



41155W0159 0019 HUTTON

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GEOLOGICAL REPORT  
on  
HUTTON TOWNSHIP URANIUM PROSPECT  
SUDBURY MINING DIVISION

RECEIVED  
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by  
NELSON HOGG  
DISTRICT GEOLOGIST, THE HANNA MINING COMPANY  
SEPTEMBER 15, 1976



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## HUTTON TOWNSHIP URANIUM PROSPECT

### INTRODUCTION

The seven claims comprising the Hutton Township uranium prospect were staked for The Hanna Mining Company by Ike Burns of Sudbury in December, 1975, and were recorded on December 29.

They cover an area underlain by Huronian sediments including a quartz pebble conglomerate unit. These rocks have been investigated for radioactivity intermittently since uranium was first discovered in Elliot Lake. With the recent increase in the price of uranium, a re-appraisal of their economic potential was considered to be warranted.

### LOCATION & ACCESS

The Hutton Township uranium prospect is in lots 4 and 5, Concession 111, Hutton Township, Sudbury Mining Division. It is possible to drive to within  $\frac{1}{4}$ -mile of the west end of the property on the road from Milnet to the Moose Mountain mine of the National Steel Corporation of Canada Limited. About one mile north of the bridge over the Roberts River, a hydro-electric transmission line crosses the road and leads to the west end of the property. It is not possible to drive along the power line.

The east end of the property is within  $\frac{1}{4}$ -mile of the C.N.R. main line north of Capreol at a point about one mile north of Milnet.

### PERSONNEL

The claims were staked for The Hanna Mining Company by Mr. Ike Burns, 1073 Stafford Street, Sudbury. Mr. Burns also cut the base line and picket lines on a contract basis.

Geological mapping was done by Mr. Nelson Hogg and John Muhic, both employees of The Hanna Mining Company. The geological report is submitted by the former for The Hanna Mining Company.

PROPERTY

The property consists of 7 unpatented mining claims described as follows:

S438195 - NW $\frac{1}{4}$ , N $\frac{1}{2}$  lot 5 Con 111, Hutton Twp.  
S438196 - SW $\frac{1}{4}$ , N $\frac{1}{2}$  lot 5 Con 111, Hutton Twp.  
S438197 - SE $\frac{1}{4}$ , N $\frac{1}{2}$  lot 5 Con 111, Hutton Twp.  
S438198 - NE $\frac{1}{4}$ , N $\frac{1}{2}$  lot 5 Con 111, Hutton Twp.  
S438199 - NW $\frac{1}{4}$ , N $\frac{1}{2}$  lot 4 Con 111, Hutton Twp.  
S438200 - SW $\frac{1}{4}$ , N $\frac{1}{2}$  lot 4 Con 111, Hutton Twp.  
S438201 - NE $\frac{1}{4}$ , N $\frac{1}{2}$  lot 4 Con 111, Hutton Twp.

PREVIOUS WORK

The property was first staked for uranium in the mid-1950's shortly after the discovery of uranium at Elliot Lake. However, only one serious attempt to evaluate the uranium potential has been undertaken, by Fano Uranium Mines Limited in the years between 1955 and 1959. Thomson<sup>2</sup> reports that three holes with a total length of 2,463 feet were drilled. No records of Fano's work could be located, so the results of drilling are unknown. The collars of two diamond drill holes were located and are shown on the accompanying geological map. A few shallow "pops" were also found where fresh quartzite and conglomerate has been exposed, but no real rock trenches or pits were seen.

DESCRIPTION OF SURVEY

A base line running N85°E was run from No.3 Post of Claim 438195. Picket lines were then run at 400-foot intervals along the base line to the north and south boundaries of the property. These lines were used to control the geological mapping and the radiometric survey. A Scintrex BGS scintillation counter was used during the geological survey to obtain radiometric readings on exposed outcrops, and many of these values are plotted on the geological map.

GENERAL GEOLOGY

Hutton Township is divided geologically into two parts along a line trending in a southeasterly direction along the Vermillion River. The larger southwest part is underlain by Archean intrusive and extrusive rocks, and the smaller northeast part is underlain mainly by sedimentary rocks of Proterozoic age. Part of the line separating these areas is marked by the Milnet fault zone, but there are some areas of younger Proterozoic rocks south of the fault.

TABLE OF FORMATIONS (after Meyn, H.D. 4)

CENOZOIC:

Recent - Fluvial clays and silts and swamp deposits  
Pleistocene - Clays, sand, gravel and till

Unconformity

PRECAMBRIAN:

Proterozoic - Olivine diabase

Intrusive contact

Huronian -

Cobalt Group

Gowganda Formation  
Argillite, quartzite, conglomerate

Bruce Group

Serpent Formation  
Quartzite, conglomerate

Espanola Formation  
Limestone, marble, greywacke

Bruce Formation  
Conglomerate, quartzite

Mississagi Formation  
Quartzite, argillite, conglomerate

Great Unconformity

Archean -

Mafic Intrusive Rocks

Amphibolite, metagabbro, metadiabase,  
pebble dikes, undifferentiated basic dikes.

Intrusive contact

Granitic Rocks - pink and grey granodiorite, granite,  
quartz monzonite.

