ELECTROMAGNETIC - MAGNETIC SURVEY

on the

J. V. BONHOMME PROPERTY

Matheson Township, Ontario

Timmins, Ontario,
September 28, 1972.

R. J. Bradshaw, P. Eng.,
Consulting Geologist.

INTRODUCTION

Magnetic and electromagnetic surveys have been carried out on the north property in Matheson Township held by J. V. Bonhomme, 168 Algonquin Blvd. East, Timmins, Ontario.

During the period August 14 to 26, 1972, picket lines were established and the surveys were completed during the August 18 to 29 interval.

The object of the survey work is to locate anomalous zones which may represent or be associated with base or precious metal deposits.

PROPERTY, LOCATION AND ACCESS

The property consists of 22 contiguous unpatented mining claims designated P308549 to P308570 inclusive.

Situated in the west-central sector of Matheson Township, the property is about a mile north of highway 101.

About 14 miles east of Timmins, Ontario, the property is accessible by boat from the highway along the Porcupine River which crosses the claim group.

PREVIOUS WORK

As indicated in the assessment work files of the Ministry of Mines, the only previous work was completed on claims P308567, P308568 and P308569. On behalf of Chiblow Mines Limited, Advance Geology and Geophysics completed magnetic and electromagnetic surveys on these claims. The Crone JEM in-line survey with 200

foot coil separation lacks sufficient power to penetrate the deep conductive overburden in the area.

GEOLOGY

There is no rock exposure on the property or immediate area. The geology, therefore, as interpreted on Map P698, most recent publication of the Ontario Ministry of Mines, is based largely on the projection of geological features in the area and data from airborne magnetic maps.

Map P698 indicates that the property is dominantly underlain by mafic to intermediate metavolcanics and some metasediments which strike generally east. These rocks are shown to be displaced by a north-northwest trending fault about a half mile east of the Porcupine River. This fault with right-hand displacement is part of a group in the area, at about 1.5 mile intervals, which strike north-northwest all with similar movement.

About two miles to the west is present a gold-copper occurrence near the volcanic-sedimentary contact which was discovered by Inco. Although there is little data available on this occurrence it is known that it was discovered by drilling a conductive zone and that several thousand feet of drilling was completed on the mineralized zone.

MAGNETIC SURVEY RESULTS AND INTERPRETATION

A plan at a scale of one inch to four hundred feet showing the contoured magnetic readings accompanies this report. The instrument and survey method are described in the Appendix.

The magnetic background on the property is in the range of 450 to 550 gammas. No prominent magnetic anomalies are present in the survey area although there are variations in the magnetic pattern.

On the northwest claims in Lot 12, the magnetic susceptibilities, although generally of the same magnitude as other areas of the property, show frequent minor variations indicating a well defined easterly trend by the isomagnetics. This characteristic may reflect the presence of well bedded rocks in this sector of the property, possibly sediments or tuffs.

In the south-central part of Lot 12 the 500 gamma magnetic contour trends north-northwest. This isomagnetic coincides with the approximate location and strike of the fault on Map P698.

On either side of this postulated fault the 500 gamma isomagnetic trends east-northeast. If this magnetic contour represents the contact between volcanics to the north and sediments to the south then there is an approximately 1200 feet displacement along the fault. The volcanic-sedimentary contact is shown several hundred feet further south on Map P698; otherwise the interpretation fits.

ELECTROMAGNETIC SURVEY RESULTS AND INTERPRETATION

The electromagnetic survey data is plotted on two plans accompanying this report at a scale of one inch to four hundred feet. The McPhar vertical loop unit and survey method are described in the Appendix to this report.

The conductive zones detected on the property are described as follows:

Conductor A - At least a mile and a half long this moderately strong conductor strikes generally east. It is less well defined in the vicinity of a postulated north-northwest trending fault. Particularly to the east, the high frequency profile indicates deep conductive overburden.

A shear zone in volcanic rocks, probably represented by graphite, perhaps with sulphides, and covered by at least 100 feet of overburden is interpreted to be the cause of conductivity.

