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Saranac Resources Ltd.
Monmouth Township Rare Earth Property
Southern Ontario Mining Division
Ontario
Geophysical and Geological Surveys

RECEIVED

NOV 4 1988

MINING LANDS SECTION

Date: November 15, 1988

H. Grant Harper, P.Eng.
Economic Geologist.

Volume Label: SaranacEng
Disk No.: 44-3
Filename: B:\Tit1Pg\Monmth1

Saranac Resources Ltd.
Monmouth Township Rare Earth Property
Southern Ontario Mining Division
Ontario
Geological and Geophysical Surveys

Introduction

Saranac Resources Ltd. owns a group of 12 unpatented mining claims located in Monmouth Township, Southern Ontario Mining Division. The Location, Access, History, and Economic Potential of the claims are described in a Report by K.A. Morgan, P. Eng. dated December 2, 1987. This report is on file with the Ontario Government's Assessment Record Office. The data contained therein need not be repeated here.

Picket lines at 400 foot intervals were cut over the entire claim group by George Farr of Wilberforce, Ontario, and Roger Mercier of Cardiff, Ontario. Magnetic, VLF Electromagnetic, and Radiometric surveys were done by Roger Mercier. The geological survey was done by the writer and Roger Mercier. The preparation of the maps, their interpretation, and the covering report were produced by the writer.

Discussion of Survey Results

Magnetic Survey

The magnetic intensity ranges from a low of minus 200 gammas to a high of 6100 gammas. Obviously, there are no iron formations on the property.

The largest area of above normal magnetic intensity lies along the west boundary in the south-central part of the claim group. It lies in an area devoid of outcrops. Neither radiometric anomalies nor electromagnetic conductors occur in the area.

There are a number of isolated above average magnetic readings scattered about the property. None of these appear to be associated with areas of above normal radioactivity which is unusual, for in the general area, zones of radioactivity are frequently associated with zones of above background magnetic intensity.

Electromagnetic Survey

The electromagnetic conductors do not appear to have any economic significance and the longest and strongest may simply be an overburden effect. This conductor, "Conductor A" follows a creek and beaver pond for most of the length of the property

"Conductor B" lying the south central portion of the claim group is relatively short and weak. It also has no spatial relationship to either magnetic or radiometric anomalies and therefore has no apparent economic significance.

None of the isolated, single line conductors seem to have any significance.

Radiometric Survey

The Radiometric Survey shows intensities ranging from a low of about 00 mev. to a high of 20,000 mev. In some of the trenches, the readings were OFF SCALE. Background count ranges from a low of 400 mev. to a high of about 1500 mev. Readings of 2500 mev. or higher were arbitrarily assumed to be anomalous.

Since Rare Earth values are commonly associated with radioactive minerals, particularly those rich in thorium, the radiometric survey is the most valuable from the economic viewpoint.

The strongest radioactivity occurs in the large rock trench located at 200W between lines 68S and 72S. Here, the readings go OFF SCALE and are the strongest found on the property.

The second strongest zone is located at 1500E and covers lines 52S and 56S. nothing is known about this area which appears to be a new discovery. Readings up to 20,000 mev occur here.

There are some significant high readings adjacent to and in the "Zircon" trenches. These require more detailed radiometric surveying.

In addition to the above there are 5 locations where readings between 10,000 and 25,000 mev. were obtained. Each of these areas requires a surface examination and grab sampling for Rare Earth values.

Geologic Survey

Table of Formations

Recent.....	Sand, Gravel, Clay, Bog
	GREAT UNCONFORMITY
Precambrian.....	Granite Pegmatite
	Syenite
	Intrusive Contact
	Metagabbro
	Intrusive Contact
	Limestone, skarn, limy paragneiss
	Metasediments
	Paragneiss

Granite Pegmatite

The granite pegmatites are of dubious origin. Since they seldom show intrusive contacts there are many who feel that the so-called granite pegmatites are simply highly metamorphosed arkosic sediments. They frequently carry significant amounts of uranium and thorium and in some instances, significant amounts of Rare Earths. These rocks have a high economic potential.

Syenite and Granite Gneisses

The syenite rocks are intrusive and consist of pink felspar and minor amounts of amphibole. They are frequently intermingled with granite gneisses most of which are probably metamorphosed sediments.

Metagabbro

The origin of the metagabbro is very uncertain. The rock is composed chiefly of pyroxene most of which has been altered to amphibole. The feldspar is dark and not easily recognized in the hand specimen. Calcite, frequently pink in color, is a common adjunct although it does appear to be introduced. Thorium is associated with the pink feldspar and Rare Earths are commonly present although not necessarily in economically interesting amounts.

Metasediments, Paragneisses, and Limestones

the sedimentary rocks have undergone severe metamorphism, probably on more than one occasion. They are mostly thin bedded, except for the paragneisses which have substantial thicknesses. It is possible that most of the Paragneisses are altered volcanic flows.

Granite Pegmatites

The so-called granite pegmatites may, in many instances, be highly metamorphosed arkosic beds. The main reason for this is the lack of cross-cutting intrusive contacts and the complete conformity with the enclosing rocks.

Their mineral character varies from coarse grained, pink, quartz rich phases to brick red, medium grained, quartz deficient rocks; the latter being where most of the uranium is found. Thorium is always associated with the uranium and this is the environment wherein Rare Earths are found.

General Geology

The formations trend about N20E across the claim group. They dip from vertically to about 70 degrees east. Their spatial relationship to each other is as depicted on Map 2174, Monmouth Township, published by the Ontario Government.

Economic Geology

Economic potential seems to be confined to the granite pegmatites and the lime rich skarn rocks and the valuable elements found in these rocks are uranium and the Rare Earths with a limited amount of zirconium being present, particularly in one of the showings. The uranium potential has been tested in a limited way - however, the known uranium deposits of the Bancroft Area are generally recognized to be of too low a grade for the economics of uranium as they exist today. No doubt uranium occurrences on the Saranac Claims fall into the same category.

Rare Earth elements commonly occur with radioactive minerals, especially thorium and therefore all radioactive mineral occurrences need to be sampled for Rare Earths.

