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Report of Work

On the

**Triple Crown Property** 

Eldorado Township, Ontario 2.240 9

NTS 42 A

Porcupine Mining Division

**Mining Claims** 

1238609

For

Starfire Minerals Inc.

And

Kenrich Eskay Mining Inc.

June 26, 2002 Timmins, Ontario Matthew Johnston Consulting Geophysicist 1226 Gatineau Blvd. Timmins, Ont. P4R 1E3

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Statement of Qualifications

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### 1.0 INTRODUCTION

The Triple Crown property of Starfire Minerals consists of 1 unpatented mining claims numbered 1238609, located in Langmuir Township. During early June 2002, a program of line-cutting and geophysical surveys was conducted over this claim group. The geophysical program consisted of total field magnetic and horizontal loop electromagnetic surveying. M.C. Exploration Services Inc., of South Porcupine, Ontario, carried out the line-cutting and geophysical surveys.

#### 2.0 Location And Access

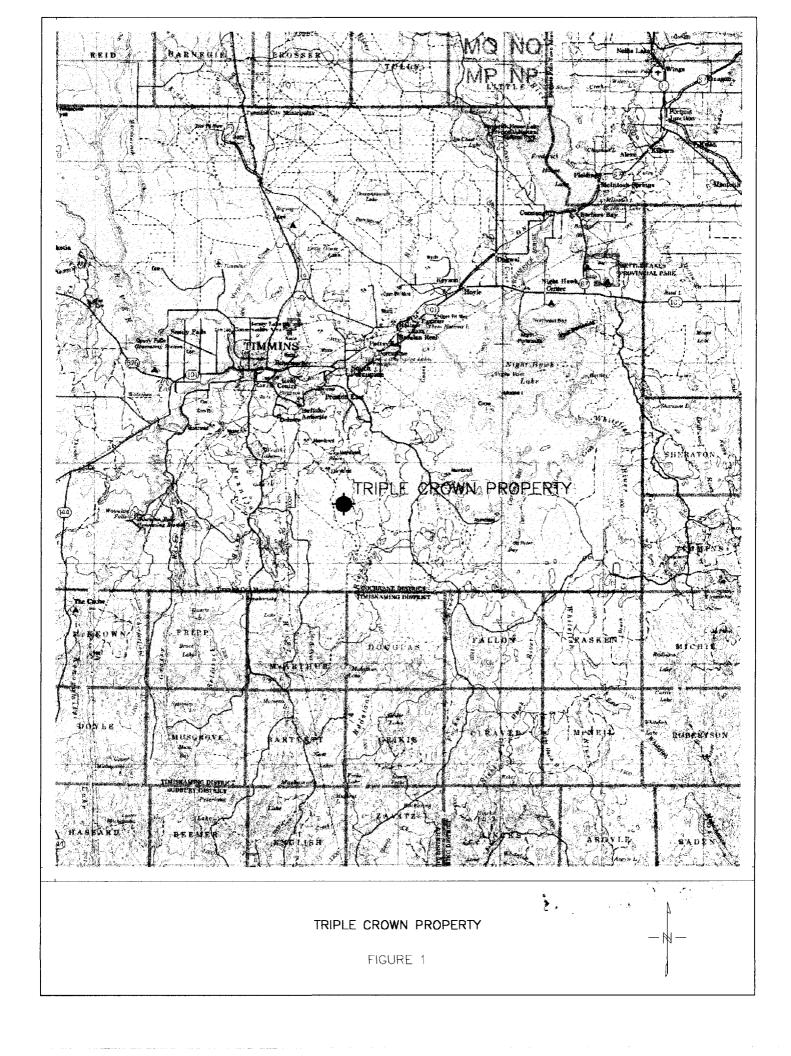


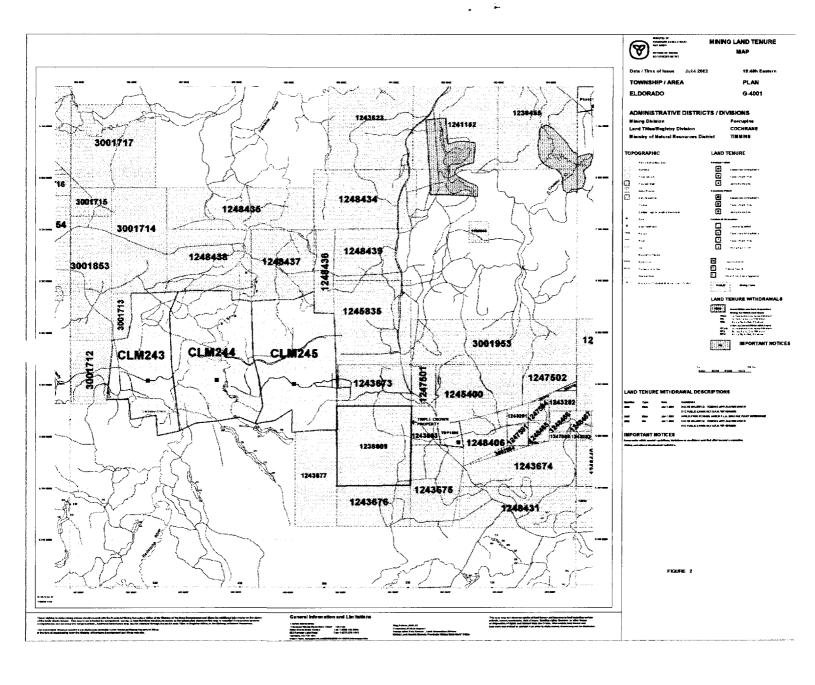
The Triple Crown property is located approximately 25 kilometers southeast of the city of Timmins, Ontario. The claim group is located in south central Eldorado Township. Access to the grid is south from Timmins along Pine street south. A number of roads, trails and snowmobile paths lead in to the property (see figures 1 and 2).

### 3.0 Summary of 2002 Geophysical and Line Cutting Program

The line cutting on the Triple Crown grid totaled 36.1 kilometers, which consisted of a 1.45 kilometer long baseline striking at 090 degrees. The grid lines were cut every 50 meters along this baseline and ranged in length between 1000 and 1500 meters. The grid lines were cut every 50 meters with pickets chained at 25-meter intervals along all lines.

