

2133

REPORT ON

GEOCHEMICAL AND GEOLOGICAL SURVEYS

ON THE DEM AND HARD CLAIMS,

VANCOUVER ISLAND,

BRITISH COLUMBIA

FOR PATHFINDER URANIUM & NICKEL MINES LTD.

July 22, 1969

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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2133 MAP.....

REPORT ON GEOCHEMICAL AND GEOLOGICAL SURVEYS ON
THE DEM AND HARD CLAIMS, VANCOUVER ISLAND, B.C.
FOR PATHFINDER URANIUM & NICKEL MINES LTD.

INTRODUCTION:

The Dem and Hard Groups comprise a total of 54 contiguous mineral claims situated immediately south of Rupert Inlet on northern Vancouver Island. Access to the northern edge of the group is by boat from Coal Harbour, 3 miles to the north.

Relief is low throughout the claims area with elevations rising to a maximum of 700 feet above sea level. Heavy timber and thick underbrush occur throughout.

Reconnaissance geochemical, geological and magnetometer surveys were conducted over approximately one-third of the group in 1968 plus minor diamond drilling near on old adit on the property.

During May, 1969 detailed geochemical and geological surveys were conducted in an anomalous area found earlier in the northern portion of the claims and reconnaissance surveys in an area of approximately 9 claims in the northeast corner of the group. The following report describes the results of these surveys.

GEOCHEMICAL SURVEY:

Field Procedures:

Detailed sampling was conducted on a 100 by 100 foot grid pattern on all, or portions of, claims Dem 29, 30 & 32. Lines were established by chain and compass, marked with flagging and stations marked at each sample location. A total of 7 line-miles were sampled in this manner. Samples were collected

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with an auger and taken wherever possible from the horizon immediately underlying the surface humous layer. This commonly consists of a reddish-brown coloured sandy clay or sand.

Notes were made at each sample location regarding soil type, depth taken, vegetation and topography to be used later in interpreting the results.

Reconnaissance sampling was conducted on a 200 by 400 foot grid pattern over approximately 9 claims in the northeastern corner of the property. A 6000 foot long east-west base line was established and 10 line-miles of north-south cross lines, spaced 400 feet apart, sampled at 200 foot intervals. Sampling procedure was the same as that for the detailed survey.

Geochemical Testing:

Samples were packaged in Kraft envelopes and shipped to Chemex Labs Ltd. of North Vancouver for analysis. After drying in an electric oven and screening to - 80 mesh, all samples were tested for total copper content. Extraction was by a perchloric-nitric acid medium with analysis by atomic absorption.

Results of Survey:

Detailed Survey. The detailed survey was conducted in an area where a previous reconnaissance survey had indicated an anomalous zone measuring 2000 feet in a northeasterly direction and up to 500 feet wide.

A plot of the frequency distribution shows that background varies up to 60 ppm copper with a mixed zone from 60-100 ppm and anomalous values above 100 ppm. Several anomalous areas were outlined. One of the largest extends northerly to the shoreline across the creek from the old adit for a length of 700 feet and an average width of 200 feet. Anomalous values also occur near the shoreline immediately northeast of this.

The highest values occur near the west end of line 14 + 00N where a peak value of 2130 ppm copper occurs. Copper mineralization had previously been reported here across a 2 foot width in amygdaloidal andesites.

Anomalous values occur immediately north and south of the base line from 13 + 00N to 24 + 00N. Highs are centered at 15 + 00N; 01 + 00E where values of 150 ppm or greater occur for a length of 300 feet in a north-south direction by approximately 100 feet wide. Additional highs occur on lines 19 + 00N to 21 + 00N in an area measuring 400 feet by 150 feet and near the west end of lines 19 and 20N, and in an area measuring 350 by 100-150 feet on lines 23 + 00N and 24 + 00N. Andesitic rocks occur at one point within the latter and dolomite is reported at the west end of line 22N, immediately north of the larger anomaly. Large areas with greater than 100 ppm copper occur south of these latter anomalies, from 13 + 00N to 23 + 00N but with only isolated values greater than 150 ppm.

Aside from the anomaly at the north end of 14 + 00N no copper mineralization was noted to account for the anomalous values. In general the anomalies exhibit a northerly trend indicating a possible structural control, as opposed to following the regional trend throughout the area.

Reconnaissance Survey. Background values are similar to those in the detailed area. Taking values of 100 ppm or greater as being anomalous, four areas of interest were located. The largest of these trends north-northeast, extending from 28 + 00E, 2 + 00S to 40 + 00E, 14 + 00W. This area has a peak value of 200 ppm copper and averages 300 feet wide. Two additional anomalous areas occur south of this on lines 28 + 00E to 36 + 00E with andesite occurring near the southern-most one. The other, the larger of the two, measures 1000 by 500 feet, having a peak value of 195 ppm copper.

A narrow, northeasterly trending anomaly extends from 16 + 00E, 04 + 00N to 24 + 00E, 10 + 00N. Peak value here is 485 ppm copper, occurring near the shoreline.

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Other anomalous areas consist of only 1 or 2 values and are not considered significant.

GEOLOGY:

Regionally, northern Vancouver Island is underlain by a northwesterly trending series of Triassic volcanics and sediments intruded by several small granitic stocks and sills and capped in places by Cretaceous and Tertiary sediments and volcanics. Triassic volcanics are the most widespread units.