Intrusive contact

Sedimentary Gneiss - granitic gneiss derived  
from graywacke

Felsic Metavolcanics - rhyolite, breccia, felsic tuffs,  
pyroclastics

Mafic Metavolcanics - massive and pillowed lavas, tufts,  
chert, iron formation.

The oldest rocks in Hutton Township are mafic volcanic flows, sills and tuffs, with minor interbedded felsic flows and tuffs, and abundant oxide iron formation. The major lenses of iron formation are held by the Moose Mountain Division of the National Steel Corporation of Canada. The Archean volcanic rocks trend in a south-easterly direction but are complexly folded by two ages of deformation.

Granitic rocks which intrude the Archean volcanics include a variety of compositional types ranging from granite to diorite, and including numerous pegmatite dikes with indistinct margins. Some of the granitic gneisses retain relict sedimentary banding, but most of the granitic intrusive rock is massive and medium grained.

Both granitic and volcanic rocks are intruded by a variety of basic dikes that trend east of north, west of north, and north of west. These dikes are generally more highly altered than the diabase dikes of Matachewan and Nipissing age. Some are amphibolite, some are altered diabase, and some are "pebble dikes". The pebble dikes are an unusual type of dike having a fine amphibolitic matrix containing rounded boulders and pebbles of a great variety of granitic and volcanic rocks and quartz. Boulders up to several feet in diameter occur in dikes less than 20 feet thick. Dikes of this type occur in the Moose Mountain mine and are common on the uranium prospect described in this report.

The contact between the Archean and Proterozoic rocks in Hutton Township is marked by a great unconformity. The Proterozoic sedimentary rocks are steeply dipping, often overturned, and facing to the north-east. The regional strike is south of east but locally there is complex folding.

Mayn<sup>4</sup> has assigned the lowest units of quartzite and conglomerate to the Bruce Group, which is overlain by conglomerate of the Gowganda formation. Rocks of the Bruce Group are exposed on the Hutton Twp. uranium property and are described more fully under "Property Geology".

Northwesterly trending faults, of which the Milnet fault is the strongest, displace both Archean and Proterozoic rocks. The Milnet fault has a right-hand horizontal displacement of more than one mile. A second set of faults, striking about N50°E, has caused segmentation of the sedimentary bands. One strong fault striking N15°W, almost parallel to the Ontario Hydro power line has a horizontal displacement of almost a mile. It crosses the Hanna uranium prospect near its west end, and terminates the band of Mississagi quartzite and conglomerate in which anomalous radioactivity occurs.

## GEOLOGY OF THE PROPERTY

The property was staked to cover a band of quartzite and conglomerate extending from the Ontario Hydro power line on the west to the C.N. Railway on the east. The north boundary was established by claims previously staked. The Huronian rocks occupy a trough in the Archean basement, and the contact is generally marked by a basal conglomerate. The western limit of Huronian sediments is a strong fault that is almost parallel to the hydro line near the west end of the property. Their eastern limit on the property is at line 44+00 East, on the north claim line, where the sedimentary rocks strike the north-east across the property boundary. Almost four of the seven claims are underlain by Archean rocks. South of the base line is a complex of granitic rock types whose boundaries are generally indistinct. They include granitized sedimentary gneisses, pink and gray massive hornblende granite and grandiorite. Mafic dikes up to 100 feet thick of altered diabase, amphibolite, and basaltic material intrude the granite. One set of mafic dikes, mapped as pebble dikes has abundant inclusions of granitic and volcanic rock types in a fine amphibolite matrix. Boulders of granite reach dimensions of several feet, and in places matrix makes up only 25% of the total rock. The best exposures of this type of dike are on line 40+00 East at 150 feet north of base line, and on line 44+00 East at 200 feet north of the base line.

Archean volcanic rocks are exposed in three main areas, at the west end of the base line, on line 32+00E and line 36+00E to the north of the base line, and from line 48+00E to line 56+00E at the east end of the property. Massive lavas and tuffs are included in the intermediate to mafic types, and a few beds of cherty tuff are interbedded with them. Most are highly fractured and sheared. In places, such as at 600' north between lines 36 and 40, the volcanics are intersected by a stockwork of narrow quartz stringers and mineralized with disseminated pyrite. At the east end of the property the mafic volcanics are intruded by stringers and dikes of granite and pegmatite.

Huronian rocks on the property have been assigned by Meyn<sup>4</sup>, to the Bruce Group, including the Mississagi formation and the Bruce Formation. The Mississagi formation has a basal conglomerate member, a quartz pebble conglomerate member, a quartzite with pebble beds member, a polymictic conglomerate member, and a pure quartzite member. The general strike is about N75°E and the dip is steeply south, but there are local complexities, particularly near the contact with Archean rocks. The lowest member is a basal conglomerate that varies greatly in thickness and character. It is best exposed on line 16 East at 300 feet south, and on line 28 East at 100 to 300 feet north. In places, it pinches to a few inches of fine mudstone, and in others it thickens to 100 feet of boulder conglomerate with a matrix of fine mudstone. Boulders of granitic, volcanic, and mafic intrusive rocks reach dimensions of 6 feet in

diameter. Except for the muddy matrix, this basal conglomerate in some places closely resembles the pebble dikes which cut the Archean rocks.