The geophysical program consisted of total field magnetic surveying and Max Min II horizontal loop electromagnetic surveying electromagnetic surveying. The total magnetic field survey, using a GEM GSM-19 magnetometer, totaled 36.1 kilometers with readings collected every 12.5 meters along all lines. The horizontal loop electromagnetic





survey was conducted utilizing the Apex Parametrics Max Min I-9. A coil separation of 200 meters was used while measuring three frequencies of 440, 1770 and 3550 Hz. A total of 31.4 kilometers of HLEM data was collected at 25-meter station intervals.

The total field magnetic survey data has been presented as contours of total magnetic intensity with posted data. The HLEM data has been presented as standard profiles for each frequency with posted data. All maps have been plotted at a scale of 1:5000. A description of both instruments and survey methods can be found in appendix A.

#### 4.0 Discussion of Results

The magnetic survey on the Triple Crown grid indicates a relatively quiet magnetic background, disrupted by 3 areas of higher anomalous magnetic patterns, with magnetic values ranging between 56224 and 62879 nT. The background magnetic field strength is 57495 nT. The isomagnetic contour pattern suggests an underlying lithology striking in a northwest-southeast direction at an azimuth of approximately 110 degrees. The most significant magnetic anomalies on the grid are the 3 magnetic domains previously mentioned. These anomalous areas have been identified and labeled on the total field contour map as anomalies A, B and C. They can be generally described as linear magnetic highs of varying strike lengths and widths which display both concordant and discordant properties relative the magnetic background.

