



**CANADIAN EXPLORATION SERVICES LTD**

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# **Elk Lake Mining Company Limited**

## **Magnetometer Survey Over the**

### **Elk Lake Property**

#### **James Township, Ontario**

## TABLE OF CONTENTS

<b>1.</b>	<b>SURVEY DETAILS .....</b>	<b>3</b>
1.1	PROJECT NAME.....	3
1.2	CLIENT .....	3
1.3	LOCATION .....	3
1.4	ACCESS.....	4
1.5	SURVEY GRID .....	4
<b>2.</b>	<b>SURVEY WORK UNDERTAKEN.....</b>	<b>5</b>
2.1	SURVEY LOG.....	5
2.2	PERSONNEL .....	5
2.3	SURVEY SPECIFICATIONS.....	5
<b>3.</b>	<b>OVERVIEW OF SURVEY RESULTS.....</b>	<b>6</b>
3.1	SUMMARY INTERPRETATION .....	6

## LIST OF APPENDICES

- APPENDIX A: STATEMENT OF QUALIFICATIONS**  
**APPENDIX B: THEORETICAL BASIS AND SURVEY PROCEDURES**  
**APPENDIX C: INSTRUMENT SPECIFICATIONS**  
**APPENDIX D: LIST OF MAPS (IN MAP POCKET)**

## LIST OF TABLES AND FIGURES

Figure 1: Location of the Elk Lake Property.....	3
Figure 2: Claim Map with Elk Lake Property Traverses.....	4
Figure 3: Google Image with Magnetic Overlay .....	6
Table 1: Survey Log .....	5

## 1. SURVEY DETAILS

### 1.1 PROJECT NAME

This project is known as the **Elk Lake Property**.

### 1.2 CLIENT

Elk Lake Mining Company Ltd.  
P.O. Box 219  
14579 Government Road  
Larder Lake, Ontario  
P0K 1K0

### 1.3 LOCATION

The Elk Lake Property is located in James Township approximately 2 km southwest of Elk Lake, Ontario. The survey area covers claims numbered 4269816, 4269818 and 4273173 located in James Township, within the Larder Lake Mining Division.



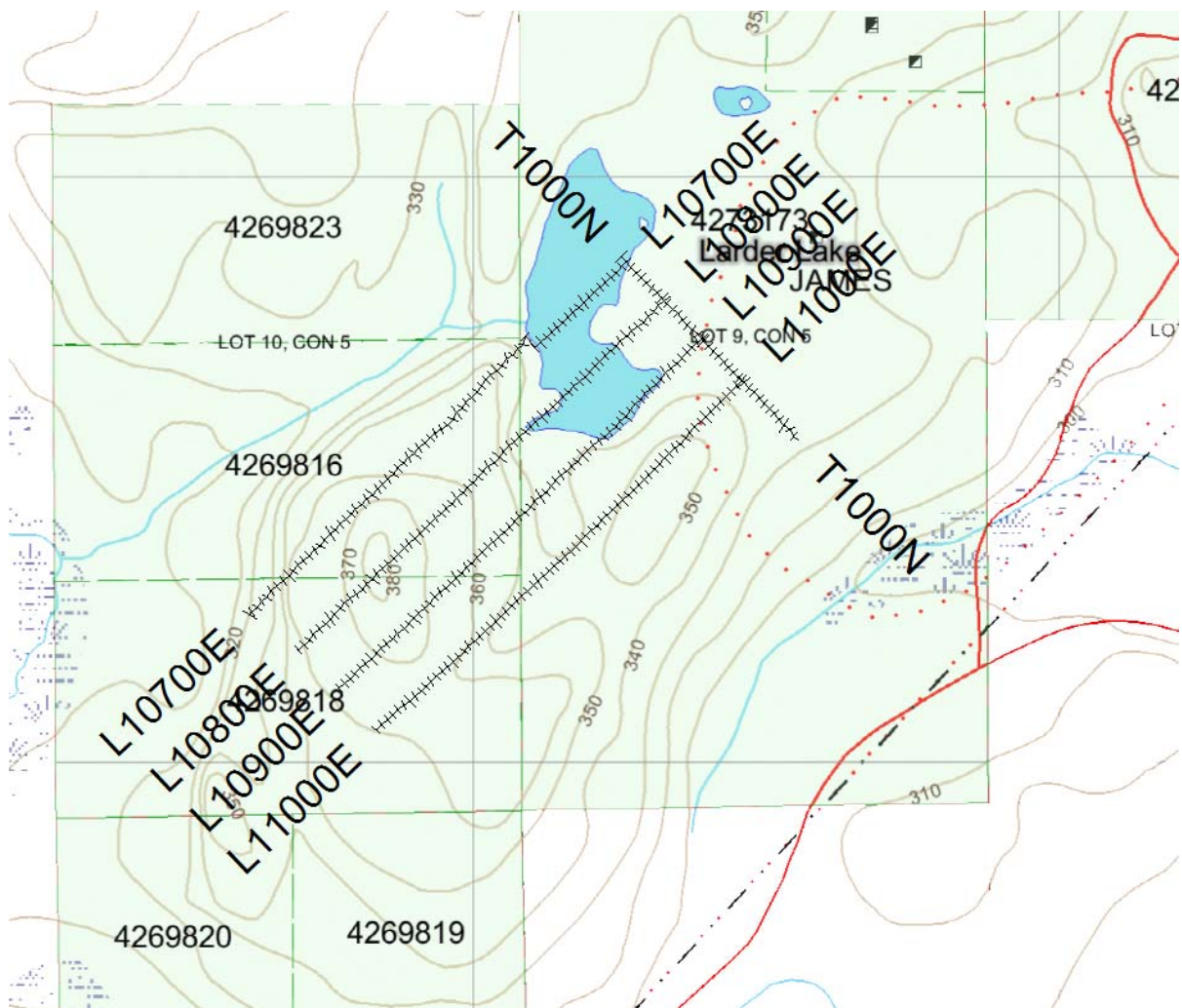
**Figure 1: Location of the Elk Lake Property**