The Dem claims lie astride a contact between limestone of the Quatsino Formation to the west and volcanics of the Karmutsen Formation to the east. Initial reconnaissance work has been conducted along this contact near which copper mineralization had previously been explored. The more recent work was conducted east of the main contact in an area underlain essentially by andesitic to basaltic volcanics.

Outcrops are very scarce, especially in the region of the detailed geochemical survey where it is confined mainly to the shoreline. Where noted the volcanics consist mainly of andesitic and basaltic flows, generally dark green and commonly amygdaloidal. Cherty dolomite was noted at one point along the shoreline near the end of 22 + ODN.

Attitudes are difficult to determine although the volcanics appear to trend northwesterly dipping moderately to steeply northeast. Most prominent jointing directions are north or slightly east of north, dipping steeply west or vertical. A strong west-northwest trending lineation possibly indicative of a fault passes through the northeast corner of the reconnaissance grid.

CONCLUSIONS AND RECOMMENDATIONS:

Detailed geochemical soil sampling has confirmed the presence of anomalous copper values, as

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indicated by the previous reconnaissance work, and more closely outlined the highs.

Copper mineralization has been found associated with only one anomalous area. Cause of the remaining anomalies has not been determined. Most anomalies exhibit a northerly trend, similar to the main jointing direction indicating they may be controlled by this.

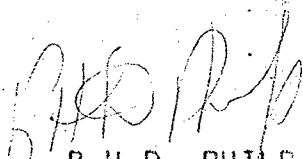
Reconnaissance soil sampling in the northeast corner of the property has indicated 4 anomalous areas warranting detailed investigation.

Both areas investigated by soil sampling appear to be essentially underlain by andesitic and volcanic flows of the Karmutsen Formation. Limestone and dolomite lenses may also be present.

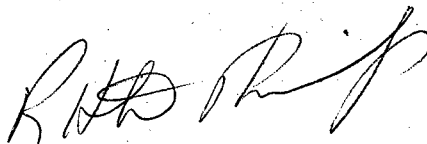
Future work should consist of investigating the main detailed geochemical anomalies by trenching or drilling with a small X-ray drill, the latter the most feasible due to the terrain. A minimum of 6 holes varying up to 100 feet in length should be considered.

Following this, detailed surveys should be considered for the anomalous area indicated by the reconnaissance work to the east.

Respectfully Submitted,



R.H.D. PHILP, P.Eng.



AGILIS EXPLORATION SERVICES LTD.

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ADDENDUM TO REPORT

DATED JULY 22, 1969

on

GEOCHEMICAL AND GEOLOGICAL SURVEYS

on the

DEM AND HARD CLAIMS, VANCOUVER ISLAND, B.C.

for

PATHFINDER URANIUM & NICKEL MINES LTD.

December 30, 1969

ADDENDUM TO REPORT

DATED JULY 22, 1969

on

GEOCHEMICAL AND GEOLOGICAL SURVEYS

ON THE DEM AND HARD CLAIMS, VANCOUVER ISLAND, B. C.

for

PATHFINDER URANIUM & NICKEL MINES LTD.

INTRODUCTION

The Dem and Hard Groups consist of 54 contiguous mineral claims on the south shore of Rupert Inlet on northern Vancouver Island, British Columbia.

In 1968, reconnaissance geochemical, geological, and magnetometer surveys were conducted over approximately 1/3 of the claims plus minor diamond drilling. This was followed by detailed surveys in an anomalous area located earlier plus further reconnaissance geological and geochemical surveys in the northeast corner of the group, and reported on earlier.

Subsequent to this, trenching was conducted to explore a known copper occurrence in the previously detailed area and detailed soil sampling was conducted in two anomalous areas indicated by the previous reconnaissance survey.

GEOCHEMICAL SURVEYS

Field Procedures:

Field procedures were similar to those used in the earlier surveys and are repeated here to satisfy requirements for assessment reports. Samples were taken at 100 foot intervals on intermediate lines between those

established during the reconnaissance survey, which were 400 feet apart. Lines were established by chain and compass and marked by flagging. Samples were collected with an auger and taken from the horizon immediately underlying the surface humus layer. This generally consists of a reddish-brown sandy clay or sand.

GEOCHEMICAL TESTING

Samples were packaged in kraft envelopes and shipped to Chemex Labs Ltd of North Vancouver for analysis. After drying in an electric oven and screening to #80 mesh, all samples were tested for total copper content. Extraction was by a perchloric-nitric acid medium with analysis by atomic absorption.

RESULTS OF SURVEY

West Anomaly:

The reconnaissance survey had indicated a narrow, northeast trending anomalous area in the north portion of lines 16 + 00E to 24 + 00E. Fill-in sampling failed to substantiate this, indicating the previous high copper values on the reconnaissance grid are isolated highs and do not form a continuous anomalous zone.

East Anomaly:

Anomalous values were found by the reconnaissance survey in a northerly trending zone, mainly on line 36 + 00E, north of the base-line.

Sampling on adjacent lines generally substantiated this, with the highest values occurring to the west on line 34 + 00E, where a peak value of 426 ppm copper was obtained. The main anomalous zone with values of 100 ppm copper or greater measures 800 feet in a north-northeast direction by an average of 300 feet wide. This joins a narrow northeast trending anomalous zone approximately 900 feet long to the south.

No outcrop was noted in the anomalous area, a portion of which consists of swampy ground. The nearest outcrops consist of andesitic volcanics typical of the Karmutsen Formation.

