

## Introduction

Chevron Canada Resources Ltd. Price Project consists of 68 contiguous claims in Price, Thornloe and Ogden Townships located 16 km south-west of Timmins, Ontario. The regional geology and road access can be found on OGS MAP 2455. The claims are optioned from Mr. J. Croxall and Mr. M. Kangas who live in the Timmins area.

Terraquest Ltd. of Toronto was contracted to fly an airborne VLF and magnetics survey of the claims in the summer of 1987. A copy of their operations Report A-716.1S is appended to this report.

The east and west boundaries of the property are accessed by all weather gravel roads and parts of the area are accessed by 4-wheel drive logging roads.

## Regional Geology and Exploration History

Outcrops occur on the property but they have not been systematically mapped. The claims have experienced only minor past exploration activity. Two early drill holes were located in the area of claim P889263 with only one reaching bedrock. A few unmapped and poorly sampled trenches are located in the south eastern part of property. The trenches expose highly sheared and altered sedimentary, volcanic and iron formation rocks.

Regional geologic features can be seen on OGS maps 2455 and 2205. The northern portion of the property is underlain by interbedded Archean metasedimentary and metavolcanic rocks. The southern portion of the area is underlain by a sequence of metavolcanics and iron formation. The two rock sequences are interpreted to be separated by a continuation of the Destor Porcupine Fault which has been faulted south along the Mattagami River Fault. The Mattagami River Fault cuts north-south across the eastern side of the property.

**RECEIVED**

A composite geologic map taken from the OGS maps and a property outline are shown in Figure 1.

**MINING LANDS SECTION**

## Geophysical Surveys

The airborne VLF and aeromagnetic surveys were designed to map lithology and structure on the property. Maps of contoured total field magnetic data and VLF profiles are enclosed. The data are plotted over topography so geophysical features can be properly located. The claims have been drawn on each map. The technical description of the surveys are included in the attached Terraquest Ltd. report.

## Geophysical Data Interpretation

The dominant magnetic features on the property are: 1) a large, elliptical high centred on claim P849067 and elongate east-west, 2) a north-west trending, narrow high that cuts the south-west side of previously noted magnetic high and, 3) an east-west high striking across the south claims of the property. These features are interpreted to be ultramafic to mafic intrusions.

The southern, east-west high also includes iron formation. The north-west trending feature is probably a dike and the dike may follow a fault. The known east-west shearing on the property parallels and abuts the north side of the east-west high. A north north-east structure is interpreted to cut across the north-west side of the elliptical magnetic feature.

The VLF profile map shows several conductors, primarily along east-west trends. Two quite coherent conductors track the east-west magnetic feature at the bottom of the property and probably reflect the more conductive sheared rocks. The north-east trending structure along the north-west side of the central intrusive is conductive over part of its trace on the VLF map. Also two east-west conductors not associated with any well defined magnetic feature cut across the central part of the area.

### **Summary**

The geophysical data suggest a large, unmapped intrusive is located in the central part of the claim block and is associated with dikes and fault. There could be less sedimentary rocks than presented in previous maps. The structures evident in the data will be the focus of ground follow-up geophysics and trenching.