The quartz-pebble conglomerate, the quartzite with pebble bands, and the polymictic conglomerate are interbedded and are subject to facies changes from one to another along strike. They occupy a trough in the Archean basement and reach a thickness of about 700 feet between lines 12E and 16E. Total radioactivity in these rocks as measured by a scintillometer is 2 to 6 times background as measured on the granitic rocks.

The quartz pebble conglomerate and quartzite are interbedded in all proportions. One of the largest exposures of quartz pebble conglomerate, on line 12E at 100' north, is nearly flat-lying due to local complex folding. The quartz pebbles are generally less than 1 inch in diameter and are not closely packed. A small amount (< 1%) of disseminated pyrite occurs in the conglomerate.

Polymictic conglomerate has a majority of quartz pebbles, but it also has pebbles of granite and volcanic rocks, and the pebbles are larger than those in the quartz pebble conglomerate, up to 3 inches in diameter. However, there are narrow bands of polymictic conglomerate interbedded with quartzite and quartz-pebble conglomerate, and there are beds of quartzite and quartz-pebble conglomerate in the polymictic conglomerate. The best exposure of polymictic conglomerate is a lenticular bed at the base of the Huronian trough from line 16E to line 24E along the base line.

The uppermost member of the Mississagi Formation is a pure white quartzite 300 to 400 feet thick. It is a shallow-water deposit, characterized by good cross-bedding which shows that the formation is overturned, facing to the north but dipping south at angles of 55 to 85°. This quartzite unit is less radioactive than the lower units and has a background of about 40 counts per second, similar to the Archean granitic rocks.

Above the Mississagi quartzite is a conglomerate and graywacke unit that Meyn<sup>4</sup> has assigned to the Bruce formation. It is characterized by a rusty-weathering surface caused by disseminated pyrite in small amounts that is apparently ubiquitous in this member. The matrix is graywacke and the pebble content varies greatly. The lower contact with Mississagi quartzite is clearly defined and for about 20 feet above the contact the rock has few or no pebbles. Generally the conglomerate has scattered small pebbles of granite or volcanic rock less than 3 inches in diameter, and has the appearance of glacial till. Locally, as between lines 8E and 12E at 1200 ft. north, there is an assortment of pebbles up to 6 inches in diameter.

Radioactivity in this member is about 40 to 60 counts per second, slightly higher than in the upper member of Mississagi quartzite.



Two north-south striking faults are interpreted on the property. One follows the hydro line near the west end. It is a distinct topographic feature, and on the map of Hutton Township (4), is shown to have a horizontal displacement of one mile. On the property it traverses a swampy area, so that its effect cannot be judged. A second fault is interpreted between lines 32E and 40E, trending east of north. It displaces the contact between Archean volcanic rocks and quartzite about 300 feet in a right-hand movement.

ECONOMIC GEOLOGY

The quartz-pebble conglomerate and the polymictic conglomerate of the Mississagi formation have radioactivity that is above normal. On the Scintrex B.G.S. Scintillation Counter, readings in counts per second on the various rock types are:

Archean Volcanic Rocks	- 20-40 C.P.S.
Granitic Rocks	- 30-45 C.P.S. with spot readings to 140.
Mafic Dikes	- 40-75 C.P.S.
Basal Conglomerate	- 20-80 C.P.S.
Polymictic Conglomerate	- 40-400 C.P.S.
Quartzite	- 60 C.P.S.
Quartz Pebble Conglomerate	- 50-240 C.P.S.
Upper Quartzite	- 35-40 C.P.S.
Bruce Conglomerate	- 40-60 C.P.S.

Surface samples taken where the radioactivity is greatest indicate that the uranium content is too low to be of economic interest at the present time.

REFERENCES

1. Kindle, L.F.: Moose Mountain-Wanapitei area -  
Ont. Dept. of Mines, Vol. 41, pt 4 - 1933
2. Thomson, Jas. E.: Uranium and Thorium Deposits at the Base of the Huronian System in the District of Sudbury.  
Ont. Dept. of Mines Geol. Rept 1
3. Meyn, H.D.: Hutton Township, District of Sudbury, Ontario  
Department of Mines Prelim. Geol. Map P.399 -  
1 in = 1/4 mile.
4. Meyn, H.D.: Geology of Hutton and Parkin Townships -  
Ont. Dept. of Mines G.R.80 - 1970

.....  
*Nelson Hogg*  
.....  
Nelson Hogg

Sept. 15/76



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RADIOMETRIC REPORT.

on

HUTTON TOWNSHIP URANIUM PROSPECT

SUDBURY MINING DIVISION

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by

JOHN F. MUHIC

for

THE HANNA MINING COMPANY

November 15, 1976

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RADIOMETRIC REPORT

SUDBURY MINING DIVISION

INTRODUCTION

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The radiometric survey was conducted by Mr. Nelson Hogg and John Muhic, both employees of The Hanna Mining Co. The radiometric report is submitted by the latter for The Hanna Mining Co.

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The property consists of 7 unpatented mining claims described as follows:

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NOVEMBER 15, 1976

JOHN F. MUHIC  
FOR  
THE HANNA MINING COMPANY

## GEOLOGY

The property is underlain by an Archean age basement complex consisting of granitic and volcanic rocks.

