MAR 19740005: NORTHEAST ALBERTA

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19740005

REPORT ON

THE NORTHEAST ALBERTA PROJECT

of

AQUARIUS MINES LTD.
100 - 10975 - 124th Street
Edmonton, Alberta

INTRODUCTION

On July 3, 1974 the writer, Joseph Sullivan, P. Eng., was retained by Aquarius Mines Ltd., to research and supervise their prospecting project on Quartz Mineral Permits (Project Area) in Northeast Alberta. Others involved in the field operation are listed in the Appendix of this report.

July 3rd to July 8th, inclusive, were spent in Edmonton mobilizing men and equipment for the oncoming field season. During the same period some research was done through the engineering data supplied from the files of Aquarius Mines and through information obtained from publications of The Research Council of Alberta.

The field period began July 9, 1974 and was continuous through to September 5, 1974.

SUMMARY AND CONCLUSIONS

The Aquarius Project Area in Northeastern Alberta is underlain by a geological environment that favours the localization of radioactive deposits. These tend to localize in folded, pegmatitic metasadiments and in tension fractures close to the major faults. Many of this year's finds were old discoveries but it is obvious that new discoveries can be made and that the area has not been thoroughly prospected before.

The writer feels that the prospecting phase should be continued for at least one more season and should be stepped-up to include reconnaissance geochemistry as an aid to locating deposits of molybdenum, copper, and gold. In addition, the program is in need of more and better controlled detailed mapping in conjunction with detailed surface and diamond drill sampling.

PROPERTY LOCATION

(Latitude 59 51', Longitude 110 10')

The property lies in the extreme northeast corner of Alberta known locally as the Andrew Lake district. The above mentioned geographical co-ordinates are close to the center of the Permit. The 1974 base camp was located in the southerly portion of the Permit on the west shore of Andrew Lake in Bonny Fault Bay. Norcanair Air Charter Services at Uranium City, Saskatchewan had the camp location as 59 airmiles west of their base at Martin Lake.

A location sketch (Figure 1) follows this page.

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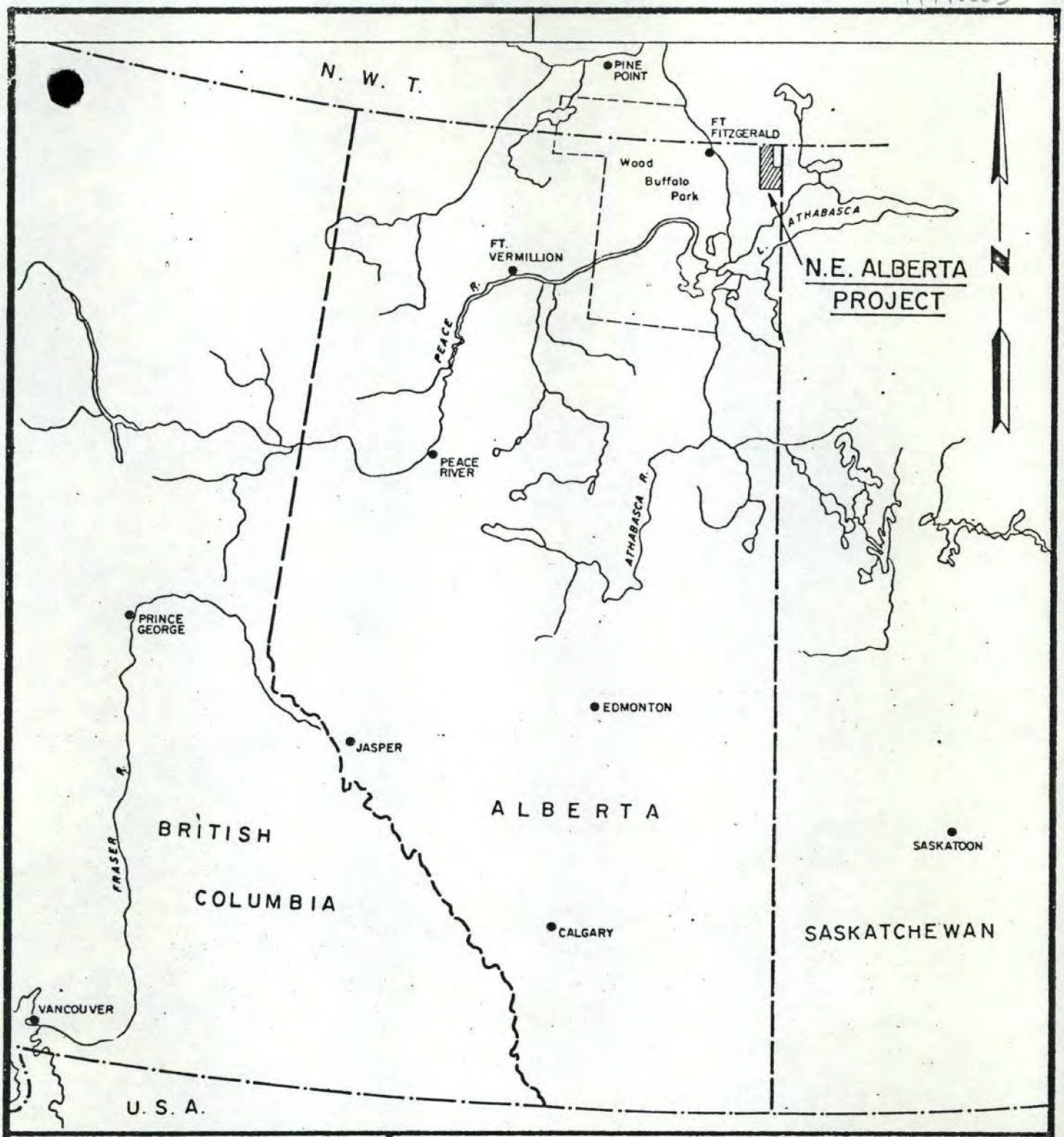
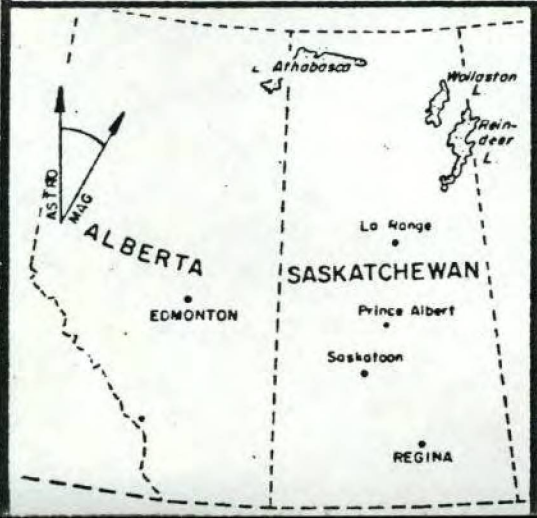