# PRICE PROJECT - REGIONAL GEOLOGY

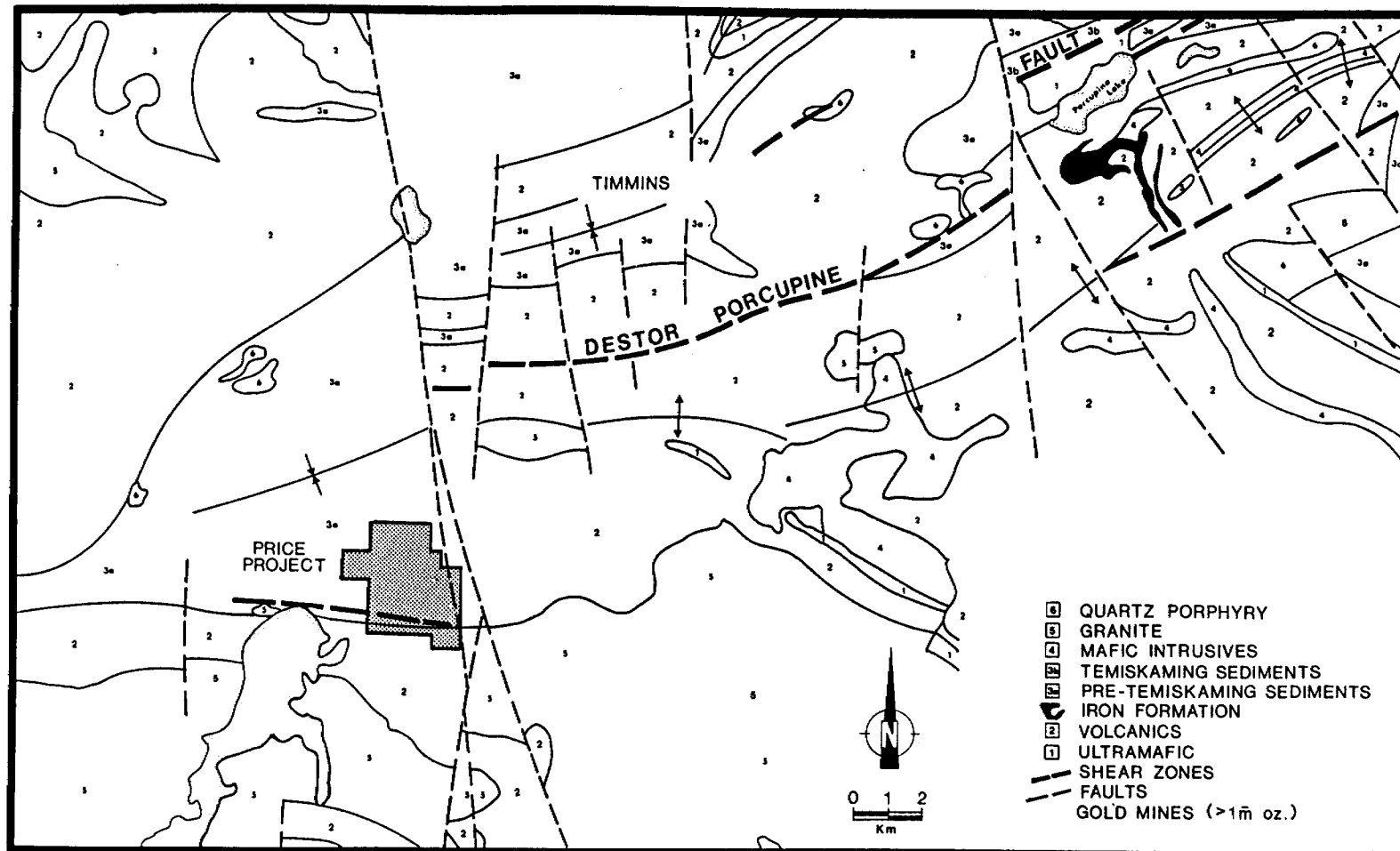
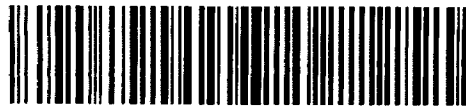


FIGURE 1



42A06NW0256 2.10493 OGDEN

020

A-716.1S

Richmond Street West, Toronto, Canada, M5H 2K1, Telephone (416) 869-0010

OPERATIONS REPORT ON AN  
AIRBORNE MAGNETIC AND VLF-EM SURVEY  
PRICE PROJECT  
PORCUPINE MINING DIVISION, ONTARIO

for

CHEVRON CANADA RESOURCES LTD.

by

TERRAQUEST LTD.  
Toronto, Canada

October 19, 1987





42A06NW0256 2.10493 OGDEN

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TABLE OF CONTENTS

	Page
1. INTRODUCTION	1
2. THE PROPERTY	1
3. GEOLOGY	1
4. SURVEY SPECIFICATIONS	2
4.1 Instruments	3
4.2 Lines and Data	3
4.3 Tolerances	3
4.4 Photomosaics	3
5. DATA PROCESSING	3
6. SUMMARY	4

LIST OF FIGURES

- Fig. 1 - General Location Map
- Fig. 2 - Survey Area Map
- Fig. 3 - Sample Record

LIST OF MAPS IN JACKET

- No. A-716.1S-1, Total Magnetic Field
- No. A-716.1S-3, VLF-EM Survey

Richmond Street West, Toronto, Canada, M5H 2K1, Telephone (416) 869-0010



## 1. INTRODUCTION

This report describes the specifications and results of a geophysical survey carried out for Chevron Canada Resources Ltd. of 1714-390 Bay Street, Toronto, Ontario, M5H 2Y2 by Terraquest Ltd., 905 - 121 Richmond Street West, Toronto, Canada. The field work was performed on August 16, 1987 and the data processing, interpretation and reporting from August 17 to October 19, 1987.

The purpose of a survey of this type is two-fold. One is to prospect directly for anomalously conductive and magnetic areas in the earth's crust which may be caused by, or at least related to, mineral deposits. A second is to use the magnetic and conductivity patterns derived from the survey results to assist in mapping geology, and to indicate the presence of faults, shear zones, folding, alteration zones and other structures potentially favourable to the presence of gold and base-metal concentration. To achieve this purpose the survey area was systematically traversed by an aircraft carrying geophysical instruments along parallel flight lines spaced at even intervals, 100 meters above the terrain surface, and aligned so as to intersect the regional geology in a way to provide the optimum contour patterns of geophysical data.

