00
Instrument cost - Sperry Sun, 29 days at \$55	1,595.00
Drill mobilization and demobilization 184 man hours at \$26/hr	4,784.00
TOTAL	\$129,649.75
Cost per foot drilled	\$ 29.24
Cost per metre drilled	\$ 95.94

GEOLOGY AND ECONOMIC ASSESSMENT

Three main types of mineralization occur on the Sulphurets property. These are Cu and/or Mo porphyry-type mineralization, disseminated Au-pyrite mineralization and Au-Ag-bearing quartz veins. North and south of the Mitchell Glacier low-grade disseminated Cu-Mo-Au-Ag mineralization occurs associated with sub-alkaline syenites. Quartz-pyrite-Au-Ag veins occur adjacent to the porphyry mineralization in the north east part of the property.

Along the north side of Sulphurets Glacier there is an extensive area of quartz-pyrite-sericite rock derived mainly from monzonite and syenite intrusive breccias and hornblende-plagioclase porphyry dikes and to a lesser extent from andesites and clastic sedimentary rocks. Zones of low-grade disseminated Au associated with 15 to 40% pyrite occur peripheral to zones of disseminated Cu-Mo-pyrite mineralization.

An extensive area of quartz-sericite-pyrite alteration in the vicinity of Brucejack Lake occurs in intermediate volcanic rocks, clastic sedimentary rocks and fine-grained hornblende syenite intrusive rocks. Gold and silver-bearing quartz veins, vein and stockwork masses and quartz stockwork or sheeted zones occur within, and commonly near the periphery of the quartz-sericite-pyrite alteration zone. Most of the quartz veins within the central area of the alteration zone do not contain significant Au-Ag values.

### DIAMOND DRILLING

Drilling in 1983 was centered in the Brucejack Lake area testing the vein-type Au-Ag mineralization in the Peninsula area and the West Brucejack Zone. The claim map shows the location of drill holes 96 to 105. Holes 96-99 were drilled in the Brucejack Peninsula area. Drill hole 100 was drilled in the Electrum Zone. Holes 101 to 105 were drilled in the West Brucejack Zone. The drill logs give the bearings, angles, and lengths of the holes along with detailed geological and mineralogical descriptions and assays.

This report covers 1351.3 meters of drilling done from August 6 to September 1, 1983, using a JK Smit 300 diamond drill operated by Ultra Mobile Diamond Drilling. The holes were drilled on Red River, Red River 2, and Red River 3 mineral claims. Split core is stored at the Esso camp on Mitchell Creek. Short segments of core, 5-10 cm in length collected at 1.5 m intervals, are stored in Vancouver.

### Near Shore Zone

The Near Shore Zone is one of four parallel quartz vein zones occurring along the northeast edge of the Brucejack Peninsula. Intense sericitization and patchy silicification has obliterated most textures and makes rock identification difficult. The vein zones appear to lie in or adjacent to a fault in an anticlinal axis. The fault, trending  $140^{\circ}$ , is not exposed but forms a prominent lineament and accounts for

different rock units along each side of the linear. The intensity of alteration decreases northwesterly to the degree where lithologic units are easily recognized.

The host rock appears to be trachyandesite with numerous fine-grained and fragment sections representing sheared or crushed areas or xenoliths of tuff-breccia. In the central portion of the zone, the host rocks are pervasively altered and no alteration envelopes have been recognized.

During the 1983 field season, four drill holes were drilled including DDH 96 to 99 from two locations on sections 388W and 438W. The purpose of the drilling was to extend the gold-bearing vein system of the Near Shore Zone westerly.

The gold-bearing structure was identified and extended a further 120 meters northwesterly from the previous years drilling. The total gold-silver bearing structure is 370 m in length.