Conductor B - Located in Lot 12, this conductor is at least 2000 feet long and continues west beyond the property boundary. From east to west it varies from weak to moderate strength. It strikes generally east and is dragged between Lines 40W and 44W by folding or faulting.

A shear zone in banded volcanic rocks, probably with graphite and perhaps sulphides is the probable cause of the conductor. Overburden in this area appears to be about 100 feet deep.

Conductor C - Next to the beaver pond on Lot 12, this expression of conductivity is poorly defined. With detailed work the conductor axis shifts quite markedly. Conductive overburden is the likely cause of this anomaly.

Conductor D - On Line 28W a single well-defined crossover represents this conductor. It may strike west or possibly southeast to correspond with conductor D1. Additional survey work is required to provide adequate data for an interpretation of this anomaly. This work was not undertaken because of the proximity of the conductor to the property boundary.

Conductor D1 - In the northwest corner of Lot 11 this weak conductor is shown to strike northwest on the plan. It is quite possible, however, that two parallel conductive zones may be present here, striking generally east. Inflections of the dip angle profiles support this possibility.

Although the conductivity in this area appears to be weak from a source of limited length, more survey work is required to provide a reasonable interpretation of these indications of conductivity.

Conductor E - Striking east-northeast this conductor is shown on both electromagnetic plans. The conductivity is weak reflected by the low magnitude crossovers and discontinuity of the conductor axis. At least 4000 feet long, the conductor coincides with the postulated volcanic-sedimentary contact for much of its length.

The development of graphite and perhaps sulphides by shearing along the contact is the probable cause of the conductivity. Overburden in this area is probably at least 100 feet deep.

Conductor F - This conductor strikes east-northeast across the base line in Lot 10 for a length of about 1000 feet. The probable

deep overburden in this area may account for the apparent weak conductivity of this anomaly.

For the most part it coincides with the postulated volcanic-sedimentary contact next to a fault interpreted to strike north-northwest. Graphite and perhaps some sulphides developed by movement along the fault and contact is the likely cause of this anomaly.

Conductor G - Approximately 1000 feet long, and striking east-northeast, this weak conductor may be the east extension of conductor F. As determined from the magnetic survey this conductor appears to be within sedimentary rocks several hundred feet south of the volcanic contact.

Graphite with possibly some sulphides is the likely cause of conductivity.

CONCLUSIONS

In conjunction with the geology as interpreted on Map P698 by the Ministry of Mines, the magnetic survey seems to indicate the location of the principal structures within the survey area. The east-northeast striking contact between volcanics to the north and sediments to the south is marked by the 500 gamma isomagnetic. The magnetic susceptibilities indicate also the approximate 1200 foot displacement of the rocks by a right-handed fault striking north-northwest.

Several zones of conductivity were detected by the survey. In general they strike east and are covered by deep overburden, of the order of 100 feet. All of the conductors with the exception of D and D1 are interpreted to be caused by graphite, with some sulphides, but no magnetic minerals. A greater amount of conductive mineralization is thought to be present along parts of conductor A and the west half of conductor B. Some additional detailed survey work is required on conductors D and D1, to provide an interpretation of these anomalies.

This area of deep overburden and minimal subsurface exploration must be considered most important as a possible location for gold deposits. The area is within a few miles north of the Porcupine-Destor fault where most of the gold mines of the Porcupine to the west are located. It has been determined by Inco two miles to the west that graphitic conductive zones contain gold-bearing quartz veins. The J. V. Bonhomme property is on the same rock horizon. Finally the writer has concluded that many of the numerous cross faults in the east sector of the Porcupine gold mine camp are contemporaneous with the deposition of gold mineralization. A strong cross fault with probably subsidiary breaks is present on the Bonhomme property. Therefore, the conductive zones should be investigated by diamond drilling for the presence of gold-bearing quartz veins as well as conductive base metals. Where conductive zones cross or are adjacent to the Bonhomme property boundaries, some attempt should be made to acquire adjacent land prior to drilling.