AQUARIUS MINES LTD.

LOCATION MAP

N. E. ALBERTA PROJECT

150 0 150 300

APPROXIMATE SCALE IN MILES

SEPTEMBER 1974

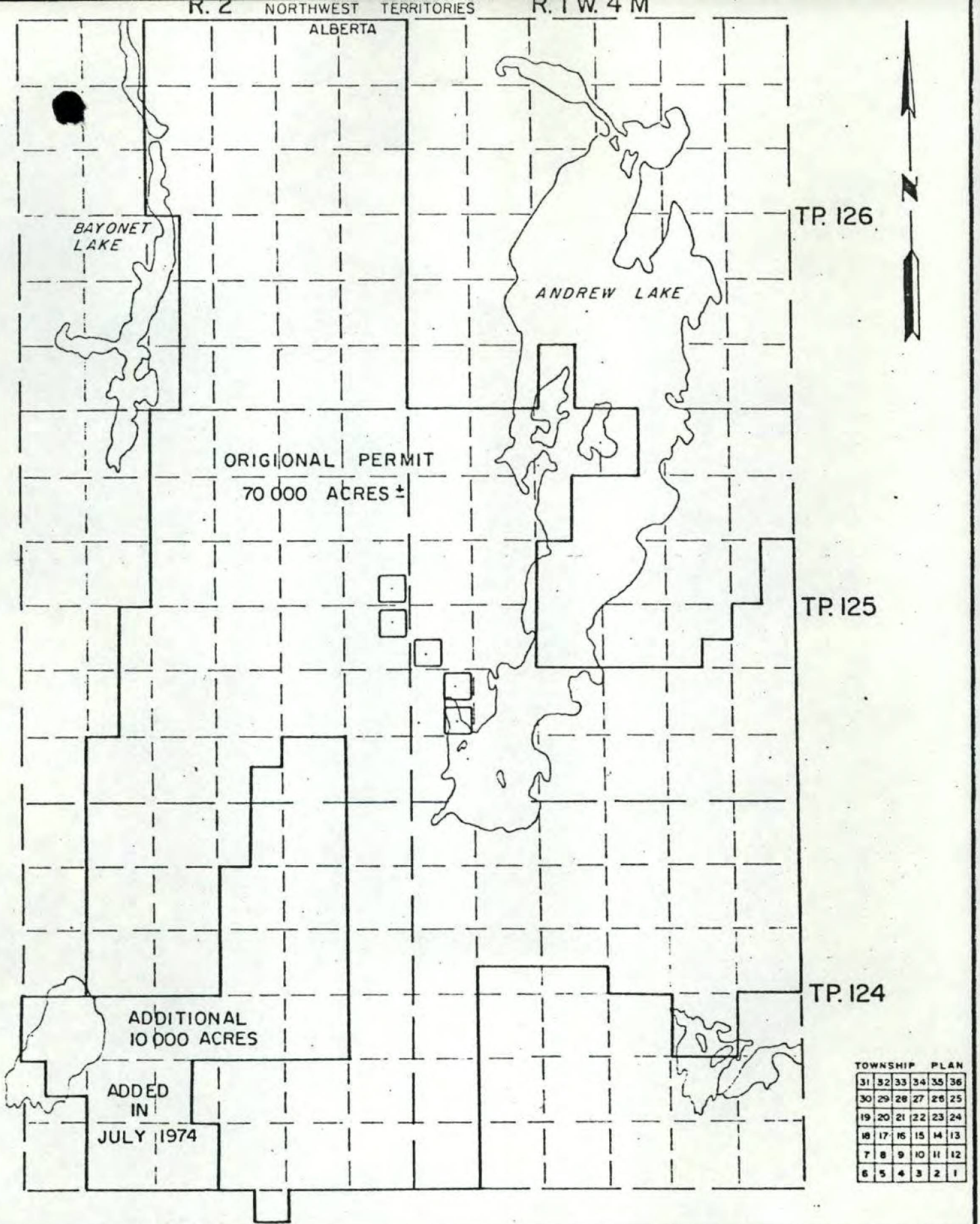
FIGURE 1.