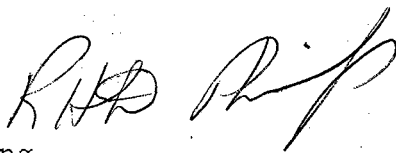
CONCLUSIONS AND RECOMMENDATIONS

Detailed soil sampling in two areas has indicated that one contains erratic high copper values that do not form a significant anomalous zone. Sampling in the other substantiated earlier reconnaissance results and more closely outlined an anomalous area warranting further investigation. No copper mineralization or outcrops were noted in the anomalous area to account for the high copper values.

Trend of the main anomalous area follows the principal jointing direction suggesting it may be caused by copper mineralization associated with fracturing or possible faulting, a condition common in the volcanics in the region.

The anomalous area should be investigated by trenching or drilling with an X-Ray drill in conjunction with similar testing of anomalous areas previously outlined to the west.

Respectfully submitted,



R. H. D. Philp, P. Eng.,

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
To Wit:

In the Matter of the Geochemical and Geological Surveys on the Dem Claims, northern Vancouver Island, British Columbia.

I, RONALD H. D. PHILP,

of 201-714 West Hastings Street, Vancouver 1, B. C.

in the Province of British Columbia, do solemnly declare that the following personnel were employed and costs incurred in conducting the surveys during the periods May 14-30, September 19-25, 1969.

PERSONNEL

R. Kirk, party chief - 12 days @ \$34.00/day	\$ 408.00	
C. Temple, labor - 12 days @ \$30.00/day	360.00	
J. Block - labor - 12 days @ \$30.00/day	360.00	
J. Hunyadi, labor and party chief - 14 days @ \$40.00/day	560.00	
M. Webb, labor = 4 days @ \$30.00/day	120.00	
S. Albert, labor - 4 days @ \$34.00/day	136.00	
B. Mottershead, geologist - 6 1/2 days @ \$75.00/day	487.50	
R. Philp, supervision, report preparation - 4 days @ \$100.00/day	400.00	
L. Marsh and K. Kikegawa - plotting, drafting - 45 hours @ \$5.00/hour	225.00	
		\$ 3,056.50

DISBURSEMENTS

Meals and accommodation	\$ 630.00	
- 63 man days @ \$10.00/day		
Geochemical testing	730.36	
Water taxis and boat rental	276.00	
Ground transportation - truck rental and gas - 2 weeks @ \$10.00/day	140.00	
Equipment and supplies freight	250.00	\$ 2,026.36

+ 10% Service Charge 202.64

TOTAL COSTS \$ 5,285.50

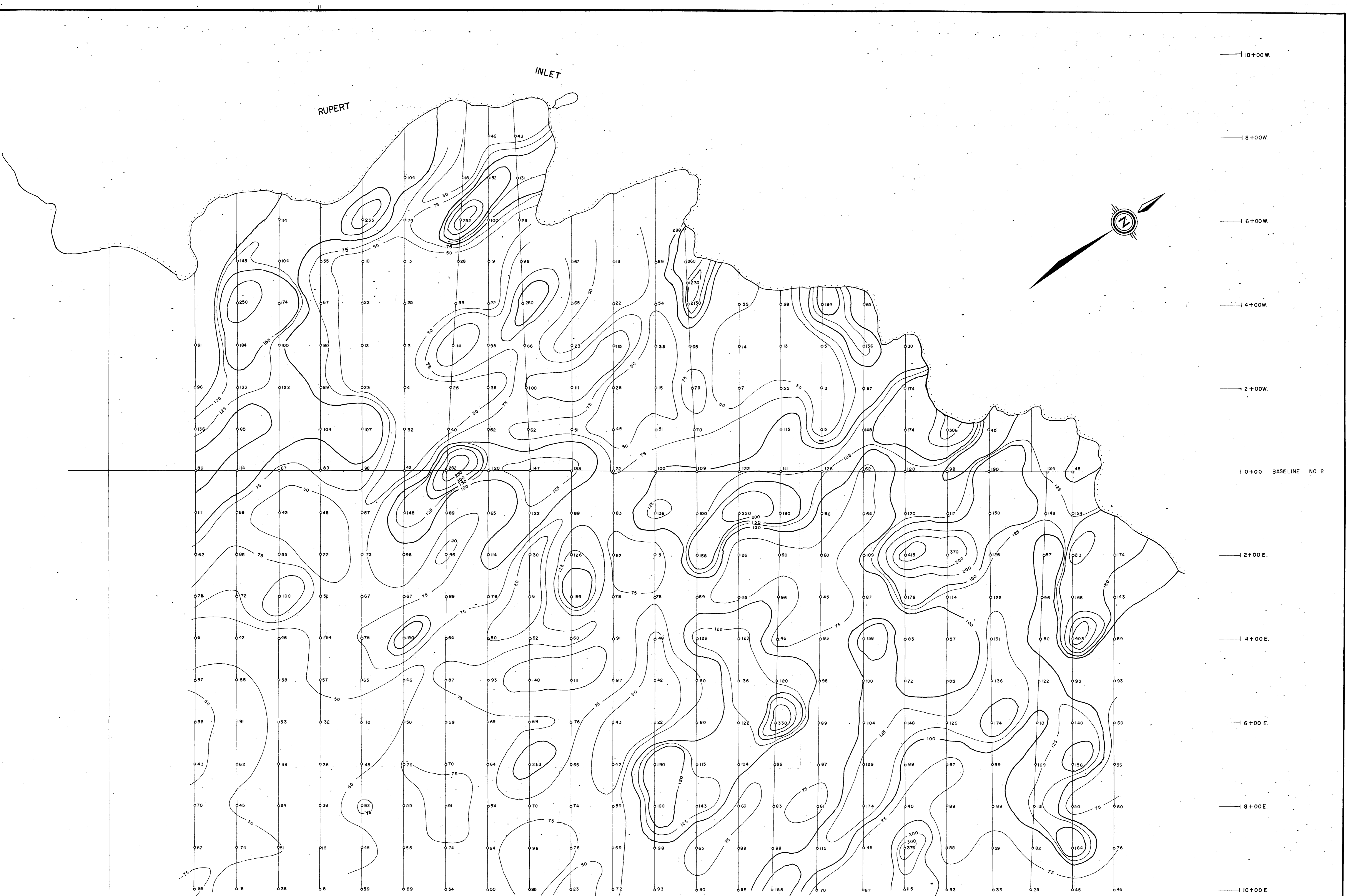
And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 7
day of Jan. 1970, A.D.