RECOMMENDATIONS

A minimum of four holes are recommended for the investigation of the conductive zones outlined as follows:

Hole No.	Location	Direction	Dip	Depth	Target
73-1	Line 48W St. 37+50N	south	60°	500'	cond. B
73-2	Line 8E St. 18N	south	60°	500'	cond. A
73-3	Line 4E St. 9+50N	south	60°	500'	cond. E
73-4	Line 12E St. 0+50N	south	60°	500'	cond. F
4 holes				2000'	

Conductors A and B may be considered base metal-gold possibilities while conductors E and F have potential for gold mineralization. The cost of this programme, which should be carried out in winter for ease of transportation, is estimated at $20,000. An amount of $1000 should be allocated for additional detailed survey work.

Respectfully submitted,

SHIELD GEOPHYSICS LIMITED

R. J. BRADSHAW

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

R. J. Bradshaw, P. Eng.,
Consulting Geologist

Timmins, Ontario,
September 28, 1972.

APPENDIX

INSTRUMENT METHOD AND SURVEY DATA

ELECTROMAGNETIC SURVEY

Any alternating magnetic field will induce an electrical eddy current in the medium through which the magnetic field passes. If a source of an alternating magnetic field is located near a conductive body anomalously strong eddy currents will be induced in the deposit due to its high electrical conductivity. Electrical currents induced in the conductive body will produce a secondary magnetic field proportional to the intensity of current flow.

A receiver coil tuned to the frequency of the transmitting device will pick up both the directly transmitted signal and the eddy current signal.

The electromagnetic unit used in this survey is a McPhar unit and consists of a vertically mounted, motor-generator powered transmitting coil operating at frequencies of 5000 and 1000 cps. and a receiving coil, tuned to the transmitting frequencies, an inclinometer, an amplifier and a headset.

Throughout the survey, the transmitter and receiver were separated by distances of 400, 800 and 1200 feet. The plane of the transmitter coil was oriented so that the transmitter was vertical and pointed towards the receiver. Orientation was obtained using a plate on which predetermined receiver positions were plotted. Stations were read at one hundred foot intervals. At all times, the receiver "faced" the transmitter. The results obtained are dip angles, measured in degrees. The dip angles are obtained by first orienting the receiver coil in the plane of the

magnetic field by rotating the coil about a vertical axis until a null or minimum signal is obtained, and then rotating the coil about a horizontal axis until a null or minimum signal is obtained. The angle which the magnetic field makes with the horizontal is recorded as a "dip" or "tilt" angle. In the absence of a conductor the dip angle will be zero since no secondary field is present. In the presence of a conductor, the axis of the receiver coil points towards the conductor and the plane of the coil away from the conductor. In the presence of a conductor, the secondary magnetic field is usually displaced from the primary in-phase as well as direction so that the total field is elliptically polarized. The receiver cannot then be nulled completely but a minimum signal can be obtained, the width of the minimum being an indication of the phase displacement.

The tilt angles are plotted as profiles, the zero or "cross-over" point indicating the focus of the conductor axis.

Once a conductor axis has been established, the transmitter is set up over the conductor and lines are read on both sides of the transmitter and the conductor axis is traced out by "leap frogging" from "cross-over" to "cross-over".

SPECIFICATIONS

Operating Frequencies: 1000 and 5000 cycles per second

Range: 2000 foot separation between transmitter and receiver for a $\pm$ 10 degree null width.

Depth of Exploration: Roughly half the distance between transmitter and receiver..

Transmitter Power Supply: 500 watt alternator driven by a 1¾ H.P. gasoline engine.

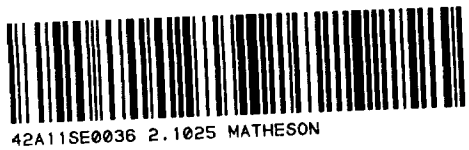
Weights:

Packboard-mounted engine generator	48 lbs.
Transmitter coil on packboard	49 lbs.
Coil mounting pole and spreader bar	22 lbs.
Receiver	7 lbs.