The Max Min HLEM survey revealed numerous conductive trends throughout the grid area. In general the conductors mapped by the HLEM survey were interpreted to be weak to moderate in strength and located at depths of 30 meters or more. The most well defined conductors are located between lines 600W and 1000W; between 400S and 500S. The conductor locations thought to reflect bedrock sources have been summarized in the table below:

| Conductor Location | Conductor Location |  |  |  |  |
|--------------------|--------------------|--|--|--|--|
| 150W/800S          | 700W/475S          |  |  |  |  |
| 200W/790S          | 750W/460S          |  |  |  |  |
| 200W/535S          | 800W/440S          |  |  |  |  |
| 250W/785S          | 800W/925S          |  |  |  |  |
| 250W/560S          | 850W/440S          |  |  |  |  |
| 300W/550S          | 900W/420S          |  |  |  |  |
| 300W/225S          | 950W/445S          |  |  |  |  |
| 350W/225S          | 1000W/335S         |  |  |  |  |
| 350W/535S          | 1050W/315S         |  |  |  |  |
| 400W/225S          | 1100W/315S         |  |  |  |  |
| 400W/525S          | 1100W/715S         |  |  |  |  |
| 450W/250S          | 1150W/325S         |  |  |  |  |
| 450W/500S          | 1150W/700S         |  |  |  |  |
| 500W/275S          | 1200W/650S         |  |  |  |  |
| 500W/500S          | 1250W/650S         |  |  |  |  |
| 550W/235S          | 1300W/660S         |  |  |  |  |
| 550W/475S          | 1350W/660S         |  |  |  |  |
| 600W/475S          | 1400W/660S         |  |  |  |  |
| 650W/470S          | 1450W/675S         |  |  |  |  |

### 5.0 Conclusions and Recommendations

The HLEM and magnetic surveys over the Triple Crown grid located numerous and significant geophysical anomalies, which would be prospective for further mineral exploration. The sources of the bedrock conductors would be very prospective zones in which to further explore. A more detailed interpretation of the HLEM data would aid in further refining potential drill targets. Magnetic modeling of the significant magnetic

anomalies would also aid further refining potential drill targets. These zones are often prospective for base metal deposits. A program of prospecting or geological mapping in these areas and throughout the grid area is recommended in order to further evaluate the Triple Crown property.

Any existing geological or geochemical information for the surveyed grid will aid in further assessing the geophysical anomalies.

Respectively Submitted,

Matthew Johnston
Consulting Geophysicist

## Statement of Qualifications

This is to certify that: MATTHEW JOHNSTON

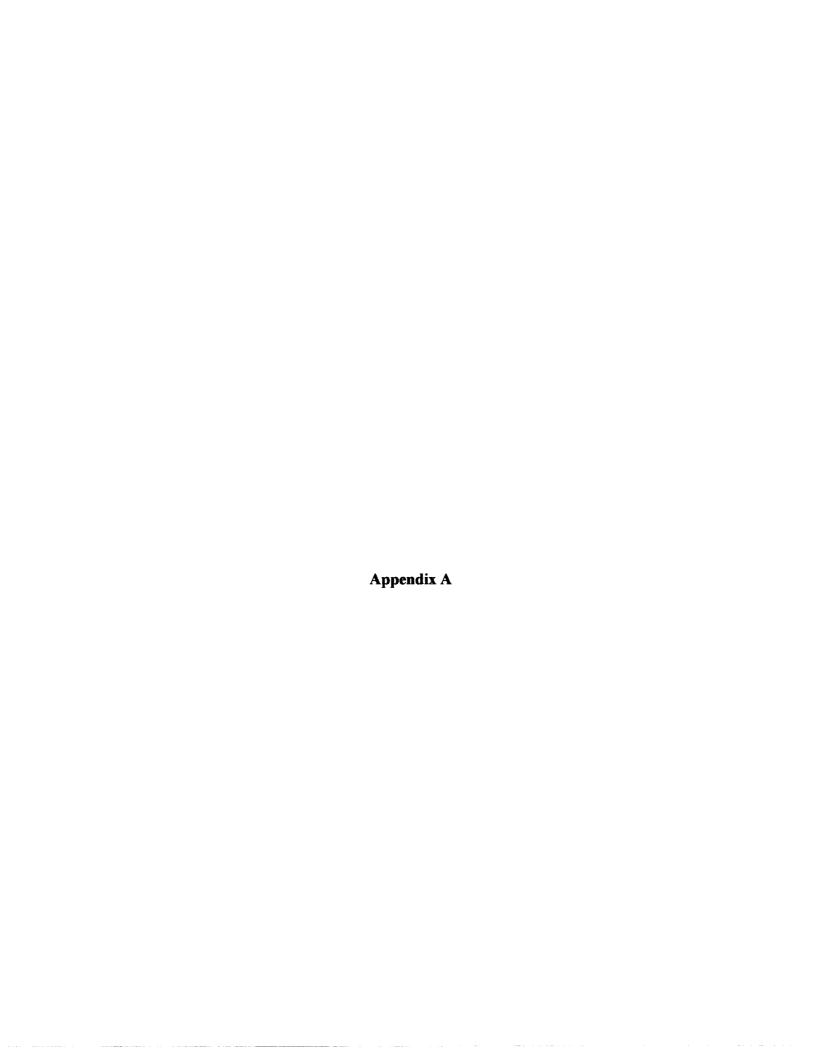
I am a resident of Timmins; province of Ontario since June 1, 1995.