Jill Surman
Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

In the Matter of

Statutory Declaration
(CANADA EVIDENCE ACT)



BASELINE NO. 1
0+00

2+00N

4+00N

6+00N

8+00N

10+00N

12+00N

14+00N

16+00N

18+00N

20+00N

22+00N

24+00N

10+00W
8+00W
6+00W
4+00W
2+00W
0+00 BASELINE NO. 2
2+00E
4+00E
6+00E
8+00E
10+00E

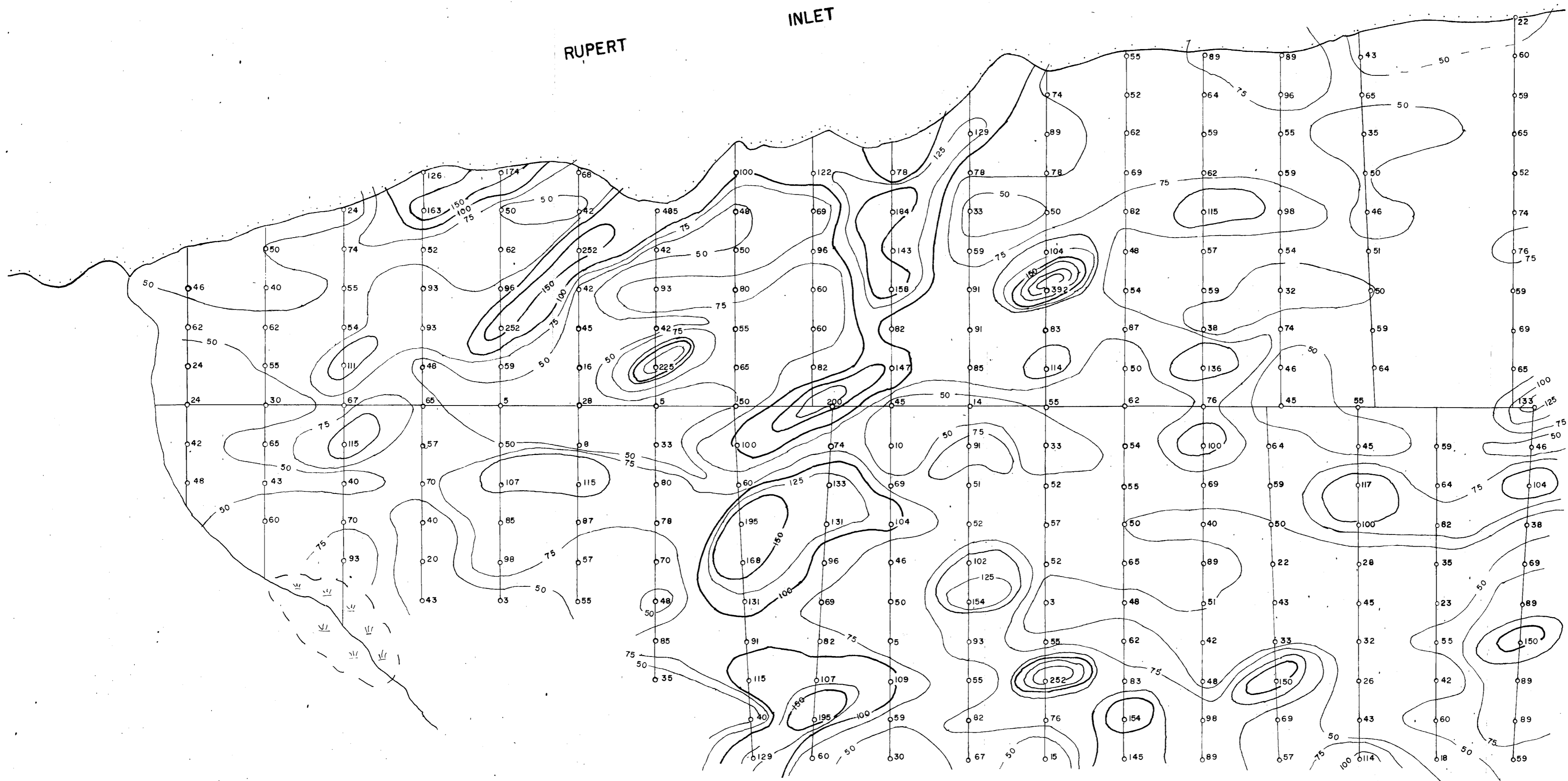
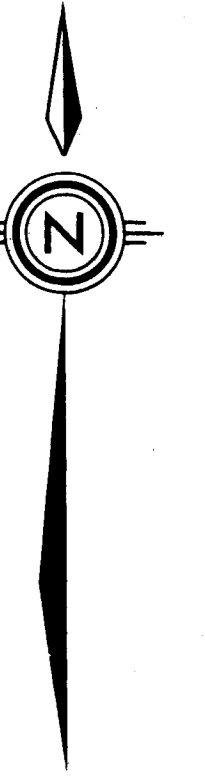
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2133 MAP #2

LEGEND

20
— 50 —
— 100 —
COPPER VALUE in ppm.
COPPER CONTOUR in ppm.

