



41P15NE8286 2.86 POWELL

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SUMMARY

The magnetometer survey over a 16 claim grid has revealed a strong relief of north-south trending highs and lows. This magnetic pattern is likely related to Matachewan-aged diabase dikes.

The induced polarization survey revealed a strongly contorted pattern. A weak north-south trend was revealed, however, no direct correlation with the magnetics could be made.

The chargeability values over the Timiskaming sediments range from 3-10 milliseconds. Those over the syenite complex are higher. At least six highs were revealed over the syenite of which one coincides with the known showing.

Trenching and eventually the drilling of 1400 ft, is recommended to investigate the sources of chargeability highs over the syenite mass.



REPORT ON
GROUND GEOPHYSICAL SURVEYS, POWELL TOWNSHIP
MATACHEWAN AREA, NORTHEASTERN ONTARIO
ON BEHALF OF
RICHLAND RESOURCES LIMITED

INTRODUCTION

During the month of July, 1970, ground geophysical surveys were undertaken by Seigel Associates Limited over a block of 16 claims in the south eastern part of Powell Township, District of Timiskaming, northeastern Ontario, on behalf of Richland Resources Limited.

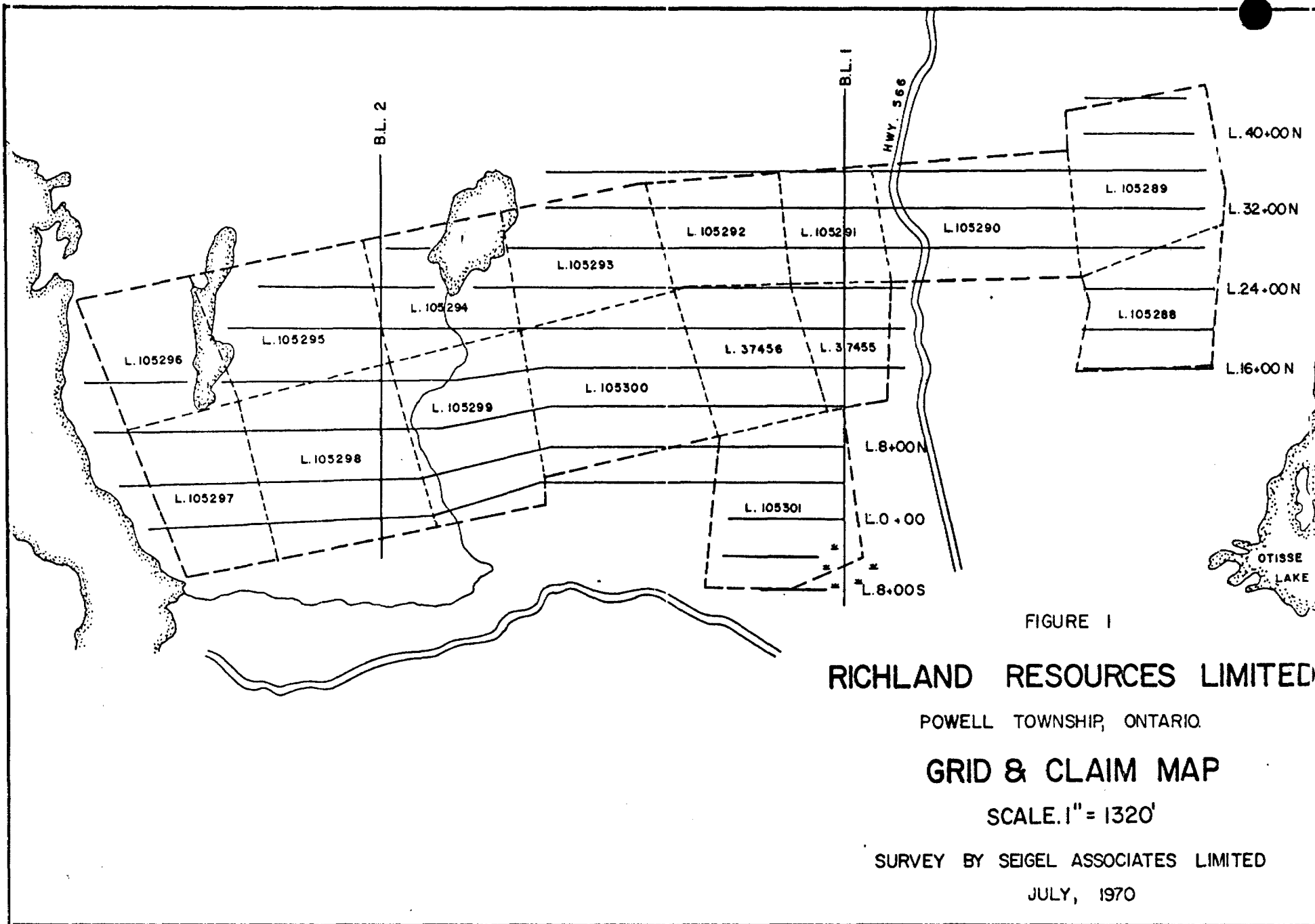
The survey consisted of a magnetometer survey over all 16 claims and an induced polarization survey over 7 claims located in the centre of the claim group. The claim group is irregular in shape and is approximately 13,000 ft. long and 4000 ft. wide. Its outline together with the survey grid is shown on Figure 1 (scale 1" = 1320').

Access to the property, which lies 2 miles northwest of Matachewan is via Ontario Highway No. 566.

The property is crossed by north-south ridges formed by diabase dykes. There is some swampy ground and three small lakes. Outcrops are abundant.