The Archean rocks are overlain by Huronian rocks of the Bruce Group. The contact between the Huronian and Archean rocks is generally marked by a basal conglomerate occupying a trough in the Archean basement.

The basal conglomerate is overlain by an interbedded sequence of quartz pebble conglomerate, polymictic conglomerate and quartzite of the Mississagi Formation. The uppermost member of the Mississagi Formation is a pure white quartzite and is overlain to the north by greywacke and conglomerate of the Bruce Formation.

A more detailed geological report of the property by Nelson Hogg is being submitted separately.

## PREVIOUS WORK

The property was first staked for uranium in the mid-1950's shortly after the discovery of uranium at Elliot Lake. However, only one serious attempt to evaluate the uranium potential has been undertaken, by Fano Uranium Mines Limited in the years between 1955 and 1959. Thomson<sup>2</sup> reports that three holes with a total length of 2,463 feet were drilled. No records of Fano's work could be located, so the results of drilling are unknown. The collars of two diamond drill holes were located. A few shallow "pops" were also found where fresh quartzite and conglomerate has been exposed, but no real rock trenches or pits were seen.

## INSTRUMENT

The instrument used during this survey was a Scintrex BGS-1 broadband Scintillation Counter with an accuracy of  $\pm 5\%$  of full scale.

## METHOD OF SURVEY

A systematic survey was conducted at 50 foot intervals on picket lines and at 100 foot intervals on the base line. The scintillometer was held approximately 2 feet above the ground and the reading in counts per second recorded. The readings were plotted on a 1" to 200 foot scale map and profiled along the picket lines. A copy of the map is attached to this report.

A total of 674 stations were read along 5.79 miles of picket lines and 1.08 miles of base line. The picket lines were cut perpendicular to the base line at 400 foot intervals. In addition the scintillometer was used to obtain radiometric readings on exposed outcrops during the geological survey. These readings are also plotted on the radiometric map although the results are not profiled.

## RESULTS & CONCLUSIONS

The background count is approximately 25 counts per second taken over the Archean basement rocks.

An anomalous zone extending from L16E to L24E approximately 200 feet wide with reading 2 - 3 times background was delineated. The radioactive zone is coincident with the polymictic conglomerate and occurs south of the contact between the conglomerate and the overlying quartzite. Spot readings up to 400 cps (16x background) were recorded.

An erratic, discontinuous anomaly is associated with quartz pebble conglomerate on L20E between 4N and 6N, and again on L32E between 7N and 9N, and on L36E between 11N and 12N. The readings are typically 2 to 3 times background with spot readings up to 10 times background. The "gap" on L24E and 28E in the anomaly may be due to the depth of the sand overburden.

It is interesting to note that background readings over the Bruce conglomerate along the northern boundary of the property are approximately 2x background on the Archean rocks.

In general the radioactivity over the most favourable stratigraphic horizons is not high or extensive enough to warrant any further exploration at the present time.

.....  
John F. Muhic

Nov.15/76

CERTIFICATE

I, John F. Muhic, of the city of Toronto, in the Province of Ontario, hereby certify that:

1. I am a graduate in geology with the degree of B. Sc. from the University of Toronto, 1975.
2. That I am a full-time employee of The Hanna Mining Company, Room 805, 69 Yonge Street, Toronto, Ontario.
3. That the accompanying report is based on my personal knowledge of work done on the property, supplemented by information from published government reports.
4. That I have no direct or indirect interest in the property.

.....  
John F. Muhic,  
Geologist

November 15, 1976



GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations 674 Number of Readings 758
Station interval 50 feet Line spacing 400 feet
Profile scale 1 in. = 200 CPS
Contour interval NA

MAGNETIC

Instrument
Accuracy - Scale constant
Diurnal correction method
Base Station check-in interval (hours)
Base Station location and value

ELECTROMAGNETIC

Instrument
Coil configuration
Coil separation
Accuracy
Method: Fixed transmitter Shoot back In line Parallel line
Frequency (specify V.L.F. station)
Parameters measured

GRAVITY

Instrument
Scale constant
Corrections made
Base station value and location
Elevation accuracy

INDUCED POLARIZATION RESISTIVITY

Instrument
Method Time Domain Frequency Domain
Parameters - On time Frequency
- Off time Range
- Delay time
- Integration time
Power
Electrode array
Electrode spacing
Type of electrode



SELF POTENTIAL

Instrument \_\_\_\_\_ Range \_\_\_\_\_

Survey Method \_\_\_\_\_

Corrections made \_\_\_\_\_

RADIOMETRIC

Instrument Scintrex B.G.S.1 Scintillation Counter

Values measured Counts per second - beta plus gamma radiation

Energy windows (levels) Broad band

Height of instrument 2 feet Background Count 25 C.P.S.