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AGILIS EXPLORATION SERVICES LTD.
PATHFINDER URANIUM &
NICKEL MINES LTD.
HARDY MINERALS PROPERTY
GEOCHEMICAL SURVEY
(Detailed Area)
DRAWN BY L.M. SCALE: 1" = 100'
CHECKED BY R.P. DATE: June, 1969



— 20 + 00 N.
 — 16 + 00 N.
 — 12 + 00 N.
 — 8 + 00 N.
 — 4 + 00 N.
 — 0 + 00 BASELINE
 — 4 + 00 S.
 — 8 + 00 S.
 — 12 + 00 S.
 — 16 + 00 S.

0 + 00
 4 + 00 E.
 8 + 00 E.
 12 + 00 E.
 16 + 00 E.
 20 + 00 E.
 24 + 00 E.
 28 + 00 E.
 32 + 00 E.
 36 + 00 E.
 40 + 00 E.
 44 + 00 E.
 48 + 00 E.
 52 + 00 E.
 56 + 00 E.
 60 + 00 E.
 64 + 00 E.
 68 + 00 E.

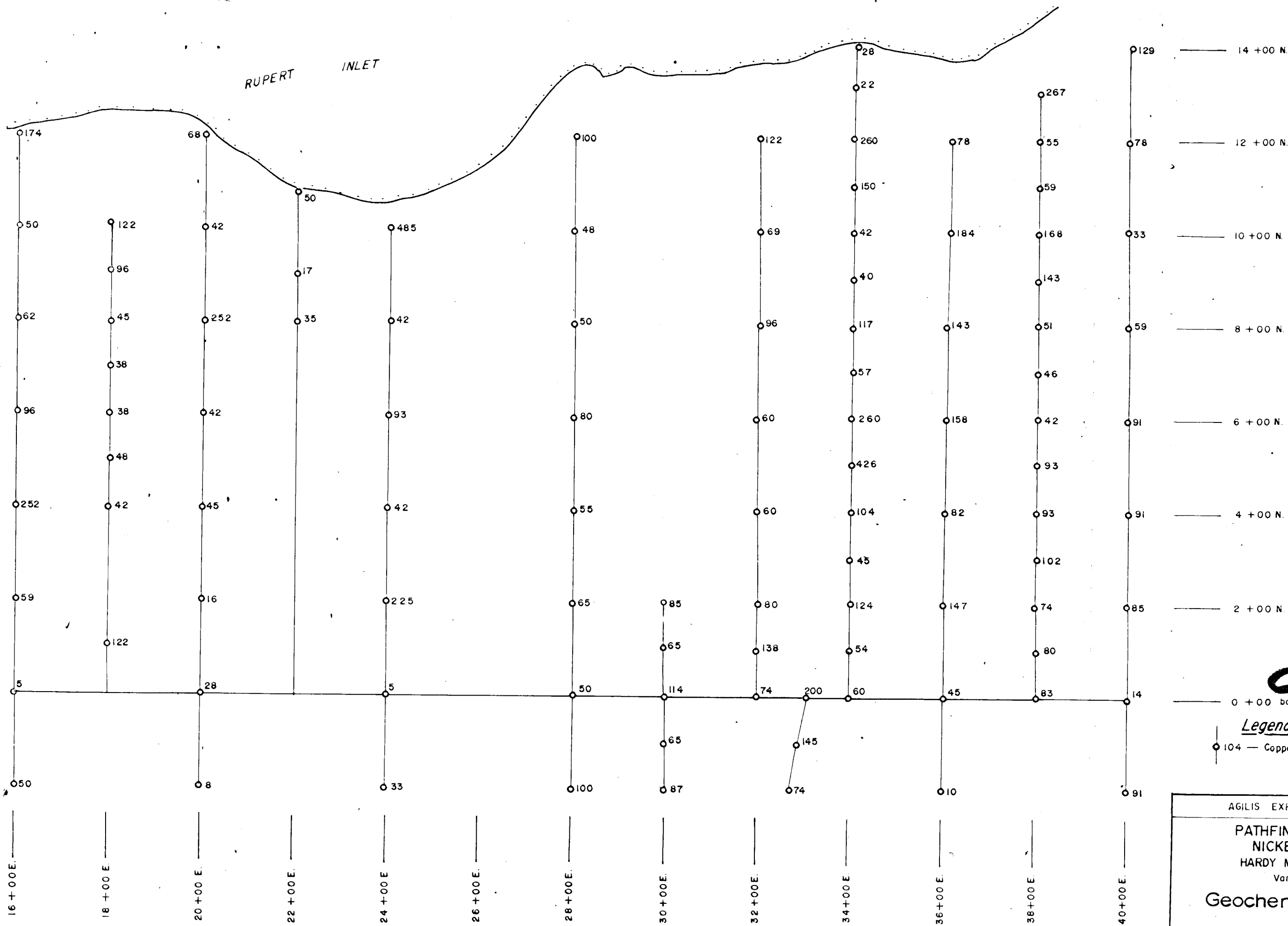
2133

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. **2133** MAP # **4**

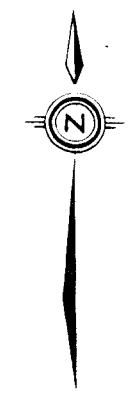
LEGEND
 COPPER VALUE in ppm. — 40
 COPPER CONTOUR in ppm. — 100