## 1.4 ACCESS

Access to the property was attained with a 4x4 truck from Elk Lake on highway 560 towards Gowganda for approximately 2 km.

## 1.5 SURVEY GRID

The traversed lines were established using a GPS in conjunction with the execution of the survey. The GPS operator would establish sample locations while remaining approximately 12.5m in front of the magnetometer operator. GPS waypoints, magnetic samples were taken every 12.5m along these controlled traverses. The GPS used was a Garmin GPSMAP 62s with an external antenna for added accuracy.



**Figure 2: Claim Map with Elk Lake Property Traverses**

## 2. SURVEY WORK UNDERTAKEN

### 2.1 SURVEY LOG

Date	Description	Line	Min Extent	Max Extent	Total Survey (m)
March 15, 2015	Locate survey area	1000N	10700E	11137.5E	437.5
		10700E	100N	1000N	900
		10800E	125N	1000N	875
		10900E	125N	1000N	875
		11000E	125N	1000N	875

**Table 1: Survey Log**

### 2.2 PERSONNEL

Bruce Lavalley and Claudia Moraga, both of Britt, Ontario conducted all the magnetic data collection with Bruce Lavalley responsible for the GPS control and GPS way-point collection.

### 2.3 SURVEY SPECIFICATIONS

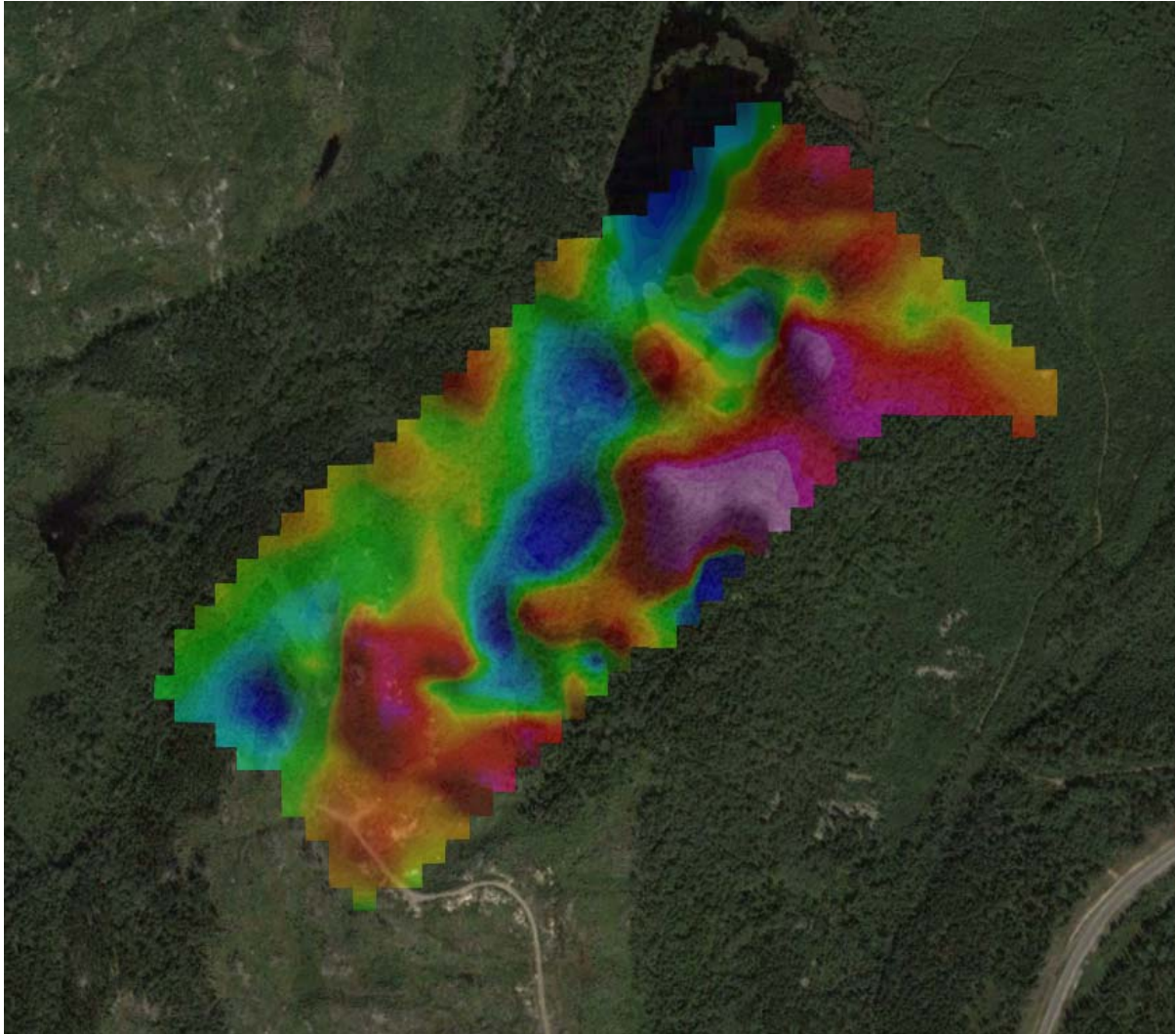
The survey was conducted with a GSM-19 v7 Overhauser magnetometer with a second GSM-19 magnetometer in base station mode for diurnal correction.

A total of 3.9625 line kilometers of magnetometer was read over the Elk Lake Property on March 15, 2015. This consisted of 317 magnetometer samples taken at a 12.5m sample interval.



### 3. OVERVIEW OF SURVEY RESULTS

#### 3.1 SUMMARY INTERPRETATION



**Figure 3: Google Image with Magnetic Overlay**

The magnetic signature varies through the survey area. The magnetically elevated region most likely represent the Nipissing Diabase system previously observed in the area. Flanking this to the northwest appears some magnetically depressed areas. This area may reflect a different phase of the diabase or an altered sedimentary package.

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## APPENDIX A

### STATEMENT OF QUALIFICATIONS

I, C. Jason Ploeger, hereby declare that:

1. I am a professional geophysicist with residence in Larder Lake, Ontario and am presently employed as a Geophysicist and Geophysical Manager of Canadian Exploration Services Ltd. of Larder Lake, Ontario.
2. I am a Practising Member of the Association of Professional Geoscientists, with membership number 2172.
3. I graduated with a Bachelor of Science degree in geophysics from the University of Western Ontario, in London Ontario, in 1999.
4. I have practiced my profession continuously since graduation in Africa, Bulgaria, Canada, Mexico and Mongolia.
5. I am a member of the Ontario Prospectors Association, a Director of the Northern Prospectors Association and a member of the Society of Exploration Geophysicists.
6. I do not have nor expect an interest in the properties and securities of **Elk Lake Mining Company Ltd.**
7. I am responsible for the final processing and validation of the survey results and the compilation of the presentation of this report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.