Size of detector 1 in X 1 in Sodium Iodide Crystal

Overburden 50% rock exposure - Overburden is swamp and sandy till  
(type, depth - include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey \_\_\_\_\_

Instrument \_\_\_\_\_

Accuracy \_\_\_\_\_

Parameters measured \_\_\_\_\_

Additional information (for understanding results) \_\_\_\_\_

AIRBORNE SURVEYS

Type of survey(s) \_\_\_\_\_

Instrument(s) \_\_\_\_\_  
(specify for each type of survey)

Accuracy \_\_\_\_\_  
(specify for each type of survey)

Aircraft used \_\_\_\_\_

Sensor altitude \_\_\_\_\_

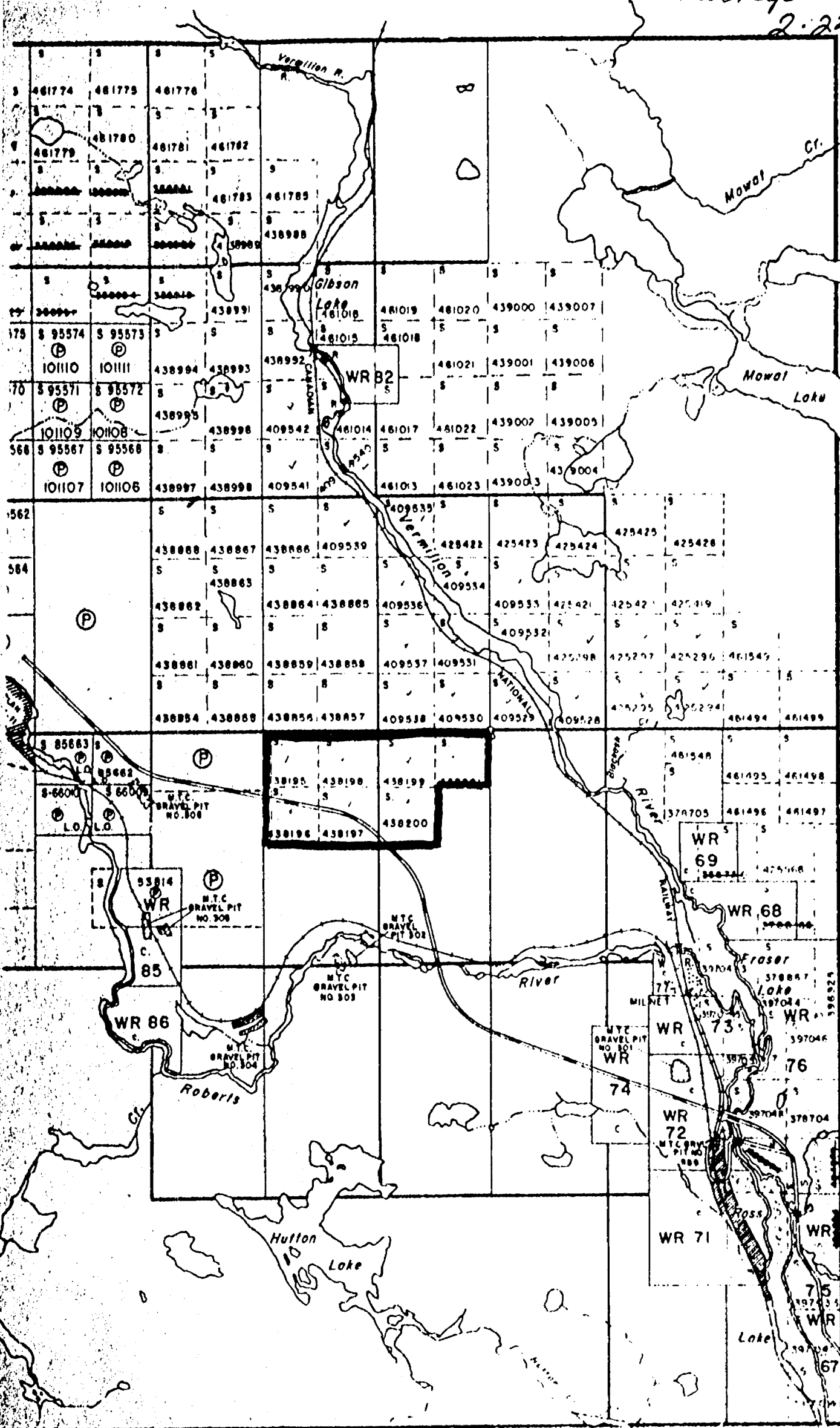
Navigation and flight path recovery method \_\_\_\_\_