AGILIS EXPLORATION SERVICES LTD.
 PATHFINDER URANIUM &
 NICKEL MINES LTD.
 HARDY MINERALS PROPERTY
 VANCOUVER ISLAND B.C.
 GEOCHEMICAL SURVEY
 (Reconnaissance)
 DRAWN BY: L.M. SCALE: 1" = 400'
 CHECKED BY: R.P. DATE: July, 1969

RUPERT INLET

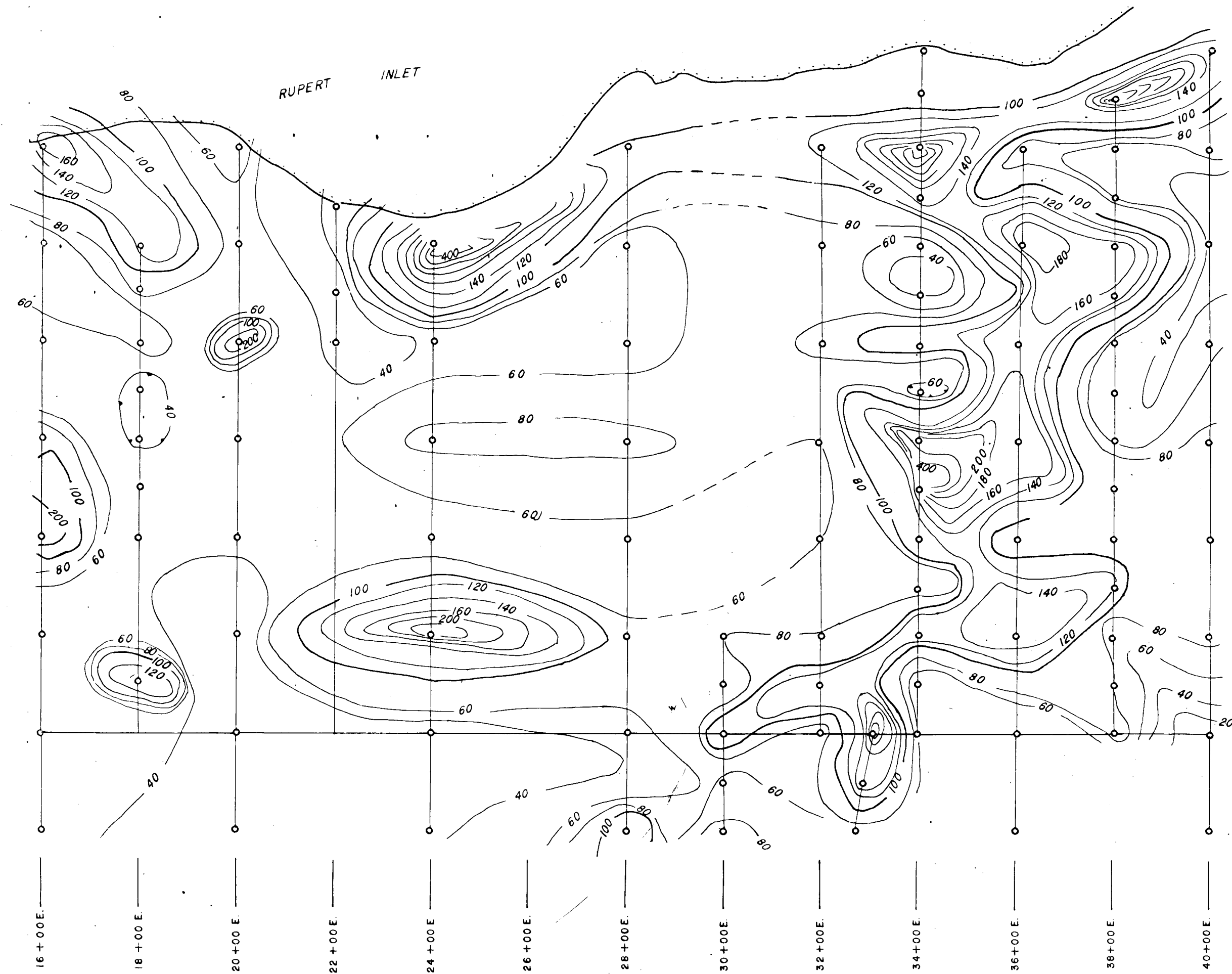


2133



Legend
 ○ 104 — Copper value in ppm.

AGILIS EXPLORATION SERVICES LTD	
PATHFINDER URANIUM & NICKEL MINES LTD. HARDY MINERALS PROPERTY Vancouver Island B.C.	
Geochemical Survey	
DRAWN BY: L.M.	SCALE: 1" = 200 feet
CHECKED: R.P.	DATE: November, 1969.