Zircon Showing

The "zircon showing" on claims S0 721594 has been exposed in one very large trench and 3 smaller ones. Mineral Collectors have pretty well destroyed what

was originally and outstanding occurrence of zircons. The zircons occur in a skarn rock which has some associated purple fluorite. A few grab samples collected in the fall of 1987 returned modest values in Rare Earths. Obviously

more sampling is needed, none of the original diamond drill results are extant today.

East Pegmatite Zone

This zone occurs east of the Hadlington Road and is located on claims SO 721599 and 721600. The zone has been explored by an open cut some 150 feet long and by some 32' drill holes the logs of which have been lost. Thorium is present in considerable amounts along with lesser amounts of uranium. The zone has never been sampled for Rare Earths.

Radioactive Anomalies

The Radiometric Survey located several zones of quite strong radioactivity, some of which appear to be new discoveries. All of these warrant surface examination and sampling for Rare Earths.

The survey also located numerous zones of modestly above normal radioactivity. If the examination of the better zones proves fruitful, then these anomalies should also be tested.

Conclusions and Recommendations

- 1.- The immediate economic potential of the claims lies in the possible discovery of concentrations of Rare Earth Minerals and the claim group has never been explored for these elements.
- 2.- The Rare Earths commonly occur in association with thorium and fluorite, both of which occur on the claims.
- 3.- The known occurrences of thorium, zircon, and fluorite should be grab samples to determine the amounts and types of Rare Earths present.
- 4.- The radioactive anomalies located during the surveys should be examined and grab sampled for Rare Earths.

This report is respectfully submitted.

Willowdale, Ontario,
November 15, 1988

H. Grant Harper, P.Eng.
Economic Geologist



Minir



900

Type of Survey(s)
Magnetic, Electromagnetic, Radiometric

Claim Holder(s)
Saranac Resources Ltd.

Address
Box 2038 Suite 404 20 Eglinton Ave, West. TORONTO, ONT. M4R1K8

Survey Company
Harper Consulting Services Inc.

Date of Survey (from & to)
 01 06 88 15 11 88
 Day Mo. Yr. Day Mo. Yr.

Total Miles of line Cut
29.13

Name and Address of Author (of Geo-Technical report)
H.G. Harper P. Eng. as above

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	20
	- Magnetometer	20
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	20
	- Other	
Man Days Complete reverse side and enter total(s) here	Geological	40
	Geochemical	
	Geophysical	
Airborne Credits Note: Special provisions credits do not apply to Airborne Surveys.	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
Airborne Credits	Geological	
	Geochemical	
	Electromagnetic	
Airborne Credits	Magnetometer	
	Radiometric	

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
50	721 592	100			
	721 593	100			
	721 594	100			
	721 595	100			
	721 596	100			
	721 597	100			
	721 598	100			
	721 599	100			
	721 600	100			
	1040 561	100			
	1040 562	100			
	1040 563	100			

RECEIVED

SOUTHERN ONTARIO MINING DIV.
 RECEIVED

NOV 15 1988

NOV -15 1988

MINING LANDS SECTION 7 8 9 10 11 12 13 14 15 16

AND GEOLOGICAL SURVEY
 ASSESSMENT FILES
 OFFICE

NOV 29 1988

Total number of mining claims covered by this report of work. **12**

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures \$ ÷ 15 = Total Days Credits

Instructions
 Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Credits Recorded **1200**

Date Recorded **Mar. 15/88**

Date Approved as Recorded **8/4/85**

Mining Recorder **[Signature]**

Branch Director **[Signature]**

Date **Nov. 15/88**

Recorded, Holder or Agent (Signature)
H.G. Harper

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
H.G. Harper, P. Eng. Box 2038 Suite 404 20 Eglinton Ave West Toronto

Date Certified **Nov 15/88**

Certified by (Signature)
H.G. Harper



GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL
TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Magnetic, Electro magnetic
Radiometric + Geologic
Township or Area Manmorth Twp.
Claim Holder(s) Sorano Resources Ltd. Box 2038
Suite 404 20 Eglinton Ave, West Toronto
Survey Company Harper Consulting Services Inc.
Author of Report H. G. Harper.
Address of Author 25 above
Covering Dates of Survey 01/06/88 to 15/11/88
(linecutting to office)
Total Miles of Line Cut 29.13

MINING CLAIMS TRAVERSED
List numerically

50 721 592
(prefix) (number)
721 593
721 594
721 595
721 596
721 597
721 598
721 599
721 600
1040 561
1040 562
1040 563

If space insufficient, attach list

SPECIAL PROVISIONS
CREDITS REQUESTED

DAYS
per claim

ENTER 40 days (includes
line cutting) for first
survey.

ENTER 20 days for each
additional survey using
same grid.

Geophysical
--Electromagnetic 20
--Magnetometer 20
--Radiometric 20
--Other _____
Geological 40
Geochemical _____

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: Nov 15/88 SIGNATURE: H. G. Harper.
Author of Report or Agent

Res. Geol. _____ Qualifications 63-1058

Previous Surveys

File No. Type Date Claim Holder

File No.	Type	Date	Claim Holder

TOTAL CLAIMS 12

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations 1346 Number of Readings Mag 1346 EM 2692 Rod 1346
Station interval 100' Line spacing 400'
Profile scale EM 1" = 30%
Contour interval Variable

MAGNETIC

Instrument Mopher M 700
Accuracy - Scale constant 10 % max.
Diurnal correction method hourly checks at base & control station
Base Station check-in interval (hours) 1/2 to 1 hour
Base Station location and value Baseline "A" - 0+00 1000 X

ELECTROMAGNETIC

Instrument Ronka EM 16
Coil configuration fixed horizontal & vertical
Coil separation N/A
Accuracy +/- 1%
Method: [X] Fixed transmitter [] Shoot back [] In line [] Parallel line
Frequency 17.86 kHz - Cutler Marine (specify V.L.F. station)
Parameters measured Vertical in phase & out of phase components

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 Mophor TV ¹ ~~3B~~ A Scintillometer