C. Jason Ploeger, P.Geo., B.Sc.  
Geophysical Manager  
Canadian Exploration Services Ltd.

Larder Lake, ON  
March 25, 2015

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## APPENDIX B

### THEORETICAL BASIS AND SURVEY PROCEDURES

#### TOTAL FIELD MAGNETIC SURVEY

Base station corrected Total Field Magnetic surveying is conducted using at least two synchronized magnetometers of identical type. One magnetometer unit is set in a fixed position in a region of stable geomagnetic gradient, and away from possible cultural effects (i.e. moving vehicles) to monitor and correct for daily diurnal drift. This magnetometer, given the term 'base station', stores the time, date and total field measurement at fixed time intervals over the survey day. The second, remote mobile unit stores the coordinates, time, date, and the total field measurements simultaneously. The procedure consists of taking total magnetic measurements of the Earth's field at stations, along individual profiles, including Tie and Base lines. A 2 meter staff is used to mount the sensor, in order to optimally minimize localized near-surface geologic noise. At the end of a survey day, the mobile and base-station units are linked, via RS-232 ports, for diurnal drift and other magnetic activity (ionospheric and spheric) corrections using internal software.

For the gradiometer application, two identical sensors are mounted vertically at the ends of a rigid fiberglass tube. The centers of the coils are spaced a fixed distance apart (0.5 to 1.0m). The two coils are then read simultaneously, which alleviates the need to correct the gradient readings for diurnal variations, to measure the gradient of the total magnetic field.



## APPENDIX C

### GSM 19



### Specifications

#### Overhauser Performance

- Resolution: 0.01 nT
- Relative Sensitivity: 0.02 nT
- Absolute Accuracy: 0.2nT
- Range: 20,000 to 120,000 nT
- Gradient Tolerance: Over 10,000nT/m
- Operating Temperature: -40°C to +60°C

#### Operation Modes

- Manual: Coordinates, time, date and reading stored automatically at min. 3 second interval.
- Base Station: Time, date and reading stored at 3 to 60 second intervals.
- Walking Mag: Time, date and reading stored at coordinates of fiducial.
- Remote Control: Optional remote control using RS-232 interface.
- Input/Output: RS-232 or analog (optional) output using 6-pin weatherproof connector.

#### Operating Parameters

- Power Consumption: Only 2Ws per reading. Operates continuously for 45 hours on standby.
- Power Source: 12V 2.6Ah sealed lead acid battery standard, other batteries available
- Operating Temperature: -50°C to +60°C

#### Storage Capacity

- Manual Operation: 29,000 readings standard, with up to 116,000 optional. With 3 VLF stations: 12,000 standard and up to 48,000 optional.
- Base Station: 105,000 readings standard, with up to 419,000 optional (88 hours or 14 days uninterrupted operation with 3 sec. intervals)
- Gradiometer: 25,000 readings standard, with up to 100,000 optional. With 3 VLF stations: 12,000, with up to 45,000 optional.

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## Omnidirectional VLF

Performance Parameters: Resolution 0.5% and range to  $\pm 200\%$  of total field.  
Frequency 15 to 30 kHz.

Measured Parameters: Vertical in-phase & out-of-phase, 2 horizontal components, total field coordinates, date, and time.

Features: Up to 3 stations measured automatically, in-field data review, displays station field strength continuously, and tilt correction for up to  $\pm 10^\circ$  tilts.

Dimensions and Weights: 93 x 143 x 150mm and weighs only 1.0kg.

## Dimensions and Weights

Dimensions:

Console: 223 x 69 x 240mm

Sensor: 170 x 71mm diameter cylinder

Weight:

Console: 2.1kg

Sensor and Staff Assembly: 2.0kg

## Standard Components

GSM-19 magnetometer console, harness, battery charger, shipping case, sensor with cable, staff, instruction manual, data transfer cable and software.

