



## INTRODUCTION

During the period from August 10, 1964 to January 15, 1965, a combined magnetic, electromagnetic and induced polarization survey was conducted by Mespi Mines Limited of 1705-80 Richmond Street, West Toronto, Ontario for Cu-Kam Porcupine Mines of the same address. A single claim of Chance Mining and Exploration of 1001-85 Richmond Street West, Toronto, Ontario was also covered during this period.

## LOCATION OF CLAIMS AND ACCESS

Thirty-seven claims, located in Godfrey township, lots 5, 6 and 7, concessions IV, V, and VI, Porcupine Mining Division Ontario are numbered as follows:

P. 51862,63, P. 51895,96,97, P. 52164,65,66,67, P. 52248,49,50,  
P. 52448,49,50,51, P. 55864,65,66,67, P. 57186,87,88,89,90,91,  
P. 58994,95,96,97,98,99, P. 59000, P. 53816, P. 54975, P. 54978.  
P. 75356 (Chance Mining and Exploration)

The property lies about 14 miles northwest of Timmins, Ontario and can be reached by an all weather road, highway 576 which traverses the central portion of the group in a N-W S-E direction..

## PREVIOUS WORK

The area has been covered by two combined magnetic-electromagnetic surveys. Hunting Survey Corporation flew the area with  $\frac{1}{2}$  mile flight line spacing in a N-S direction for Mr. B.W. Lang in 1957. In May 1964, the ground was flown by Hunting with  $\frac{1}{8}$  mile flight line spacing in an E-W direction for Mespi Mines Limited.

Both surveys indicated only a few weak electromagnetic anomalies.

## GEOPHYSICAL INSTRUMENTS USED

For the electromagnetic survey, a Ronka Mark IV horizontal loop unit was used. The survey was carried out using a 300 foot coil separation with readings taken at 100 foot intervals. A total of 1305 stations were read with the unit.

For the magnetic work, a Sharpe MF-1 fluxgate magnetometer was used to measure changes in the vertical component of the earth's magnetic field. The sensitivity was 20 gammas per scale division on the most sensitive scale. All readings have been tied into a base system on the grid and drifts have been corrected. A total of 2966 stations were established with the magnetometer survey.

For the induced polarization survey, a Crone induced polarization unit was used.

With this method, discontinuous pulses of square wave current are applied to the ground being surveyed. The cycling rate is 2 seconds current on positive, 2 seconds current off, 2 seconds current on negative, 2 seconds current off etc...

A 2500 watt, 400 cycle, three phase generator driven by a 6 HP Briggs and Stratton engine and controlled by a transistorized circuit box supplies the power. As much current as possible is put into the ground through two current electrodes placed between 2000 and 6000 feet apart. Two porous pots spaced 200 feet apart are used as potential electrodes and are moved together along the line being surveyed with readings taken every 100 feet.

For this survey a gradient array was used throughout. The field procedure is to lay out the current electrodes 2000 to 6000 feet apart such that the line joining them is perpendicular to strike. A square grid of lines, parallel to the current line, can be surveyed, from any set

up with the sides of the square equal to approximately one half the distance between the current stakes.

Field measurements are taken of (a) the primary current - I, (b) the primary voltage - Vp (c) the secondary voltage - Vs.

The primary current in amperes is taken from the power unit.

The receiver measures the primary voltage Vp between the two potential electrodes while the primary current is on. It also senses and locks into this signal in order to have a timing reference to measure the secondary voltage. When the current is shut off there is a 20 millisecond delay then a 1 second sample is taken of the secondary signal Vs. This is an integration of the voltage against time and is measured in millivolt seconds.

From the readings the apparent chargeability and apparent resistivity can be calculated for each station read. The apparent chargeability (IP effect) is obtained by dividing the primary voltage Vp by the secondary voltage Vs and is recorded in milledseconds thus:

$$\frac{V_s}{V_p} = \frac{\text{Millivolt seconds}}{\text{volts}} = \text{milledseconds.}$$

The resistivity can be calculated from the primary current and primary voltage (at the pots). This is multiplied by a factor depending on the geometric position of the two pots with respect to the two current electrodes. A total of 2052 stations were read.

### SURVEY RESULTS

#### Electromagnetic

Conditions existing on this property made it extremely difficult to run an electromagnetic survey. Deep conductive overburden, noisy conductive shears and an extremely noisy hydro power line running across the central part of the grid all combined to make reading conditions very bad. A portion of the property was left unsurveyed as conditions were

so noisy that a null could not be obtained even with a 200 foot coil separation.

Two parallel, north south trending conductors of moderate to poor conductivity were picked up on claims P. 58994, P. 58995, P. 58996, and P. 59000. Both these conductors were tested by drilling and found to be caused by fine-grained siliceous graphitic sediments.

No other conductors were interpreted from the results obtained.