PROPERTY AND OWNERSHIP

Aquarius Mines Ltd., has been granted 3 Quartz Mineral Exploration Permits (Project Area) in Northeast Alberta as follows:

Quartz Mineral Permit #182 dated July 18, 1974
Quartz Mineral Permit #183 dated July 18, 1974
Quartz Mineral Permit #184 dated August 23, 1974

The above permit areas are collectively called the Project Area (Fig. 2) and were explored as a single project during the 1974 program.



AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	QUARTZ MINERAL PERMITS	GENERAL OUTLINE
1" = 2 miles.	Sept. 1974	FIGURE 2.

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HISTORY

Activity was continuous in the southerly portion of this permit from 1968 until 1971. McIntyre Porcupine Mines Ltd. held the ground as the New Senator-Rouyn Option during 1968 and 1969. They conducted an aerial radiometric survey and did follow-up work involving prospecting, geological mapping, surface blasting and sampling, and surface diamond drilling.

Hudson's Bay Oil and Gas Co. Ltd. held the ground as Alberta Quartz Mineral Permits No's. 24, 25, and 26 during 1970 to 1971, and still hold ground covering the Cherry Lake area. They combined an aerial radiometric survey with aeromagnetics and aero-electromagnetic surveys. Their follow-up work included prospecting, geological mapping, surface sampling, with a minimal amount of diamond drilling.

Both these projects have been filed for assessment work with the Research Council of Alberta in Edmonton as:

New Senator-Rouyn Option, Thorpe, W.H. Feb. 1969

Quartz Mineral Permit 24, 25 and 26, Burgan, E.C. Feb, 5, 1971.

FIELD PROCEDURES AND COMPILATION OF DATA

In brief, the scheme proposed was scintollometer prospecting with an "open eye" for other economic minerals, and a geologist to check any interesting discoveries. For this purpose the camp was equipped with six sound scintillometers.

The scheme as imparted to the prospector by the writer was that the prospector traverse an area slowly during reconnaissance and, if his scintillometer records readings several times greater than background then a radioactive deposit may be indicated. He must be aware also that the counting rate will vary within the area depending on soil coverage, topography, or the presence of a large mass of rock such as a granite bluff. In spite of the traps the prospector may feel justified in taking a closer look, he may take outcrop readings and samples for field and laboratory assay at intervals as close as five feet.

Generally, the closer look was the geological checking and examination done by the writer.

Besides the scintillometers, the prospectors were equipped with good airphoto coverage and good geological base maps as produced by Dr. J.D. Godfrey of the Research Council of Alberta. All their traverses and anomalous readings were plotted on the same scale as the base maps (2" = 1 mile) and have been reproduced as Figures 3 and 4 in this report.

Other information used in this compilation is acknowledged under "References" on page 16. Some of this data has been incorporated into a second set of plans, Figures 5 and 6, to give the reader a planimetric view of the general geology and other engineering information in the areas of chief interest.

GENERAL GEOLOGY

Dr. J. D. Godfrey in both his above mentioned publications and private discussion reports that the rocks in the Andrew Lake district are Precambrian in age. Rock types fall into three groupings: granites and granite gneisses; quartzite, biotite-sericite schists, conglomerate, and slate; and, porphyroblastic schists grading into porphyritic grey granite. Most of the rocks observed by the writer were small bodies of pink or grey granite, granite gneiss, quartzite, biotite-sercite schist, and pegmatite. It is Dr. Godfrey's contention that this is a migmatic environment arrived at by granitization of sediments with the production of a pasty viscous mass possessing some magmatic characteristics.

The general trend of the gneissosity and schistosity is steep and to the north and may dip to the east or west. Metamorphism is so intense that sedimentary remnants exhibit no primary structures other than a light and dark grey banding. In his 1961 report Dr. Godfrey writes, "The major faults in the district are of regional dimensions and may either transect the strike of the rocks, generally to the northwest, or parallel the strike."

MINERALIZATION

Small brown and yellow gossens paralleling the schistosity are common in the metasediments. Pyrite is generally the feature sulphide in these zones but arsenopyrite and pyrrhotite may be present.

Zones of high radioactivity are sometimes associated with minor chalcopyrite and/or molybdenite. Limonite and the yellow oxides of uranium and molybdenum may be present but, on occasion, the activity has no apparent mineral associates.