## Taking Advantage of a “Quirk” of Physics

Overhauser effect magnetometers are essentially proton precession devices except that they produce an order-of magnitude greater sensitivity. These "supercharged" quantum magnetometers also deliver high absolute accuracy, rapid cycling (up to 5 readings / second), and exceptionally low power consumption.

The Overhauser effect occurs when a special liquid (with unpaired electrons) is combined with hydrogen atoms and then exposed to secondary polarization from a radio frequency (RF) magnetic field. The unpaired electrons transfer their stronger polarization to hydrogen atoms, thereby generating a strong precession signal-- that is ideal for very high-sensitivity total field measurement. In comparison with proton precession methods, RF signal generation also keeps power consumption to an absolute minimum and reduces noise (i.e. generating RF frequencies are well out of the bandwidth of the precession signal).

In addition, polarization and signal measurement can occur simultaneously - which enables faster, sequential measurements. This, in turn, facilitates advanced statistical averaging over the sampling period and/or increased cycling rates (i.e. sampling speeds).

## APPENDIX C

### GARMIN GPS MAP 62S



Physical & Performance:	
Unit dimensions, WxHxD:	2.4" x 6.3" x 1.4" (6.1 x 16.0 x 3.6 cm)
Display size, WxH:	1.43" x 2.15" (3.6 x 5.5 cm); 2.6" diag (6.6 cm)
Display resolution, WxH:	160 x 240 pixels
Display type:	transflective, 65-K color TFT
Weight:	9.2 oz (260.1 g) with batteries
Battery:	2 AA batteries (not included); NiMH or Lithium recommended
Battery life:	20 hours
Waterproof:	yes (IPX7)
Floats:	no
High-sensitivity receiver:	yes
Interface:	high-speed USB and NMEA 0183 compatible

Maps & Memory:	
Basemap:	yes
Preloaded maps:	no
Ability to add maps:	yes
Built-in memory:	1.7 GB

Accepts data cards:	microSD™ card (not included)
Waypoints/favorites/locations:	2000
Routes:	200
Track log:	10,000 points, 200 saved tracks

Features & Benefits:	
Automatic routing (turn by turn routing on roads):	yes (with optional mapping for detailed roads)
Electronic compass:	yes (tilt-compensated, 3-axis)
Touchscreen:	no
Barometric altimeter:	yes
Camera:	no
<u>Geocaching-friendly:</u>	yes (paperless)
<u>Custom maps compatible:</u>	yes
Photo navigation (navigate to geotagged photos):	yes
Outdoor GPS games:	no
Hunt/fish calendar:	yes
Sun and moon information:	yes
Tide tables:	yes
Area calculation:	yes
Custom POIs (ability to add additional points of interest):	yes
Unit-to-unit transfer (shares data wirelessly with similar units):	yes
Picture viewer:	yes
Garmin Connect™ compatible (online community where you analyze, categorize and share data):	yes

- *Specifications obtained from [www.garmin.com](http://www.garmin.com)*

**APPENDIX D**

**LIST OF MAPS (IN MAP POCKET)**

Posted contoured TFM plan map (1:2500)

