

GEOLOGIC REPORT
on the
SUNSET GROUP OF CLAIMS

NTS-92L/12
co-ords
50°37.5'N 127°32'W

Owned by
UTAH MINES LTD.
&
GORDON MILBOURNE

Operator
UTAH MINES LTD.

By
G.L. Holland
Geologist

June 15, 1983

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,366

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MAP 1 - Front Pocket - Claim Map Showing Mapped Area

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INTRODUCTION

This report will claim as assessment, the costs of compiling geologic data by means of a detailed mapping program just completed. A statement of costs, located in Appendix A, outlines the total costs of the project.

LOCATION AND ACCESS

The claim group, upon which the work was performed on, is located in the Nanaimo Mining Division, with co-ordinates $50^{\circ}37.5'N$, $127^{\circ}32'W$. They are located on the NTS map sheet 92 L/12 and are located approximately four (4) kilometers northwest of the Island Copper Pit and eight (8) kilometers southwest of Port Hardy, B.C., on Vancouver Island.

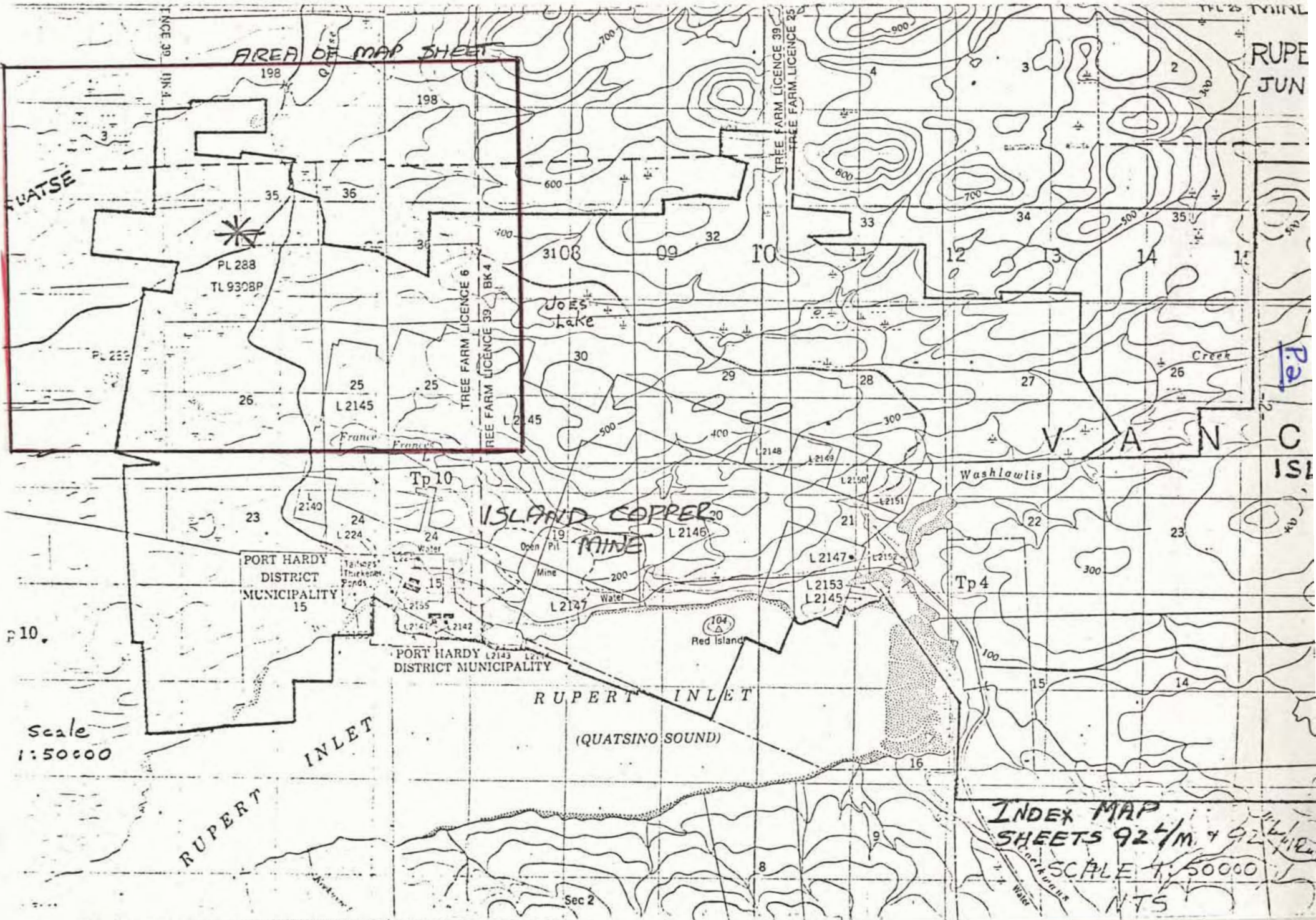
Access to the property is along the Coal Harbour Road from Port Hardy, a distance of ten (10) kilometers. On the property, logging roads provide excellent access into most of the area. The condition of all access roads is good.