Values measured T_p

Energy windows (levels) T_p = 0.2 mev & higher

Height of instrument hip level Background Count _____

Size of detector 1.5" x 1.5" Sodium Iodide Crystal

Overburden 0 - 30 ± feet, sandy, clay, bog, variable.
(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 _____

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

Drainage Development _____

Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General _____

ANALYTICAL METHODS

Values expressed in: per cent
 p. p. m.
 p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, -(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

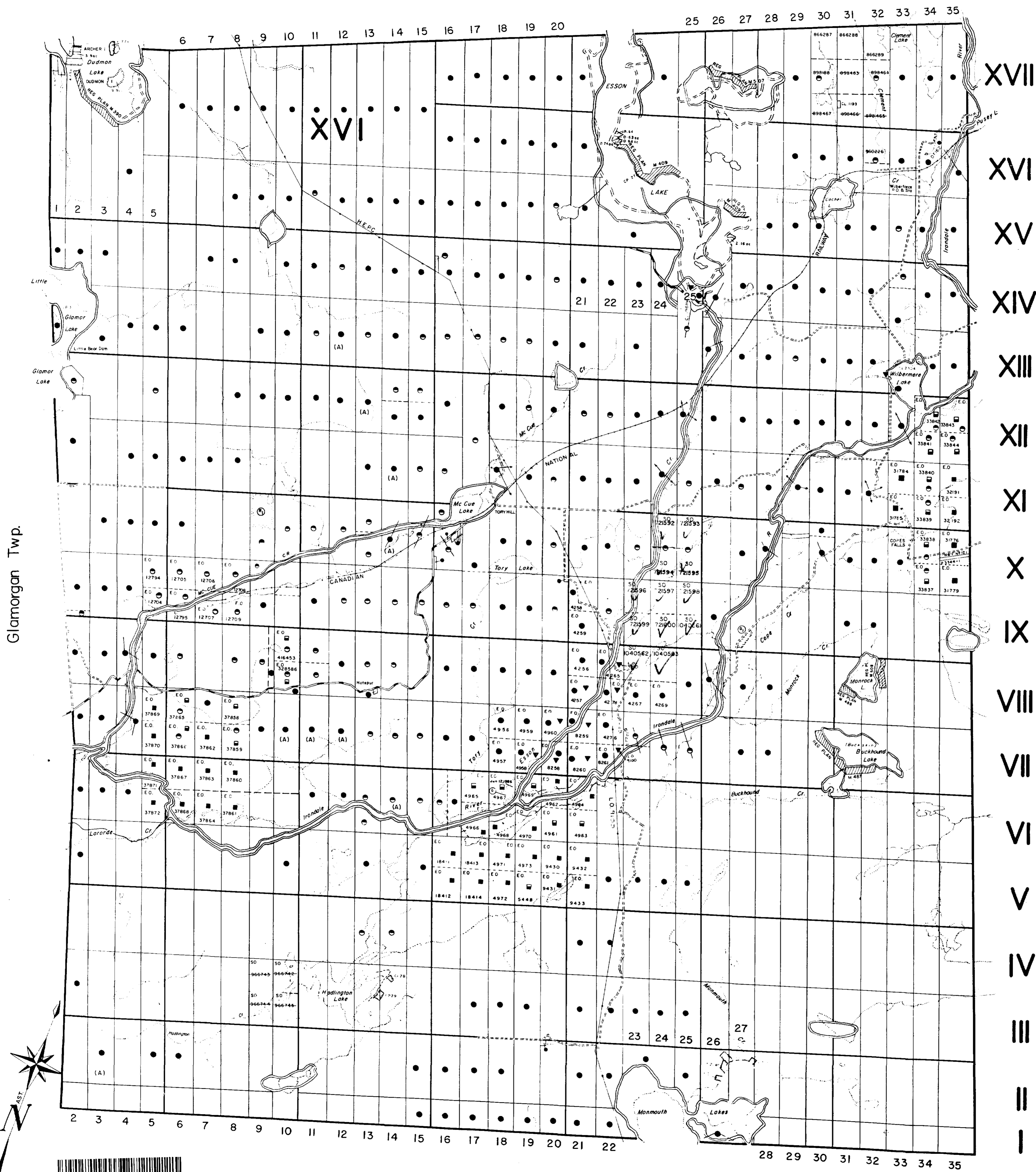
Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

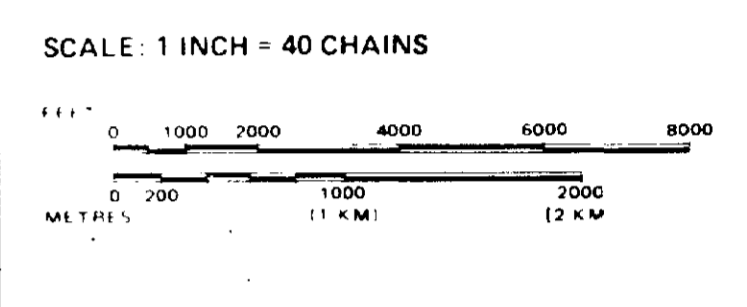
Dudley Twp.



HIGHWAY AND ROUTE No.	
OTHER ROADS	
TRAILS	
SURVEYED LINES:	
TOWNSHIPS, BASE LINES, ETC.	
LOTS, MINING CLAIMS, PARCELS, ETC.	
UNSURVEYED LINES:	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC.	
RAILWAY AND RIGHT OF WAY	
UTILITY LINES	
NON PERENNIAL STREAM	
FLOODING OR FLOODING RIGHTS	
SUBDIVISION OR COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH OR MUSKEG	
MINES	
TRAVERSE MONUMENT	

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
... SURFACE RIGHTS ONLY	
... MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
... SURFACE RIGHTS ONLY	
... MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	
LAND ACQUISITION	



NOTES

This Map Is Not To Be Used
FOR SURVEY PURPOSES

Original shoreline shown thus:

F.R.I. shoreline shown thus:

Patents Map shoreline shown thus:

For status of summer resort locations shown thus:

Please contact Ministry of Natural Resources.