A list of significant assays/intervals follows:

(Au and Ag assays given in oz/ton)

DDH 96		
64.00-66.65:	2.65 m	.102 Au, .85 Ag
91.12-92.40:	1.28 m	.114 Au, 2.24 Ag
DDH 97		
75.34-76.07:	0.73 m	.095 Au, 1.21 Ag
DDH 98		
27.07-27.76:	0.69 m	.123 Au, 3.47 Ag
44.18-45.52:	1.34 m	.066 Au, 5.23 Ag

DDH 99

31.21- 31.75: 0.54 m	.130 Au, 2.50 Ag
36.65- 38.00: 1.35 m	.541 Au, 10.28 Ag
122.13-123.90: 1.77 m	.730 Au, 2.33 Ag

West Brucejack Zone

The West Brucejack Zone is a linear quartz vein to vein stockwork zone which appears to have a strike length of 300 m and a strike of  $140^{\circ}$  with vertical to sub-vertical veins. The vein system is mainly within clastic sedimentary rocks including arenites, arkoses, and conglomerates. The host sedimentary rocks, adjacent volcanic rocks and vein system are mainly surrounded by fine-grained hornblende syenite intrusive rocks.

Diamond drill-holes 101, 102, 103 were drilled from a single drill site on section 0+38.75S. The drill holes encountered a substantial mafic flow unit, a maroon tuff, and subsequently intersected a clastic sedimentary sequence which was extensively quartz veined and carried variable amounts of tetrahedrite, sphalerite, galena, pyrargyrite, argentite, and electrum. The quartz-stockwork, quartz veined zone appears to have an apparent true width of 28.0 meters. DDH 101 encountered the zone at a depth of 150 meters below the surface. All three drill holes encountered hornblende syenite at depth.

Diamond drill holes 104, 105 were drilled on section O+68.75S similar to the previous section. The units encountered from the collar include mafic flows, maroon tuff, clastic sediments, and bottoming in fine to very coarse grained syenite. The veined zone is weakly to moderately developed, is 15-30 meters in apparent true width, and extends 95 meters in depth.

A list of significant assays/intervals follows:

DDH 101:	46.75- 54.58: 7.83 m	0.167 oz/t Au	13.52 oz/t Ag
	65.75- 69.75: 4.00 m	0.351 oz/t Au	1.89 oz/t Ag
DDH 102:	48.33- 52.13: 3.80 m	0.038 Au	6.64 Ag
	62.35- 63.45: 1.15 m	0.032 Au	7.20 Ag
	67.19- 74.67: 7.48 m	0.217 Au	17.59 Ag
	83.22- 86.26: 3.04 m	0.466 Au	55.86 Ag
DDH 103:	99.57-102.05: 2.48 m	0.074 Au	14.20 Ag
	157.35-158.50: 1.15 m	0.342 Au	12.05 Ag
	161.40-162.05: 0.65 m	0.017 Au	6.70 Ag
DDH 104:	74.31- 75.31: 1.00 m	0.518 Au	
	88.16- 90.88: 2.72 m	0.722 Au	
	112.62-114.30: 1.68 m	0.165 Au	
DDH 105:	90.30- 96.65: 6.35 m	0.106 Au	
	114.80-115.75: 0.95 m	0.486 Au	



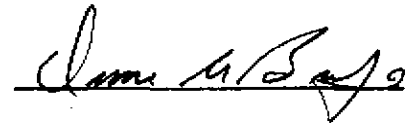
### Electrum Zone

The Electrum Zone is located in the southern portion of the Sulphurets property, approximately 2 km southwest of the West Brucejack Zone. Electrum bearing quartz vein float was discovered in 1981 and in 1982, electrum was found in place following trenching. The Electrum Zone is underlain by moderately to intensely quartz-sericite-pyrite altered syenodiorite. Numerous sub-parallel quartz veins from several cm to 50 cm occur within the zone. The veins generally trend northwesterly although a major structure has not been identified.

One diamond drill hole, DDH 100, was drilled perpendicular to the general vein trend in the vicinity of the relatively most intensely veined zone. No quartz stockwork or sustained veined zone was encountered. Quartz veining was sporadic and only locally carried weak concentrations of tetrahedrite, sphalerite, and pyrite. Electrum was observed in only one 18 cm quartz vein at 30.0 m. A 0.5 meter section; 29.80-30.30 m, ran 1.461 oz/t Au, and 1.31 oz/t Ag. A second short section, 78.60-79.25 m ran 0.193 oz/t Au, and 0.71 oz/t Ag. The remainder of the hole did not carry any significant precious metal values.

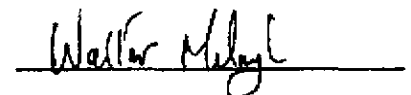
STATEMENT OF QUALIFICATIONS

I, Dane A. Bridge, certify that I received my B.Sc. Honours in Geology in 1969 and my M.Sc. in Geology in 1972, both from the University of Manitoba.