Aircraft altitude \_\_\_\_\_ Line Spacing \_\_\_\_\_

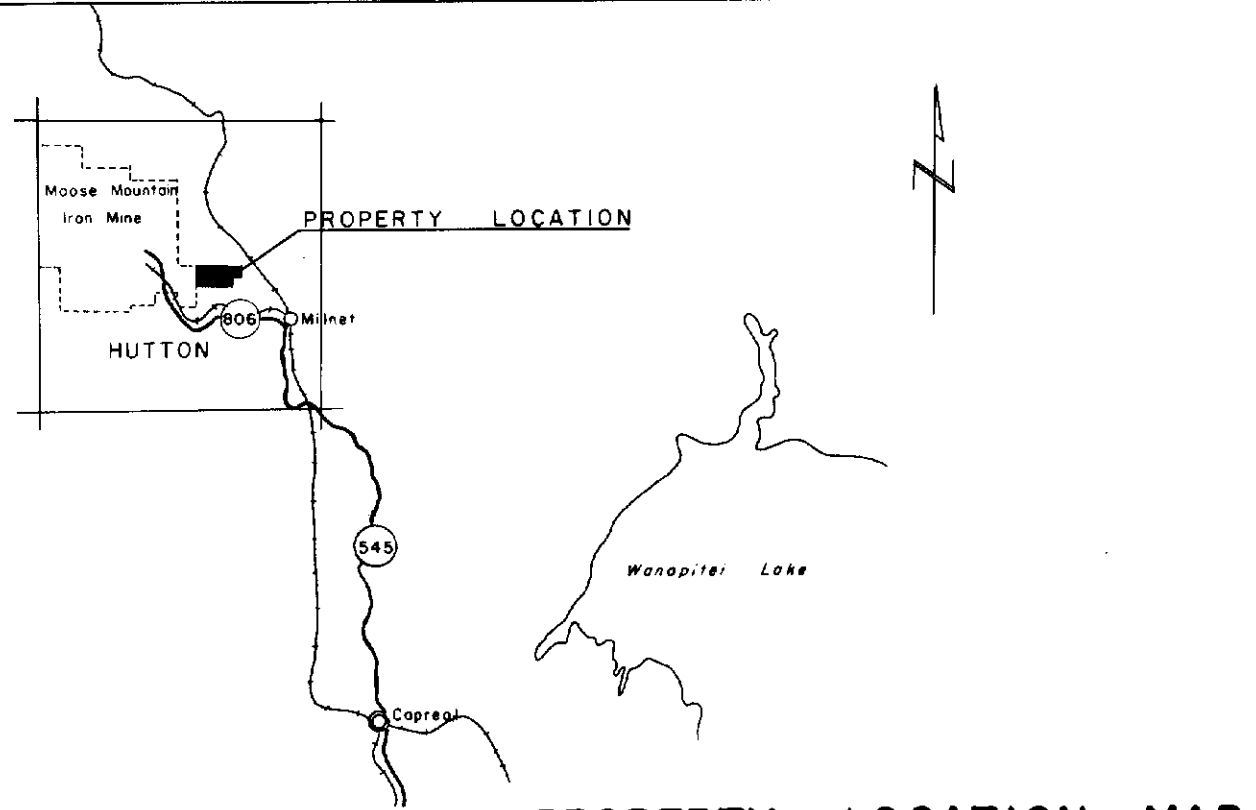
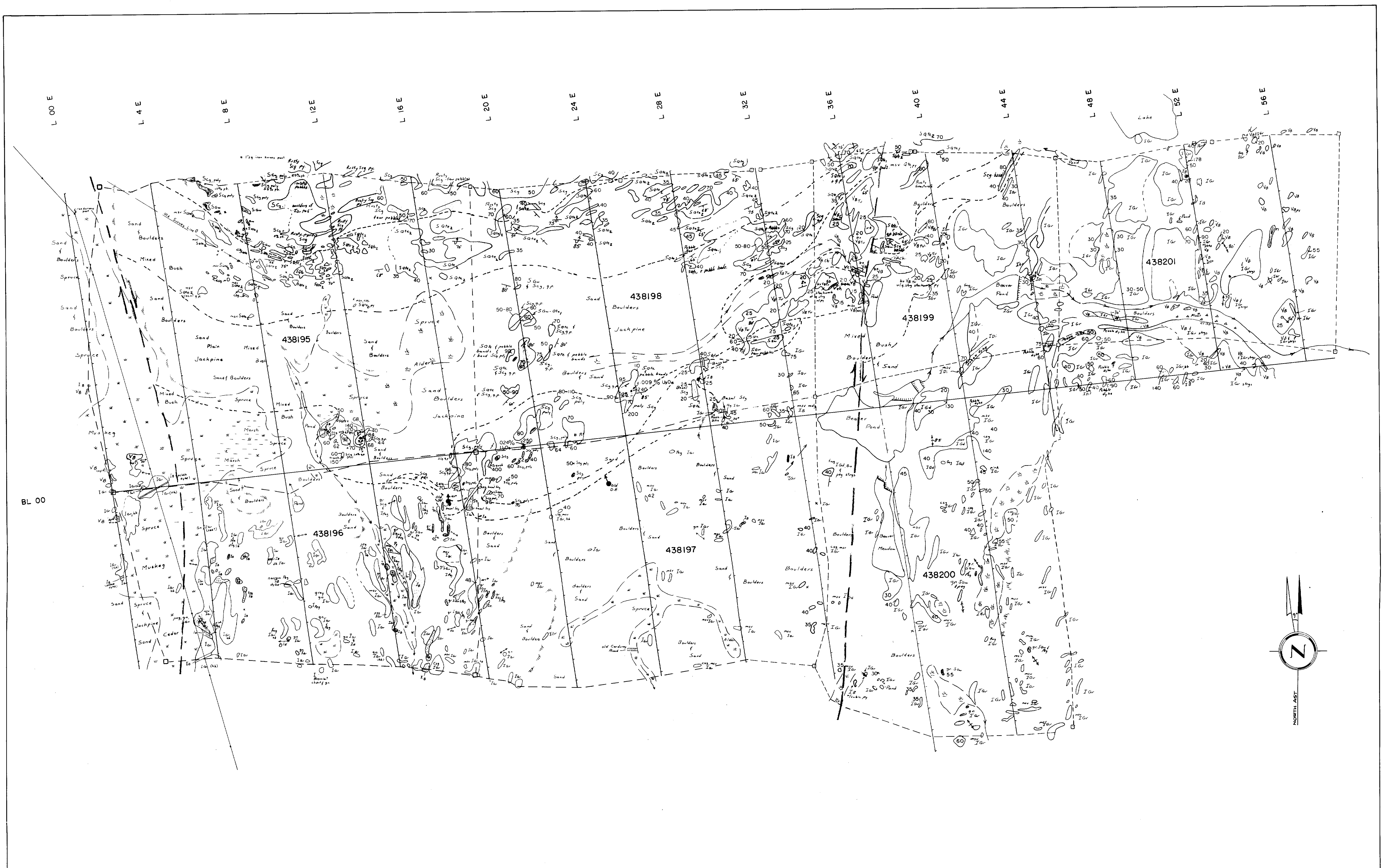
Miles flown over total area \_\_\_\_\_ Over claims only \_\_\_\_\_