GRAVEL AND SAND

① JUNE 12, 1986 File 30003

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. - MINING RIGHTS ONLY				
S.R.O. - SURFACE RIGHTS ONLY				
M.+S. - MINING AND SURFACE RIGHTS				
Description	Order No.	Date	Disposition	File
SFC 36/80	W.4.84	2/1/84	M.R.O.	

DATE OF ISSUE

SEP 10 1983

SOUTHERN ONTARIO
MINING DIVISION

100' SURFACE RIGHTS RESERVATION AROUND ALL THE LAKES AND RIVERS

TOWNSHIP
MONMOUTH

M.N.R. ADMINISTRATIVE DISTRICT
MINDEN
MINING DIVISION
SOUTHERN ONTARIO
LAND TITLES / REGISTRY DIVISION
HALIBURTON

Ministry of Natural Resources Ontario
Ministry of Northern Development and Mines



NOV 15 1988

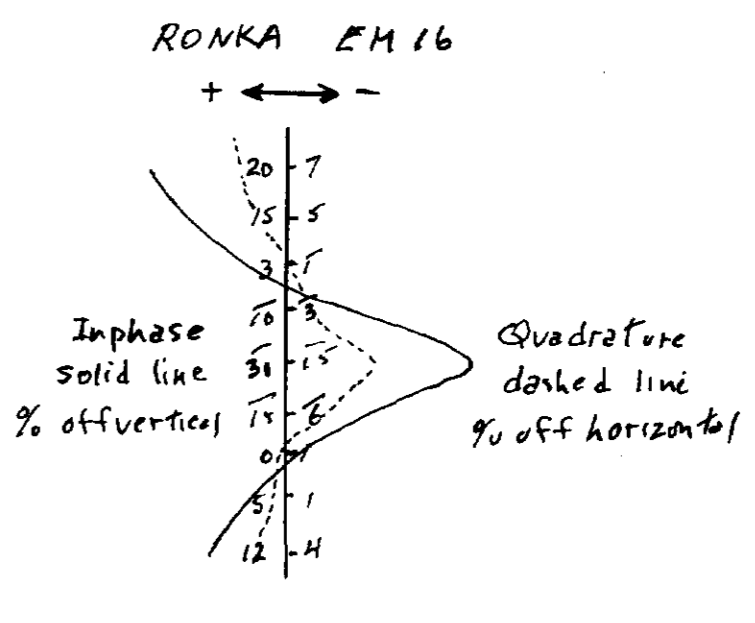
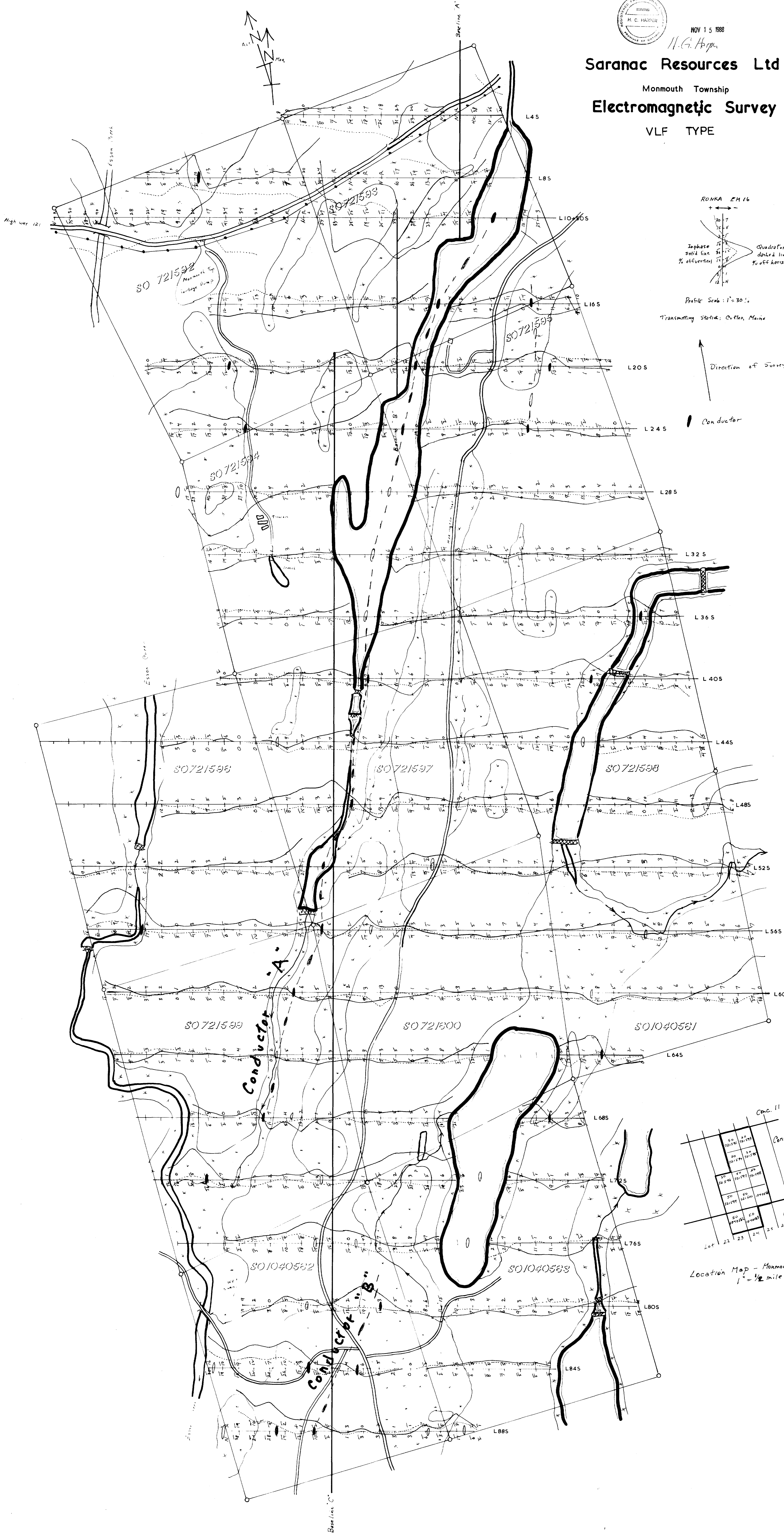
H. G. Harper

