MAGNETIC

AND

HORIZONTAL LOOP ELECTROMAGNETIC

SURVEYS

FOR

ESSEX MINERALS COMPANY

HALLIDAY PROJECT

HYDRO GRID

Timmins, Ontario
May 1978

Peter T. George, P.Eng.
Consulting Geologist

HYDRO GRID

Introduction

The following report describes the results of ground geophysical surveys completed for Essex Minerals Company, Halliday Project, Ontario. Line cutting was completed during the period January 4 to February 26, 1978. Geophysical surveys were completed during the period February 4 to April 15, 1978.

Property Description

The property consists of ten contiguous, unpatented mining claims designated as follows:

L500779 to L500782 inclusive

L500929 to L500934 inclusive

Property, Location and Access

The property is located in the north quarter of Semple and Hutt Townships. Access to the property is via the Papakomeka Lake road south from Timmins then east on the Matachewan road to the Ontario Hydro line that crosses the west side of Hutt Township. The hydro line crosses the central part of the property approximately 1.5 miles south of the Matachewan road.

Geophysical Surveys

Magnetic and horizontal loop electromagnetic surveys were completed on the property.

The magnetic survey was carried out utilizing a Scintrex MP-2 Proton Magnetometer capable of reading total field values to an accuracy of ± 1 gamma. Readings were taken at 50 foot intervals on all base lines and cross lines. Base stations were established at 100 foot intervals along all base lines and tie lines. Diurnal variation was corrected for by tieing in to the base stations at time intervals generally less than half hour and in no case greater than one hour.

The horizontal loop electromagnetic survey was carried out utilizing an Apex Parametrics Max Min II HEM. The HEM unit measures the in-phase and Quadrature components of the secondary field developed in the vicinity of conductive material. The measurements are accurate to ± 1%. Readings were taken at 444 Hz and 1777 Hz frequencies utilizing a 400 foot reference cable.

Conductivity-width and depth of overburden determinations are presented on the 444 Hz HEM maps.

Regional Geology

The regional geology of the area is presented on Ontario Department of Natural Resources Compilation Map 2205 (Timmins-Kirkland Lake).

The area is underlain by an Archean volcanic-sedimentary complex locally referred to as the Halliday dome. The general stratigraphic sequence in the area is as follows:

A thick sequence of mafic volcanic rocks is overlain by a felsic volcanic complex consisting of flows, pyroclastics and volcaniclastic sediments. Ultramafic flows or sills are common in the general stratigraphic interval marked by the felsic volcanic-mafic volcanic contact zone. Sedimentary rocks occur intercalated with the volcanic rocks and also occur at the top of the stratigraphic sequence.

Folding in the area is complex but generally occurs about fold axes having an east-west trend. Some large scale cross folding has occurred about north-south trending fold axis.

Two major sets of faults occur in the area. One set has a northeasterly strike direction and the other has a north to northwesterly strike direction.

Three sets of diabase dikes occur in the area. Dikes having a northerly strike direction are probably Matachewan-type. Dikes having a northeasterly strike direction are probably Sudbury-type.

A thin veneer of generally flat lying early Proterozoic sedimentary rocks unconformably overlies the Archean rocks in parts of the area.

Property Geology and Previous Work

Hollinger Exploration has recorded geophysical and geological surveys in the vicinity of the present grid. Two drill holes were reported near the west boundary of the property.

The property is underlain by interlayered mafic and felsic volcanic rocks with an east-west strike direction.

Geophysical Results

Magnetic Survey:

Maximum magnetic relief on the property is 1300 gammas. The property displays generally low magnetic relief with a number of narrow magnetic anomalies. The magnetic anomalies have no electromagnetic response and are probably due to disseminated magnetite.

HEM Survey:

Three electromagnetic anomalies were located during the survey.

Anomaly A

Anomaly A occurs from line 36W to 60W. The 444 Hz data displays an intermittent response. The zone is a weak, thin conductor from line 36W to line 48W. From line 52W to line 60W the conductive zone is 50 to 200 feet wide with good conductivity. The best response is on line 60W where the data indicates a zone 150 feet wide with a conductivity-width of 20 mhos and a depth of burial of 40 feet.