MAGNETOMETER SURVEY

A Sharpe M.F.-1 fluxgate magnetometer was used in the magnetic survey. This instrument measures the vertical component of the earth's magnetic field in gammas. Base stations for determining the magnetic diurnal variations were established along the main base line at 100 foot intervals. Magnetic readings were taken at 50 foot intervals, along the cross lines.

GEOPH



900

2.1025

RECEIVED

OCT 2- 1972

PROJECTS SECTION

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 Magnetic & Electromagnetic

Township or Area Matheson Township

Claim holder(s) J. V. Bonhomme

168 Algonquin Blvd. E., Timmins, Ontario

Author of Report R. J. Bradshaw

Address 26 Pine Street South, Timmins, Ontario

Covering Dates of Survey August 14 - 29, 1972
(linecutting to office)

Total Miles of Line cut 21.1

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: Sept. 28, 1972 SIGNATURE: _____
Author of Report or Agent

PROJECTS SECTION

Res. Geol. _____ Qualifications On this file

Previous Surveys LA

Checked by _____ date _____

GEOLOGICAL BRANCH

Approved by _____ date _____

GEOLOGICAL BRANCH

Approved by _____ date _____

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
P	308549
	308550
	308551
	308552
	308553
	308554
	308555
	308556
	308557
	308558
	308559
	308560
	308561
	308562
	308563
	308564
	308565
	308566
	308567
	308568
	308569
	308570

TOTAL CLAIMS 22

If space insufficient, attach list

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 1100 Number of Readings magnetic - 2200
EM - 1300 approx.

Station interval 100'

Line spacing 400'

Profile scale or Contour intervals 1" = 20° EM profile scale; 100 gamma magnetic contour interval
(specify for each type of survey)

MAGNETIC

Instrument Sharpe M.F.-1 fluxgate

Accuracy - Scale constant + or - 10 gammas

Diurnal correction method check of base stations at no greater than 1 hour intervals

Base station location along base line at 400' intervals from Line 0

ELECTROMAGNETIC

Instrument McPhar 1000-5000

Coil configuration vertical loop

Coil separation minimum 400' maximum 1600'

Accuracy + or - 1 degree

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

Frequency 1000 and 5000 cps
(specify V.L.F. station)