#### Magnetic

The most prominent features of the magnetic relief over the property are broad, discontinuous generally elongated, anomalous zones trending northerly, and a series of long, narrow anomalies with a north to north-westerly strike. The first class of anomalies are interpreted as being caused by a basic intrusive. A drill hole in this area bottomed in a coarse grained gabbro, and the geological map of the area shows a gabbro body to the south. The latter type of anomalies are associated with the basic (probably diabase) dikes.

The magnetically low area running north-south through the center of the group correlates well with the sediments mapped to the south and with the sediments cut by drilling in the northern part of the group.

#### Induced Polarization

The I.P. survey of the property showed considerable variation in I.P. and resistivity response.

One anomaly extended from 20S to 34N through the center of the property. This anomaly had fair strength with chargeabilities up to 35 milliseconds but was quite broad indicating a formational response. It extended over an outcrop area of interflow conglomeratic sediments containing up to 20% pyrite and pyrrhotite in places. A drill hole was also put down to test for the cause on L 2N at 16E. This also intersected sulphide bearing sediments.

As this formation was cut by a diabase dike the profiles in places exhibit a double hump with the low occurring over the dike.

Only one other anomaly appeared significant enough to warrant testing by drill, this occurs on claim P. 57188 and extends from L 8S to L 4N. This was tested with two drill holes and was found to be caused by disseminated pyrite and pyrrhotite with minor chalcopryrite, in andesitic tuffs and sediments.

All other anomalies obtained were downgraded and considered less significant due to a lack of a corresponding resistivity low.

#### CONCLUSIONS AND RECOMMENDATIONS

No further work is recommended on this property as both the I.P. and E.M. anomalies have been adequately tested and explained.

Respectfully submitted  
MESPI MINES LIMITED

  
W.E. Nymann  
Exploration Manager

WEN/jf

June 29 / 65

SUITE 1705  
80 RICHMOND STREET WEST  
TORONTO 1, ONTARIO

900



Mr. F. W. Matthews,  
Mining Recorder,  
Department of Mines,  
Room 1534, East Block,  
Parliament Buildings,  
TORONTO 2, Ontario.