Anomaly B

Anomaly B occurs as a single line response on line 60W with a coincident 325 gamma magnetic anomaly. The data indicates a thin

Anomaly B - Con't

zone with a conductivity-width of 4 mhos and a depth of burial of 60 feet.

Anomaly C

Anomaly C is a weak single line response on line 12W. The zone is at approximately the same stratigraphic position as Anomaly A.

Conclusions and Recommendations

Anomalies A and B have probably been drill tested by Hollinger Exploration. A field check should be made to locate the position of the drill site relative to the conductor axis.

Anomaly C is too thin and has too short a strike length to be of economic significance.

Respectfully submitted,

Peter T. George, P.Eng.
Consulting Geologist

HYDRO

Ministry of Natural

Ontario

GEOPHYSICAL – GEOLOGICAL TECHNICAL DATA

41P14NE8385 2.2802 HUTT

900

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) Mag., HEM, Line Cutting

Township or Area SEMPLE & HUTT TPS.

Claim Holder(s) Essex Minerals Company
91 Pine St., South, Timmins, Ont.

Survey Company Geoex Ltd., P.O. Box 70, Timmins, Ont.

Author of Report Peter T. George, P.Eng.

Address of Author Geoex Ltd., P.O. Box 70, Timmins

Covering Dates of Survey MARCH 1 - MAY 30, 1978
(linecutting to office)

Total Miles of Line Cut 8.45

SPECIAL PROVISIONS CREDITS REQUESTED

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

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
–Electromagnetic	40
–Magnetometer	20
–Radiometric	
–Other	
Geological	
Geochemical	

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

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

DATE: June 8, 1978 SIGNATURE: Peter T. George
Author of Report or Agent

L.D.

Res. Geol. _____ Qualifications 63.2350

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)	EM	MAG
L	500779 (H)	1/2	✓
L	500780 (H)	1/2	✓
L	500781	1/2	1/2
L	500782	1/4	✓
L	500929 (H)	1/4	✓
L	500930	1/3	✓
L	500931	1/4	✓
L	500932 (H)	3/4	✓
L	500933	✓	
L	500934	1/4	✓

(H) Hydro line

TOTAL CLAIMS 10

If space insufficient, attach list

Page 2 of 2

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations Mag: 878 HEM: 281 Number of Readings Mag: 878 HEM: 1124

Station interval Mag: 50' HEM: 100' Line spacing 400'

Profile scale 1 inch = 20%

Contour interval 25 to 100 gammas

MAGNETIC

Instrument Scintrex MP-2 Proton Mag.

Accuracy – Scale constant + 1 gamma

Diurnal correction method Base Stns. established at 100' intervals along B.L.

Base Station check-in interval (hours) Maximum 1 hour

Base Station location and value 00/24W 59225 8

ELECTROMAGNETIC

Instrument Apex Parametrics Maxmin II

Coil configuration Horizontal Loop

Coil separation 400'

Accuracy + 1%

Method: ☐ Fixed transmitter ☐ Shoot back ☒ In line ☐ Parallel line

Frequency 444 Hz., 1777 Hz.
(specify V.L.F. station)