The claims covered during the magnetometer survey are numbered L105288 to L105301 inc., L37455 and L37456. (Larder Lake Mining Division) The latter two are patented claims. Claims L105291 to L105293 inc., L105300, L105301, L37455 and L37456 were covered with the induced polarization survey





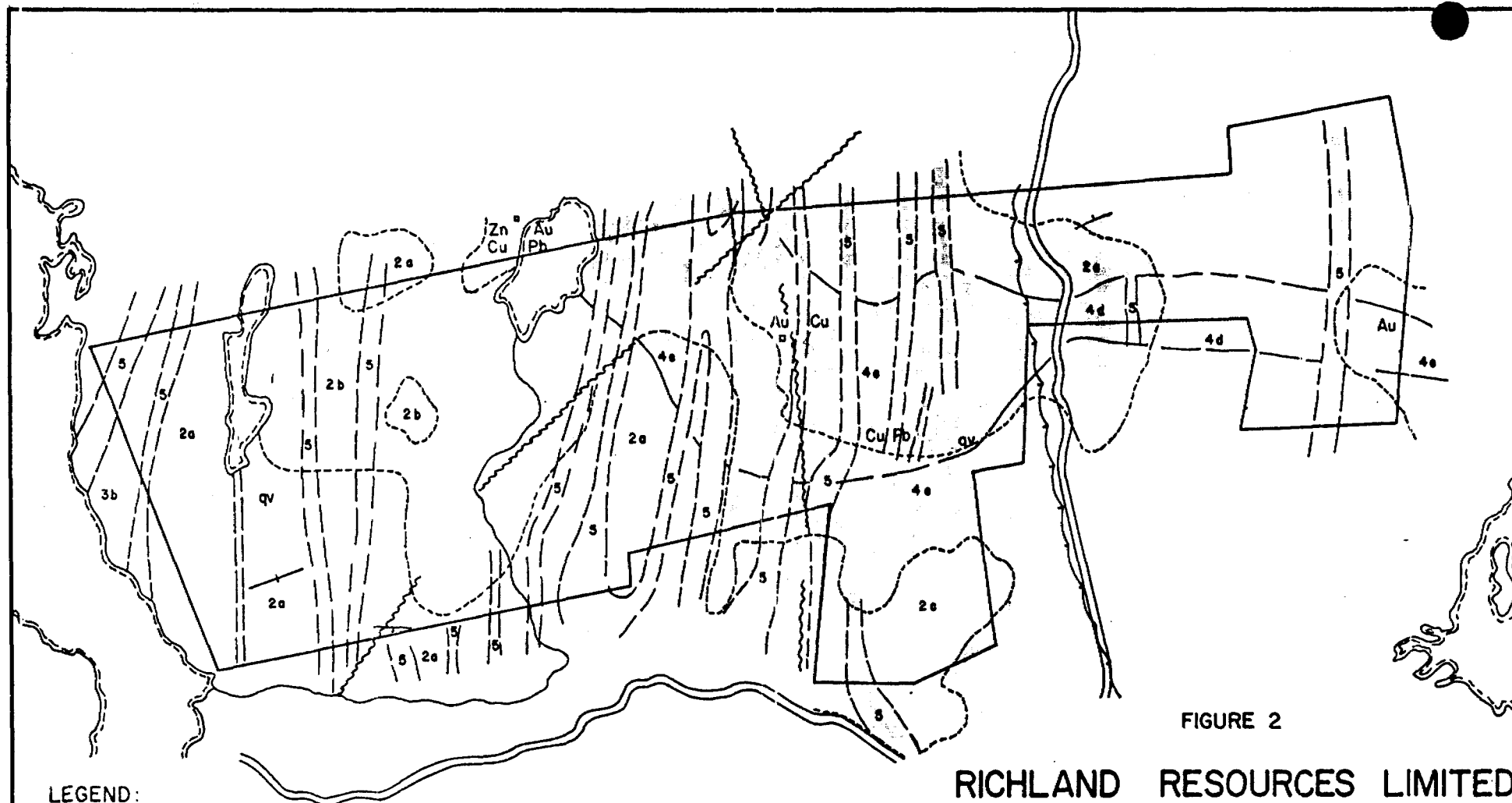


FIGURE 2

RICHLAND RESOURCES LIMITED

POWELL TOWNSHIP, ONTARIO.





GEOLOGICAL MAP



SCALE. 1" = 1320'

COMPILATION BY SEIGEL ASSOCIATES LIMITED

BASED ON O.D.M. P. 272

LEGEND:

-  Basic Intrusive Rock (Matachewan) Diabase.
-  Acid Intrusive Rock (Algonian)
 - e. Syenite Porphyry and Coarse Grained Syenite.
 - d. Basic Syenite and Lamprophyre.
-  Basic Intrusive Rock (Halleyburian)
 - b. Diorite.
-  Sedimentary Rock (Timiskamin)
 - a. Conglomerate
 - b. Greywacke and Interbedded Argillite and Quartzite.
 - c. Arkose

-  Geological Boundary approximate or assumed
-  Boundary of Rock Outcrop

NOTE. CLAIMS AS SUPPLIED BY RICHLAND RESOURCES LIMITED.

as well.

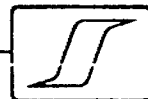
The survey grid was prepared by Ingamar Exploration Ltd, of Timmins, Ontario. A north-south baseline was established through the number 3 post of Claim L37455. A second base line was cut 4650' west of the first base line. The survey lines were 400 ft. apart and picketed every 100 ft.

For the induced polarization survey a Scintrex Mk VII time-domain induced polarization unit was employed. This instrument features a 2.5 kW solid state transmitter and a "Newmont-type" remote triggered receiver, with a current-on time of 2 seconds and a current-off time of 2 seconds. The normalized transient polarization voltages are integrated from 0.45 seconds to 1.1 seconds after the current-off time and are expressed in units of milliseconds. The delay of 0.45 seconds before measuring the transient voltages remaining in the ground effectively suppresses any electromagnetic induction transients. Besides the chargeability, i.e. the induced polarization factor (in milliseconds), the resistivity was also measured, in units of ohmmetres.

The equi-spaced three electrode array was employed throughout with an electrode spacing of 200 and 400 ft.

In the present grid area high induced polarization responses may arise from metallic conductors including metallic sulphides and graphite as well as from certain platy alteration minerals, such as clays, chlorite, etc. Magnetite to a lesser extent can give rise to anomalous responses as well.

For the magnetometer survey a Scintrex MF-2 vertical field fluxgate magnetometer was employed. Stations were read every 100 ft. During regular intervals the readings were tied in to a base station enabling the contouring of the magnetic data.



The purpose of the magnetometer survey was to assist in defining the geologic structure. The purpose of the induced polarization survey was to detect disseminated mineralization (chalcopyrite) as found in the main showing on Claim L37456.