## 2. THE PROPERTY

The property staddles Price and Thorneloe township in the Porcupine Mining Division of Ontario about 16 kilometres southwest of the town of Timmins. The property is readily accessible by roads.

The latitude and longitude are 48 degrees 20 minutes, and 81 degrees 29 minutes respectively, and the N.T.S. references are 42A/5 and 6.

The survey outline is shown in figure 2.

## 3. GEOLOGY

### Map References

1. Map 2205: Timmins-Kirkland Lake, Geological Compilation Series. scale 1:253,440. O.D.M. 1973.
2. Map 2455: Timmins. scale 1:50,000. O.G.S. 1982.

The survey area is underlain predominantly by clastic metasediments, argillite and greywacke. Throughout the southern half these sediments are intercalated with amphibolitized mafic calc-alkalic metavolcanics and some east trending iron formations.



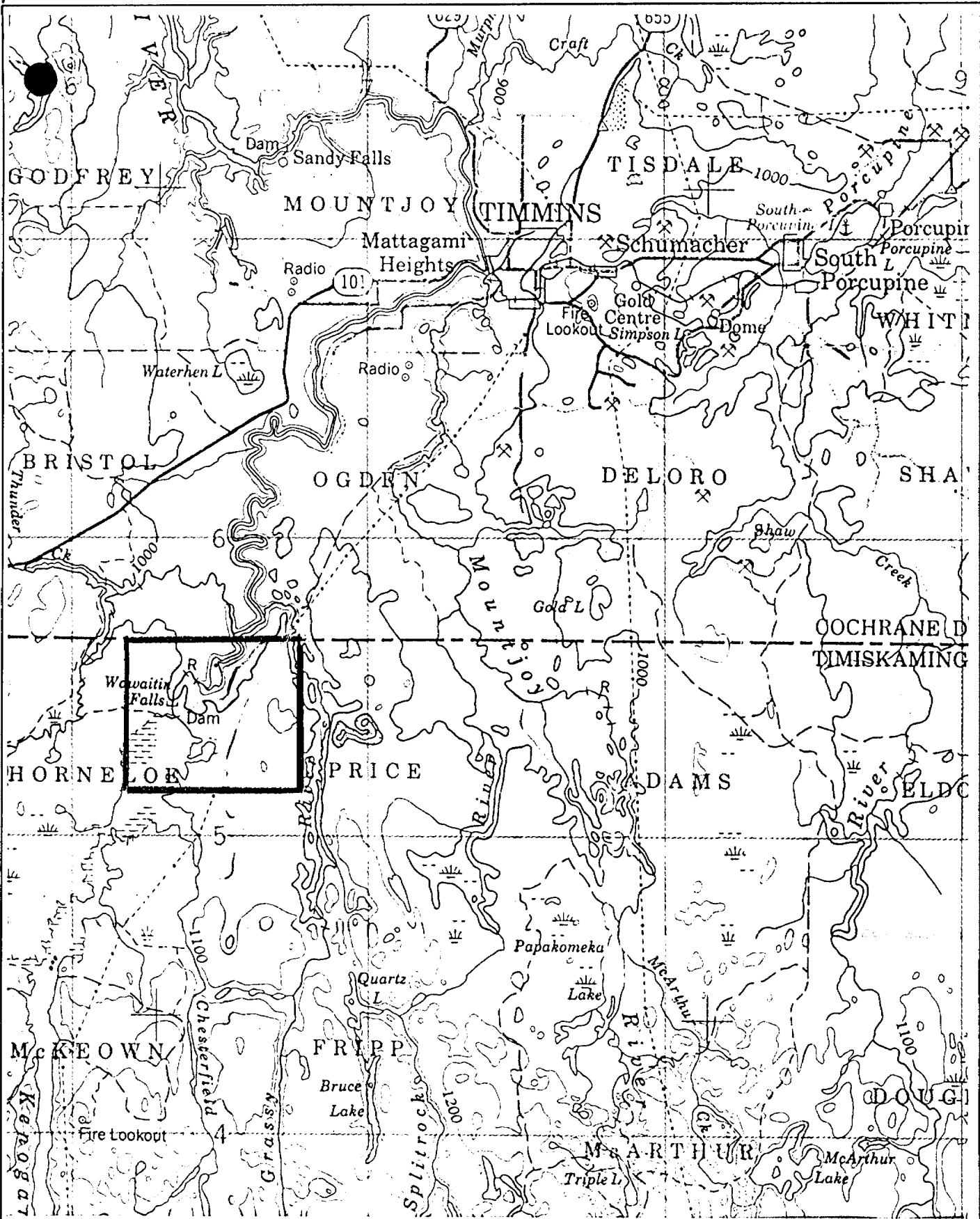


FIGURE 2. Survey Area Location



Tholeiitic metavolcanics occur along the east boundary of the survey area. Felsic intrusives, primarily hornblende diorite occurs to the south and southeast. Diabase dykes trend to the north-northwest and northeast. The structural systems trend to the north-northwest and east-west.