Parameters measured In Phase & Quadrature components of secondary field

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

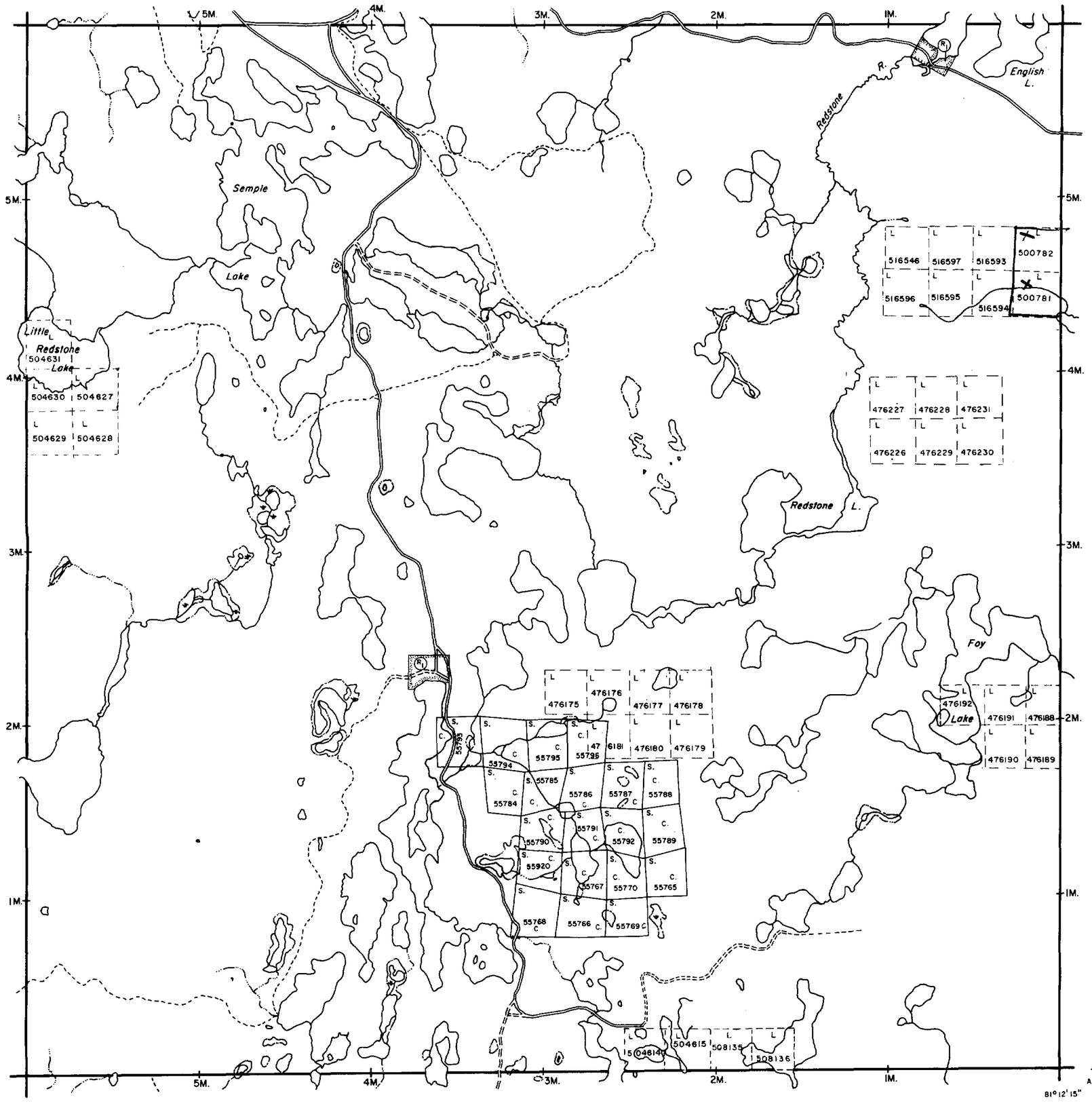
Power

Electrode array

Electrode spacing

Type of electrode

ENGLISH TWP. M-787



MOHER TWP. M-868

HUTT TWP. M-943

SOTHMAN TWP. M-1121

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

Areas withdrawn from staking under Section 43 - of the Mining Act, (R.S.O. 1970)

Order No.	File	Date	Disposition
(R1) W.19/78	188543	10/4/78	S.R.O.