LOT 7

LOT 6

0+00 BASE LINE

30E BASF 1 INF

CON. VI

CON. V

P.52250

P.53816

P.58994

P.58995

P.51862

P.52249

P.59000

P.58996

P.51863

P.51896

P.52248

P.58999

P.51897

P.51895

P.55866

P.55864

P.52161

P.52164

P.55867

P.55865

P.52166

P.52165

26 S

28 S

30 S

32 S

34 S

36 S

38 S

40 S

42 S

44 S

46 S

48 S

50 S

52 S

54 S

56 S

58 S

60 S

62 S

64 S

66 S

68 S

70 S

72 S

74 S

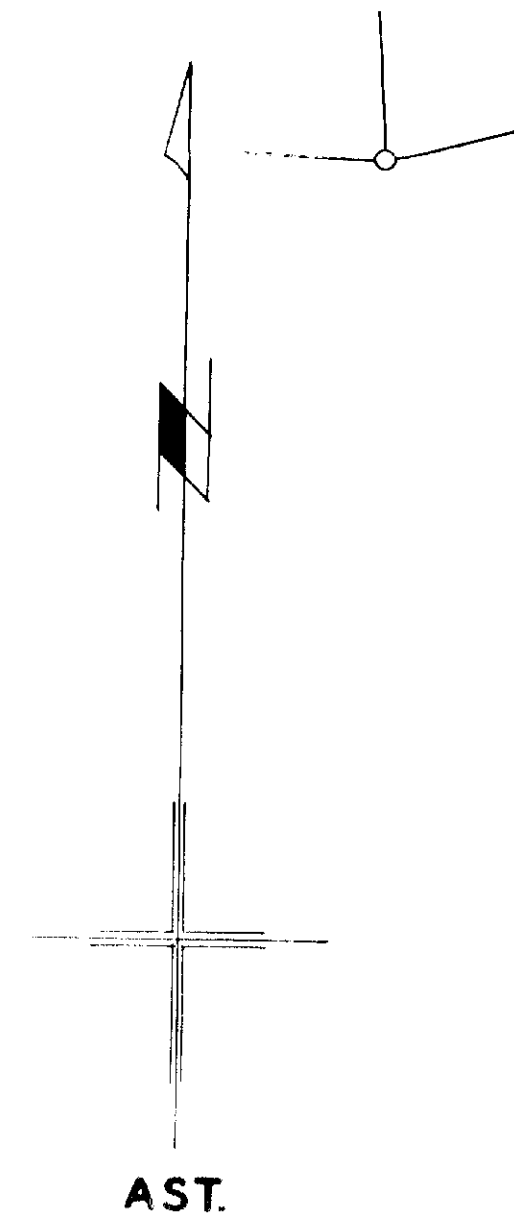
76 S

78 S

P.52450

P.52449

P.52451





LOT 7

LOT 6

CON. VI

CON. V

CON. IV

P.52250

P.53816

P.58994

P.58995

P.57191

P.51862

P.52249

P.59000

P.58996

P.58997

P.51896

P.52248

P.58999

P.58998

P.55866

P.55864

r. 7535e

P.54975

22-S

24 S

26 S

28 S

30 S

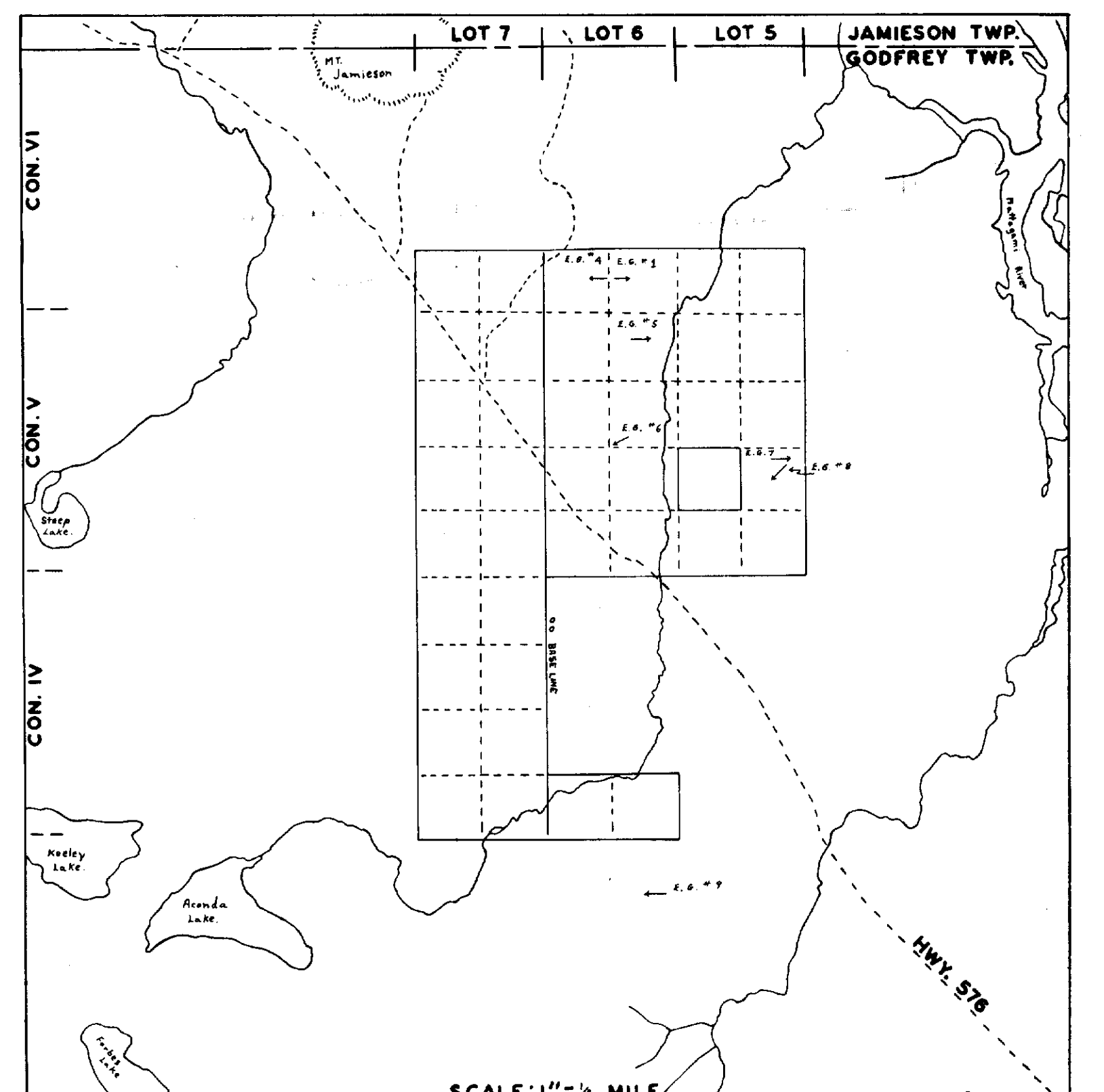
32 S

34 S

36 S

0+00 BASE LINE

AST.