Gold mineralization has been detected in a minor quartz feldspar porphyry intrusive along the western boundary.

#### 4. SURVEY SPECIFICATIONS

##### 4.1 Instruments

The survey was carried out using a Cessna 206 aircraft, registration C-GGLS, which carries a magnetometer and a VLF electromagnetic detector.

The magnetometer is a high sensitivity airborne proton (Overhauser) type with the sensor element mounted in a towed bird at a distance of 14 metres below and 24 metres behind the aircraft. It's specifications are as follows:

Resolution:	0.01 gamma
Accuracy:	0.03 gamma for 2 readings per second
Cycle time:	0.5 second
Range:	20000-100000 gammas
Gradient tolerance:	Up to 5000 gammas per meter
Model:	GSM-11
Manufacturer:	GEM Systems Inc., 105 Scarsdale Rd., Don Mills, Ontario, M3B 2R5

The VLF-EM unit uses three orthogonal detector coils to measure (a) the total field strength of the time-varying EM field and (b) the phase relationship between the vertical coil and both the "along line" coil (LINE) and the "cross-line" coil (ORTHO). The LINE coil is tuned to a transmitter station that is ideally positioned at right angles to the flight lines, while the ORTHO coil transmitter should be in line with the flight lines. It's specifications are:

Accuracy:	1%
Reading interval:	1/2 second
Model:	TOTEM 2A
Manufacturer:	Herz Industries, Toronto

The VLF sensor is mounted in the left wing tip extension.

Other instruments are:

- . King KRA-10A Radar altimeter
- . UDAS-100 data processor with Digidata nine track tape recorder,



manufactured by Urtec Ltd., Markham, Ontario.

- . Geocam video camera and recorder for flight path recovery, manufactured by Geotech Ltd., Markham, Ontario.

#### 4.2 Lines and Data

- a) Line spacing: 100 metres
- b) Line direction: 360 degrees
- c) Terrain clearance: 100 metres
- d) Average ground speed: 193 km/hr.
- e) Data point interval: Magnetic: 11 metres  
VLF-EM: 11 metres
- f) Tie Line interval: 2 kilometres
- g) Channel 1 (LINE): NAA Cutler, 24.0 kHz
- h) Channel 2 (ORTHO): NSS Annapolis, 21.4 kHz
- i) Line km over total survey area: 330 kms

#### 4.3 Tolerances

- a) Line spacing: Any gaps wider than twice the line spacing and longer than 10 times the line spacing were filled in by a new line.
- b) Terrain clearance: Portions of line which were flown above 125 metres for more than one km were reflown if safety considerations were acceptable.
- c) Diurnal magnetic variation: Less than ten gammas deviation from a smooth background over a period of two minutes or less as seen on the base station analogue record.
- d) Manoeuvre noise: nil

#### 4.4 Photomosaics

For navigating the aircraft and recovering the flight path, semicontrolled mosaics of aerial photographs were made from existing air photos. Each individual photograph was photographically adjusted to conform to the NTS map system before the mosaic was assembled.

#### 5. DATA PROCESSING

Flight path recovery was carried out in the field using a video tape viewer to observe the flight path as recorded by the Geocam video camera system. The flight path recovery was completed daily to enable reflights to be selected where needed for the following day.

The magnetic data was levelled in the standard manner by tying survey lines to the tie lines. The IGRF has not been removed. The

total field was contoured by computer using a program provided by Dataplotting Services Inc. To do this the final levelled data set is gridded at a grid cell spacing of 1/10th of an inch at map scale.

The VLF data was treated automatically so as to normalize the non conductive background areas to 100 (total field strength) and zero (quadrature). The algorithms to do this were developed by Terraquest and will be provided to anyone interested by application to the company.

All of these dataprocessing calculations and map contouring were carried out by Dataplotting Services Inc. of Toronto.

Grant, F.S. and Spector A., 1970: Statistical Models for Interpreting Aeromagnetic Data; Geophysics, Vol 35

Grant, F.S., 1972: Review of Data Processing and Interpretation Methods in Gravity and Magnetism; Geophysics 37-4

Spector, A., 1968: Spectral Analysis of Aeromagnetic maps; unpublished thesis; University of Toronto, 1968.

6. SUMMARY

An airborne combined magnetic and VLF-EM mapping survey has been carried out at 100 metre line intervals with data reading stations at 11 metres along the flight lines. All data is produced on maps at a scale of 1:10,000.

TERRAQUEST LTD.