HISTORY

The claims upon which work was performed are owned by Utah Mines Ltd. and Gordon Milbourne, of which Utah Mines Ltd. is the operator. The major block of claims have been held by the current owners since 1969, and fringe claims have been added since that time.

PHYSIOGRAPHY AND VEGETATION

Topography on the property consists of gently rolling hills that range from elevations of 350 meters to 510 meters. Vegetation is primarily large stands of fir and cedar, many areas of which have been logged off.



AREA OF MAP SHEET

PL 288
TL 9308P

TREE FARM LICENCE 6
BK 4
TREE FARM LICENCE 39

L2145

ISLAND COPPER
MINE

L2146

L2147

L2153
L2145

PORT HARDY
DISTRICT
MUNICIPALITY
15

PORT HARDY
DISTRICT MUNICIPALITY

RUPERT INLET
(QUATSINO SOUND)

Washlawtis

Tp 4

INDEX MAP
SHEETS 924/M + 924/N
SCALE 1:50000
NTS

Scale
1:50000

RUPERT INLET

Sec 2

RUPERT
JUN

Pa
C
ISL

GEOLOGIC PROGRAM

The program performed, consisted of a detailed mapping program by G.L. Holland, a Geologist from the Utah Mines Ltd, Vancouver office. Mapping was performed on a scale of 1 inch = 400 feet or a metric equivalent of 1=4800. The program commenced on the 18th of April and was completed the 15th of June, 1983. Total area that was completed is approximately twelve square kilometers.

A total of six rock units were encountered in the area that was mapped. In sequence from oldest to youngest they include: Karmutsen Volcanics; Quatsino limestone; Parson Bay Sediments; Bonanza Volcanics; Hornblende Porphyry Intrusions; and Island Intrusions.

Lithology:

1) Karmutsen Volcanics - andesite to basaltic composition. Primarily volcanic flows but minor pillows are seen. The most noted texture in the Karmutsen is the plagioclase amygdules, which are often up to 1 cm in size and often contain minor chlorite. Alteration noted, on the property, is a regional metamorphism of lower greenschist facies.

2) Quatsino Limestone - the limestone of this unit ranges from a dark grey, massive limestone to a light grey to white coloured sugary textured limestone. Fracturing is generally moderately developed with calcite filling the fractures. Numerous pelecypods and corals are found. Minor black chert nodules are present within the limestone.

3) Parson Bay Sediments - consists mainly of black limy shales with numerous massive limestone zones. The black shales exhibit strong bedding and colour banding, with alternating beds of black limy shales and a green, non-limy, mudstone. These beds range from a few millimeters, up to 20 centimeters in width. An average of 2-3% disseminated pyrite is present with values up to 5%. The shales bear pelecypods and corals, most of which have been altered to calcite.

At intrusive contacts, cherty sections are found with minor epidote rich skarn zones. Mapping failed to encounter any sulphide enrichment within these chert and skarn contact zones.

The upper contact with the Bonanza volcanics shows no evidence of contact metamorphism, no chilled margins, or brecciation. There appears to be an interfingering zone of the two rock types, the width of this zone is not determined.

The lower contact with the Quatsino limestone was not found in outcrop but is believed to be gradational.

4) Bonanza Volcanics - this unit is dominated by lapilli tuffs, with minor amounts of volcanic breccia, crystal tuffs, and red cherts.

The lapilli tuffs are andesitic in composition and contain numerous clasts that range in size to about 2 mm. The clasts are predominately feldspar with minor mafic and quartz clasts. The clast content rarely exceeds 15% of the rock. Graded bedding is present, in minor amounts, and is due mainly to alteration and clasts size.