Radioactivity is common to areas of brecciation containing red hematite alteration and chloritization, also to biotite concentrations in grey to pink pegmatite and biotite rich zones in the metasediments.

AREAS OF CHIEF INTEREST (See Figures No's. 5 and 6)

These areas are numbered chronologically from north to southeast and not in order of importance.

Area 1:

The prospector described this discovery as a knob of metasediments about 200 feet in diameter outcropping in the muskeg. Time did not permit the writer to make a visit to the spot but it is interesting in that it

is the largest number of readings found in so small an area in the Dumbell Lake district. A specimen of rusty, chloritized, quartz-biotite schist brought in by the prospector assayed: Au Tr. O/T U_3O_8 .002

Area 2:

The writer made a brief visit to this area on August 27th. The topography here has an east-west trend on the west side of the Bonny Fault indicating the existence of a series of subsidiary faults or tension breaks.

The work of two prospecting parties traversing at different times showed that radioactivity increased in the area about ½ mile west and southwest from the southerly tip of Holmes Lake. Both the 7,000 cps readings and the 8,000 cps readings are on low east-west scarps where the down faulted sides are covered by overburden. A small specimen of metasedimentary rock taken from the 8,000 cps locality assayed: U_3O_8 .266%

Area 3:

Here the radioactivity lies over an area about 800 feet wide and 800 feet long. Thirty readings ranged from 500 to 4,500 cps giving an average of 870 cps, or nine times the background for that area. The underlying rock, where exposed, is pegmatitic and probably is derived from the remobilization of the surrounding metasediments.

Area 4: (See Figures 8 and 9)

The writer has referred to this area as the second narrows and Hutton Lake Fault discoveries. The northerly portion lies immediately west of the Hutton Lake fault where anomalous readings tend to cluster around tight folds and disruptions in a northeast trending band of quartz-biotite schist. The discovery was made on the north shore of a long embayment of Andrew Lake Arm north of the second narrows and was traced northerly for 1,800 feet. The pace and compass sketch map (Figure 8) made by the writer indicates that radioactivity is discontinuous along the 1,800 feet and that the discovery is composed of a number of small radioactive centers.

South, on the north shore of the second narrows, two small pits have been blasted into an area of northerly trending fractures and brecciation. A two foot width of red hematite alteration with lesser amounts of yellow autunite appears to be the chief center of radioactivity moving the scintillometers up to readings of 4,500 and 5,000 counts per second.

Area 5: (Figure 9)

On the north shore of Andrew Lake Arm about 500 feet east of the third narrows a 2,200 foot zone of pegmatitic metasediments strike northeast on a similar trend to the second narrows zones. Every rock outcrop gave anomalous radioactive readings indicating some continuity along strike. At no point was the actual width exposed but it is guesstimated to the under 25 feet.

Two grab samples taken from the southerly rock cuts assayed:

No.	U_3O_8	ThO_2
383	.006	N/R
386	.006	N/R

Area 6: (Figure 10)

The metasediments at Spider Lake contain a zone of high radioactivity. The deposit appears to be structurally controlled by an anticlinal fold plunging moderately into the north end of the lake. The uranium-molybdenum mineralization is likely in pendil shaped deposits at the apex of drag-folds that plunge sub-parallel to the larger anticline. The McIntyre-Porcupine Company drilled two core holes under the more radioactive surface exposures with disappointing results. These two holes have been plotted by the writer on Figure 10.

J. D. Godfrey in his 1958 report (58-4, page 7) reports having taken three grab samples "from the highly radioactive zone". His assay results were as follows:

Sample No.	U_3O_8%	Mo %
JG 58-44 1A	1.03	0.69
JG 58-44 1B	3.93	1.03
JG 58-44 1C	3.29	1.40

Area 7:

This is the Carrot Lake deposit discovered by Hudson's Bay Oil and Gas and reported by E.C. Burgan in his 1971 assessment report. His information discloses that much of the zone reads 20 times background with two, 5 foot surface samples assaying: U_3O_8, 0.5% and 0.49%

ADDITIONAL CONSIDERATIONS (Figures 5 and 6)

The airborne electromagnetic and radioactive anomalies outlined on Figures 5 and 6 were transposed to those sheets by sketching from the report of E. D. Burgan, 1971. It is possible that the ground follow-up was never completed for not all the anomalous areas were reported on. There is mention however that anomaly No. 1 in the Waugh Lake area contains pyrite, pyrrhotite and minor chalcopyrite.

RECOMMENDATIONS

The second year should see at least two two-man prospecting teams continuing the 1974 program and being guided by the geology and geophysical information on hand. Closer examination is needed, in the seven areas selected by the writer on Figures 5 and 6, in the way of surface mapping and sampling, and also in new areas selected by the new prospecting teams.

A light packsack style diamond drill should be on hand with a driller-miner team to take near surface samples and drill short blast holes for surface rock cuts. As the various phases progress the company would be in a position to intelligently select areas for deeper diamond drilling.