GEOLOGY

The geology of the property is described in O. D. M. - Volume XL IV Part ii, 1935, W. S. Dyer together with Maps 44a and 44b. - Preliminary Map No. P-272, 1964, H. L. Lovell, - Geological Report 51, 1967, H. L. Lovell, together with Map 2110, and also in a report by A. C. A. Howe International Limited, February 20, 1970, Report No. 266.

The area is mainly underlain by tightly folded, highly metamorphosed, coarsely grained sedimentary rocks of Timiskaming age, (see Figure 2, scale 1" = 1320'). These sediments consist of mainly conglomerates and arkoses, greywackes and interbedded argillites and quartzites occur as well. In the centre part syenites and syenite-porphyrries of Algomian age occur. In the western part of the claim block a Haileyburian diorite outcrops. Numerous quartz diabase dikes (Keweenawan) cut in a north-south direction through these older formations. These dikes often contain pyrite.

Summary of Geological Formations

	(Matachewan:	diabase dikes
		intrusive contact
	(Algomian:	syenites etc.
<u>Archaen</u>		intrusive contact
	(Haileyburian:	diorites
		intrusive contact
	(Timiskaming:	sediments



The diabase dikes contain a higher amount of magnetite than most rock types. On magnetic maps they are therefore often shown as long linear highs with adjacent lows. Syenites, especially the bigger masses, are along their contacts with the surrounding rock types of a basic nature. They show thus a magnetic high as well along their contacts (viz. GSC Aeromagnetic Map No. 287G, the syenite stock in Cairo Twp. containing 5% magnetite). A third rock type likely giving rise to a magnetic high is the Haileyburian diorite.

The gold bearing quartz veins cutting in the syenites contain also silver, copper and molybdenum. The Young-Davidson and Matachewan Consolidated Mines Limited both mined a syenite stock south east of the survey area.

Samples from a trench in the south east corner of Claim L37456 and later drilling revealed copper values ranging from 0.6 - 1.0%.

PRESENTATION OF DATA

The induced polarization and resistivity results are shown on Plate 1 on the scale of 1" = 400 ft. The 200 ft. and 400 ft. spacing results are shown in profile form with vertical scales of 1" = 10 milliseconds for the chargeability and 1.33" = a logarithmic cycle of 10 for the resistivity, the latter being expressed in ohmmetres.

The results of the 200 ft. are shown in contour form as well, contour intervals are 1 millisecond and 1000 ohmmetres respectively.

Plate 2 on the scale of 1" = 400 ft. shows the magnetometer survey in contour form a contour interval of 100 gammas.



DISCUSSION OF RESULTS

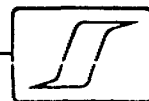
The magnetometer survey along 14.5 miles of line revealed a relief ranging from +5000 to -700 gammas around an arbitrary zero level. (This zero level is shown on Plate 2 using the 1000 gamma contour line). The magnetic relief shows a north-south trend of strong linear highs with adjacent lows. The steep gradients suggest that the magnetic sources come close to the ground surface.

Most of the magnetic highs coincide with the Matachewan diabase dykes reflecting the higher magnetite content of the diabase.

There seems to be no difference in magnetic relief obtained over the Timiskaming sediments and the Algoman syenites. The syenites do not show a higher magnetic level along the contacts with the sediments as is the case in the syenite in Cairo Township. It is therefore suggested that the syenite mass is rather homogeneous in constitution. Several SW-NE striking faults could be interpreted, one of which is shown on ODM map 2110.

The induced polarization survey was executed along parts of twelve traverses totalling 6.5 line miles.

The 200 and 400 ft. spacing results are comparable. This suggest that the distribution of polarizable material is homogeneous with depth. The chargeability values range from 5 to 30 milliseconds. Along parts of lines 8S to 8N the chargeabilities are less than 10 milliseconds. This area is underlain by sediments. The background level over those sediments is therefore considered to be about 6 milliseconds. The resistivity values range 3000 to 6000 ohmmetres over the area of low chargeabilities. North of the syenite mass another area of low chargeabilities (3-7 milliseconds, lines



24-36N, near stations 4-20W) coincides with the sediments.

The chargeability responses over the syenite mass show values ranging from 15-30 milliseconds with a few depressions (7-13 milliseconds). It is difficult to determine however, if the general north-south trend on chargeability and resistivity contour plans is influenced by the diabase dikes. In places, increased chargeabilities correspond with increased magnetic response while in other locations increased chargeabilities are seen with magnetic lows.

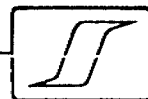
The resistivities over the syenite mass range from 5000 to 30,000 ohmmetres and again no direct correlation exist between resistivity values and chargeability and/or magnetic values.

One of the chargeability highs (marked A-A, up to 30 milliseconds) seems to coincide with the showing which is located close to line 12N station 4W. This intrinsic chargeability value is equivalent to a metallical content of 2 to 4% by volume, of the underlying rocks. This high extends for at least 1200' and should be examined near lines 16 and 24N. This zone extends to the south (A') in an area which is supposedly underlain by sediments. Several other highs located within the syenite mass, are marked on plate 1, of which B¹-B²-B³, and F-F show the strongest responses.

A few other highs (marked G, H, I, K and L) were revealed outside the syenite complex, the strongest of which is 26 milliseconds (I).

CONCLUSIONS AND RECOMMENDATIONS

A magnetometer survey over the present grid has revealed a strong relief of north-south trending highs and lows. Most of the linear highs could be correlated with Matachewan diabase dikes. The magnetic sources all come close to the ground surface.



The induced polarization and resistivity surveys over part of the same grid revealed a strong distorted pattern of a weak north-south trend. However, no direct correlation could have been made between the magnetic, chargeability and resistivity results.

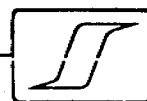
Over the sediments the chargeability level ranges from 3-10 milliseconds. The chargeabilities over the syenite are higher. Zone A-A coincides with a known mineralized showing. Several other highs were encountered over the syenite. It is suggested that detailed geological mapping and trenching should be executed near the strongest sections of zones A-A through F-F.