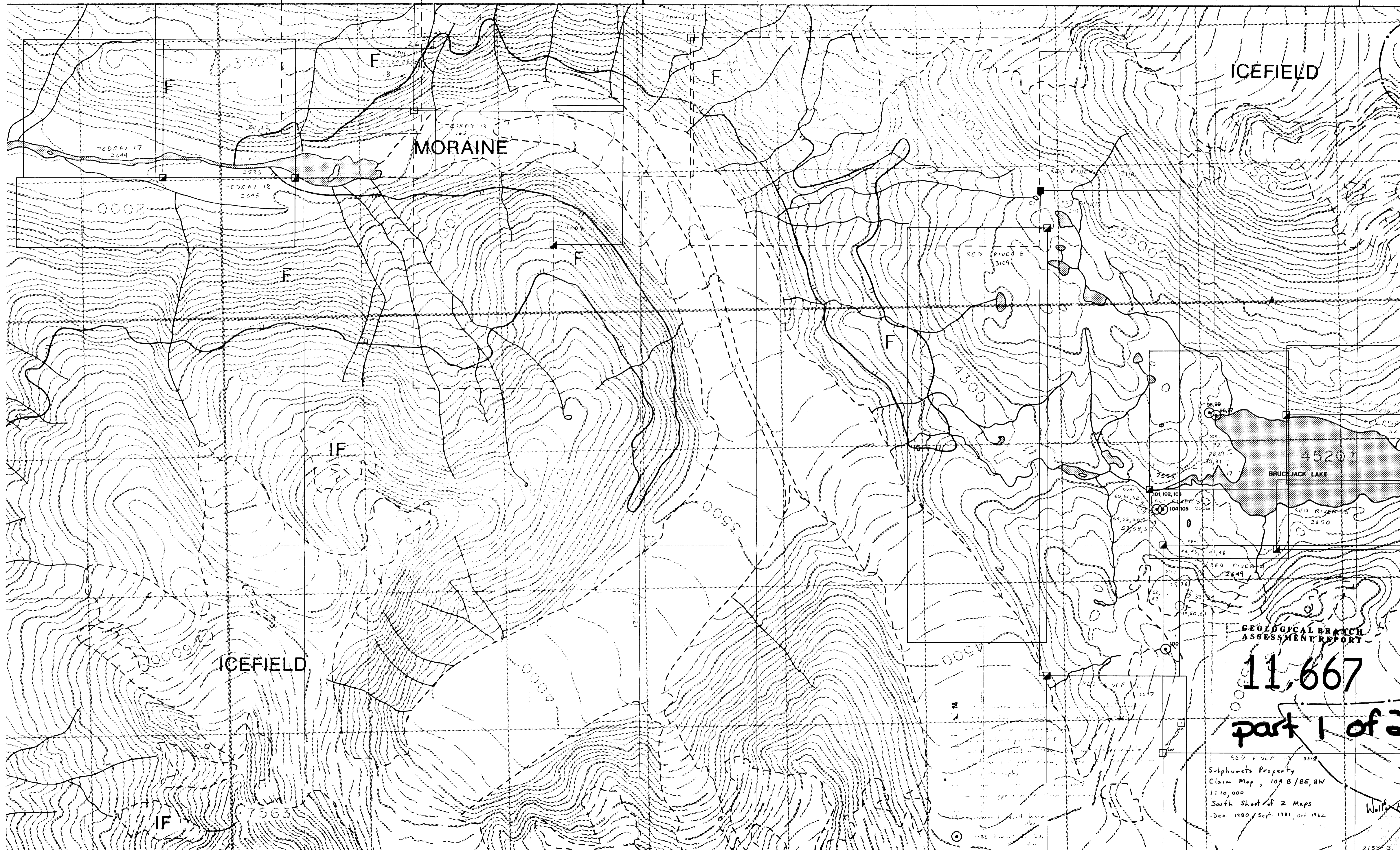


DANE BRIDGE

I, Walter Melnyk, certify that I received my B.Sc. Eng. in 1972 from the University of Saskatchewan, Saskatoon. I am a registered professional engineer in the province of Ontario and British Columbia.