Saranac Resources Ltd

Monmouth Township

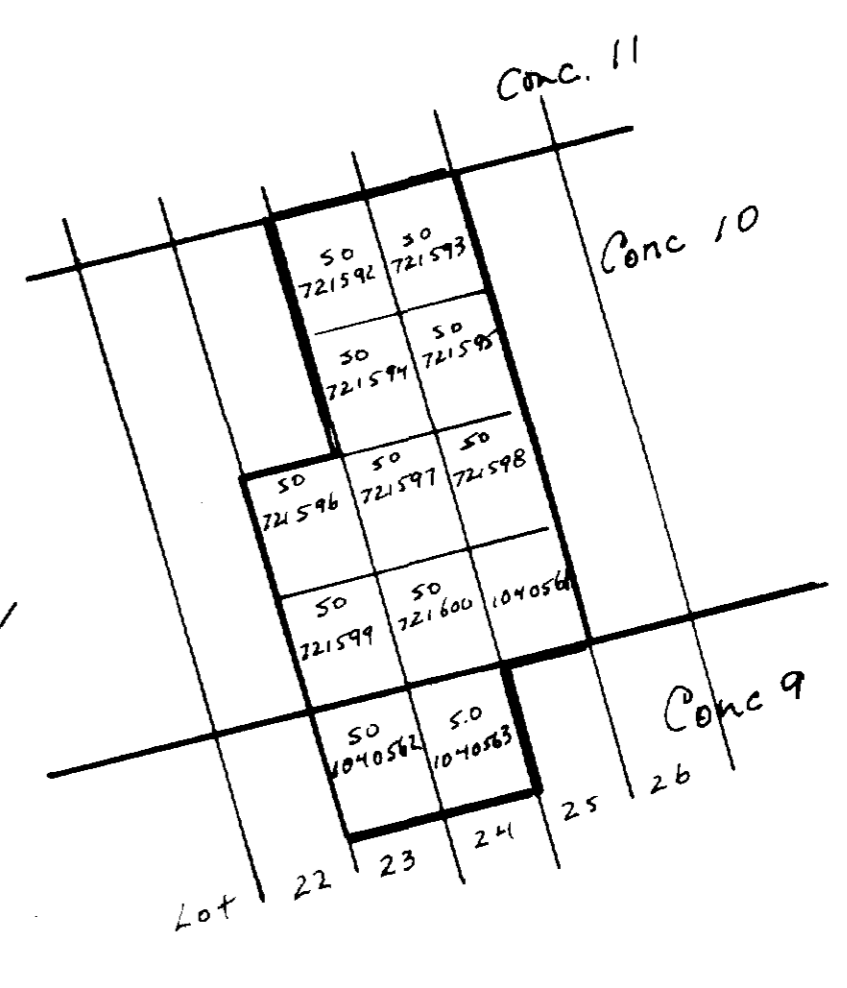
Electromagnetic Survey

VLF TYPE



Direction of Survey

Conductor



Location Map - Monmouth Twp
1" = 1/2 mile

0 200 400 600
FEET



15 1988
NOV 15 1988