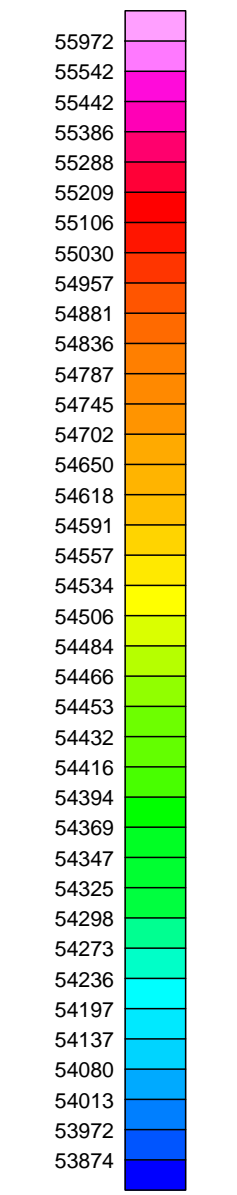
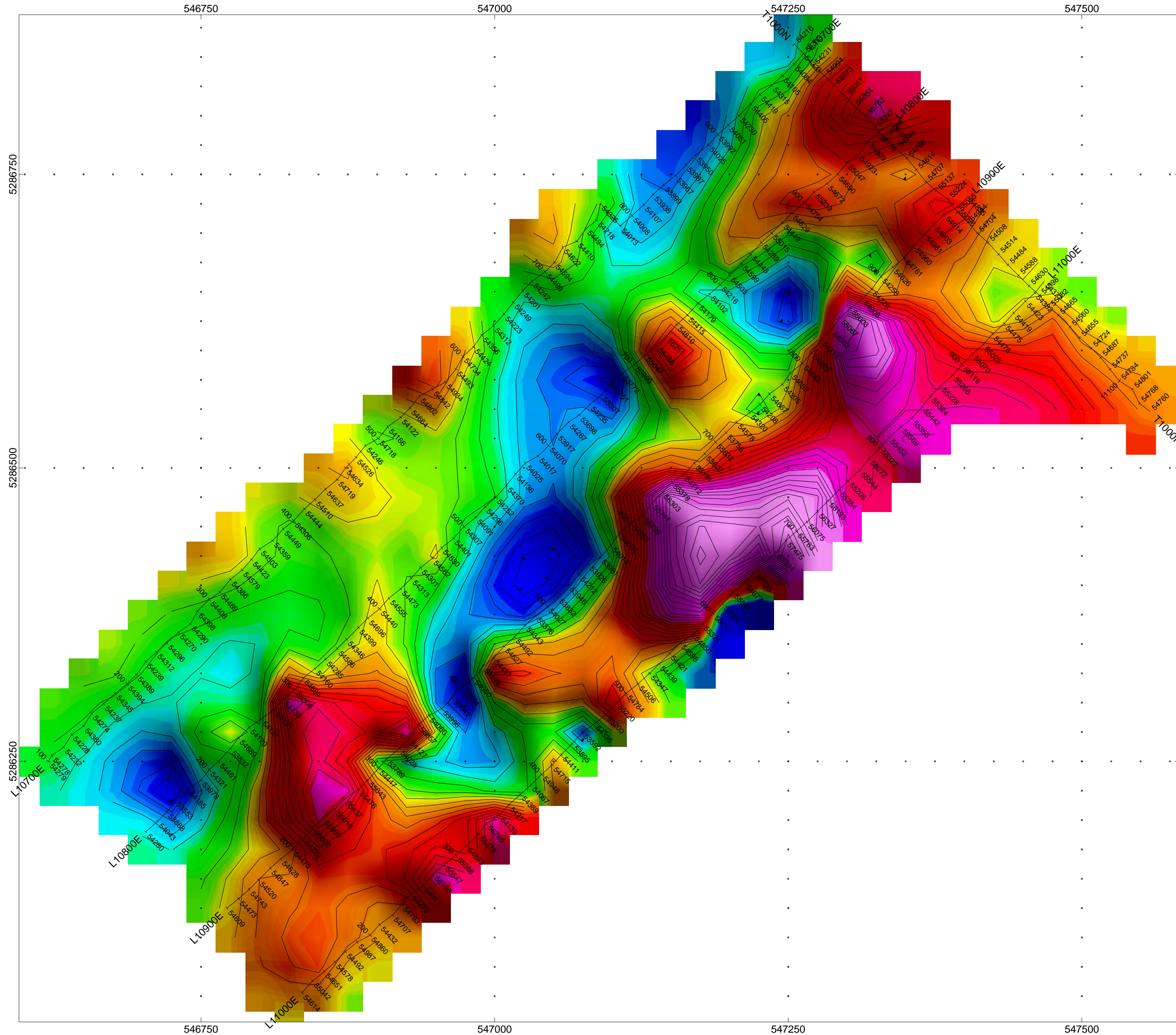
- 1) ELK LAKE-ELK LAKE-MAG-CONT-Q2059

Claim Map with Magnetic Traverses (1:20000)