LEGEND

PATENTED LAND	Ⓟ or ●
PATENTED FOR SURFACE RIGHTS ONLY	◒
LEASE	Ⓛ
LICENSE OF OCCUPATION	L.O.
CROWN LAND SALES	C.S.
LOCATED LAND	Loc.
CANCELLED	C.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
HIGHWAY & ROUTE NO.	17
ROADS	
TRAILS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	

*used only with summer resort locations or when space is limited

TOWNSHIP OF 2.2802

SEMPLE

DISTRICT OF
SUDBURY

LARDER LAKE
MINING DIVISION

SCALE : 1 INCH = 40 CHAINS (1/2 MILE)

DR. R.W. NOBLE	PLAN NO. M-1100
DATE APR. 22, 71	

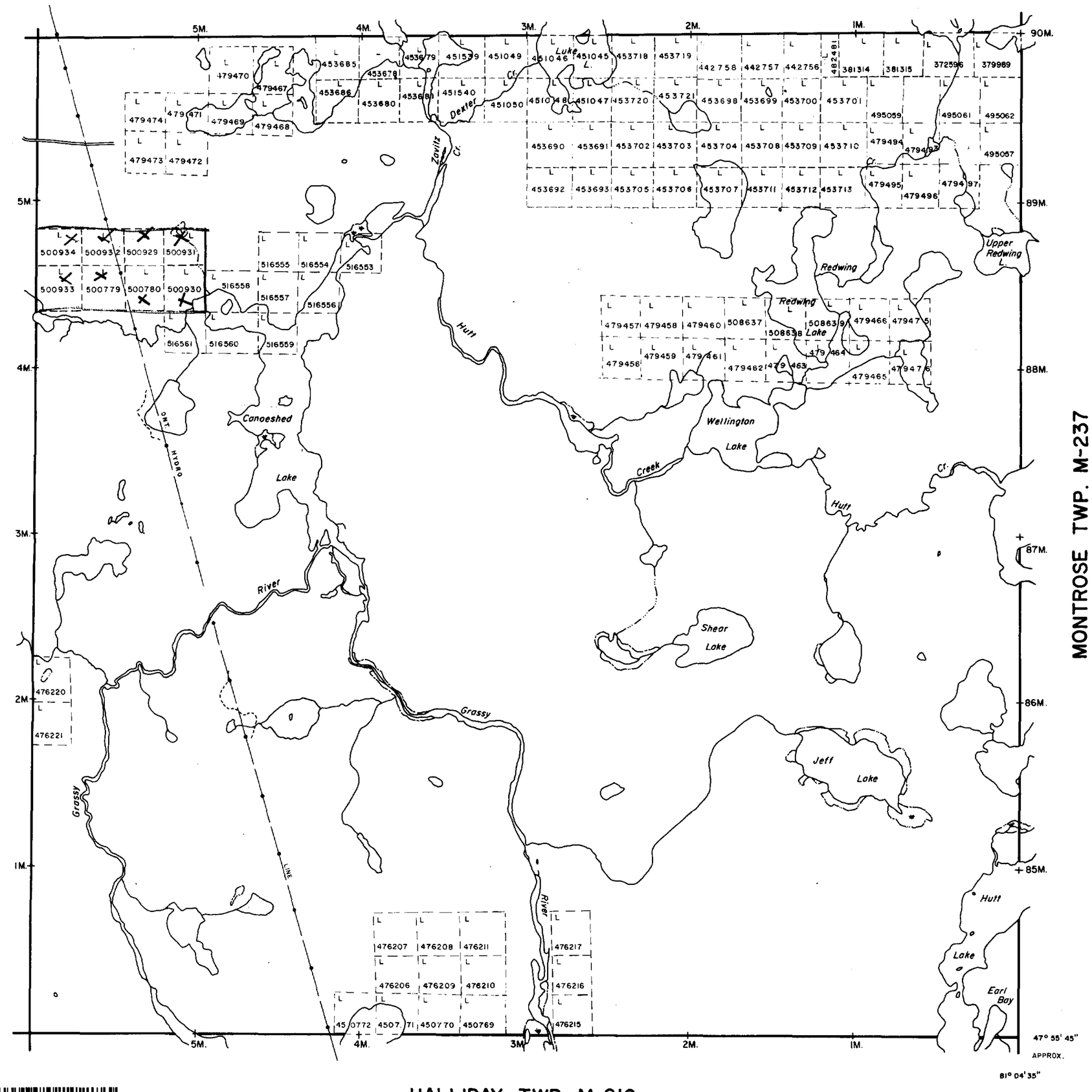
ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

ZAVITZ TWP. M-1189

SEMPLE TWP. M-1100

MONTROSE TWP. M-237

HALLIDAY TWP. M-910



NOTES

400' surface rights reservation along the shores of all lakes and rivers.