Respectfully submitted,

[redacted]

Jos. Sullivan, P.Eng.

APPENDIX

Aquarius Mines Ltd. Personnel for the Northeast Alberta Project Field Season from July 9th to September 5th, 1974

Name		Period From 1974	To 1974
Joseph Sullivan Burnaby 1, B. C.	Geological Engineer	July 9	Sept. 5
Geogre Beyko Surrey, B. C.	Prospector	July 9	July 18
Ben Alexander Edmonton, Alta.	Prospector	July 11	Sept. 4
George Mathew Edmonton, Alta.	Prospector	July 9	Sept. 4
William Kennedy Rocky Mountain House, Alta.	Prospector	July 9	Sept. 4
Alexander McNiven Calgary, Alta.	Prospector	Aug. 5	Aug. 28
David Lyons Calgary, Alta.	Prospector	Aug. 5	Sept. 4
K. Warren Geiger Rocky Mountain House Alta.	Consulting Geologist	July 30 Sept. 5	July 31

REFERENCES

Godfrey, J.D., 1958: Mineralization in the Andrew, Waugh and Johnson Lakes Area, Northeastern Alberta; Research Council of Alberta, Preliminary Report 58-4

1961: Geology of the Andrew Lake, North District; Research Council of Alberta, Preliminary Report 58-3

1963: Geology of the Andrew Lake, South District; Research Council of Alberta, Preliminary Report 61-2

Geiger, K. W., 1969: Report on the Initial Three Phase Exploration Program Mineral Claims 148-153, Northeastern Alberta; Rapid River Resources Ltd.

1969: Preliminary Geological Exploration of Permit 115 Northeastern Alberta.

Thorpe, W. H., 1969: New Senator-Rouyn Option; McIntyre-Porcupine Mines Ltd.

Burgan, E.C., 1971: Alberta Quartz Mineral Permits 24, 25 and 26; Hudson's Bay Oil and Gas Co. Ltd.

CERTIFICATION

I, Joseph Sullivan of the Municipality of Burnaby, Province of British Columbia, certify as follows:

1] I am a Geological Engineer residing at:

[redacted]
Burnaby, B. C.

2] I am a Professional Engineer of British Columbia. I graduated from the University of British Columbia in 1951 with a B.A.Sc.

3] I have practiced my profession for twenty-three years.

4] I have no interest, direct or indirect, in the properties or securities of Aquarius Mines Ltd.

5] The above report is based on 58 days working on the permit plus engineering data made available in the reports of the Research Council of Alberta.

DATED at Burnaby, B. C., this tenth day of October, 1974.

[redacted]
Joseph Sullivan, P. Eng.

110° 15' 00"

110° 00' 00"

Hutton Lake

500-1000

5000' & 1200

1500 & 600'

500

400

400

700

500

250

10-500, 2-600, 2-700
3-800, 1-550, 1-1300
2-2000, 1-1500, 1-2500
1-4500, 2-1260
1-760, 1-960
1-860, 1-1060

200-400

2200

Rutledge Lake

Camp

Lodge

400-500

ANDREW LAKE

800

700

500

POTENTIAL ANOMALOUS AREA, 10 APPROXIMATE READINGS, WITH MANY MORE POSSIBLE.
NOTE: SCINTILLOMETERS SHORTING OUT FROM DAMPNESS.

1300, 500, 600, 1500, 500
2000, 800, 760, 700, 600
1000, 1050, 900, 900, 500
925, 500, 500, 500, 500,
500, 500, 660, 900, 1000
1200, 1050, 1500, 1200, 760
1300, 760, 500, 1200, 1200
950, 900, 500, 500, 1500
1500, 500, 600, 800, 600
1000, 2000

650-800 IN 9 LOC.

500, 600, 900 cps OVER 20'

Sederholm Lake

ANDREW LAKE ARM

5000, 3500, 2000
1000, 3000, 4500
1000, 5000, 1500
3000, 1000, 5000
2000, 3500, 1100
1000, 1600, 3500
1500, 4500

5 READINGS AVER. 1000 CPS

1200
800

1100

500
500

20 READINGS AVER. 1000 CPS.

2750-4500
4000-5000

950
650

6 READINGS AVER. 1000 CPS.

500

Waugh Lake

Hieroglyphic Lake

750
500
3000
500
500

3000
3500
7000
1000
2000

Spider Lake

5000
3000
4000
6000
5000
5000
3800
12000
7000
2000

Johnson Lake

Ney Lake

59° 45' 00"

59° 45' 00"

Cherry Lake

APPROXIMATE BOUNDARY OF CONCESSION

110° 15' 00"

Lister Lake

NOTE: The values along the indicated traverses are Scintillometer readings in counts per second.

Weekes Lakes

110° 00' 00"

AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	ANDREW LAKE SOUTH	PROSPECTING TRAVERSES 1974
2" = 1 mile	Sept. 1974	FIGURE 3

19790005

132

60° 00' 00"

110° 15' 00"

110° 00' 00"

59° 52' 30"

APPROX. BOUNDARY OF CONCESSION

Wells Lake

Harker Lake

Lindgren L.