*Charles Q. Barrie*  
Charles Q. Barrie, M.  
Geologist



*Qual. .  
2.8305*





Ministry of Northern Development and Mines

Report of Work  
(Geophysical, Geological, Geochemical and Expenditures)

# 2  
Mini



42A06NW0256 2.10493 OGDEN

107 14

900

Type of Survey(s) **Airborne Magnetic/VLF** *W87 06-294* **Ogden**

Claim Holder(s) **Larry John Salo and Matti Kangas** Prospector's Licence No. **M20010, M-20585**

Address **128 Queen Avenue, Timmins, Ontario** *117 425*

Survey Company **Terraquest Ltd.** Date of Survey (from & to) **16 | 08 | 87** | **21 | 09 | 87** Total Miles of line Cut

Name and Address of Author (of Geo-Technical report) **W.E. Glenn, #1714-390 Bay Street, Toronto, Ontario M5H 2Y2**

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

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
P	998246				
	998247				
	998248				
	998017				
	998021				

**RECEIVED**  
OCT 16 1987  
**MINING LANDS SECTION**

**RECORDED**  
OCT 30 1987

Expenditures (excludes power stripping)

Type of Survey **Airborne Magnetic/VLF**

Performer **Larry John Salo and Matti Kangas**

Date **OCT 30 1987**

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.

Total number of mining claims covered by this report of work. **5**

For Office Use Only

Total Days Cr. Recorded **400** Date Recorded **Oct. 30/87** Mining Recorder **[Signature]**

Date Approved & Recorded **30 Dec 87** Branch Director **[Signature]**

Date **11/28/87** Recorded Holder or Agent (Signature) **[Signature]**

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 **W.E. Glenn, #1714 - 390 Bay Street, Toronto, Ontario, M5H 2Y2**

Date Certified **Oct 29/87** Certified by (Signature) **[Signature]**





# 221/87

Instructions: - Please type or print. **Nov 3**  
 - If number of mining claims traversed exceeds space on this form, attach a list.  
 Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.  
 - Do not use shaded areas below.

Mining Act 2.10493

Type of Survey(s) <b>AIRBORNE MAGNETIC &amp; VLF-EM</b>		Township or Area <b>PRICE &amp; THORNLOE TWPS.</b>	
Claim Holder(s) <b>CHEVRON MINERALS LTD.</b>		Prospector's Licence No. <b>T-1690</b>	
Address <b>#1714-390 BAY STREET, TORONTO, ONTARIO M5h 2Y2</b>			
Survey Company <b>TERRAQUEST LTD.</b>		Date of Survey (from & to) 16 08 87   21 09 87 Day   Mo.   Yr.   Day   Mo.   Yr.	
Name and Address of Author (of Geo-Technical report) <b>W.E. GLENN, #1714-390 BAY STREET, TORONTO, ONTARIO M5H 2Y2</b>			

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
For each additional survey: using the same grid: Enter 20 days (for each)	- Other	
	Geological	
	Geochemical	

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic 40
	Magnetometer 40
	Radiometric

Mining Claims Traversed (List in numerical sequence)

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
P	849065		P	880306	
	849066			880307	
	849067			880308	
	849068			880309	
	849069			880310	
	871790			889259	
	871791			889260	
	871792			889261	
	871793			889262	
	871794			889263	
	871795			889264	
	871796			900409	
	871797			900410	
	880296			900411	
	880297			900412	
	880298			900413	
	880299			900414	
	880300			900415	
	880301			905586	
	880302			905587	
	880303			905588	
	880304			988131	
	880305			988132	

Expenditures (to be completed by Mining Division)

**RECEIVED RECEIVED**

Performed on Claim(s) **1187**

**SEP 14 1987**

**MINING LANDS SECTION**

Calculation of Expenditure Days Credits

Total Expenditures \$  ÷  = 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.

Total number of mining claims covered by this report of work. **46**

Date **Sept 11/87** Recorded Holder or Agent (Signature) *[Signature]*

For Office Use Only

Total Days Cr. Recorded **690** Date Recorded **Sept 14/87** Mining Recorder *[Signature]*

Date Approved as Recorded **19 Nov 87** Branch Director *[Signature]*

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  
**W.E. GLENN, #1714-390 BAY STREET, TORONTO, ONTARIO M5H 2Y2**

Date Certified **Sept 11/87** Certified by (Signature) *[Signature]*





Ogden Twp. (M.305)