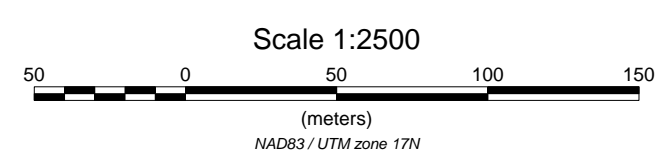
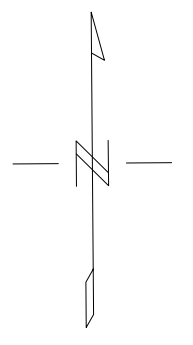
- 2) ELK LAKE-ELK LAKE-GRID-Q2059

**TOTAL MAPS = 2**





Magnetometer  
nanoTesla (nT)



<b>ELK LAKE MINING COMPANY LIMITED</b>	
<b>ELK LAKE PROPERTY</b> <b>James Township, Ontario</b>	
TOTAL FIELD MAGNETIC CONTOURED PLAN MAP Base Station Corrected	
Posting Level: 0nT Field Inclination/Declination: 74degN/12degW Station Separation: 12.5 meters Total Field Magnetic Contours: 100nT	
GSM-19 OVERHAUSER MAGNETOMETER/VLF v7	
Receiver Operated By: Bruce Lavalley GPS Operated By: Claudia Moraga Processed by: Jason Ploeger Map Drawn By: C Jason Ploeger, P.Geo March 2015	
Drawing : ELK LAKE-ELK LAKE-MAG-CONT-Q2059	