Pythagoras L.

Dumbell L.

1100, 1200, 500, 600
900, 800, 700, 600
900, 800, 1900
600, 500, 600, 1000, 600, 900
700, 700, 500, 2200, 500

Lake

Swimmerton

Bailey L.

Spur L.

Sedgwick Lake

Murchison L.

Henson L.

Bayonet Lake

One Week Lake

ANDREW LAKE

Camsell L.

William (Ransely) Smith L.

Geikie L.

Holmes L.

Lakes

Hilton

Split

Cinderella L.

Horberg L.

Inksfer L.

Niggli L.

Flagon L.

Doze L.

NOTE: The values along the indicated traverses are Scintillometer readings in counts per second.

Figure 4

1974005

AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	ANDREW LAKE NORTH	PROSPECTING TRAVERSES 1974
2" = 1 mile	Sept. 1974	FIGURE 4

60° 00' 00"

LEGEND

- METASEDIMENTS
- FAULTING
- (airborne) A_4 ELECTROMAGNETIC ANOMALIES
- (airborne) A – MEDIUM RADIOACTIVITY
- B – WEAK RADIOACTIVITY
- NO LETTER – QUESTIONABLE RADIOACTIVITY
- RADIOACTIVITY 20 X BACKGROUND
- RADIOACTIVITY 10-20 X BACKGROUND

110° 15' 00"

Wells Lake

Harker Lake

Lindgren L.

Sample 382
Au Tr. U_3O_8 .003

Pythagoras L.

AREA 1.

Sample 383
Au Tr. U_3O_8 .002

Dumbell L.

APPROX. BOUNDARY OF PERMIT

Lake

Sedgwick Lake

Swimmerton Lake

Spur L.

Bailey L.

Bayonet Lake

Murchison L.

Henson L.

Bonny Fault

ANDREW LAKE

Camsell L.

William Smith L.

Geikie L.

Holmes L.

Sample 381
U_3O_8 = .266

AREA 2.

Lakes

Spill

Hutton L.

Bonny Fault

Cinderella L.

One Week Lake

110° 00' 00"

60° 00' 00"

Horberg L.

Inksfer L.

A_4

Niggli L.

CBS 2483

Flagon L.

Doze L.

59° 52' 30"

110° 15' 00"

110° 00' 00"

AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	ANDREW LAKE NORTH	RECONNAISSANCE AND RESEARCH
2" = 1 Mile	Sept. 1974	FIGURE 5.

LEGEND

- METASEDIMENTS
- FAULTING
- (airborne) A_5 ELECTROMAGNETIC ANOMALIES
- (airborne) A – MEDIUM RADIOACTIVITY
- B – WEAK RADIOACTIVITY
- NO LETTER – QUESTIONABLE RADIOACTIVITY
- RADIOACTIVITY 20 X BACKGROUND
- RADIOACTIVITY 10-20 X BACKGROUND

110°15'00"

110°00'00"

59°45'00"