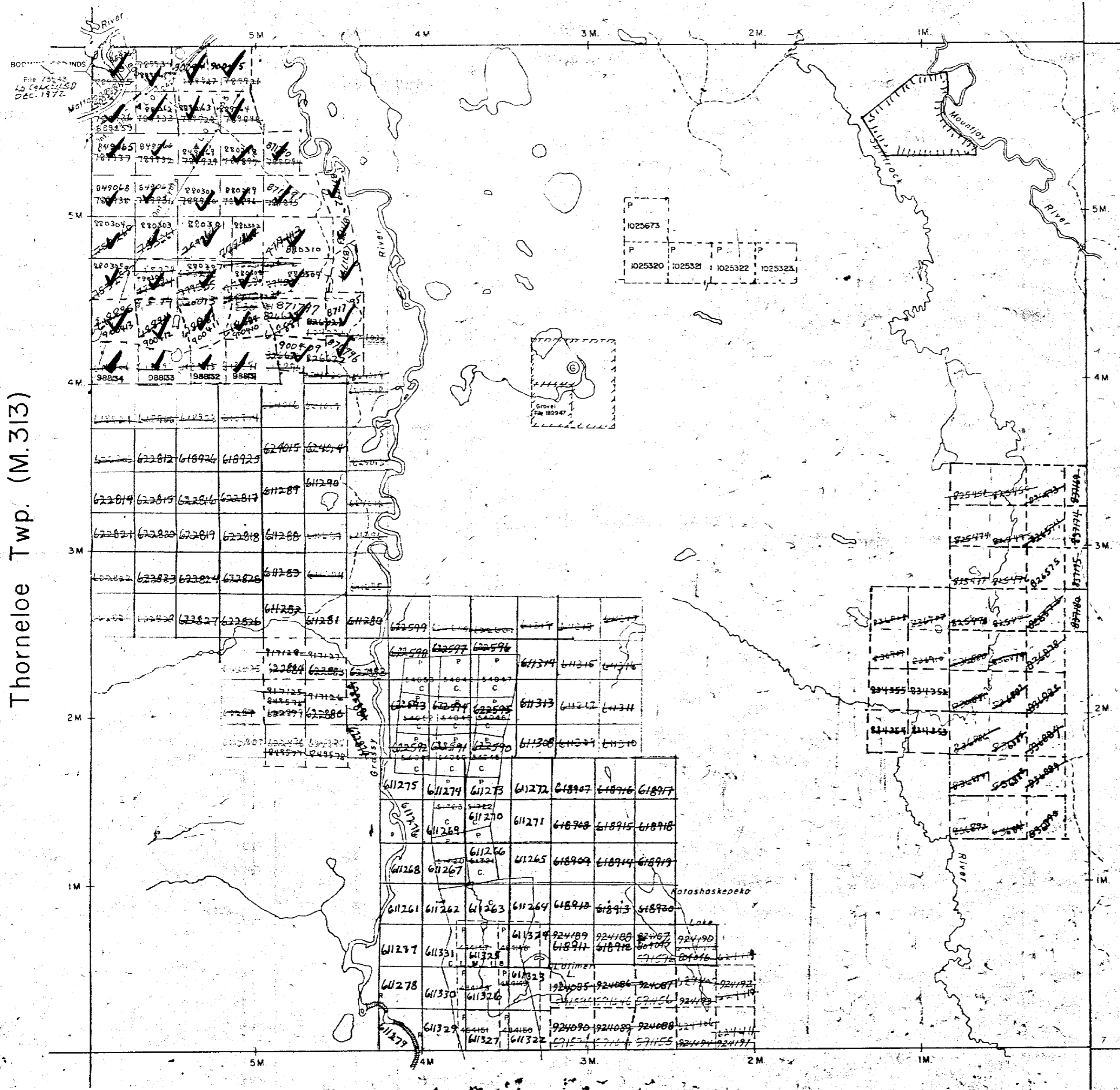
THE TOWNSHIP OF

PRICE

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS



Thorneloe Twp. (M.313)

Adams Twp. (M.261)

Fripp Twp. (M.281)



PLAN NO. M-307  
 ONTARIO  
 MINISTRY OF NATURAL RESOURCES  
 SURVEYS AND MAPPING BRANCH

**REFERENCES**

**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
SEC. 43/70		17/5/72	S.R.O.	164584

FILED ONLY Nov 15/85, 832526, 832701

**SAND AND GRAVEL**

- GRAVEL FILE 143834
- M.N.R. GRAVEL RESERVE
- M.N.R. GRAVEL PIT 258 FILE 111467

**NOTES**

Reservation for Deputy Chief Ranger's Headquarters site shown thus File: 110657

Flooding Rights on Kenogamissi Lk. & Mattagami R. are reserved to Ont. Hydro — L.O. 7598. File: 1163 vol.3

This township lies within the Municipality of the CITY OF TIMMINS.