LOT 7

LOT 6

30 E BASE LINE

0+500 BASE LINE

CON. VI

CON. V

CON. IV

P 52250

P 53816

P 58994

P 58995

P 51882

P 52249

P 59000

P 58996

P 51863

P 51896

P 52248

P 58999

P 51897

P 51895

P 55866

P 55864

P 753

P 52167

P 52164

P 55867

P 55865

2

26 S

28 S

30 S

P 52166

P 52165

32 S

34 S

36 S

38 S

40 S

42 S

P 54978

44 S

P 52448

46 S

48 S

50 S

52 S

54 S

P 52450

56 S

P 52449

58 S

60 S

62 S

64 S

66 S

68 S

70 S

P 52451

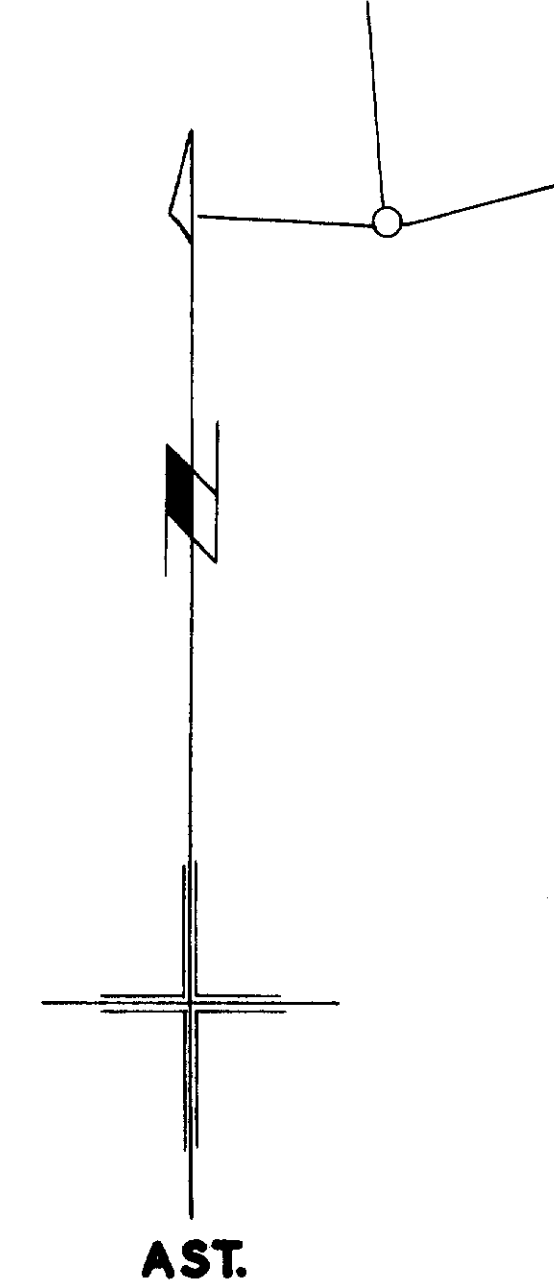
72 S

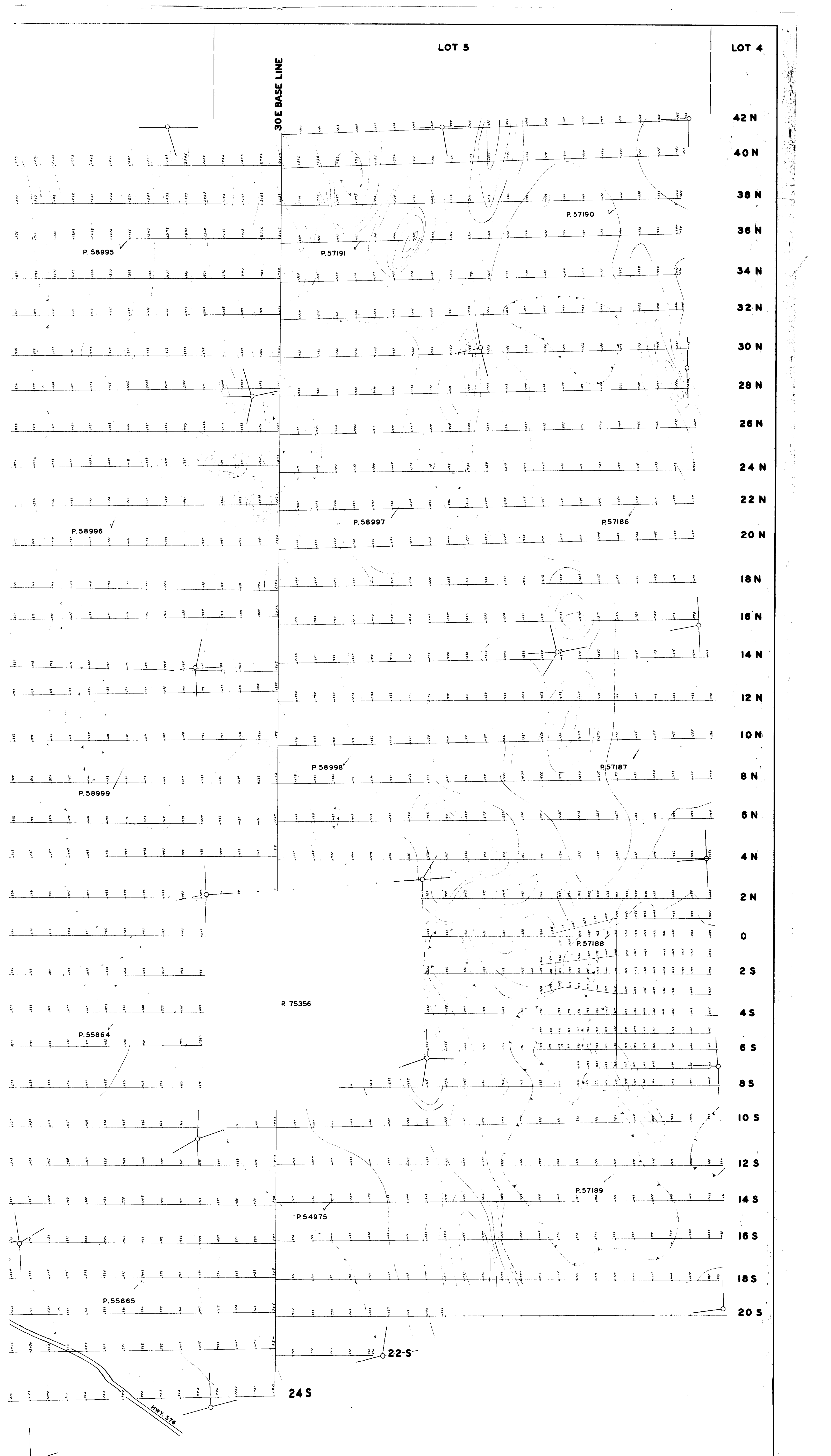
74 S

76 S

78 S

HWY. 578

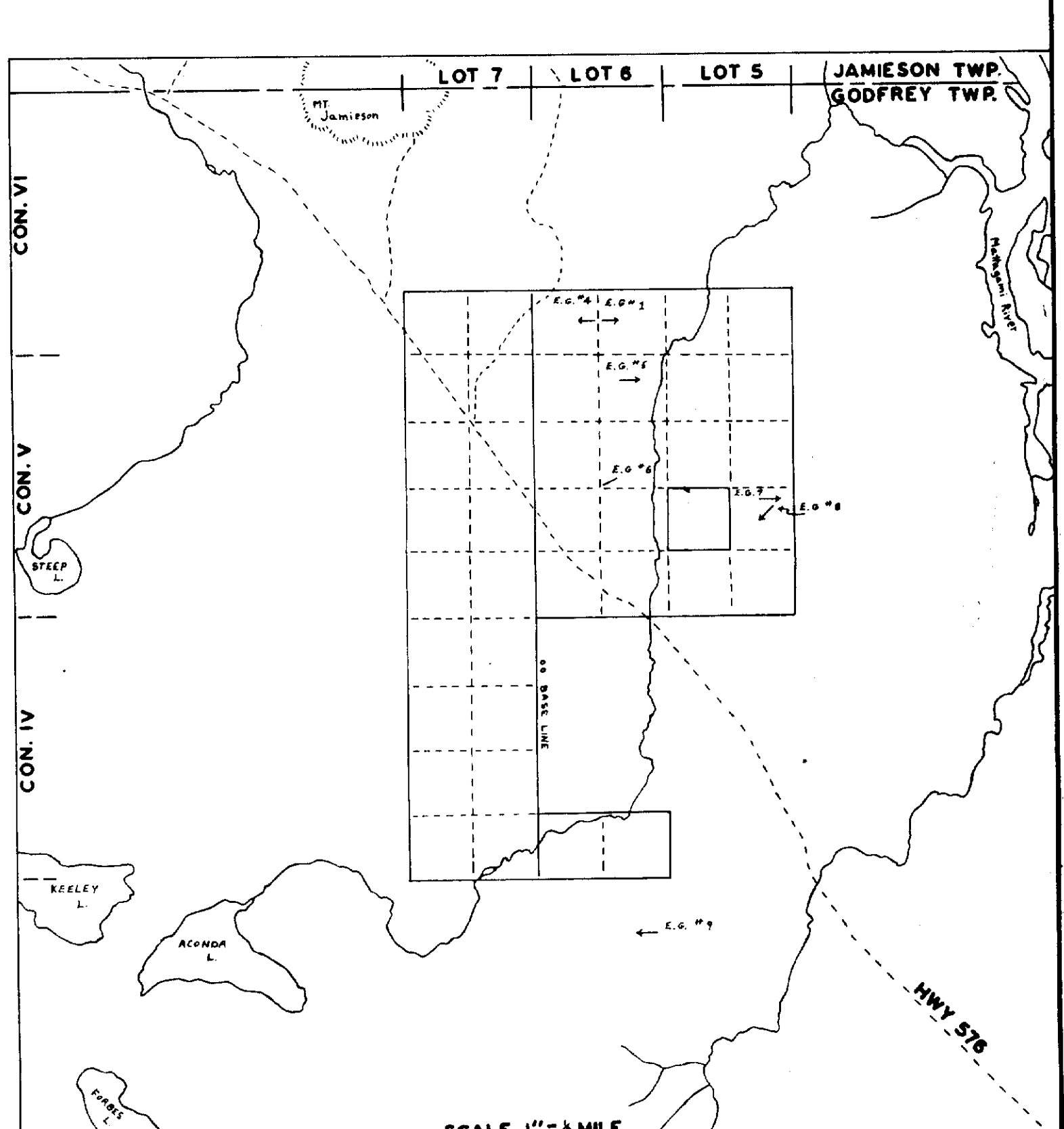