Alteration is the prominent feature of the tuffs, ranging from weak to intense, and varies over very short distances. The principal alteration is sericite-chlorite with zones of sericite; sericite-chlorite-biotite; sericite-chlorite-epidote; and silicious-magnetite. The source of the alteration is very difficult to pinpoint as there is a lot of overlap in alteration patterns of contact metamorphism, regional metamorphism and hydrothermal alteration. The silicious-magnetite alteration is confined to the contacts of the hornblende porphyry dikes and appears due to hydrothermal solutions. Epidote is contained mainly along fractures and as mineral replacement.

The Volcanic breccia consists of fragments of Parson Bay shales and Bonanza lapilli tuffs in an andesitic matrix. The tuff fragments predominate and range up to 20 cm in size and much more rounded than the subangular tuff fragments. Minor bedding is present, defined by grain or fragment sizes.

The crystal tuffs are defined by the presence of amygdules that are composed of feldspar, quartz and calcite. They are andesitic in composition and also contain the clasts present in the lapilli tuff.

Minor zones of a pinkish to red chert are present in various places throughout the property, it is not determined whether these cherts are chemical precipitates or depositional.

Pyrite is present throughout most of the Bonanza volcanics in quantities up to 10-15%. Average grade is 1-3%. The pyrite is found as disseminations and on fractures within the rock. Chalcopyrite and molybdenum are found in various portions of the property. They occur in very minor amounts (<.5%) and primarily along fractures. Magnetite is an alteration product and usually confined to zones of strong alteration, most often around the hornblende porphyry dyke.

5) Hornblende (feldspar) Porphyry - is andesitic in composition and contains 15% hornblende phenocrysts that range up to 1 cm in size. Feldspar phenocrysts are present in most of the dyke outcrops and are generally 3-4 mm in size and up to 10% in content. The dyke contains only minor pyrite and is often barren of sulphides.

It is believed that these dykes are feeder zones for upper Bonanza volcanics that are not seen on the property. They are co-magmatic.

6) Island Intrusions - a stock of equigranular granodiorite is present in the north portion of the map sheet. This unit contains xenoliths of a slightly more mafic phase. The mineral assemblage is composed of biotite, feldspar and quartz. No sulphides are present.

STRUCTURE

Four prominent fracture directions are present on the property. They are 020° ; 060° ; 090° ; 130° . These directions are present throughout most of the property and within all the rock units. This indicates a post depositional time period. No evidence exists of major faulting or movement. Dykes are present along the 060° and 130° fracture directions.

The other structural feature noted is the bedding within the Parson Bay sediments. The beds trend $130^{\circ}/-30^{\circ}$ SW.

APPENDIX A
STATEMENT OF COSTS

STATEMENT OF COSTS

Wages - Permanent

40 days @ \$125.00/day	5,000.00
40 days @ \$105.00/day	<u>4,200.00</u>
	9,200.00

9,200.00

Field Supplies

Total Costs

350.00

Room and Board

1,800.00

Gasoline

250.00

Reproduction

100.00

TOTAL COSTS:

\$11,700.00
=====

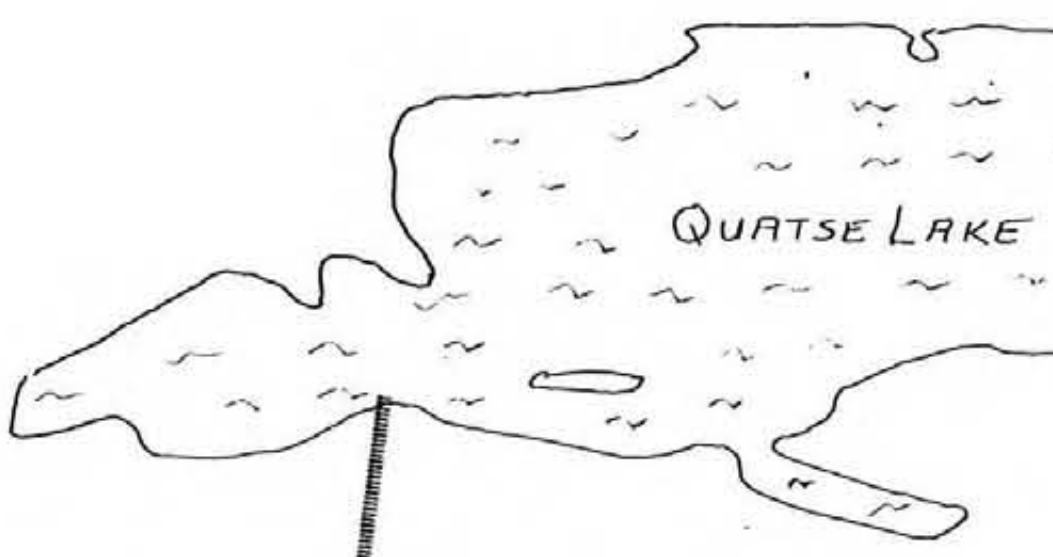
APPENDIX B

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

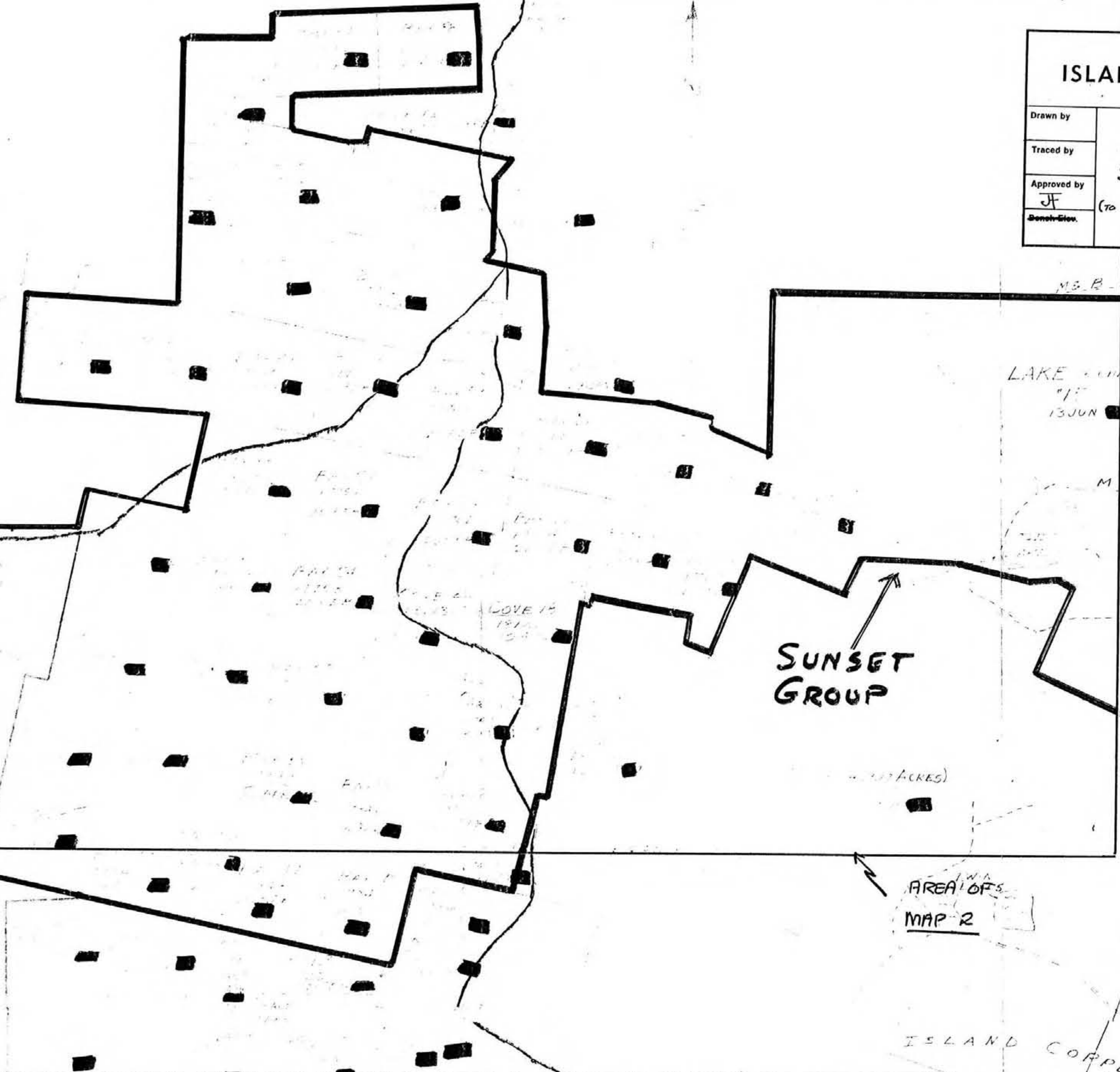
G.L. Holland - Geologist, graduated with a BSc from the University of British Columbia in 1978. Employed as a field assistant from 1973 to 1975 by Noranda Mines Ltd.; as a field assistant from 1976 to 1977 by Utah Mines Ltd; employed as a geologist from 1978 to present by Utah Mines Ltd., Vancouver Exploration office.