Date / Time of Issue: Mon Jan 13 08 29 35 EST 2014

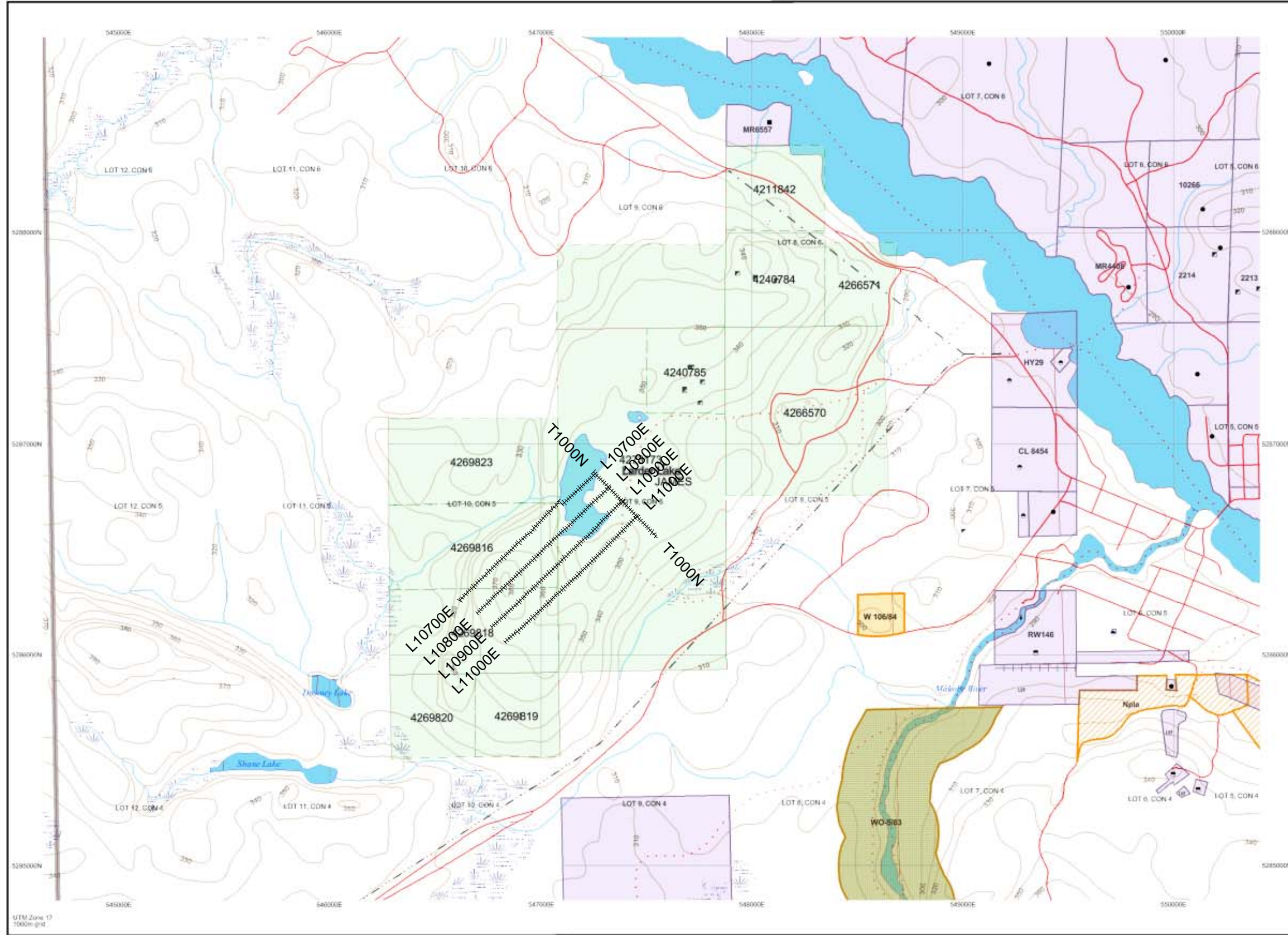
TOWNSHIP / AREA  
JAMES

PLAN  
M-0225

ADMINISTRATIVE DISTRICTS / DIVISIONS

Mining Division  
Land Titles/Registry Division  
Ministry of Natural Resources District

Larder Lake  
TIMISKAMING  
KIRKLAND LAKE



TOPOGRAPHIC

- Administrative Boundaries
- Township
- Concession Lot
- Provincial Park
- Indian Reserve
- Crt. Pt. & Pile
- Centreline
- Mine Shaft
- Mine Headframe
- Railway
- Road
- Trail
- Natural Gas Pipeline
- Utilities
- Tower

Land Tenure

- Freehold Patent:
- Surface And Mining Rights
  - Surface Rights Only
  - Mining Rights Only
- Leasehold Patent:
- Surface And Mining Rights
  - Surface Rights Only
  - Mining Rights Only
- License of Occupation:
- Uses Not Specified
  - Surface And Mining Rights
  - Surface Rights Only
  - Mining Rights Only
- Other:
- Land Use Permit
  - Order In Council (Not open for staking)
  - Water Power Lease Agreement



- LAND TENURE WITHDRAWALS
- Mining Claims
  - Filed Only Mining Claims
- IMPORTANT NOTICES
- No



LAND TENURE WITHDRAWAL DESCRIPTIONS (list may not be complete)

Identifier	Type	Date	Description
W 106/84	Ws	Jan 1, 2001	SURFACE RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NRW 100184
WO-583	Wsm	Jan 1, 2001	SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. WO-583

IMPORTANT NOTICES

Areas under which special regulation, limitations or conditions exist that affect normal prospecting, staking and mineral development activities