LEGEND

PATENTED LAND	Ⓟ or ●
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LICENSE OF OCCUPATION	L.O.
CROWN LAND SALES	C.S.
LOCATED LAND	Loc.
CANCELLED	C.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
HIGHWAY & ROUTE NO.	(17)
ROADS	
TRAILS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	

*used only with summer resort locations or when space is limited

TOWNSHIP OF 2.2802

HUTT

DISTRICT OF
SUDBURY

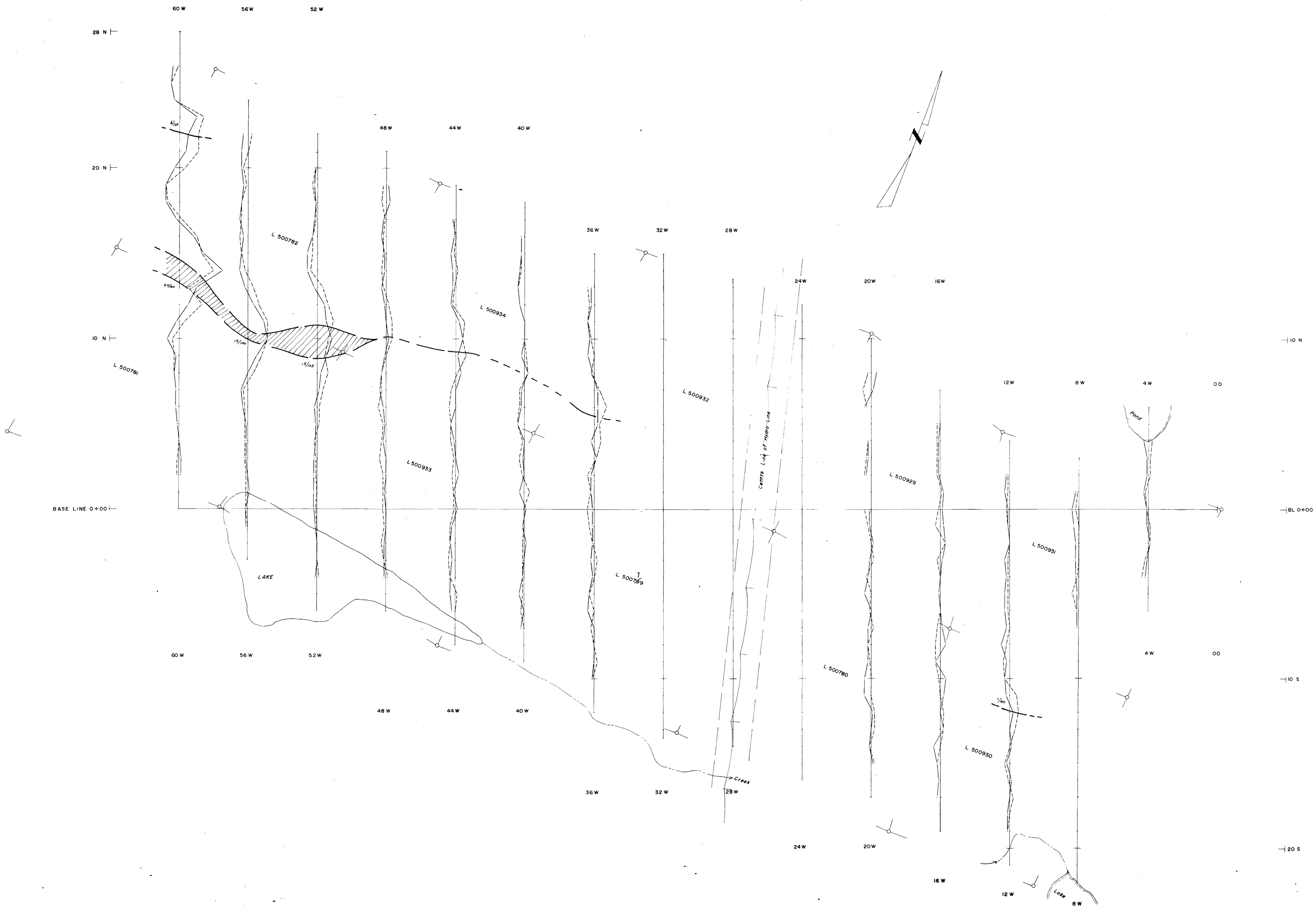
LARDER LAKE
MINING DIVISION

SCALE : 1 INCH = 40 CHAINS (1/2 MILE)

DR. R. NOBLE
DATE MAY 5, 71.

PLAN NO. **M-943**

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH



LOCATION MAP Scale: 1 inch = 1/2 mile

LEGEND

Conductor Axis

Conductor Width

Conductivity Thickness (mhos)/Depth Estimate (ft.)

In-Phase Profile

Quadrature Profile

Profile Scale: 1 inch = 20 %

Instrument: Apex Parametrics Maxmin II

Cable: 400' (121.9 m)

Frequency: 444 Hz.

Claim Post		Road	
Witness Post		Fence	
Creek		Hydro Line	
Swamp		Building	
Lake		Drill Hole	
Trail		Outcrop	

CLIENT ESSEX MINERALS CO.

PROJECT HALLIDAY

GRID HYDRO

H.E.M. SURVEY

Scale: 1 inch = 200 feet

Drafted By: J. Hol

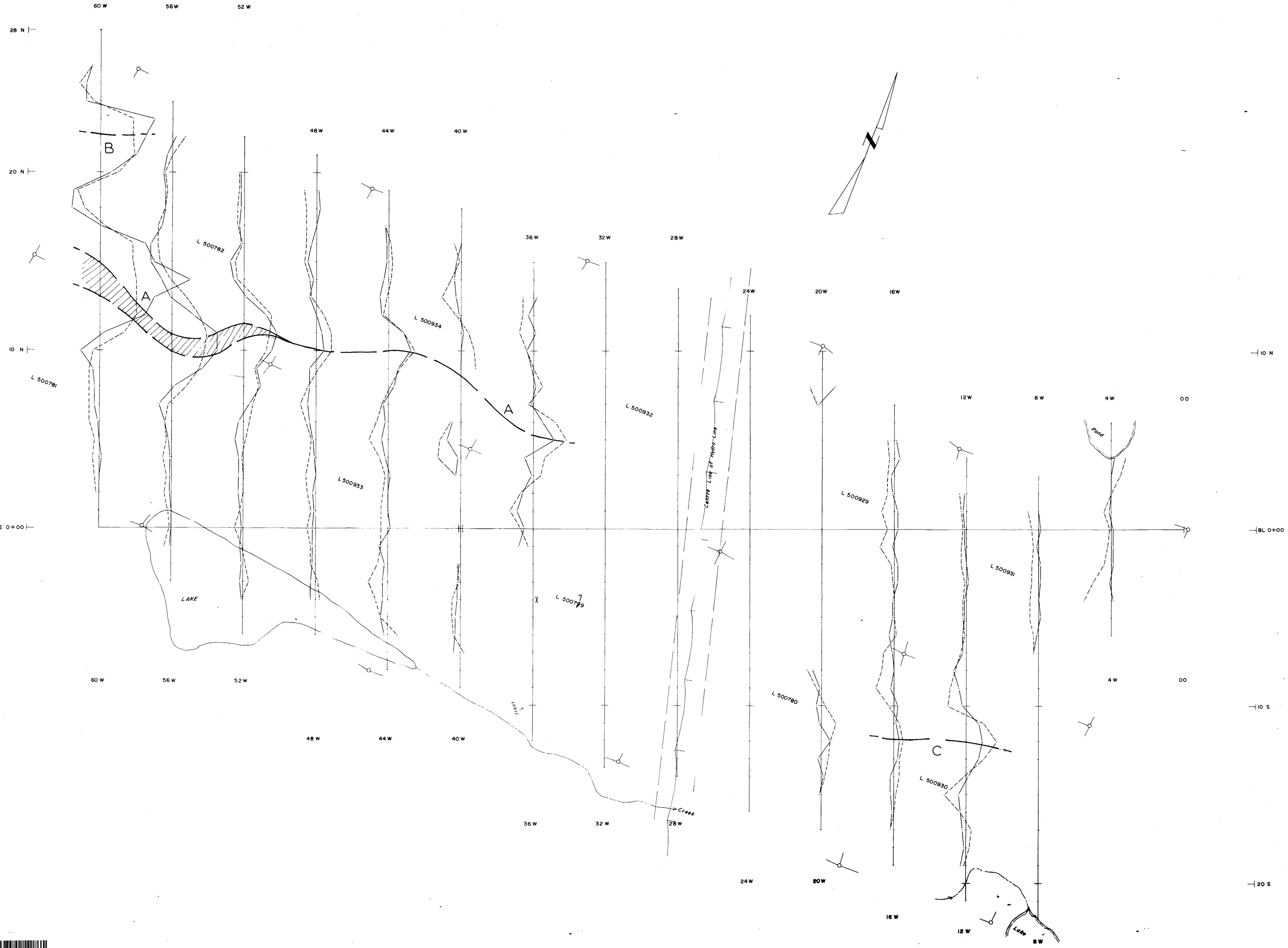
Covering Dates: Field April 4
Office April 15-May 30
1978