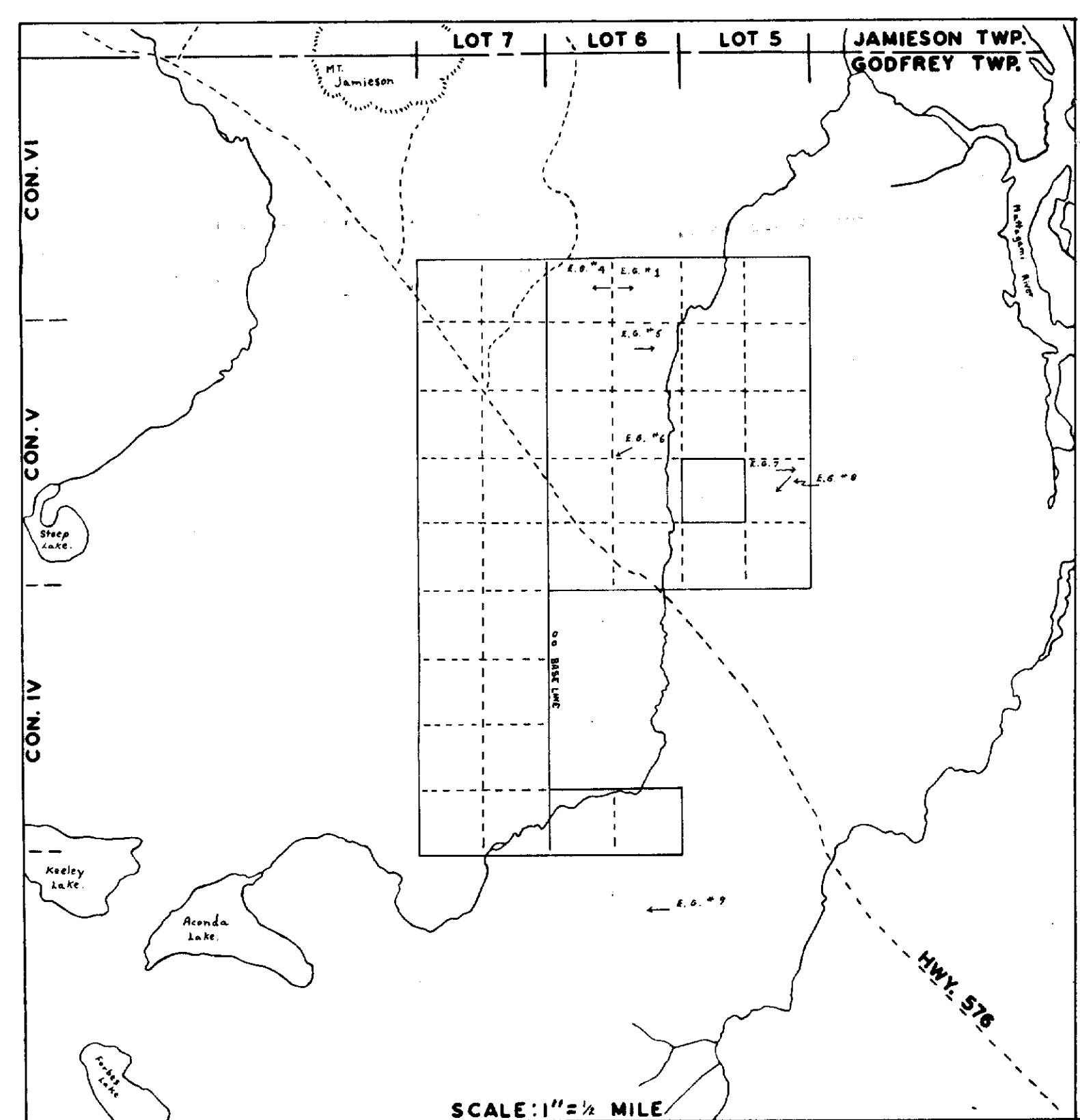
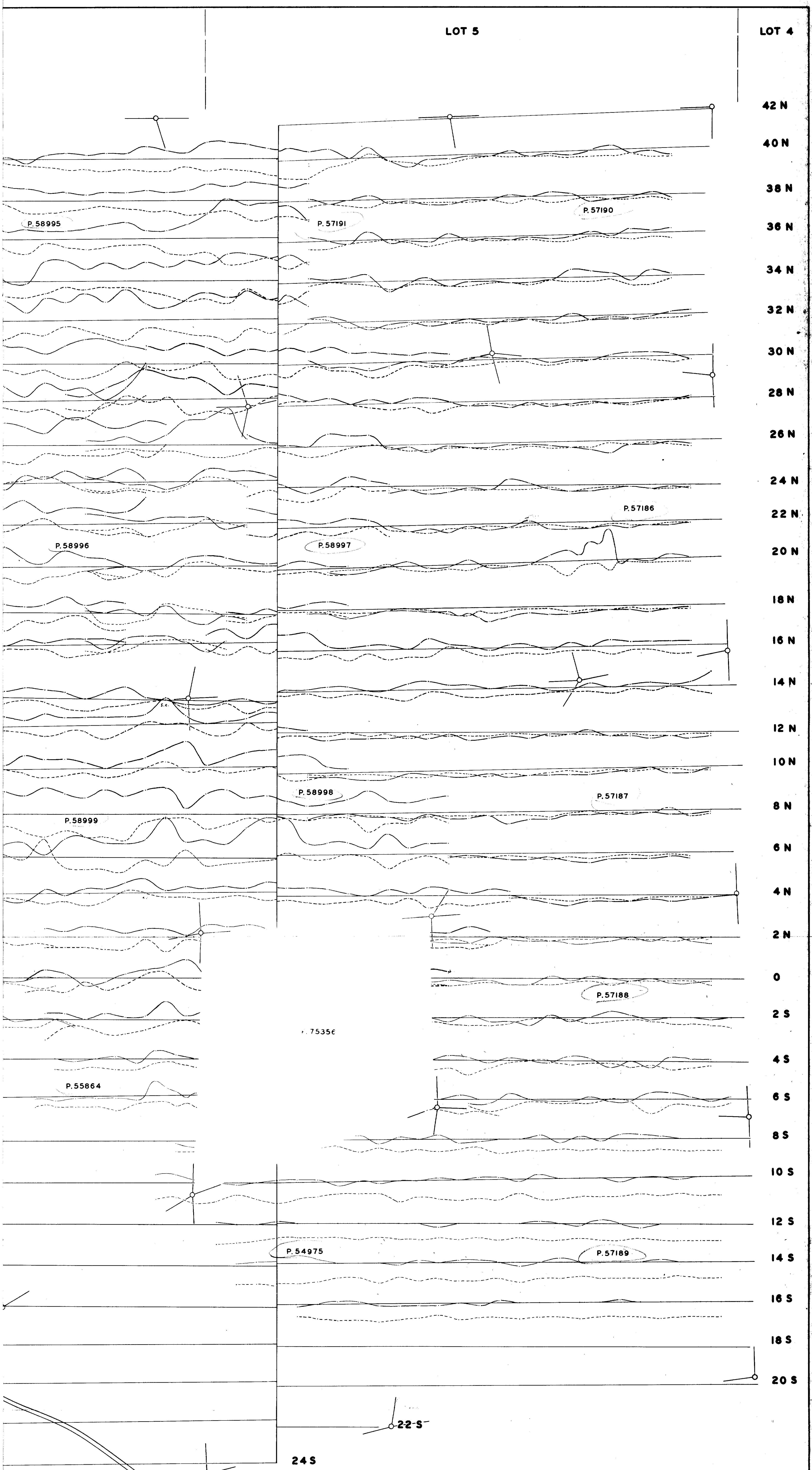
**CU-KAM PORCUPINE MINES LTD.**  
**EAST GODFREY GRID**  
**MAGNETOMETER SURVEY**  
 INSTRUMENT: FLUXGATE MF-1  
 MAP SCALE: 1"=200'