Parameters measured dip angle in degrees

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION – RESISTIVITY

Instrument

Time domain Frequency domain

Frequency Range

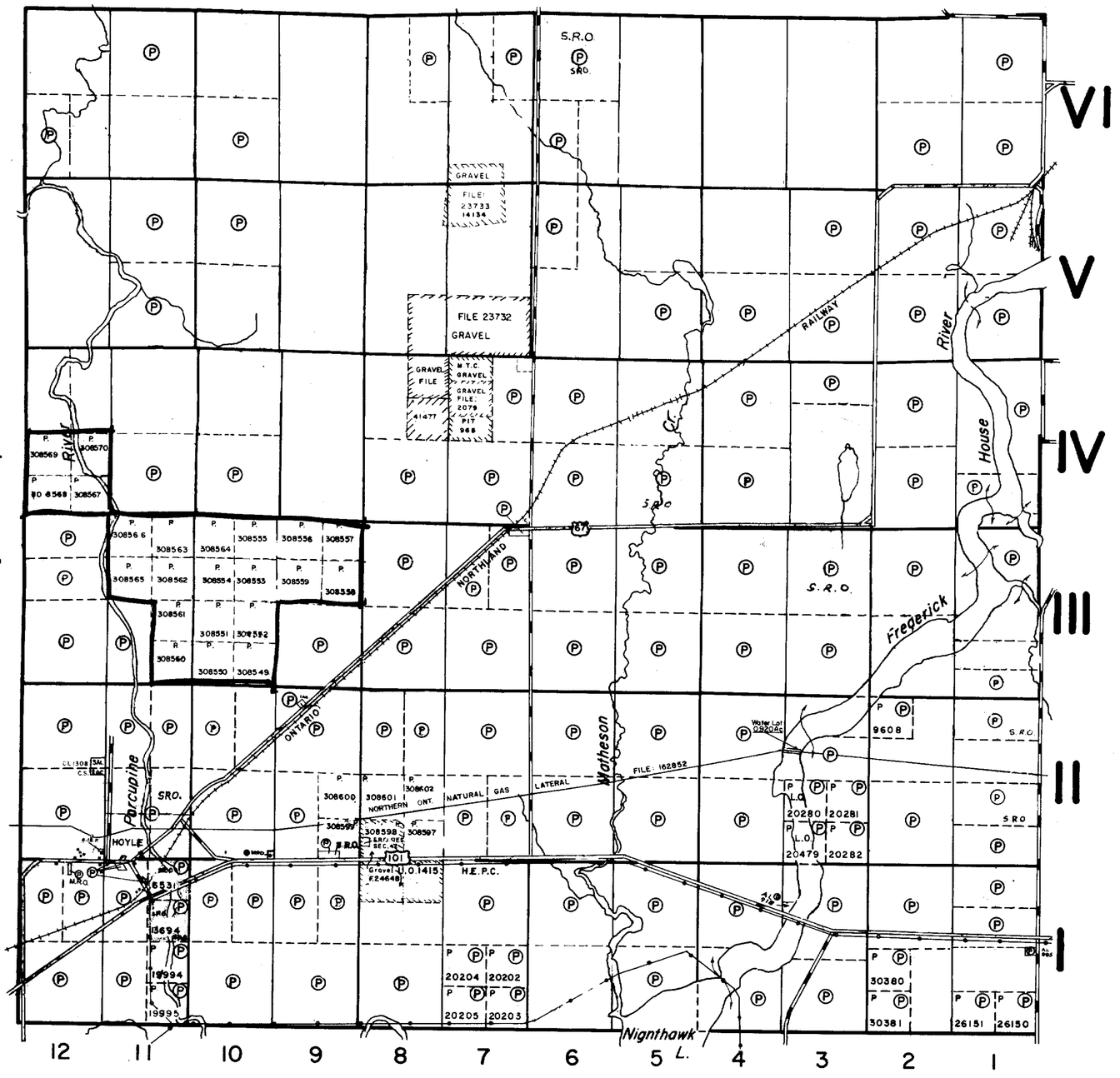
Power

Electrode array

Electrode spacing

Type of electrode

Evelyn Twp.



Hoyle Twp.

German Twp.

Cody Twp.

B.D.

THE TOWNSHIP OF MATHESON

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH= 40 CHAINS

LEGEND

PATENTED LAND	(P)
CROWN LAND SALE	(S) or C.S.
LEASES	(L)
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 MUSKEG	
MINES	

NOTES

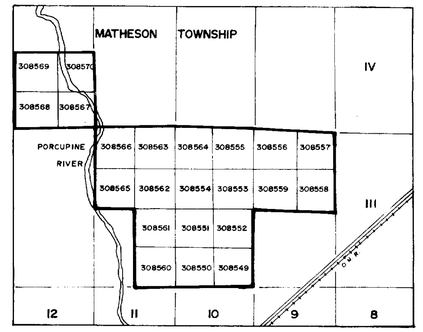
Reserve Flooding Rights to 903' Contour to H.E.P.C. on Frederick House River.

400' Surface rights reservation around all lakes & rivers.

DATE OF ISSUE
OCT 4 1972
ONT. DEPT OF MINES AND NORTHERN AFFAIRS

PLAN NO.- M-297

ONTARIO DEPARTMENT OF MINES AND NORTHERN AFFAIRS



KEY MAP

one inch to one half mile

CONCESSION IV

CONCESSION III

LOT 12

LOT 11

LOT 10

LOT 9

BEAVER POND

BEAVER POND Cr.