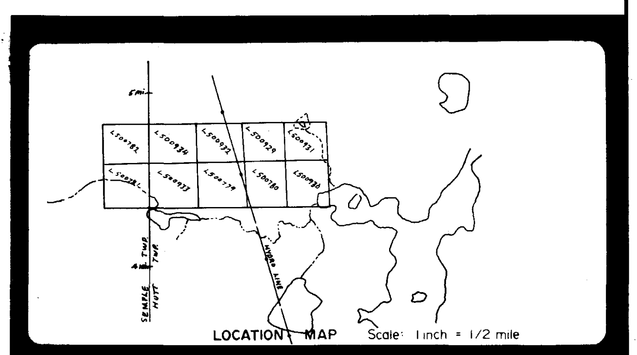
Consultant: P.T. George

REGISTERED ENGINEER P. T. GEORGE

GEOEX Limited
Exploration Services and Management
P.O. Box 70,
Timmins, Ont.
(705) 267-3990

Drawing Number 12A





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Conductor Axis

Conductor Width

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In-Phase Profile

Quadrature Profile

Profile Scale: 1 inch = 20 %

Instrument: Apex Parametrics Maxmin II

Cable: 400' (121.9 m)

Frequency: 1777 Hz

Claim Post		Road	
Witness Post		Fence	
Creek		Hydro Line	
Swamp		Building	
Lake		Drill Hole	
Trail		Outcrop	

CLIENT ESSEX MINERALS CO.

PROJECT HALLIDAY

GRID HYDRO

H.E.M. SURVEY

Scale: 1 inch = 200 feet

Drafted By: J. Hol

Covering Dates: Field April 4
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1978

Consultant: P.T. George

ONTARIO PROFESSIONAL ENGINEERS
P. T. GEORGE

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Exploration Services and Management