These sections are as follows

A-A:	Line 12N - 4W; 16N - 4W; 24N - 6W
B ¹ -B ² -B ³ :	Line 24N - 2W; 28N - BL to 8E
D:	Line 16N - 16W
E:	Line 16N - 24W
F-F:	Line 28N - 27W

If overburden conditions do not allow such trenching the following diamond drill holes are recommended to investigate certain sections of these zones:

- | | |
|---|--|
| Zone A-A: | 1. Collar on line 16N at station 2.50W. Drill west for 350 ft. at 45° inclination. |
| | 2. Collar on line 24N at station 4.50 W. Drill southwest for 350 ft. at 45° inclination. |
| Zone B ¹ -B ² -B ³ : | 3. Collar on line 24N at the B. L. Drill northwest for 350 ft. at 45° inclination. |



Zone F-F: 1. Collar on line 28N at station 25.50W. Drill west for 350 ft. at 45° inclination.

Additional drilling on zones A-A to F-F and on zones outside the syenites would be predicted upon the initial holes. Whereas the above holes are 350 ft. recommended length, this length is intended to be a minimum one. In the event that interesting sulphide mineralization persists to 350 ft. depth in any hole, this hole should obviously be extended.

Respectfully submitted,



Jan Klein, M. Sc. , P. Eng. ,
Geophysicist.





TECHNICAL ASSESSMENT WORK CREDITS

Recorder Holder Mr. G.S. Welsh
Township or Area Powell Township

Type of Survey and number of Assessment Days Credits per claim

GEOPHYSICAL Airborne Ground
Magnetometerdays
Electromagneticdays
Radiometricdays
Induced Polarization 40 days
GEOLOGICALdays
GEOCHEMICALdays
SECTION 84 (14)days
Special Provision Man days

Mining Claims
L. 105291 to 93 Inclusive
105300 - 01

NOTICE OF INTENT TO BE ISSUED

- Credits have been reduced because of partial coverage of claims.
- Credits have been reduced because of corrections to work dates and figures of applicant.
- NO CREDITS have been allowed for the following mining claims as they were not sufficiently covered by the survey:

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40;

Baden Twp. (M.205)

THE TOWNSHIP
OF
CHAIN TRAP
POWELL

DISTRICT OF
TIMISKAMING

LARDER LAKE
MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	Ⓟ
CROWN LAND SALE	C.S.
LEASES	Ⓛ
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	—
IMPROVED ROADS	—
KING'S HIGHWAYS	—
RAILWAYS	—
POWER LINES	—
MARSH OR MUSKIEG	—
MINES	Ⓧ
CANCELLED	C.

NOTES

PART OF THIS TWP LYING SOUTH AND WEST OF THE MATACHEWAN LAKE WITHIN THE TIMAGAMI PROVINCIAL FOREST.

400' Surface Rights Reservation Around All Lakes & Rivers.

L.O. 7601 Covers Flooding Rights In This Twp To Below Contour 870'00 To H.E.P.C. File: 12290 Vol. 2.

L.O. 1167 Shown thus: File: 90970

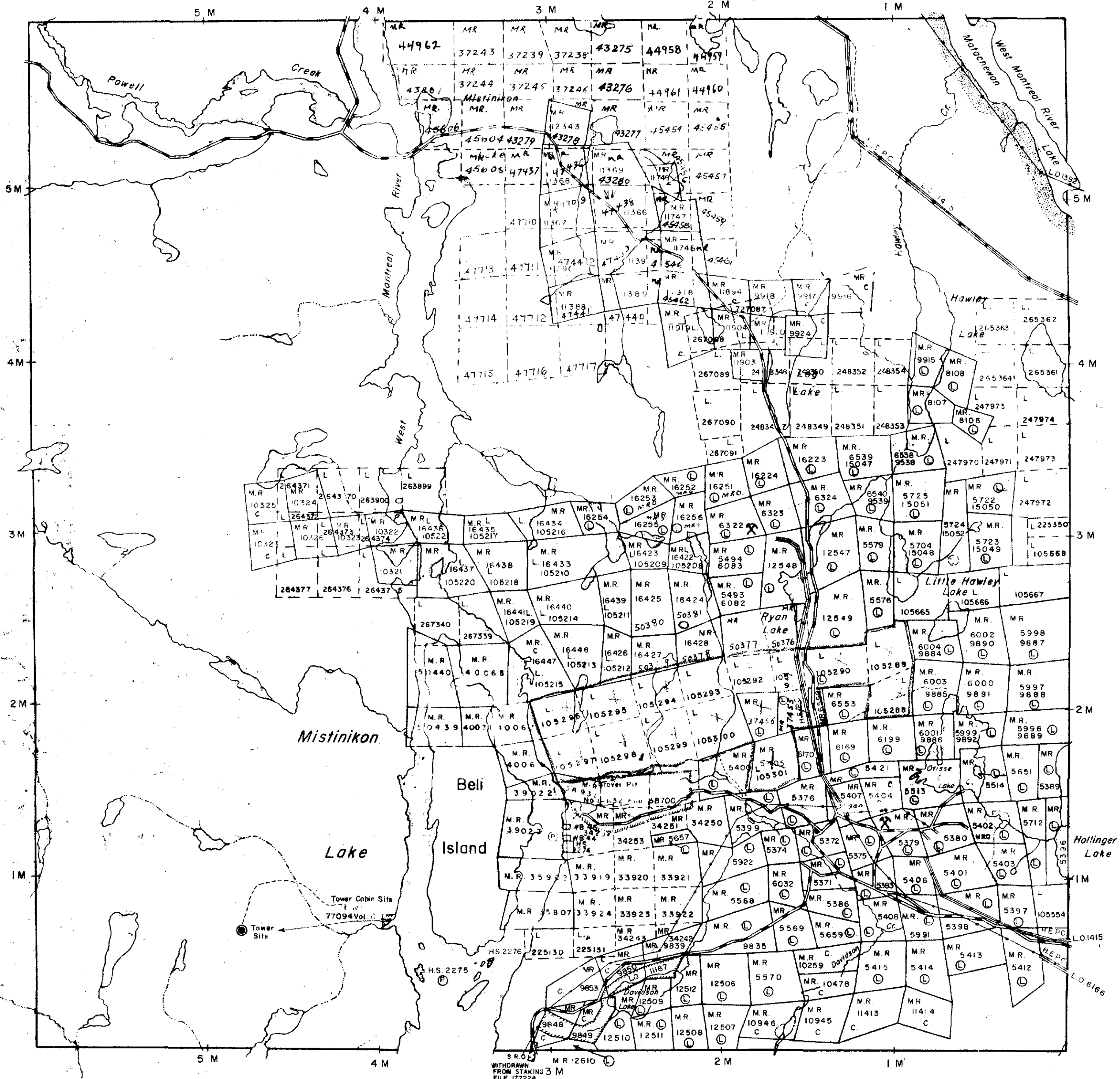
DATE OF ISSUE
DEC 17 1970
ONT. DEPT. OF MINES
AND NORTHERN AFFAIRS