**CONTOURS**  
 100 GAMMA INTERVALS UP TO 1500 GAMMAS  
 500 GAMMA INTERVALS FROM 1500 TO 3000 GAMMAS

SURVEY DATE: SEPT. 25 TO NOV. 10, 1964  
 DRAWN BY: R.C. DENOMMEE  
 APPROVED: *W.E. Ryan*



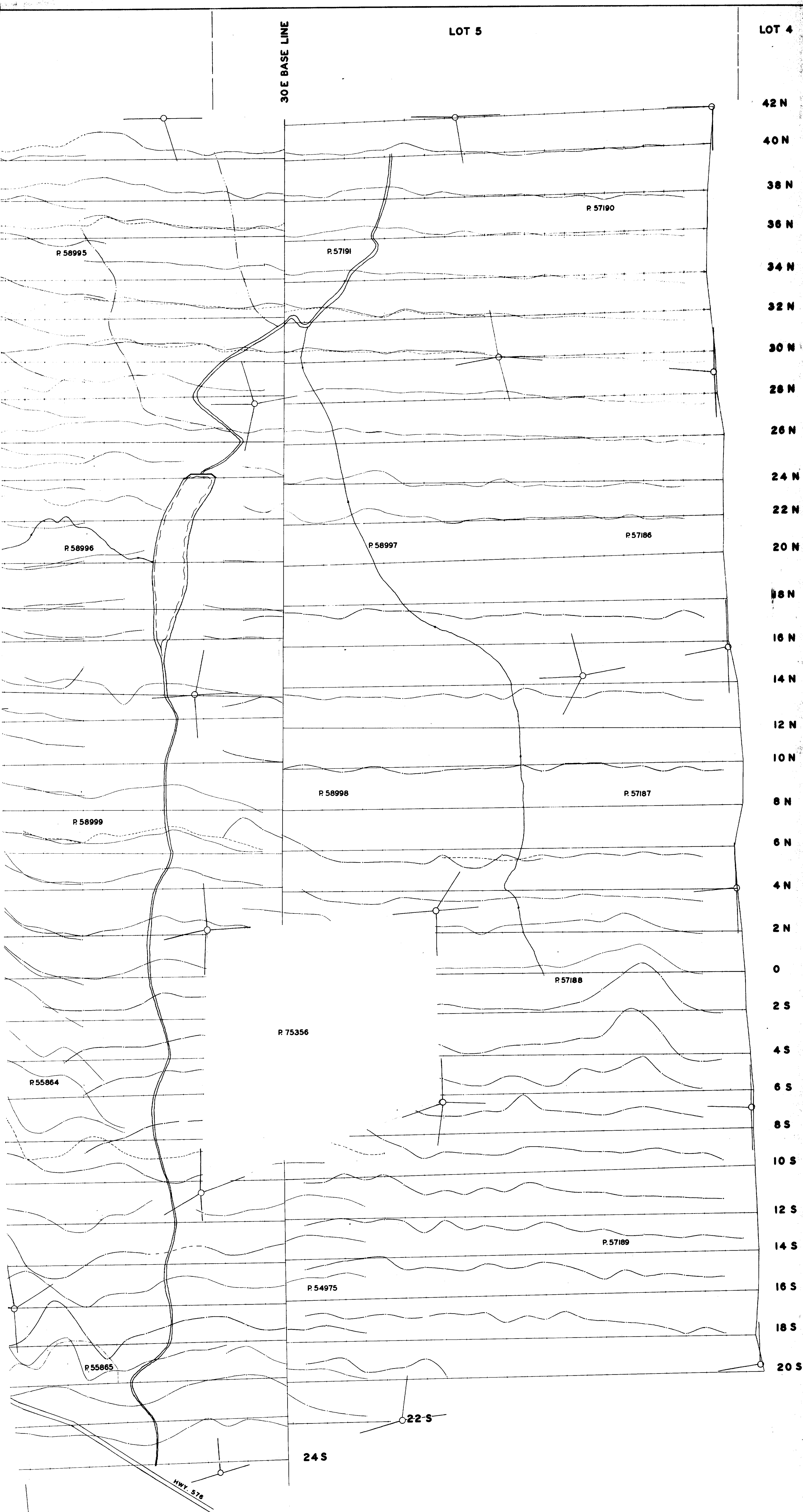




**CU-KAM PORCUPINE MINES LTD.**  
**ELECTRO-MAGNETIC SURVEY**  
**EAST-GODFREY GRID**  
 INSTRUMENT: RONKA H.E.M.  
 COILS 300' APART  
 MAP SCALE 1" = 200'  
 PROFILE SCALE 1" = 20%  
**LEGEND**

——— IN-PHASE  
 - - - - - OUT OF PHASE

DRAWN: R.C. DENOMMEE  
 APPROVED: *WE Pym*  
 SURVEY DATE: OCT. 3 - NOV. 7, 1964



**CU-KAM PORCUPINE MINES LTD.**  
**EAST GODFREY GRID**  
**I.P. CHARGEABILITY PROFILES**  
 VERTICAL SCALE: 1" = 20 UNITS  
 HORIZONTAL SCALE: 1" = 200'  
 a = 200'

DRAWN BY: H.Z. TITILEY  
 APPROVED: *WE*  
 SURVEY DATE: SEPT. 16, 1964 TO JAN. 15, 1965