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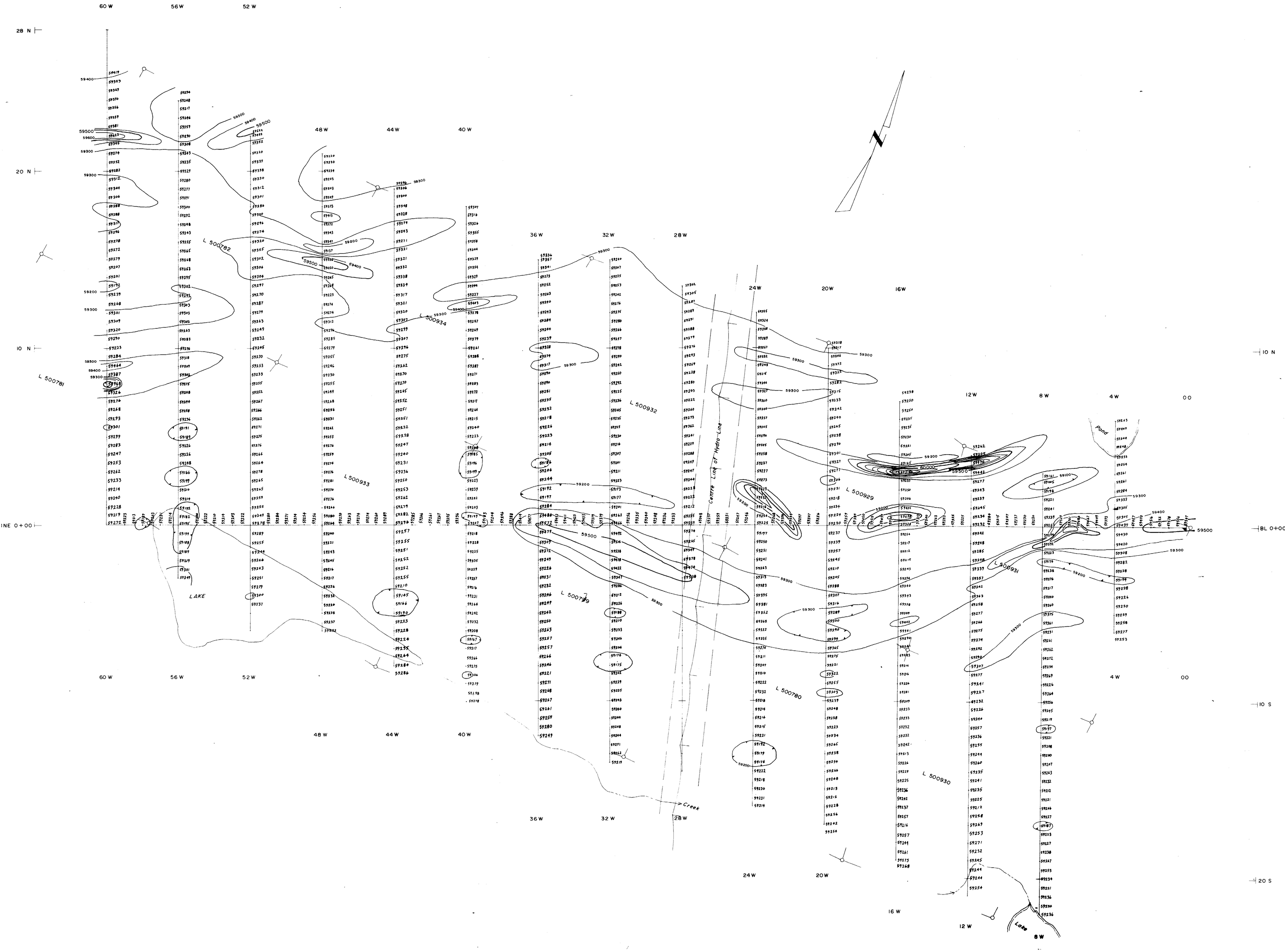
Drawing Number
12B



LOCATION MAP Scale: 1 inch = 1/2 mile

LEGEND

Measurement Station Along Picket Line

Total Field Value

Main Base Station

Magnetic Contour

Magnetic Depression

Instrument: Scintrex MP-2

CONTOURS: 500 gammas
100 gammas
50 gammas
25 gammas

Claim Post		Road	
Witness Post		Fence	
Creek		Hydro Line	
Swamp		Building	
Lake		Drill Hole	
Trail		Outcrop	

CLIENT ESSEX MINERALS CO.

PROJECT HALLIDAY

GRID HYDRO

MAGNETOMETER SURVEY

Scale: 1 inch = 200 feet

Drafted By: W. Wallace

Covering Dates: Field April 4
Office April 15-May 30
1978

Consultant: P.T. George

GEOEX Limited
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Drawing Number 12C

240