I am self employed as an Consulting Geophysicist, based in Timmins, Ontario.

I have received a B.Sc. in geophysics from the University of Saskatchewan; Saskatoon, Saskatchewan in 1986.

I have been employed as a professional geophysicist in mining exploration and other consulting geophysical techniques since 1986.

Signed in Timmins, Ontario, this July 2, 2002



# **Survey Theory - Total Field Magnetics**

## Magnetic Survey

### Theory:

The magnetic method is based on measuring alteration in the shape and magnitude of the earth's naturally occurring magnetic field caused by changes in the magnetization of the rocks in the earth. These changes in magnetization are due mainly to the presence of the magnetic minerals, of which the most common is magnetite, and to a lesser extent illuminate, pyrrhotite, and some less common minerals. Magnetic anomalies in the earth's filed are caused by changes in two types of magnetization: (1) Induced, caused by the magnetic field being altered and enhanced by increases in the magnetic susceptibility of the rocks, which is a function of the concentration of the magnetic minerals. (2) Remanent magnetism is independent of the earth's magnetic field, and is the permanent magnetization of the magnetic particles (magnetite, etc.) in the rocks. This is created when these particles orient themselves parallel to the ambient field when cooling. This magnetization may not be in the same direction as the present earth's field, due to changes in the orientation of the rock or the field. The unit of measurement (variations in intensity) is commonly known as the Gamma which is equivalent to the nanotesla (nT).

#### Method:

The magnetometer, GSM-19 with an Overhauser sensor measures the Total Magnetic Field (TFM) perpendicular to the earth's field (horizontal position in the polar region). The unit has no moving parts, produces an absolute and relatively high resolution measurement of the field and displays the measurement on a digital lighted display and is recorded (to memory). Initially, the tuning of the instrument should agree with the nominal value of the magnetic field for each particular area. The Overhauser procession magnetometer collected the data with a 0.2 nanoTesla accuracy. The operator read each and every line at a 12.5m interval with the sensor attached to the top of three (56cm), aluminum tubing sections. The readings were corrected for changes in the earth's magnetic field (diurnal drift) with a similar GSM-19 magnetometer, acting as a stationary base station which automatically read and stored the readings at every 30 seconds. The data from both units was then downloaded to PC and base corrected values were computed.

## **Theory of Operation:**

### Apex MaxMin I-9

The MaxMin I ground Horizontal Loop ElectroMagnetic (HLEM) systems are designed for mineral & water exploration and for geoengineering applications. They expand the highly popular MaxMin II and III EM system concepts. The frequency range (in Hz) is extended to seven octaves from four. The ranges and numbers of coil separations are increased and new operating modes are added. The receiver can also be used independently for measurements with power line sources. The advanced spheric and powerline noise rejection is further improved, resulting in faster and more accurate surveys, particularly at large coil separations. Several receivers may be operated along a single reference scale. Mating plug in data acquisition computer is available for use with MaxMin I for automatic digital acquisition and processing. The computer specifications are in separate data sheets.