Utah Mines Ltd.		
ISLAND COPPER MINE		
Port Hardy, B.C.		
Drawn by	LOCATION MAP SUNSET GROUP	Date
Traced by		JUNE/83
Approved by	(TO ACCOMPANY ASSESSMENT REPORT)	Scale
JF		1" = 1000'
Demolition		Division METRIC 1:12,000
		Dwg. No.
		MAP 1



JUND (15 UNITS)
1224
2 JULY

MIMAS (12 UNITS)
1223
2 JULY



GEOLOGICAL BRANCH
ASSESSMENT REPORT

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M 35 (889.14 ACRES)
L 2146
27 SEP

RUBY & units
#16
13 JUN
SPAM 17 R
23898
7 MAR
SPAM 18 FR.
23899
7 MAR
KEN 16
23881
7 MAR
SPAM 19 FR.
23900
7 MAR
KEN 15
23880
7 MAR

KEN 2
20757
2 OCT

KEN 4
20104
4 OCT

KEN
20206
2 OCT

SPAM 21 R
24505
17 APR

KEN 1
23874
12 MAR

ISLAND COPPER



GEOLOGICAL BRANCH
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11,366

LEGEND:

- HORNBLLENDE(FELDSPAR) PORPHYRY
- BONANZA VOLCANICS - basalt, rhyolite, and other volcanic rocks
- PARSONS BAY SEDIMENTS - shales, limestones
- QUATSINO LIMESTONE
- KARMUTSEN VOLCANICS - basalt, flows

SYMBOLS:

- Road - paved, gravel, trail
- Old Rail Line
- Swamp
- Creek
- River
- Lake
- Mine Access - various, post and pre-war
- Old Bonanza Limestone, and other volcanic rocks
- Bonanza's Contact - probably, post-war
- Fault - zone with dip direction
- Fracture or Zone - strike and dip
- Bedding - strike and dip
- Breccia Flow
- Cut Grid Lines
- Claim Boundary



Utah Mines Ltd.
ISLAND COPPER MINE
Port Hardy, B.C.

Drawn by G. Halland	Traced by G. Halland	Date June 10, 1965	Scale 1" = 400'
GEOLOGY		Revision	Scale: 1:4800 (metric)
		Map No. MAP 2	

11,366
GEOLOGICAL BRANCH
ASSESSMENT REPORT

M 35 (889.4 ACRES)
 L 2146
 27 SEP

SPAM 17R
 23900
 7 MAR

SPAM 19FR
 23900
 7 MAR

SPAM 18FR
 23899
 7 MAR

SPAM 17R
 23938
 7 MAR

SPAM 16
 23881
 7 MAR

SPAM 15
 23880
 7 MAR

SPAM 14
 23879
 7 MAR

SPAM 13
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SPAM 12
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SPAM 2
 23867
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SPAM 1
 23866
 7 MAR