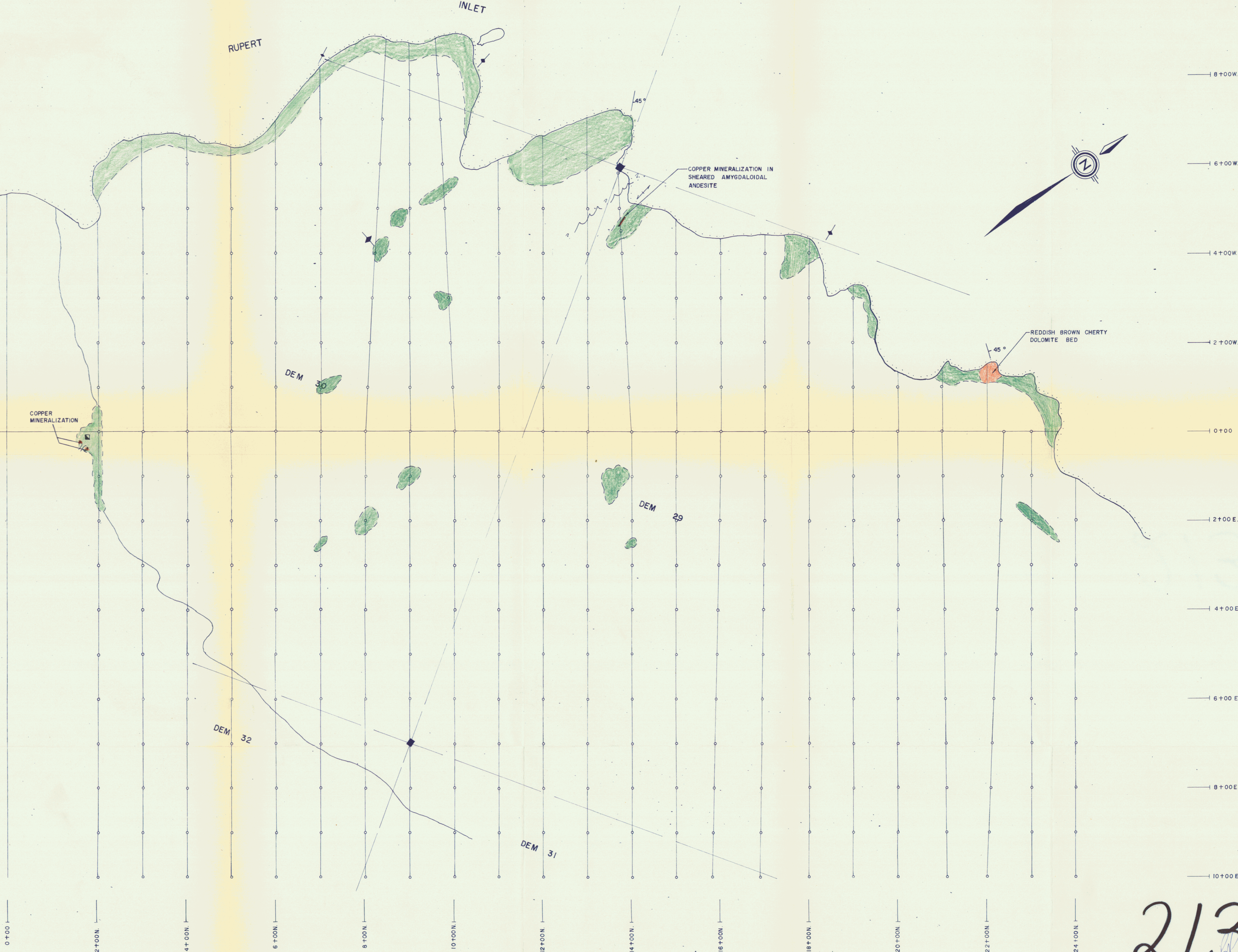
- 14 + 00 N.
- 12 + 00 N.
- 10 + 00 N.
- 8 + 00 N.
- 6 + 00 N.
- 4 + 00 N.
- 2 + 00 N.
- 0 + 00 baseline.

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Legend

— 80 — Copper contour (interval - 20 ppm)

AGILIS EXPLORATION SERVICES LTD	
PATHFINDER URANIUM & NICKEL MINES LTD. HARDY MINERALS PROPERTY Vancouver Island B.C.	
Geochemical Survey CONTOUR MAP	
DRAWN BY: L.M.	SCALE: 1" = 200 feet
CHECKED: R.P.	DATE: November, 1969.