REELMAN TWP. M.737

Hutton Tp.  
 Hanna Mang. Co., The.  
 Nov. 15/76 - G.P.C.L.  
 survey maps.  
 2-2252



PARKIN TWP. M.1049



**LEGEND**

**PROTEROZOIC**  
**BRUCE GROUP**  
**BRUCE FORMATION**

- Conglomerate (Scg), Graywacke (Sgw)

**MISSISSAGI FORMATION**

- Upper quartzite (SQte2)
- Quartzite with pebble bands (SQte1), Graywacke (Sgw)
- Quartz pebble conglomerate (Scg.gp)
- Polymictic conglomerate (Scg.poly)
- Basal conglomerate (Scg.basal)

**ARCHEAN**

- Mafic intrusive rocks
- Diorite intrusive
- Basic dike - undifferentiated
- Pebble dike

**SYMBOLS**

- Strike and dip of bedding
- Strike and dip of overturned bedding
- Strike and dip of shearing
- Plunge of lineation
- Diamond drill hole

**ABBREVIATIONS**

- gn Granite rocks
- lpg Pegmatite
- lgr Hornblende granite
- lgrd Grandiorite
- gn Gneiss
- gr.gw Granitized graywacke
- gn.gw Gneissic granite
- vacm Recrystallized cherty tuff
- Intermediate to basic volcanic rocks
- vs Lava flows
- vs.tu Tuff
- qv Quartz vein
- py Pyrite
- bx Brecciated
- gn Gneissic
- msv Massive