Hutton Lake

Rutledge Lake

Hutton Lake Fault

Bonny Fault

AREA 3

Camp

Lodge

ANDREW LAKE

x reef

A_8

with yellow stain

Sederholm Lake

AREA 4

AREA 5

ANDREW LAKE ARM

3rd NARROWS

2nd NARROWS

reef

1st. NARROWS

Camp

x reef

A

A_1

A_2

A_5

CBS 5407

Waugh Lake

AREA 7

biotite granite

CARROT LAKE

B

Hieroglyphic Lake

AREA 6

Spider Lake

Johnson Lake

Ney Lake

Morris Lake

Cherry Lake

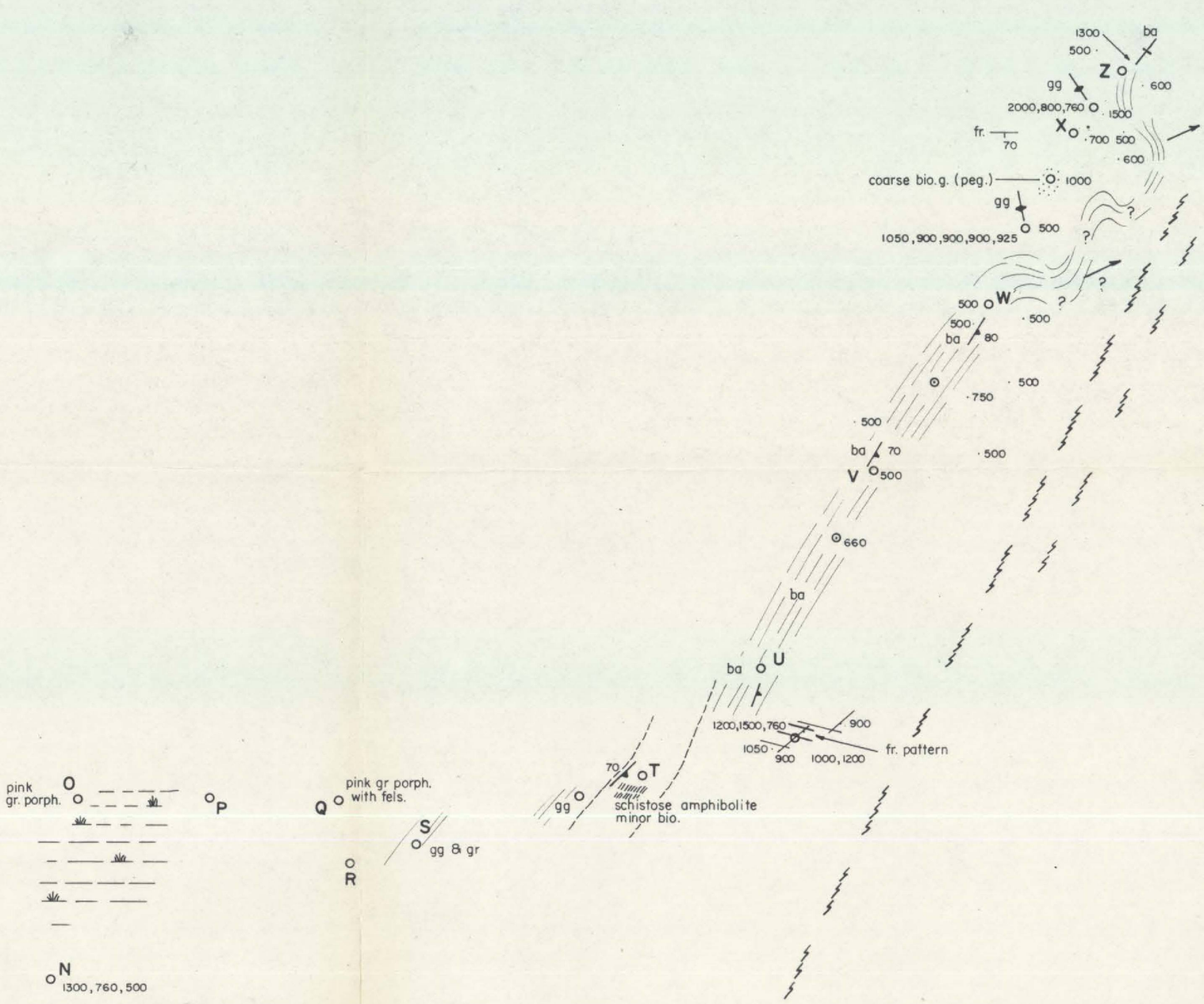
Lister Lake

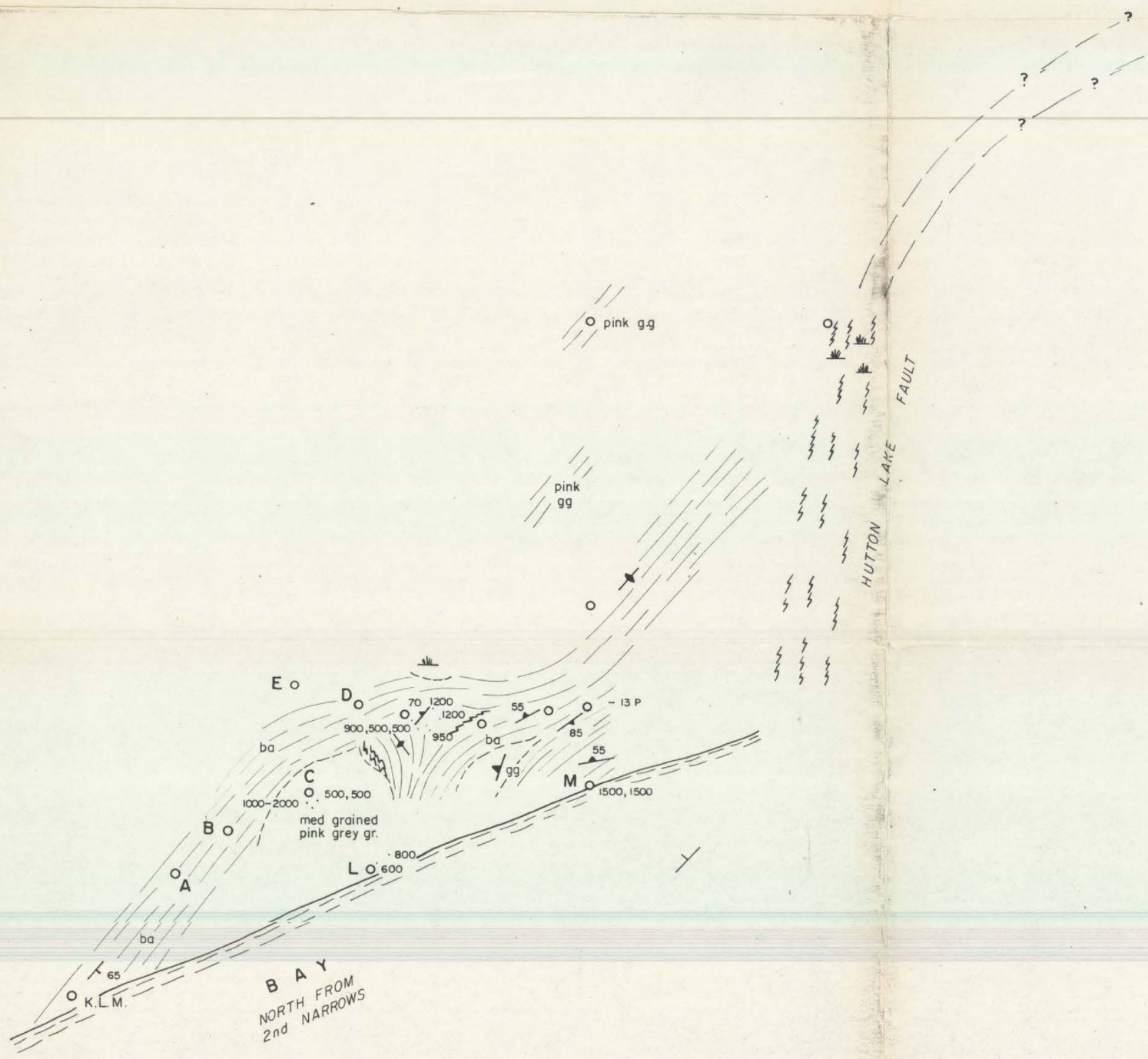
Weekes Lakes

APPROXIMATE BOUNDARY OF PERMIT

1974 0005

AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	ANDREW LAKE SOUTH	RECONNAISSANCE AND RESEARCH
2" = 1 Mile	Sept 1974	FIGURE 6.





SIMPLE LEGEND USED ON COMPASS SURVEYS:

- gg — Granite gneiss
- pg — Pink granite
- Gg — Grey granite
- Peg — Pegmatite
- ba — Banded quartz – biotite schist
- ba — Banded quartz – biotite schist with pegmatite
- Q — Quartzite
- Dragfolds
- 60 — Strike and Dip of banding, schistosity and gneissosity
- Survey station
- 1000cps — Radioactivity in counts per second
- RC — Rock cut

BACKGROUND 100 – 200 cps.
PACE & COMPASS

AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	2nd NARROWS OF ANDREW LAKE ARM	AREA 4 NORTH
1" = 100'	Sept. 1974	FIGURE 8

(128)

A 5000 cps

B 3500 cps
pegmatite

2000 cps
pegmatite

C

1000 cps 3000 cps
pegmatite

D

pegmatite 4500 cps
pegmatite 1000 cps

E 5000 cps
70

muskeg

F

1500 cps
3000 cps

G

1000 cps

65
H 5000 cps

I

pink granite
2000 cps

J

3500 cps

1100 cps
1000 cps
K

2000 cps
pegmatite

1600 cps
L

M

N

3500 cps
2800 cps
3500 cps

O

P

Sample No. 383 — 3500 cps