0+00
 2+00N
 4+00N
 6+00N
 8+00N
 10+00N
 12+00N
 14+00N
 16+00N
 18+00N
 20+00N
 22+00N
 24+00N

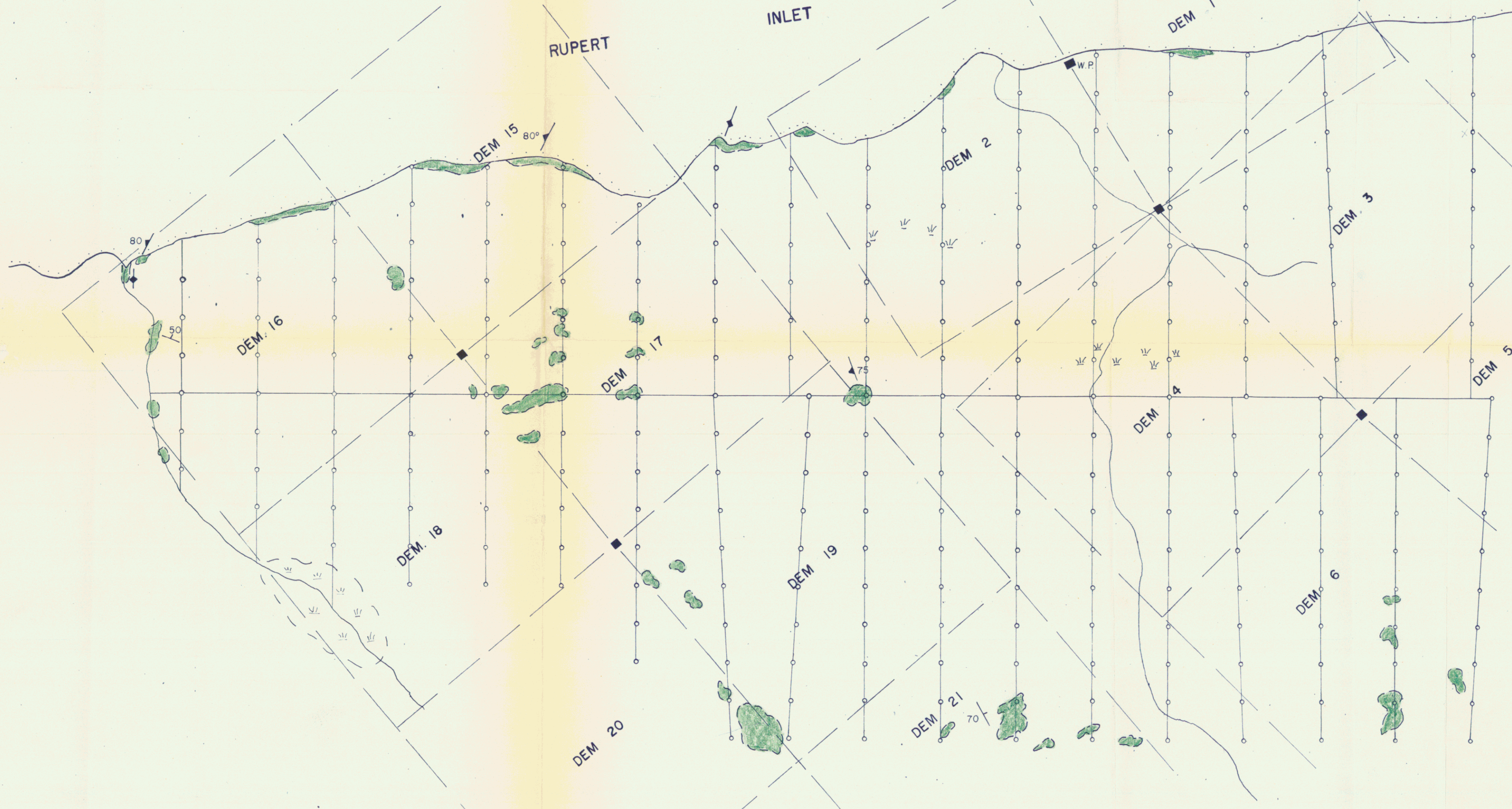
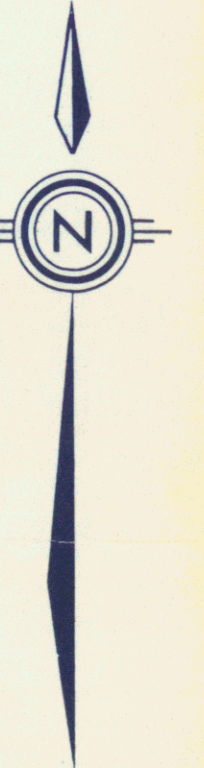
0+00 BASELINE NO. 2
 2+00E
 4+00E
 6+00E
 8+00E
 10+00E

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Department of
 Mines and Petroleum Resources
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 NO. 2133 MAP #1

LEGEND
 STRIKE & DIP (JOINTING)
 STRIKE & DIP (BEDDING)
 OUTCROP (Andesite - Basalt)
 CLAIM POST

AGILIS EXPLORATION SERVICES LTD.
 PATHFINDER URANIUM &
 NICKEL MINES LTD.
 HARDY MINERALS PROPERTY
 SURFACE PLAN & GEOLOGY MAP
 (Detailed Area)
 DRAWN BY L.M. SCALE 1" = 100'
 CHECKED BY R.R. DATE June, 1969



20+00 N.
 16+00 N.
 12+00 N.
 8+00 N.
 4+00 N.
 0+00 BASELINE
 4+00 S.
 8+00 S.
 12+00 S.
 16+00 S.

0+00
 4+00E
 8+00E
 12+00E
 16+00E
 20+00E
 24+00E
 28+00E
 32+00E
 36+00E
 40+00E
 44+00E
 48+00E
 52+00E
 56+00E
 60+00E
 64+00E
 68+00E

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Department of
 Mines and Petroleum Resources
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 NO. 2133 MAP #3

LEGEND
 OUTCROP (Andesite - Basalt)
 SWAMP
 STRIKE & DIP (JOINTING)
 STRIKE & DIP (BEDDING)
 CLAIM POST

AGILIS EXPLORATION SERVICES LTD.
 PATHFINDER URANIUM &
 NICKEL MINES LTD.
 HARDY MINERALS PROPERTY
 VANCOUVER ISLAND B.C.
 SURFACE PLAN & GEOLOGY MAP
 (Reconnaissance)
 DRAWN BY: L.M. SCALE: 1" = 400'
 CHECKED BY: R.P. DATE: July, 1969