W. H. Hahn

2. 11789

Saranac Resources Ltd

Monmouth Township




Radiometric Survey

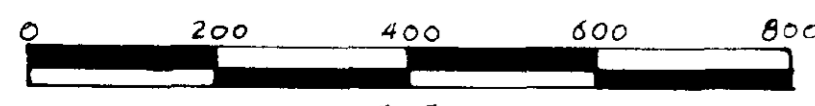
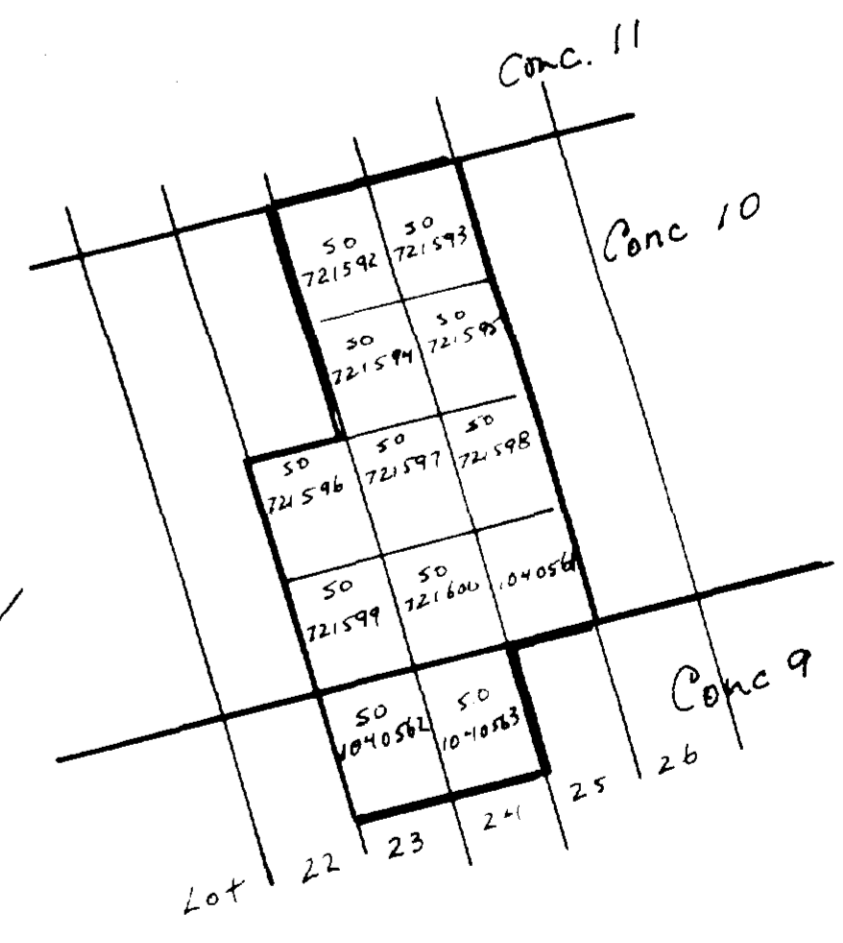
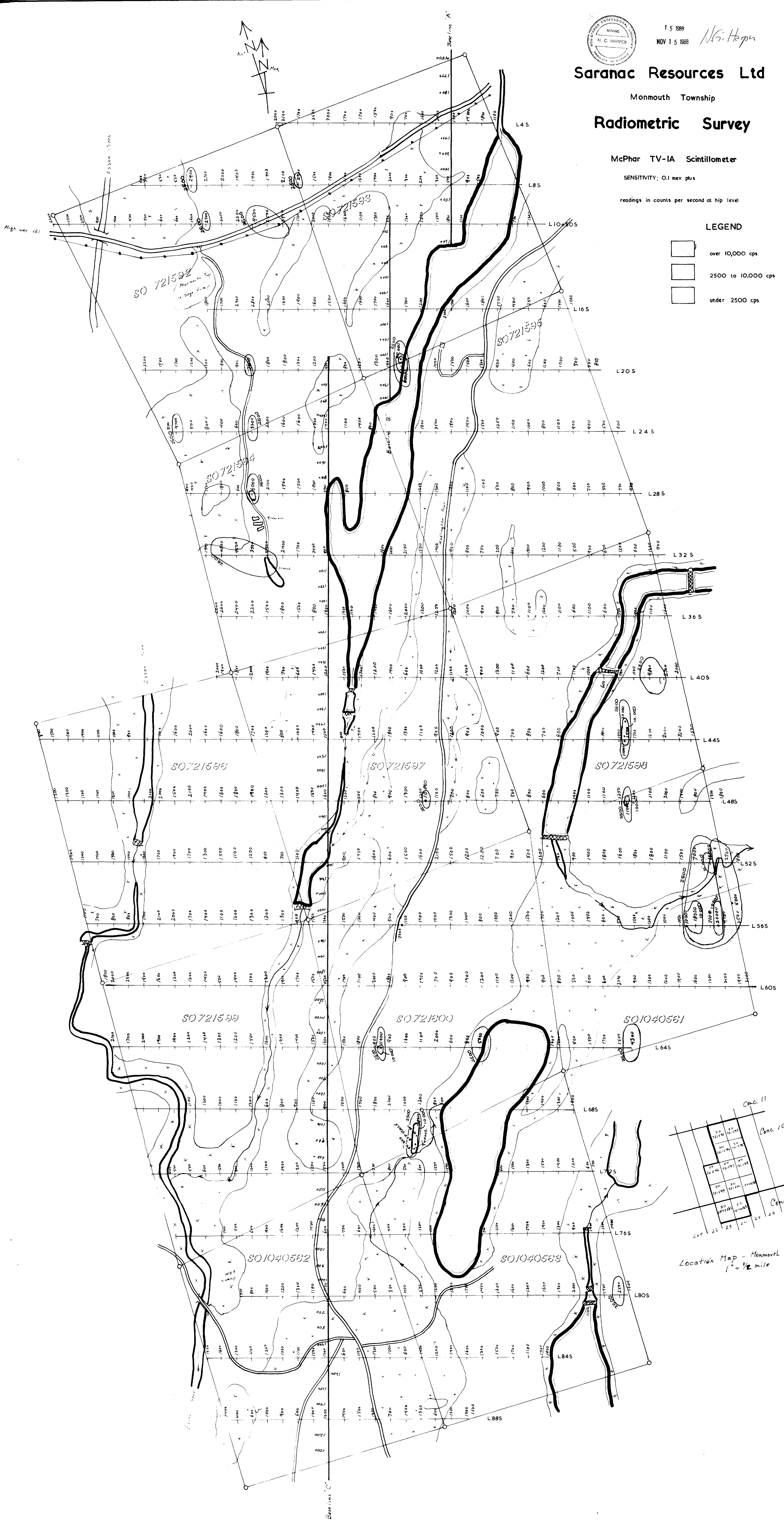
McPhar TV-IA Scintillometer