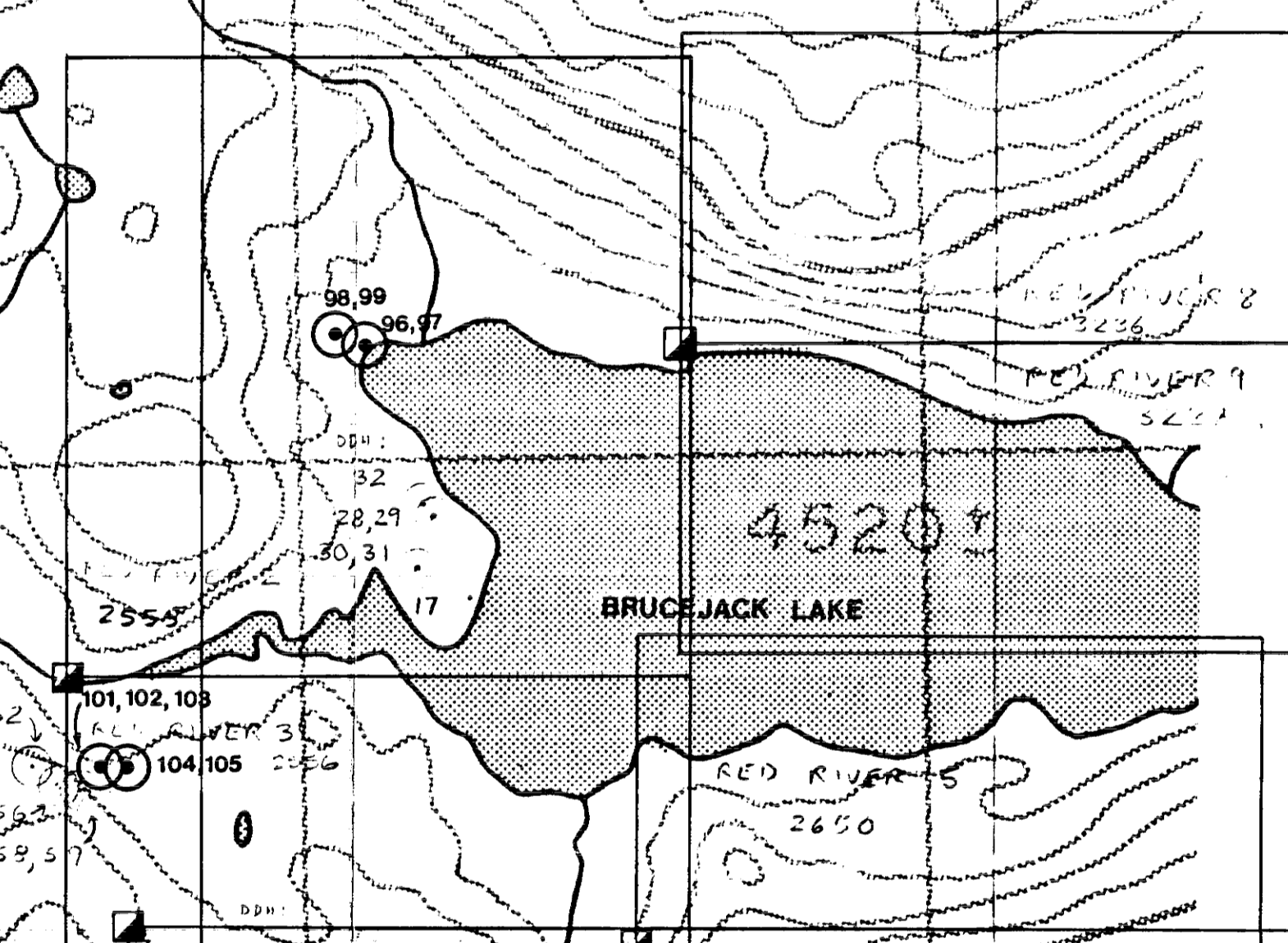
WALTER MELNYK



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ICEFIELD



GEOLOGICAL BRANCH  
ASSESSMENT REPORT

11,667  
part 1 of 2

RED RIVER 12 3518  
Sulphurets Property  
Claim Map, 104 B/BE, BW  
1:10,000  
South Sheet of 2 Maps  
Dec. 1880 / Sept. 1981, Oct. 1982

Walter H. Hogg