**LEGEND**

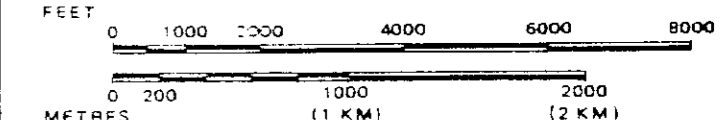
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
  - TOWNSHIPS, BASE LINES, ETC.
  - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
  - LOT LINES
  - PARCEL BOUNDARY
  - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING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

**DISPOSITION OF CROWN LANDS**

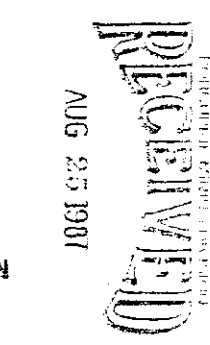
TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

SCALE: 1 INCH = 40 CHAINS



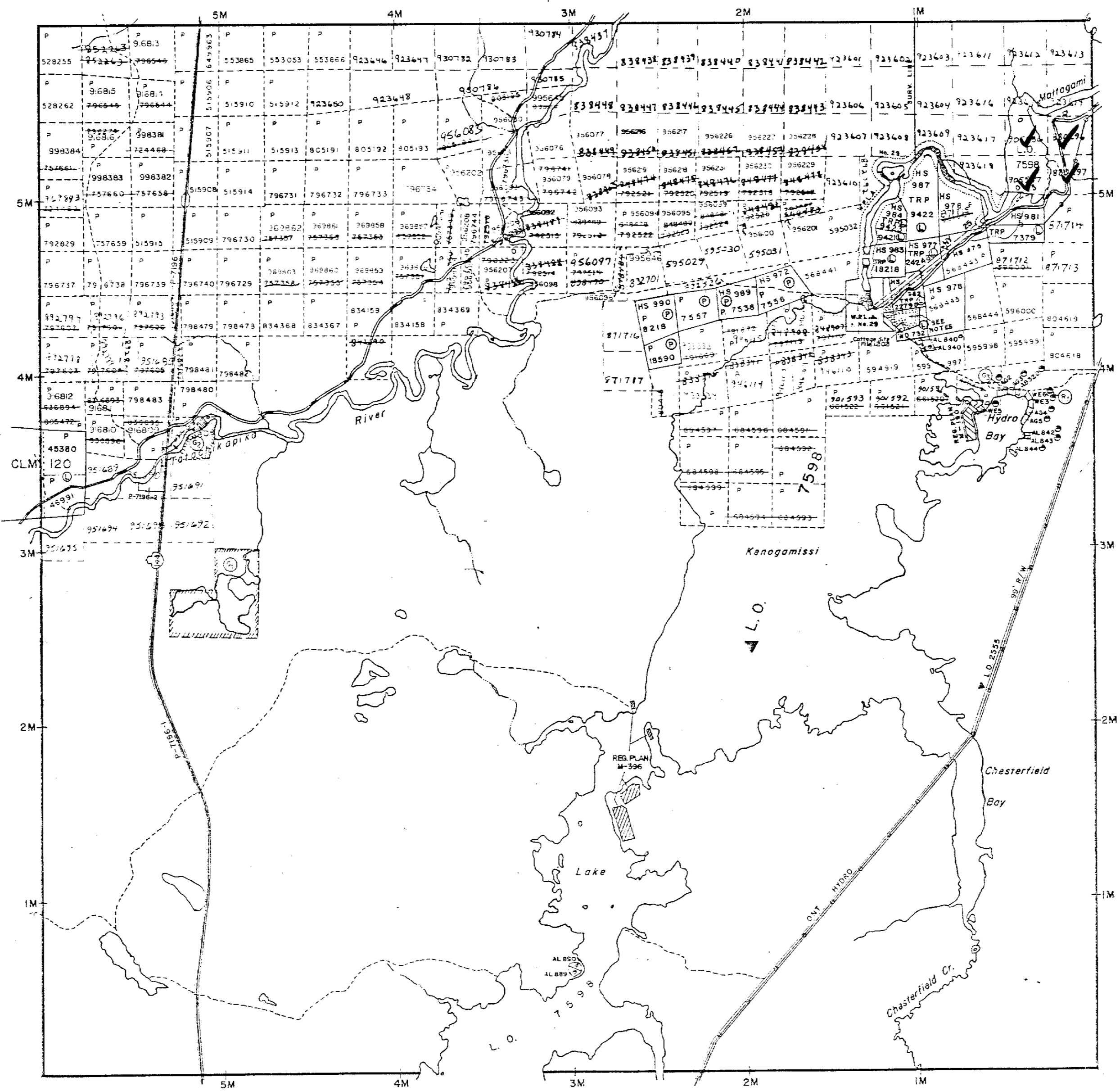
TOWNSHIP  
**THORNELOE**  
M.N.R. ADMINISTRATIVE DISTRICT  
TIMMINS  
MINING DIVISION  
PORCUPINE  
LAND TITLES / REGISTRY DIVISION  
COCHRANE



Ministry of Natural Resources  
Land Management Branch  
Ontario

Date: MARCH 1985  
Number: G-3229

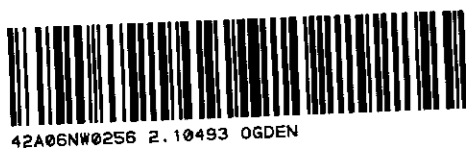
Bristol Twp.