PLAN NO. **M.241**

ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS

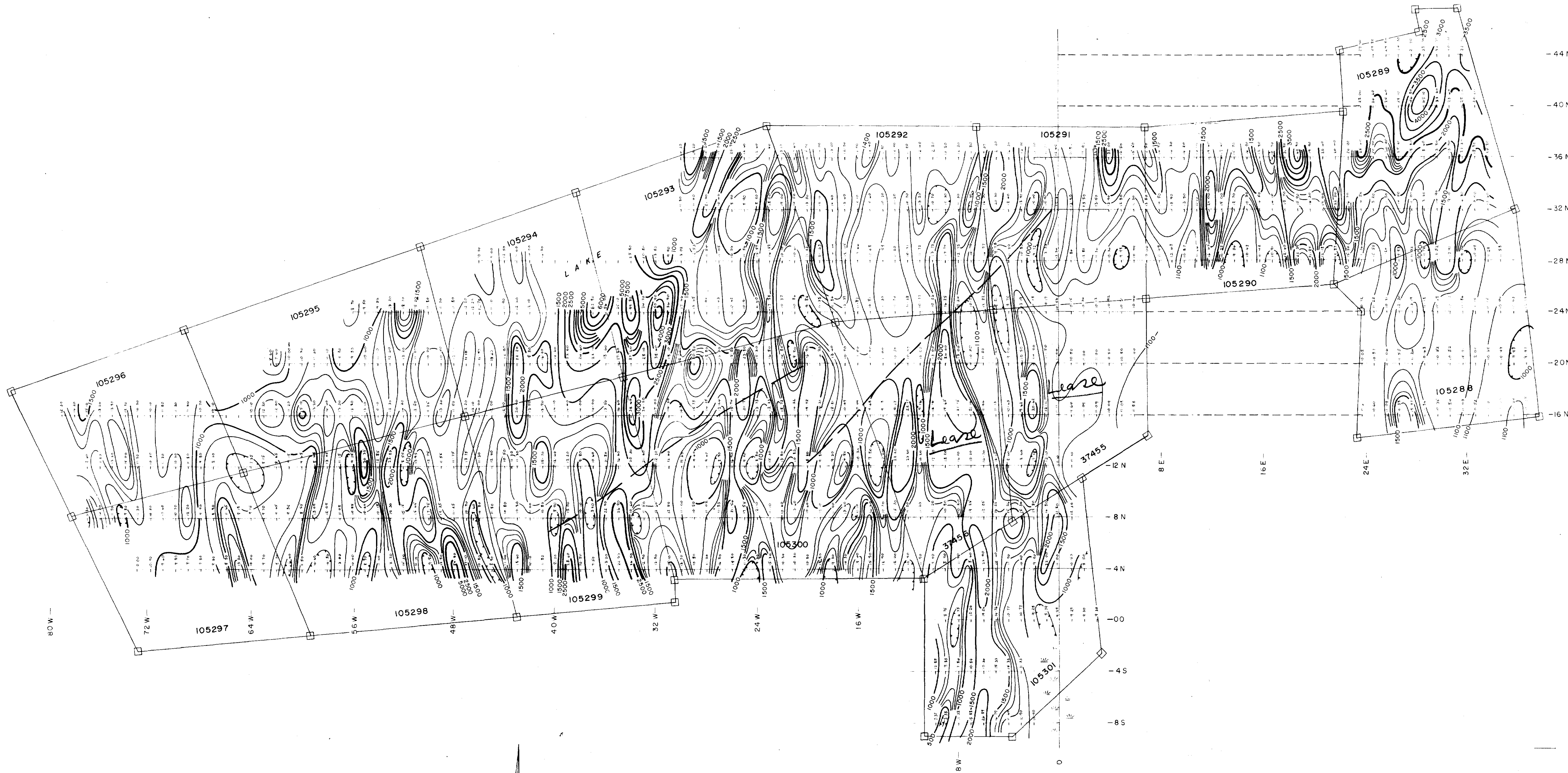
Bannockburn Twp. (M.207)

Cairo Twp. (M. 210)



Yarrow Twp. (M.260)





- LEGEND**
- LINE, STATION AND MAGNETOMETER READING x 100
 - CONTOUR INTERVAL IN UNITS OF 100 GAMMAS.
 - 2500 GAMMA ISOMAGNETIC CONTOUR INTERVAL.
 - 500 GAMMA ISOMAGNETIC CONTOUR INTERVAL.
 - 100 GAMMA ISOMAGNETIC CONTOUR INTERVAL.
 - MAGNETIC LOW.
 - INTERPRETED FAULT.
 - CLAIM LOCATION APPROXIMATE IN RELATION TO GRID