## **Specifications**

- Frequencies 110, 220, 440, 880, 1760, 3520, 7040, 14080 Hz plus 50/60Hz power line frequency (receiver only).
- Modes MAX1: HL mode, Tx & Rx coil planes horizontal and coplanar.

MAX2: V coplanar loop mode, Tx & Rx coil planes V & coplanar

MAX3: V coaxial loop mode, Tx & Rx coil planes V & coaxial

MIN1: P loop mode 1 (Tx coil plane H & Rx coil plane V.

MIN2: P loop mode 2 (Tx coil plane V & Rx coil plane H.

• Coil Separation 12.5,25,50,75,100,125,150,200,300,400 meters standard 10,20,40,60,80,100,120,160,200,240,320 m, internal option

50,100,200,300,400,500,600,800,1000,1200,1600 ft internal opt -Parameters IP and Q components of the secondary magnetic field, in % Measured of primary (Tx) fld. Fld amplitude and/or tilt of PL fld.

- Readouts Analog direct readouts on edgewise panel meters for IP, Q and tilt, and for 50/60Hz amplitude. Additional digital readouts when using the DAC, for which interfacing and controls are provided for plug-in.
- Range of Analog IP and Q scales;  $0 \pm 20\%$ ,  $0 \pm 2-\%$ , 0 Readouts  $\pm 100\%$ , switch activated. Analogue tilt scale  $0 \pm 75\%$  grade (digital IP & Q  $0 \pm 102.4\%$ ).

 $\square$ Readability Analogue IP and Q 0.05% to 0.5%, analogue tilt 1% grade (digital IP & Q 0.1%).

 $\Box$ Repeatability  $\pm 0.05\%$  to  $\pm 1\%$  normally, depending on frequency, coil spacing & conditions.

□Signal Powerline comb filter, continuous spherics noise clipping, Filtering autoadjusting time constants and other filtering.

 $\square$ Warning Lights Rx signal and reference warning lights to indicate potential errors.

□Survey Depth From surface down to 1.5 times coil separation used. □Transmitter 110Hz: 220atm 220Hz: 215atm 440Hz: 210atm 880Hz: 200atm

Dipole moments 1760Hz: 160atm 3520Hz: 80atm 7040Hz:40atm 14080Hz: 20atm

- Reference Cable Light weight unshielded 4/2 conductor teflon cable for maximum temperature range and for minimum friction.
- Intercom Voice communication link via reference cable.
- Rx Power Supply Four standard 9V batt (0.5Ah, alk). Life 30 hrs continuous duty, less in cold weather. Rechargeable batt optional.
- Tx Power Supply Rechargeable sealed gel type lead acid 12V-13Ahr batt (4x 6V-6½Ah) in canvas belt. Opt 12V-8Ahr light duty belt pack.
- Tx Battery For 110-120/220-240VAC, 50/60/400 Hz and 12-15VDC supply Charger operation, automatic float charge mode, three charge status indicator lights. Output 14.4V-1.25A nominal.

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• Operating Temp -40 □ C to +60 □ C

☐Tx weight 8 kg ☐Tx weight 16 kg with standard batt.

IP=In-Phase/ Q=Quadrature/ H= Horizontal/ V= Vertical/ PL= Powerline

## **HLEM Theory**

The MaxMin I is a frequency domain, horizontal loop electromagnetic (HLEM) system, based on measuring the response of conductors to a transmitted, time varying electromagnetic field. The transmitted, or primary EM field is a sinusoidally varying field at any of the eight varying frequencies. This field induces an electromotive force (emf), or voltage, in any conductor through which the field passes (defined by Faraday's Law). The emf causes a secondary current to flow in the conductor in turn generating a secondary electromagnetic field. This changing secondary field induces an emf in the receiver coil (by Faraday's Law) at the same frequency, but which differs from the primary field in magnitude and phase. The difference in phase (phase angle) is a function of the conductance of the conductor(s), both the target and the overburden, and host rock. The magnitude of the secondary field is dependant on the conductance, dimension, depth, geometry as well as on the interference from the overburden and host rock. The two parameters, phase angle and magnitude are measured by measuring the strength of the secondary field in two components; the real field, In-phase with the primary field, and the imaginary field, Quadrature or 90° out-of-phase from the primary field. The magnitude and phase angle of the response is also a function of the frequency of the primary field. A higher frequency field generates a stronger response to weaker conductors. A low frequency tends to pass through weak conductors and penetrate to a deeper depth. The lower frequency also tends to energize the full thickness of a conductor, and give better measure of it's true conductivity-thickness "a", in mho's per meter. For these reasons, two or more frequencies are usually used. A lower frequency for better penetration and a higher frequency for stronger response to weaker conductors. The transmitted primary field also creates an emf in the receiver coil, which is much stronger than that of the secondary and must be corrected for by the receiver. This is done by electronically creating an emf in the receiver, whose magnitude is determined by the distance between the transmitter and receiver. The phase is derived from the receiver via an interconnecting cable.