U_3O_8 = ·006

Q 1500 cps

Sample No. 386 — pegmatite
U_3O_8 = ·006 — 4500 cps.

Trail

3rd. NARROWS

SIMPLE LEGEND USED ON COMPASS SURVEYS:

- gg — Granite gneiss
- pg — Pink granite
- Gg — Grey granite
- Peg — Pegmatite
- ba — Banded quartz – biotite schist
- Banded quartz – biotite schist with pegmatite
- Q — Quartzite
- Dragfolds
- 60 — Strike and Dip of banding, schistosity and gneissosity
- Survey station
- 1000 cps — Radioactivity in counts per second
- RC — Rock cut

BACKGROUND 400 cps
TAPE & COMPASS 19740005

AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	3rd. NARROWS OF ANDREW LAKE ARM	AREA 5
1" = 100'	Sept. 1974	FIGURE 9

DDH @ -45° approximately 500'

Reported 15.5'@ 0.02 U_3O_8

N

M

RC 8. 3000

3500

70 7000

RC 7.

RC 6. 3000

2000

limonite pods

L

K

J

massive, medium grained pink granite

I

N

SIMPLE LEGEND USED ON COMPASS SURVEYS:

- gg — Granite gneiss
- pg — Pink granite
- Gg — Grey granite
- Peg. — Pegmatite
- bg — Banded quartz - biotite schist
- Banded quartz - biotite schist with pegmatite
- Q — Quartzite
- Dragfolds
- 60 — Strike and Dip of banding, schistosity and gneissosity
- Survey station
- 1000 cps — Radioactivity in counts per second
- RC — Rock cut

H gg

G gg 65

E

F gg

D gg 500

70

schist grades to granite gneiss along strike.

DDH @ -45° approximately 500'

Reported 5.0'@ 0.01 U_3O_8

80 3000

C

4000 RC 5

RC 3 70

B 6000 5000

RC 4

RC 1. 85 1700 2000

RC 2. 3000 3800

2000 1200

A

SPIDER LAKE

BACKGROUND 50-100 cps
TAPE & COMPASS 19740005

AQUARIUS MINES LTD.		
N.E. ALBERTA PROJ.	SPIDER LAKE	AREA 6
1" = 100'	Sept. 1974	FIGURE 10