THE HANNA MINING COMPANY  
**HUTTON TWP. URANIUM PROSPECT**  
 SUDBURY MINING DIVISION  
 ONTARIO

**GEOLOGIC MAP** 2.2252

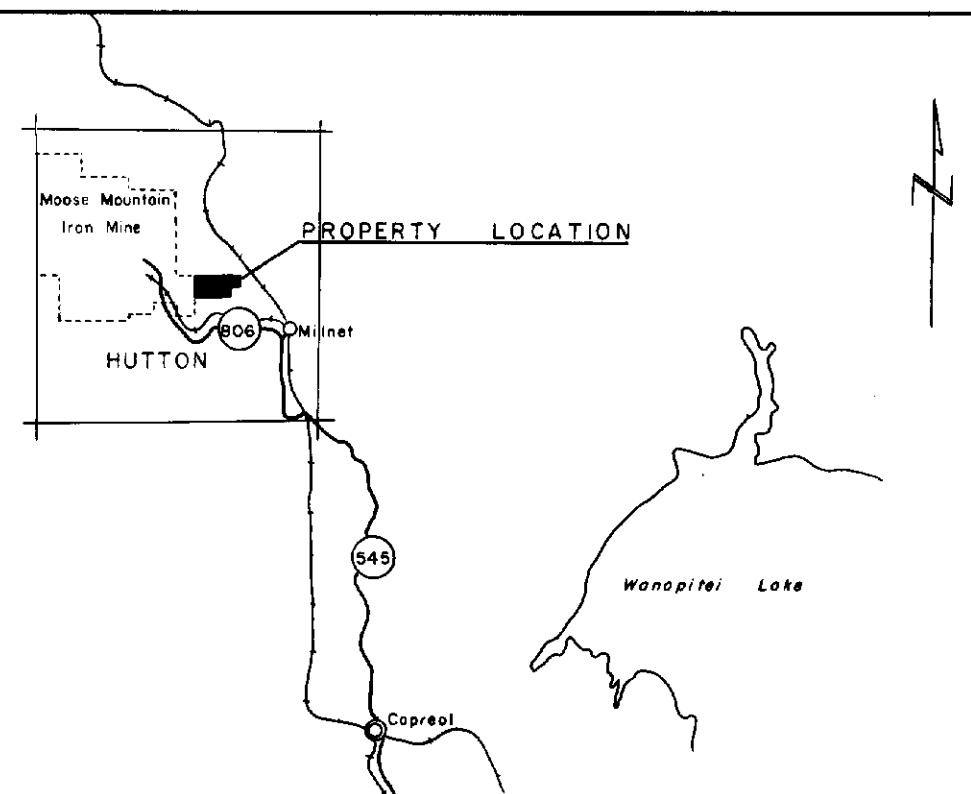
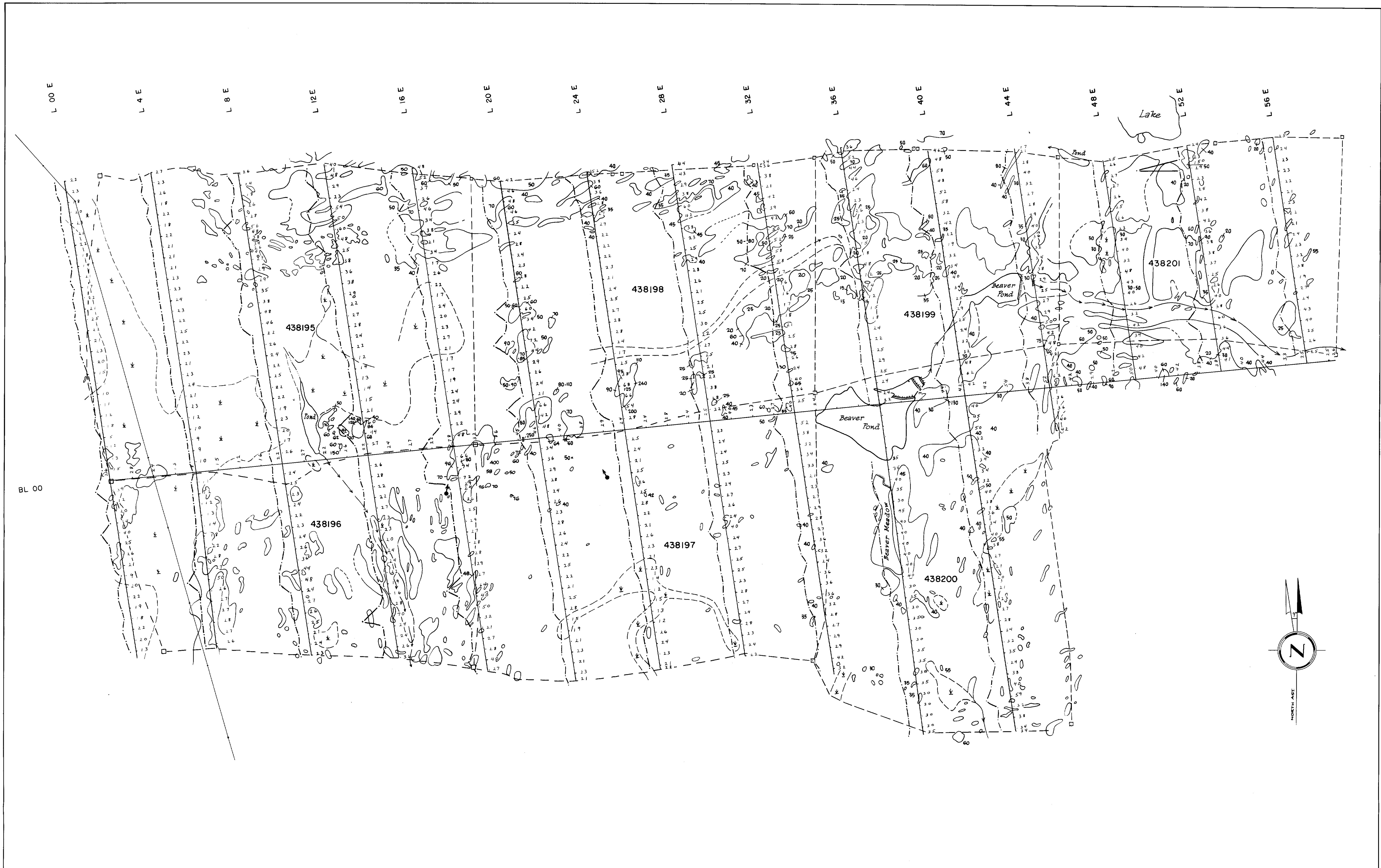
SCALE 1" = 200'

200 0 200 400 600  
Feet

Work by Nelson Hogg & John Mueh	Interpretation by <i>N.H.</i>	Revised
Date Sept 15, 1976	Date Sept 15, 1976	N.T.S. No 41-1-14

*Nelson Hogg* HUTTON-0019-#1



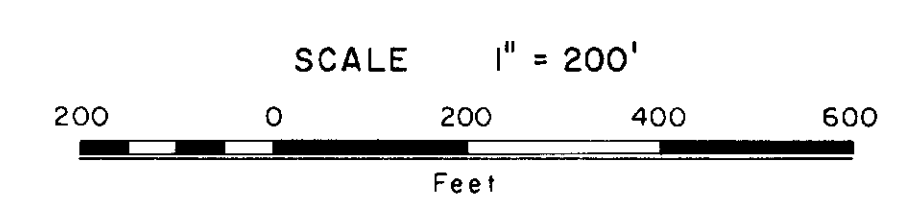


PROPERTY LOCATION MAP

INSTRUMENT: Scintrex B.G.S.I - Scintillation Counter  
 Readings are total radioactivity in counts per second.

THE HANNA MINING COMPANY  
 HUTTON TWP. URANIUM PROSPECT  
 SUDBURY MINING DIVISION  
 ONTARIO

**RADIOMETRIC MAP 2.22.52**



Work by John Muhic	Interpretation by <i>John Muhic</i>	Revised
Date	Date Nov. 15, 1976	N.T.S. No. 41-1-14

HUTTON-0019, #2