Those wishing to stake mining claims should consult with the Provincial Mining Recorders' Office of the Ministry of Northern Development and Mines for additional information on the status of the lands shown hereon. This map is not intended for navigational, survey, or land title determination purposes as the information shown on this map is compiled from various sources. Completeness and accuracy are not guaranteed. Additional information may also be obtained through the local Land Titles or Registry Office, or the Ministry of Natural Resources.

The information shown is derived from digital data available in the Provincial Mining Recorders' Office at the time of downloading from the Ministry of Northern Development and Mines web site.

General Information and Limitations  
 Contact Information:  
 Provincial Mining Recorders' Office  
 Wilket Green Millers Centre 933 Ramsey Lake Road  
 Sudbury ON P3E 6B5  
 Home Page: www.mdm.gov.on.ca/MNDM/MINES/LANDS/infomrpgpe.htm

Toll Free  
 Tel: 1 (888) 415-8645 ext 574  
 Fax: 1 (877) 670-1444

Map Datum: NAD 83  
 Projection: UTM (8 degree)  
 Topographic Data Source: Land Information Ontario  
 Mining Land Tenure Source: Provincial Mining Recorders' Office

This map may not show unregistered land tenure and interests in land including certain patents, leases, easements, right of way, flooding rights, licences, or other forms of disposition of rights and interest from the Crown. Also certain land tenure and land uses that restrict or prohibit free entry to stake mining claims may not be illustrated.