#### Method

The MaxMin I is a two-man continuously portable EM system. Designed to measure both the vertical and horizontal In-Phase (IP) and Quadrature (QP) components of the

anomalous field from electrically conductive zones. The plane of the Transmitter (Tx) was kept parallel to the mean slope between the TX and Receiver (Rx) at all times. This ensures a horizontal loop system measuring perpendicular to the anomalous targets. The grid being surveyed should also be secant chained in order to keep a constant separation (between Tx and Rx) to eliminate anomalous response derived from cable loss over rough terrain. Crews attempted to keep a constant separation for a qualitative survey. Three frequencies; 440Hz, 1760Hz, and 3520Hz were selected to resolve complex conductors if/when encountered. The 100 meter coil spacing, chosen to detect possible deep conductors also ensures a more consistent survey overall (a large spread gives better penetration over areas of conductive layers, eg. clay). The crews read the cross-lines only to cut the geology at a perpendicular angle for better cross-over response



# **Work Report Summary**

**Transaction No:** 

W0260.01344

Status: APPROVED

**Recording Date:** 

2002-AUG-15

Work Done from: 2002-APR-20

Approval Date:

2002-SEP-03

to: 2002-JUN-26

Client(s):

300371

STARFIRE MINERALS INC.

Survey Type(s):

ЕМ

LC

MAG

| Work | Report | Details: |
|------|--------|----------|
|      |        |          |

| Claim#    | Perform  | Perform<br>Approve | Applied  | Applied<br>Approve | Assign | Assign<br>Approve | Reserve | Reserve<br>Approve | Due Date             |
|-----------|----------|--------------------|----------|--------------------|--------|-------------------|---------|--------------------|----------------------|
| P 1238609 | \$24,550 | \$24,550           | \$19,200 | \$19,200           | \$0    | 0                 | \$5,350 | \$5,350            | 2005-NOV <b>-</b> 24 |
|           | \$24,550 | \$24,550           | \$19,200 | \$19,200           | \$0    | \$0               | \$5,350 | \$5,350            |                      |

**External Credits:** 

**\$**0

Reserve:

\$5,350 Reserve of Work Report#: W0260.01344

\$5,350 Total Remaining

Status of claim is based on information currently on record.



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Ministry of Northern Development and Mines Ministère du Développement du Nord et des Mines **Ontario** 

Date: 2002-SEP-04

GEOSCIENCE ASSESSMENT OFFICE 933 RAMSEY LAKE ROAD, 6th FLOOR SUDBURY, ONTARIO P3E 6B5

STARFIRE MINERALS INC. BOX 10 11TH FLOOR, 808 WEST HASTINGS STREET VANCOUVER, BRITISH COLUMBIA V6C 2X4 CANADA Tel: (888) 415-9845 Fax:(877) 670-1555

Submission Number: 2.24090 Transaction Number(s): W0260.01344

Dear Sir or Madam

#### **Subject: Approval of Assessment Work**

We have approved your Assessment Work Submission with the above noted Transaction Number(s). The attached Work Report Summary indicates the results of the approval.

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

If you have any question regarding this correspondence, please contact STEVEN BENETEAU by email at steve.beneteau@ndm.gov.on.ca or by phone at (705) 670-5855.