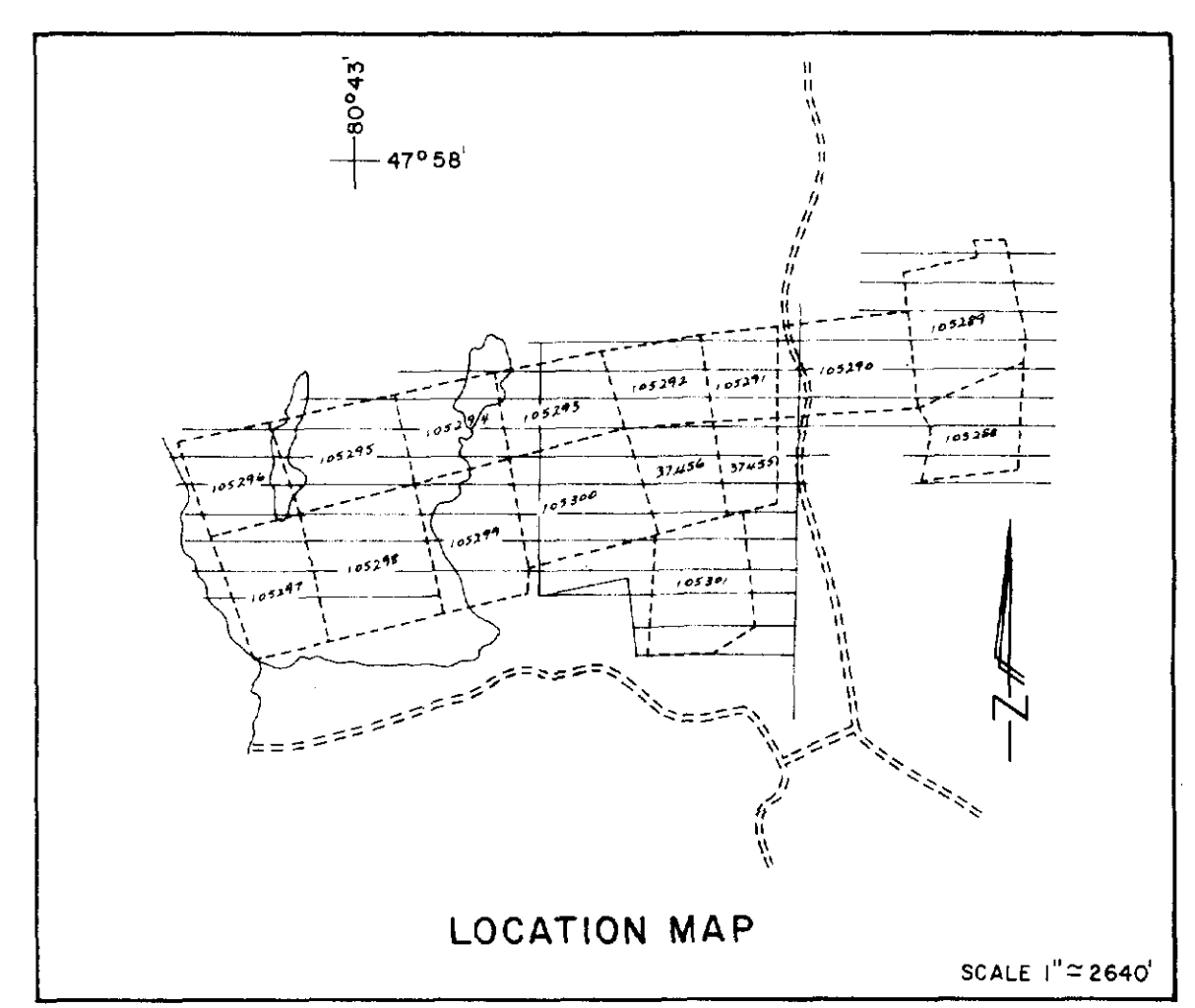
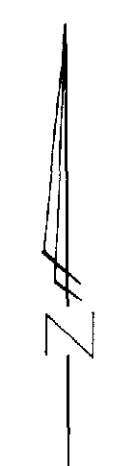
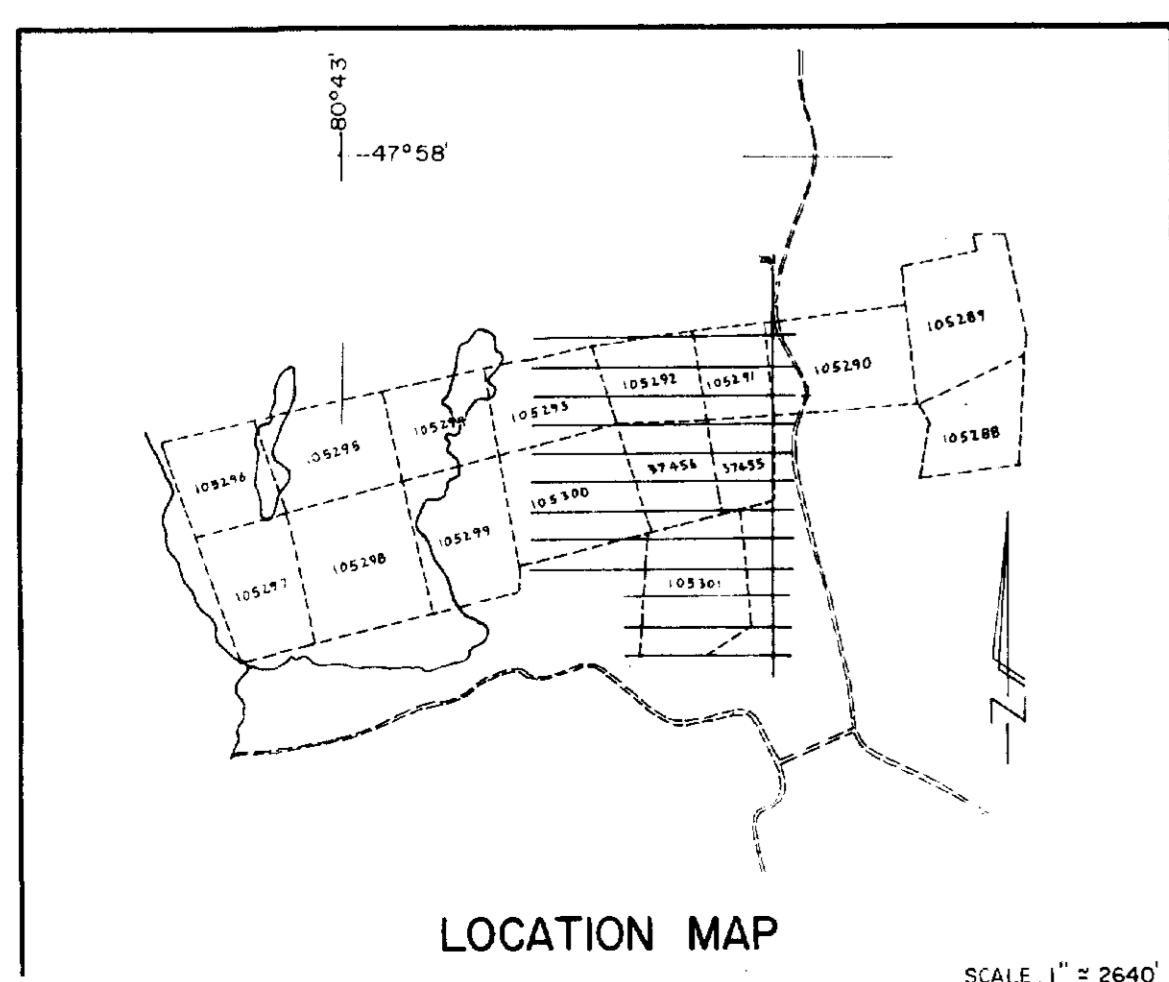
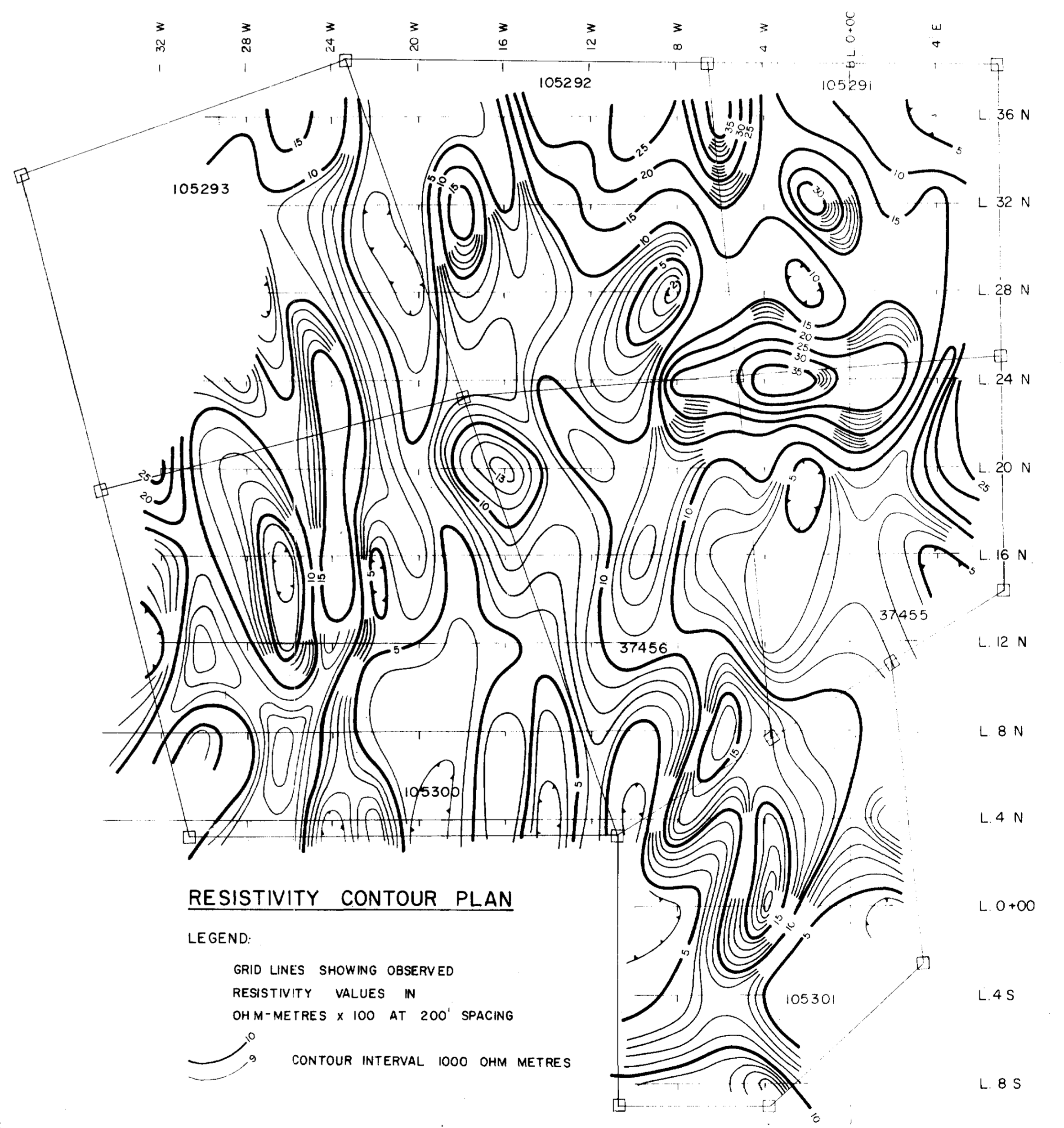
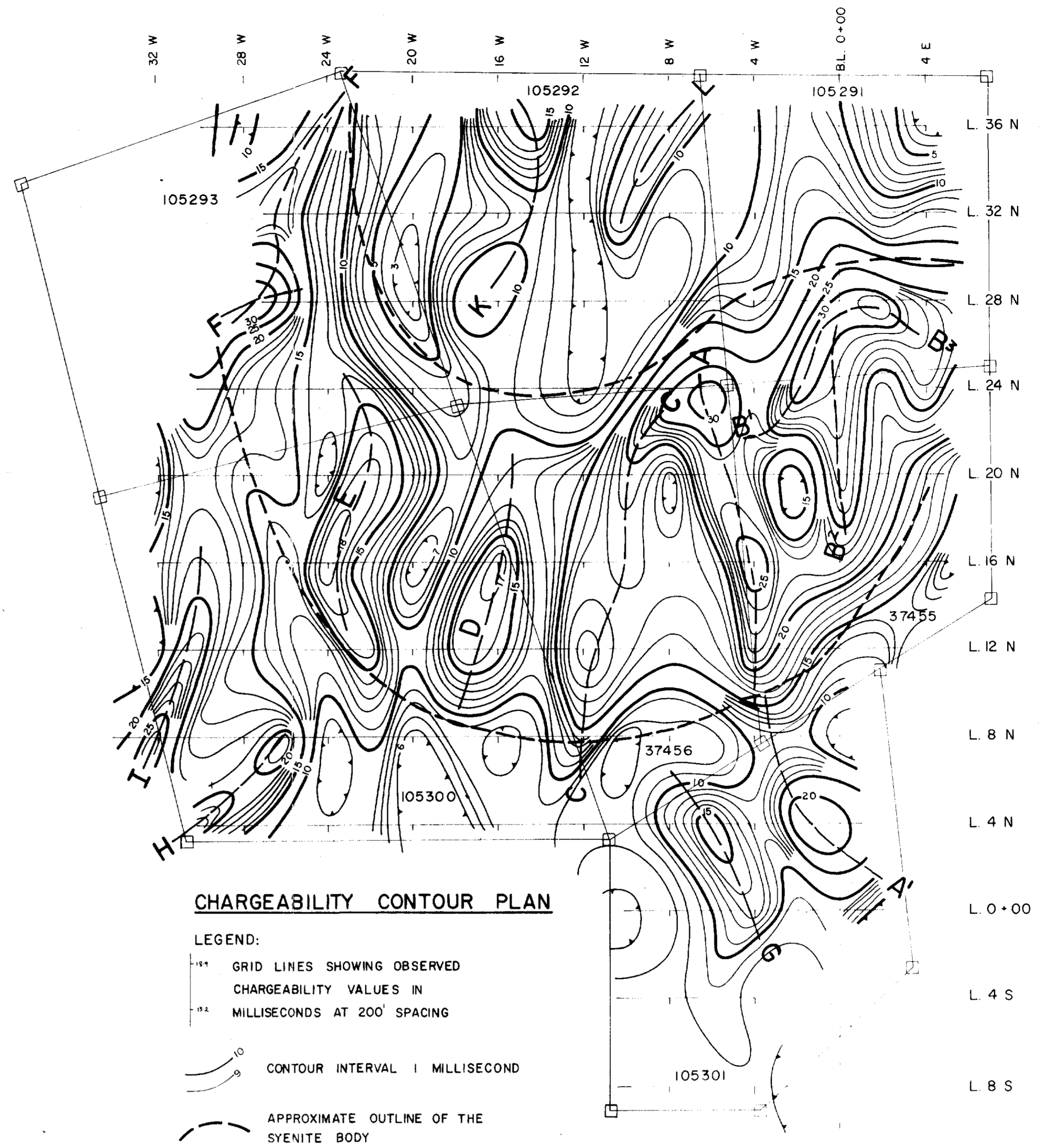
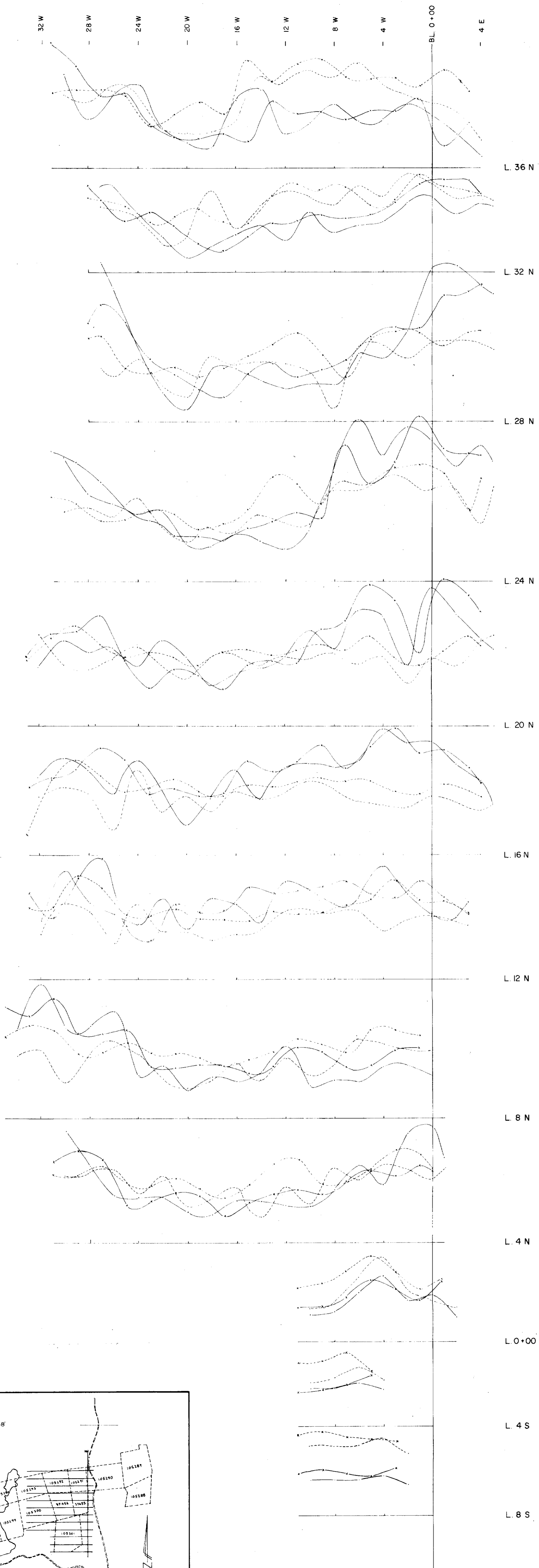


PLATE 2
 RICHLAND RESOURCES LIMITED
 POWELL TOWNSHIP, ONTARIO
 GROUND MAGNETOMETER SURVEY
 SCINTREX M.F 2
 SCALE. 1" = 400'
 SURVEY BY SEIGEL ASSOCIATES LIMITED
 JULY 1970





LEGEND

CHARGEABILITY; SCALE: 1" = 10 MILLISECONDS

ELECTRODE SPACING; a = 200' b = 400'

RESISTIVITY; SCALE: LOGARITHMIC 1.33'S FACTOR OF 10 (DATUM LEVEL = 100 OHM-METRES)

ELECTRODE SPACING; a = 200' b = 400'

NOTES: THREE ELECTRODE ARRAY.

CLAIM LOCATION APPROXIMATE IN RELATION TO GRID

PLATE I

RICHLAND RESOURCES LIMITED

POWELL TOWNSHIP, ONTARIO

INDUCED POLARIZATION SURVEY

SCINTREX 2.5 KW MK-7 I.P. UNIT

SCALE. 1" = 400'

SURVEY BY SEIGEL ASSOCIATES LIMITED

JULY 1970