SENSITIVITY: 0.1 mev plus

readings in counts per second at hip level

LEGEND

-  over 10,000 cps
-  2500 to 10,000 cps
-  under 2500 cps





NOV 15 2008

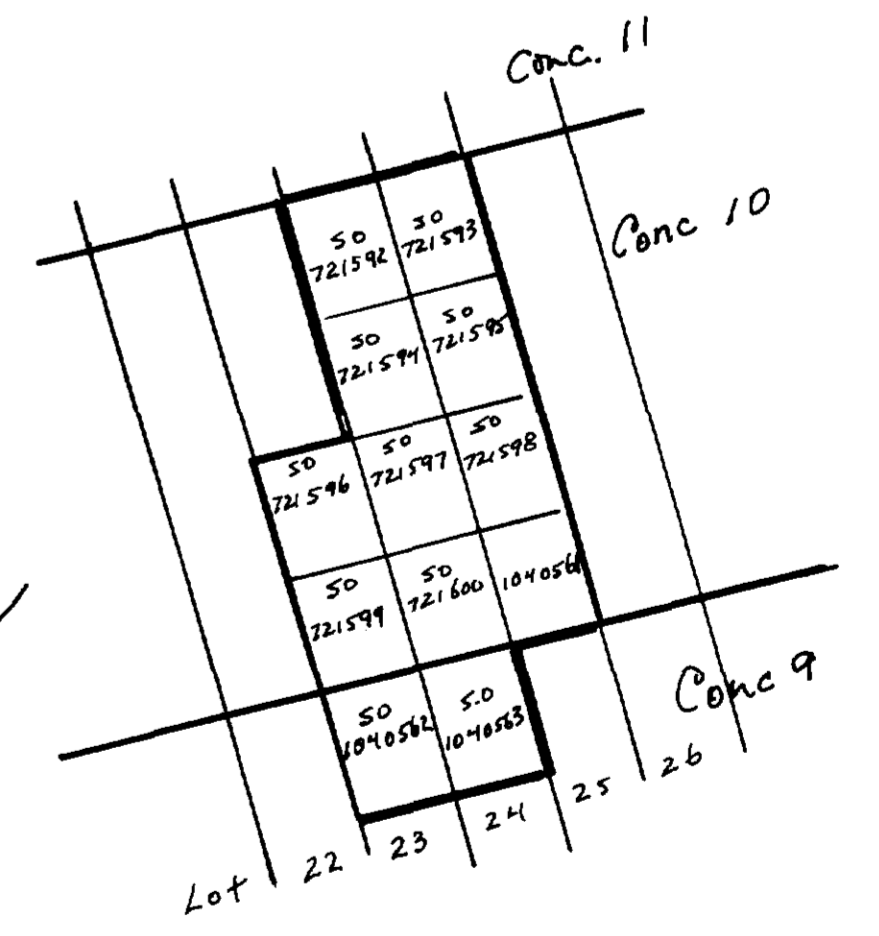
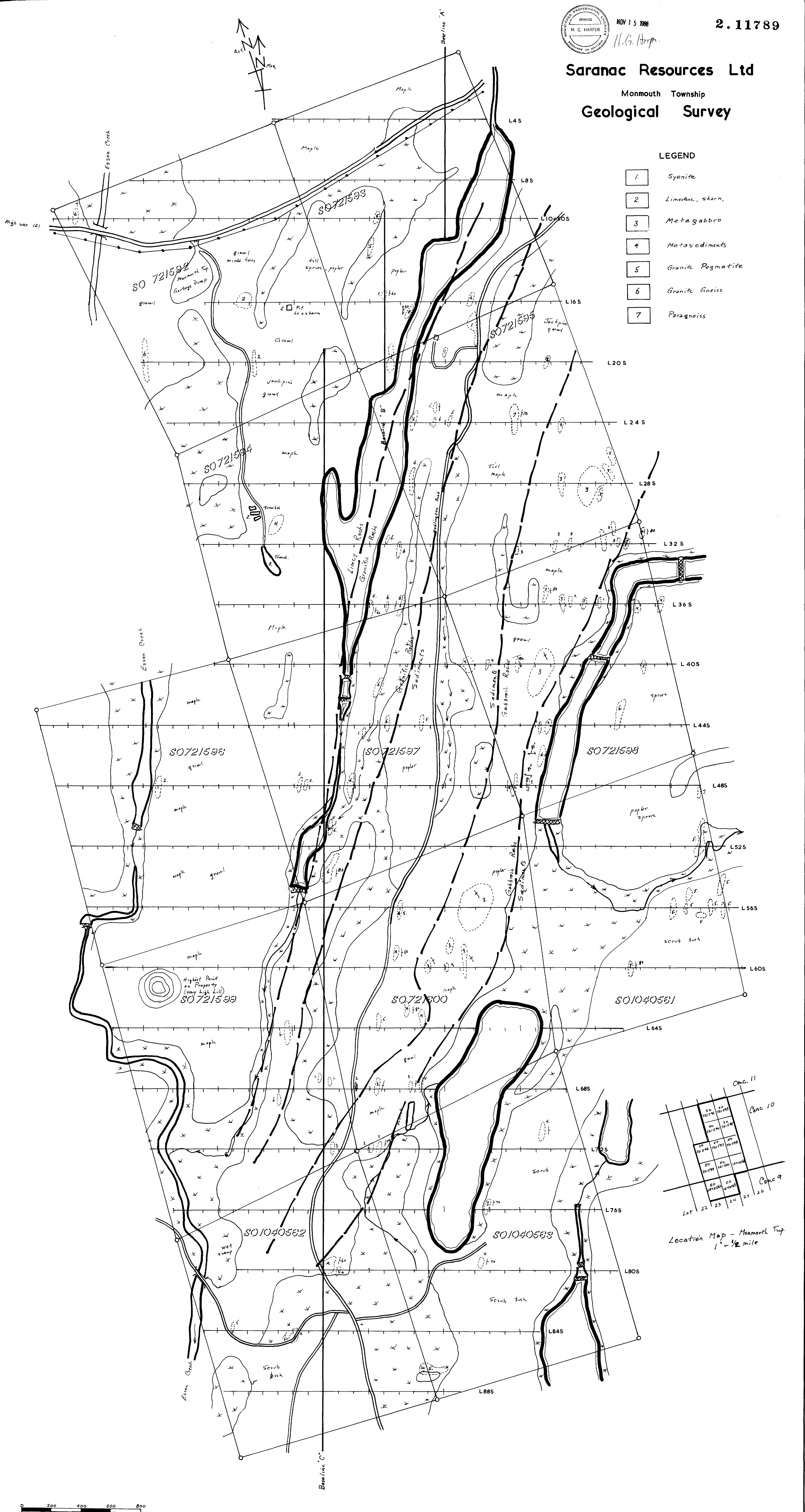
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Saranac Resources Ltd

Monmouth Township Geological Survey

LEGEND

- 1 Syenite
- 2 Limestone, shorn,
- 3 Metagabbro
- 4 Metasediments
- 5 Granite Pegmatite
- 6 Granite Gneiss
- 7 Paragneiss