Yours Sincerely,

Roy Spooner

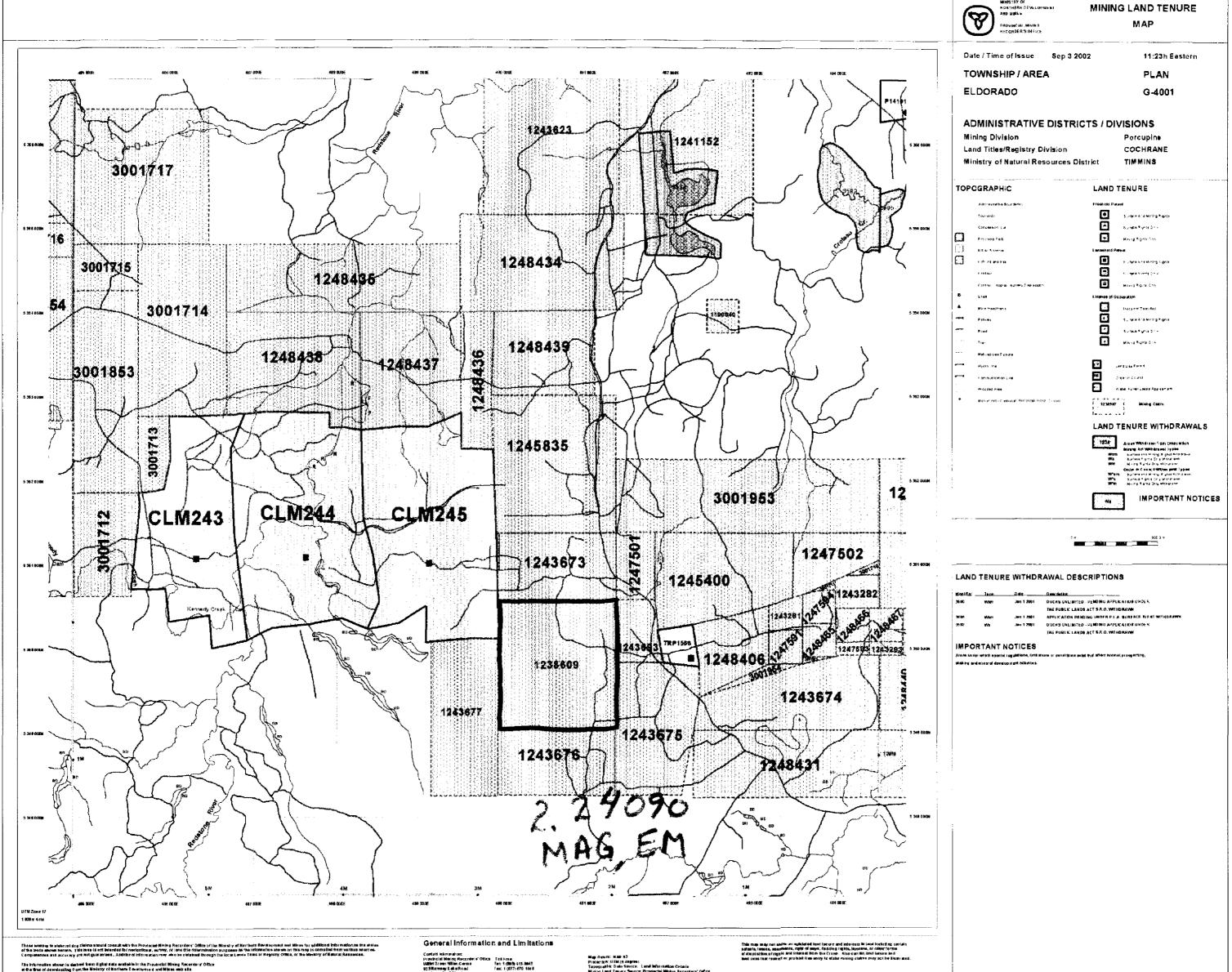
Acting Senior Manager, Mining Lands Section

Cc: Resident Geologist

Starfire Minerals Inc. (Claim Holder)

Assessment File Library

Starfire Minerals Inc. (Assessment Office)



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