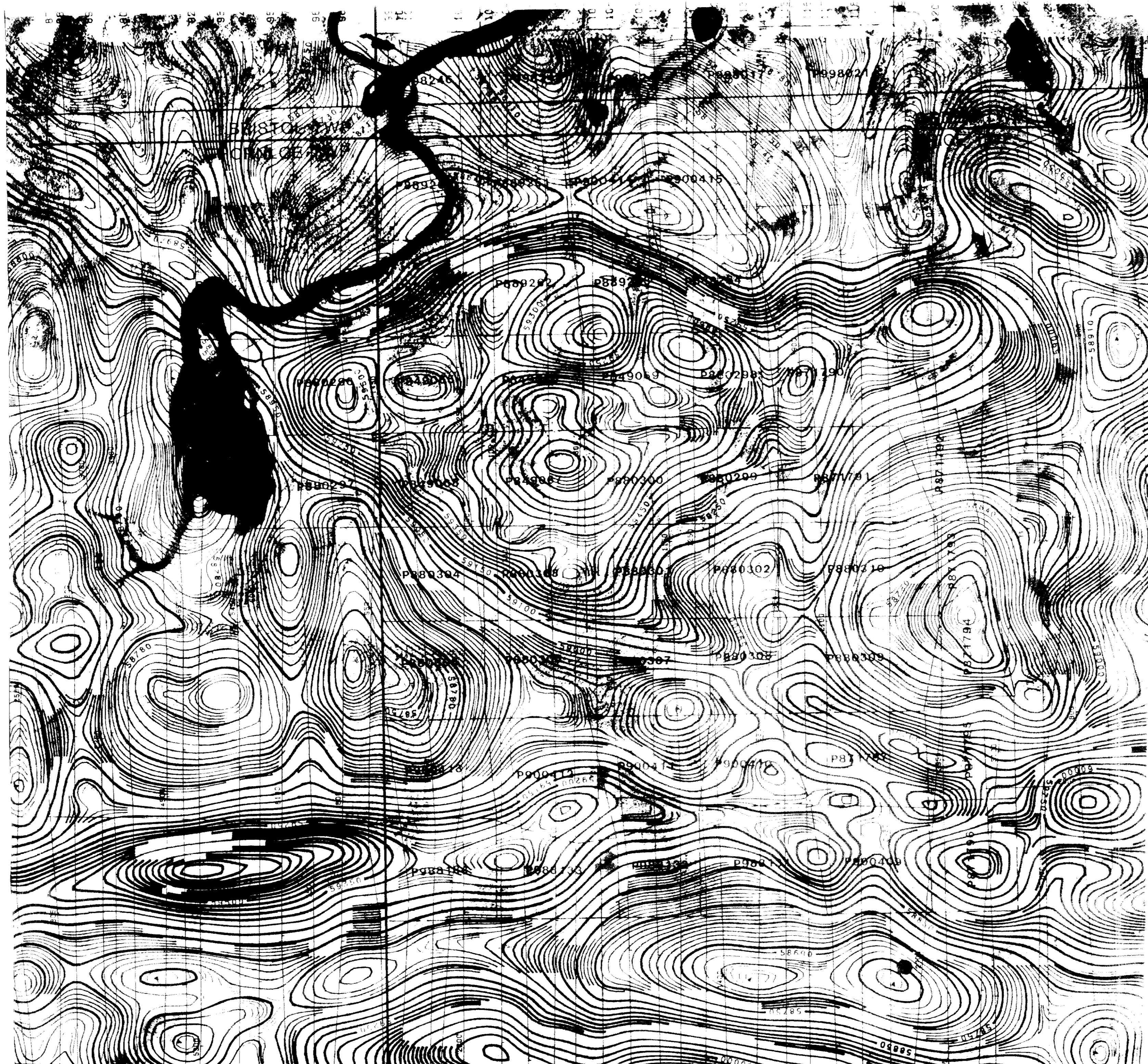


Denton Twp.

Price Twp.

McKeown Twp.





**LEGEND**

Terrain Clearance ..... 100 meters  
 Line Spacing ..... 100 meters

**TOTAL MAGNETIC FIELD**

250 gammas  
 50 gammas  
 10 gammas  
 2 gammas

CHEVRON CANADA RESOURCES LTD.

**AIRBORNE MAGNETIC SURVEY  
 TOTAL MAGNETIC FIELD**

**PRICE PROJECT  
 ONTARIO**

N.T.S. NO. 42A/586 DRAWING NO. A-716.1S.1  
 SCALE: 1:10,000 DATE: October 1987

**TERRAQUEST LTD.**  
 TORONTO, CANADA