NOV 15 1988

H.G. Harper


Saranac Resources Ltd

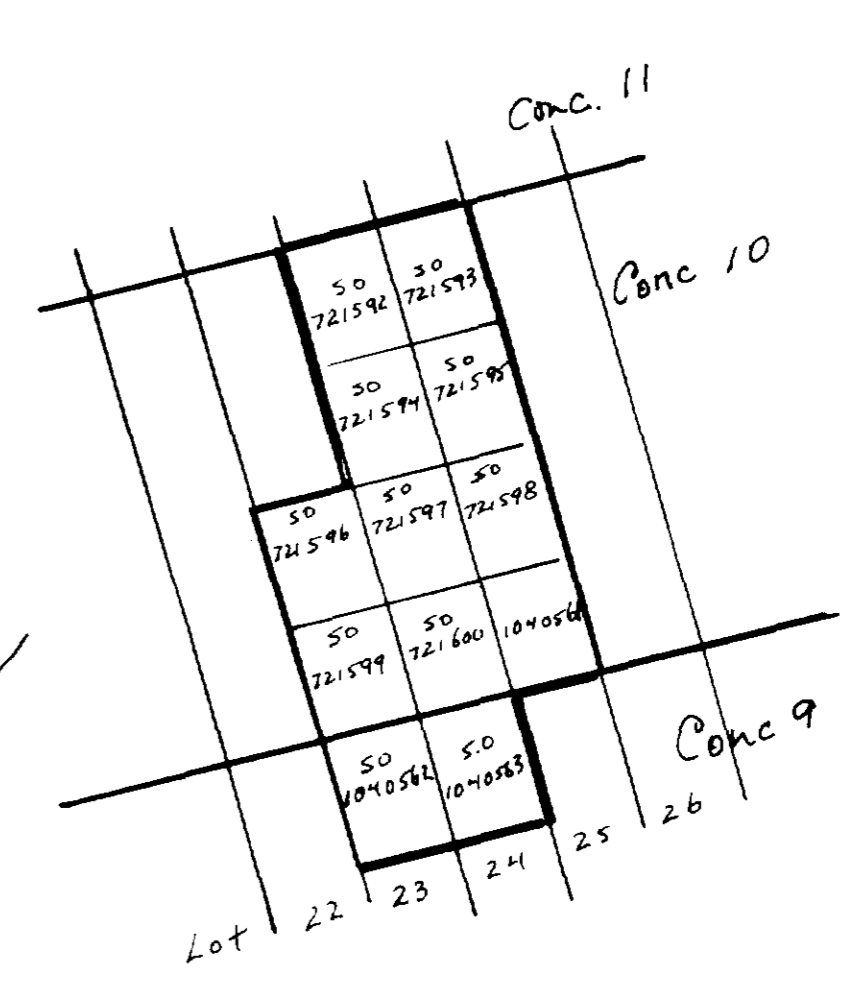
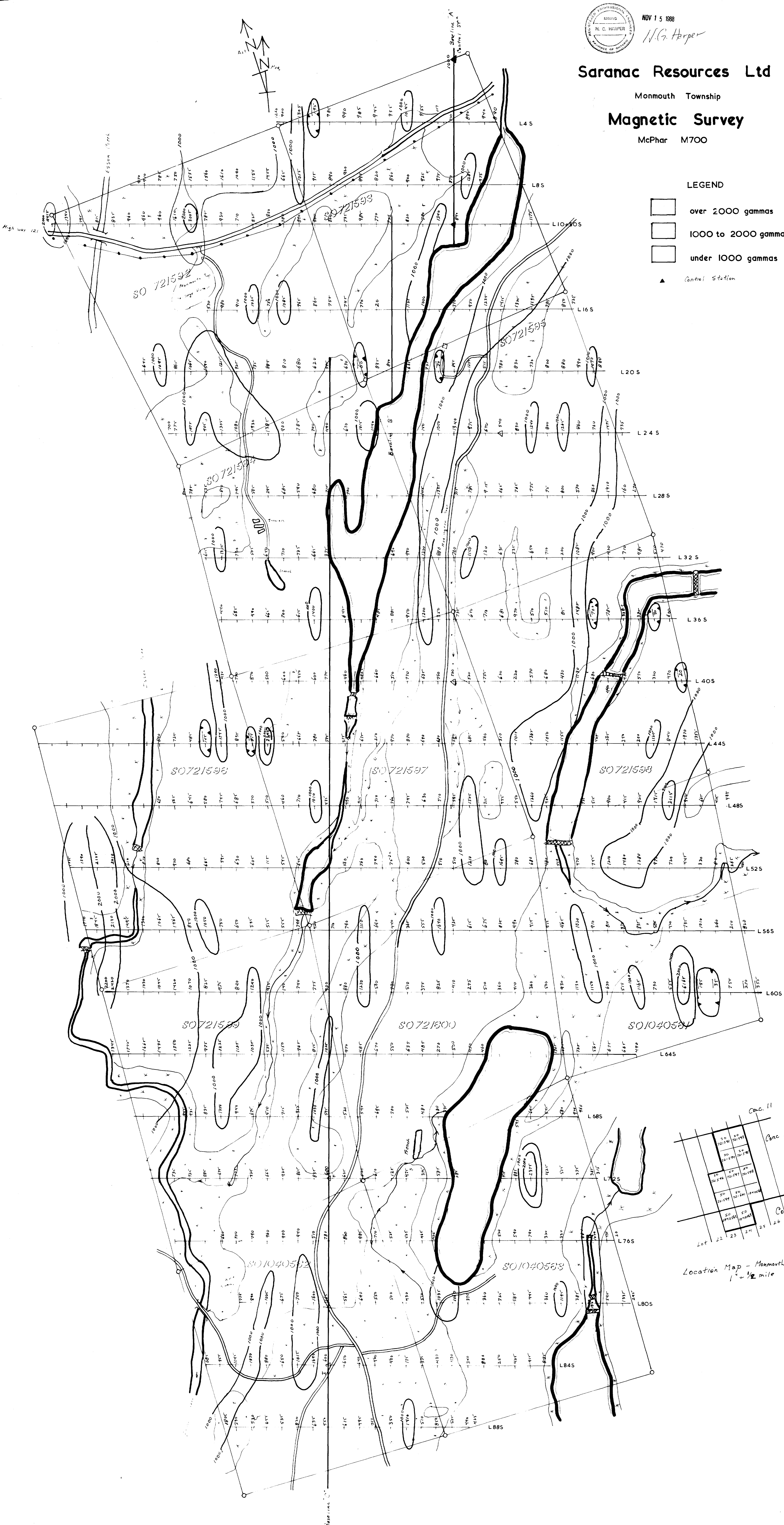
Monmouth Township

Magnetic Survey

McPhar M700

LEGEND

-  over 2000 gammas
-  1000 to 2000 gammas
-  under 1000 gammas
-  Control Station



Location Map - Monmouth Twp
1/2 mile