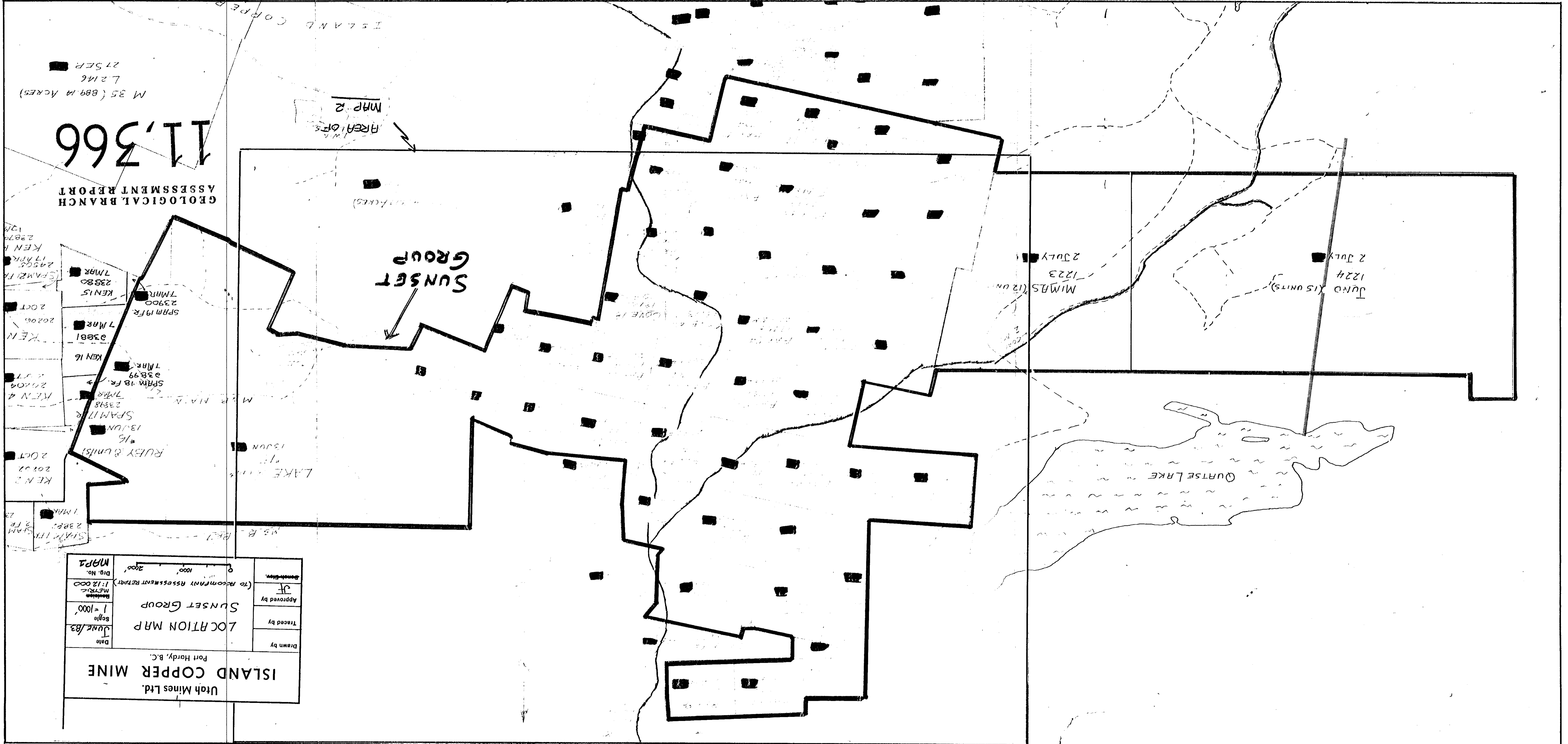
MAP 2
 AREA OF

SUNSET
 GROUP

MIMS (12 UNITS)
 1223
 2 JULY

JUNO (15 UNITS)
 1224
 2 JULY

Utah Mines Ltd. Island Copper Mine Port Hardy, B.C.		Drawn by	
LOCATION MAP		Traced by	
SUNSET GROUP		Approved by	JF
(To accompany Assessment Report)		Checked by	
Scale 1" = 1000'		Drawn by	
Date June/83		Checked by	
Sheet 1 of 1000		Drawn by	
Drawing No. 11,366		Checked by	
Map No. MAP 2		Checked by	





GEOLOGICAL BRANCH
ASSESSMENT REPORT
11,366

LEGEND:

- HORNBLENDE (FELDSPAR) PORPHYRY
- BONANZA VOLCANICS - basalt, rhyolite, andesite, tuffite, and other volcanic products
- PARSONS BAY SEDIMENTS - shales, limestone
- QUATSINO LIVESTONE
- KARMTUSEN VOLCANICS - basaltic flows

SYMBOLS:

- Road - paved, gravel, trail
- Old Rail line
- Swamp
- Creek
- River
- Lake
- Mine access - surface, past old Bonanza - excavation, mine and other areas (lines)
- Bonanza's surface - probable, past line
- Fault zone with dip direction
- Fracture or zone - strike and dip
- Bedding - strike and dip
- Breccia flow
- Cut Grid lines
- Claim boundary



Utah Mines Ltd.
ISLAND COPPER MINE
Port Hardy, B.C.

Drawn by G. Halland	Date June 10, 1965	Scale 1" = 400'
Traced by G. Halland	Revision	Scale 1:4800 (metric)
<p style="text-align: center; font-size: 2em; font-weight: bold;">GEOLOGY</p>		<p style="text-align: right;">Dwg. No. MAP 2</p>