PORCUPINE RIVER

OLD BEAVER DAM

FLOODED

Volcanics ?

Sediments ?

Volcanics ?

Sediments ?

52 W 48 W 44 W 40 W 36 W 32 W 28 W 24 W 20 W 16 W 12 W 8 W 4 W 0 4E 8E 12E 16E 20E 24E 28 E 32 E 36 E 40 E 44 E 48 E 52 E

N

LEGEND

- Measurement station along picket line
- Relative value of the vertical component of the earth's magnetic field in gammas
- Magnetic contour
- Magnetic depression

INSTRUMENT: Sharpe M.F.-1 fluxgate

MAGNETOMETER SURVEY
ON THE
J. V. BONHOMME PROPERTY
MATHESON TOWNSHIP, ONTARIO
BY
SHIELD GEOPHYSICS LIMITED

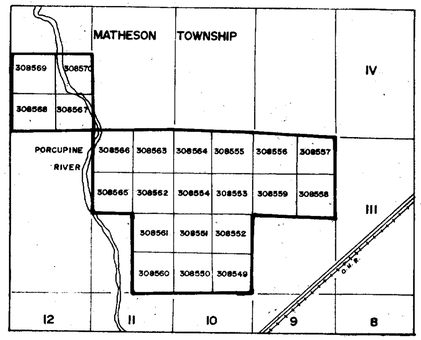
SCALE

0 400 800 1200

FEET

SEPTEMBER 1972

Sept. 72



KEY MAP

one inch to one half mile

CONCESSION IV

CONCESSION III

LOT 12

LOT 11

LOT 10

LOT 9

PORCUPINE RIVER

BEAVER POND

Cr.

OLD BEAVER DAM

FLOODED

52 W 48 W 44 W 40 W 36 W 32 W 28 W 24 W 20 W 16 W 12 W 8 W 4 W 0 4 E 8 E 12 E 16 E 20 E 24 E 28 E 32 E 36 E 40 E 44 E 48 E 52 E

LEGEND

- Measurement station along picket line
- North dip angles to left of line
- South dip angles to right of line
- 1000 cps
- 5000 cps
- Profile scale: 1" = 20°
- Transmitter location
- Conductor axes - 1000 cps
- 5000 cps

INSTRUMENT: McPhar 1000/5000 E.M

ELECTROMAGNETIC SURVEY

ON THE

J. V. BONHOMME PROPERTY

MATHESON TOWNSHIP, ONTARIO

BY

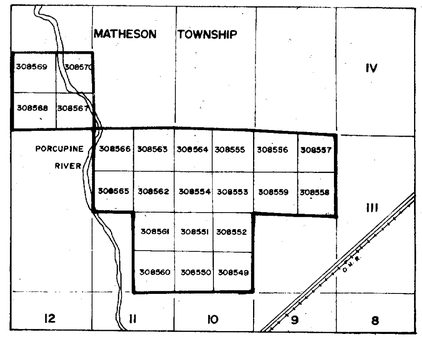
SHIELD GEOPHYSICS LIMITED

SCALE

0 400 800 1200

FEET

SEPTEMBER 1972



KEY MAP

one inch to one half mile

CONCESSION IV

LOT 11

LOT 10

LOT 9

LOT 12

BEAVER POND

OLD BEAVER DAM

PORCUPINE RIVER

Cr.

BEAVER POND

Cr.

52 W 48 W 44 W 40 W 36 W 32 W 28 W 24 W 20 W 16 W 12 W 8 W 4 W 0 4E 8E 12E 16E 20E 24E 28E 32E 36E 40E 44E 48E 52E

CONCESSION III

See Electromagnetic Survey for LEGEND.

DETAILED ELECTROMAGNETIC SURVEY ON THE J. V. BONHOMME PROPERTY

MATHESON TOWNSHIP, ONTARIO

BY

SHIELD GEOPHYSICS LIMITED

SCALE

0 400 800 1200

FEET

SEPTEMBER 1972