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HOLBIK EXPLORATION

Airborne Geophysical Assessment Report

Wolf Ridge Property

Edwards Lake, Casino Lake Area

Southwest Upsala

Thunder Bay Mining Division

Northwestern Ontario, Canada

Survey conducted by:

Expert Geophysics Ltd.

August 6th, 2022 to August 9th, 2022

Commissioned by:

International Lithium Corp.

650 W Georgia St.

Vancouver, BC V6B 4N9

Byron Holbik

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May 19, 2024

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Introduction

This report will summarize the work completed by Expert Geophysics Limited for an airborne MobileMTm electromagnetic and magnetic survey in the Northwestern Ontario 'Wolf Ridge Block' commissioned by Internation Lithium Corp. with the purpose of mapping bedrock structure and lithology as well as possible alteration/mineralization zones.

The program was conducted in 2022 between August 6th and August 9th, covering the entire 5,549 cell unit claim block using EGL's airborne MobileMtm technology with a total of 734 line-kilometer flown. GPS data was recorded in UTM 15N with the same coordinate system used in the reported maps and deliverables.

The Wolf Ridge property is located Southwest of Upsala and Northwest of Lac des Mille Lacs Lake within the Edwards and Casino Lake Area. The property consists of 11 multi-cell claims and 4 individual claims under the ownership of 2873454 Ontario Inc. Access to the property is good by using Highway 17 and logging roads. Though the logging road will need to be cut at the time of writing.

Geochemical Li anomalies from lake sediments were interpolated onto the resistivity maps and confirmed a spatial relation with Li-mineralization and conductivity. Additionally, the survey by EGL was able to better understand the geology of the Wolf Ridge property for future exploration especially for untested low conductivity sites. Recommended areas for exploration are along the north arm of Bedivere Lake and near-surface high conductivity sites.

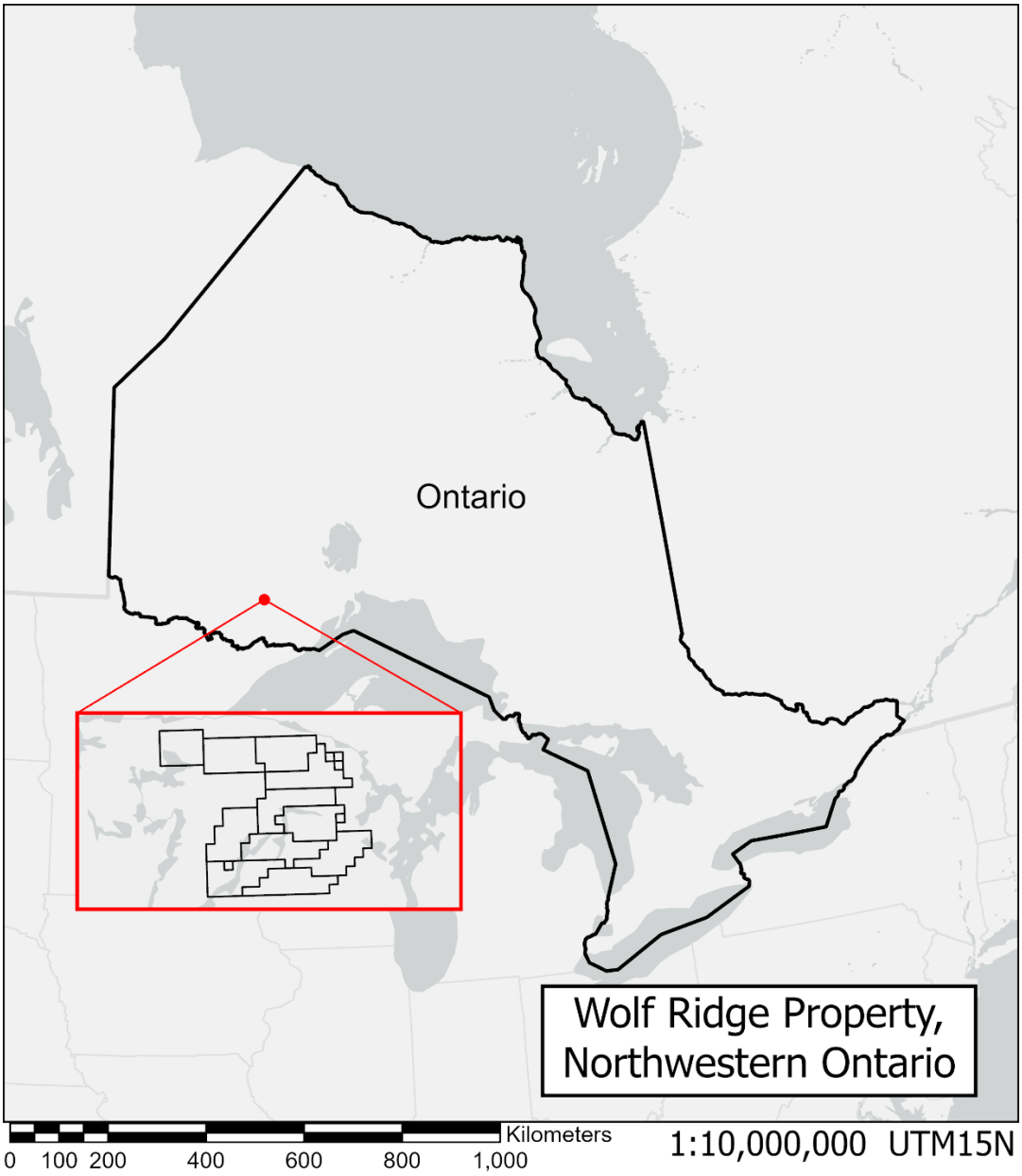


Figure 1. Wolf Ridge Regional Map UTM15N

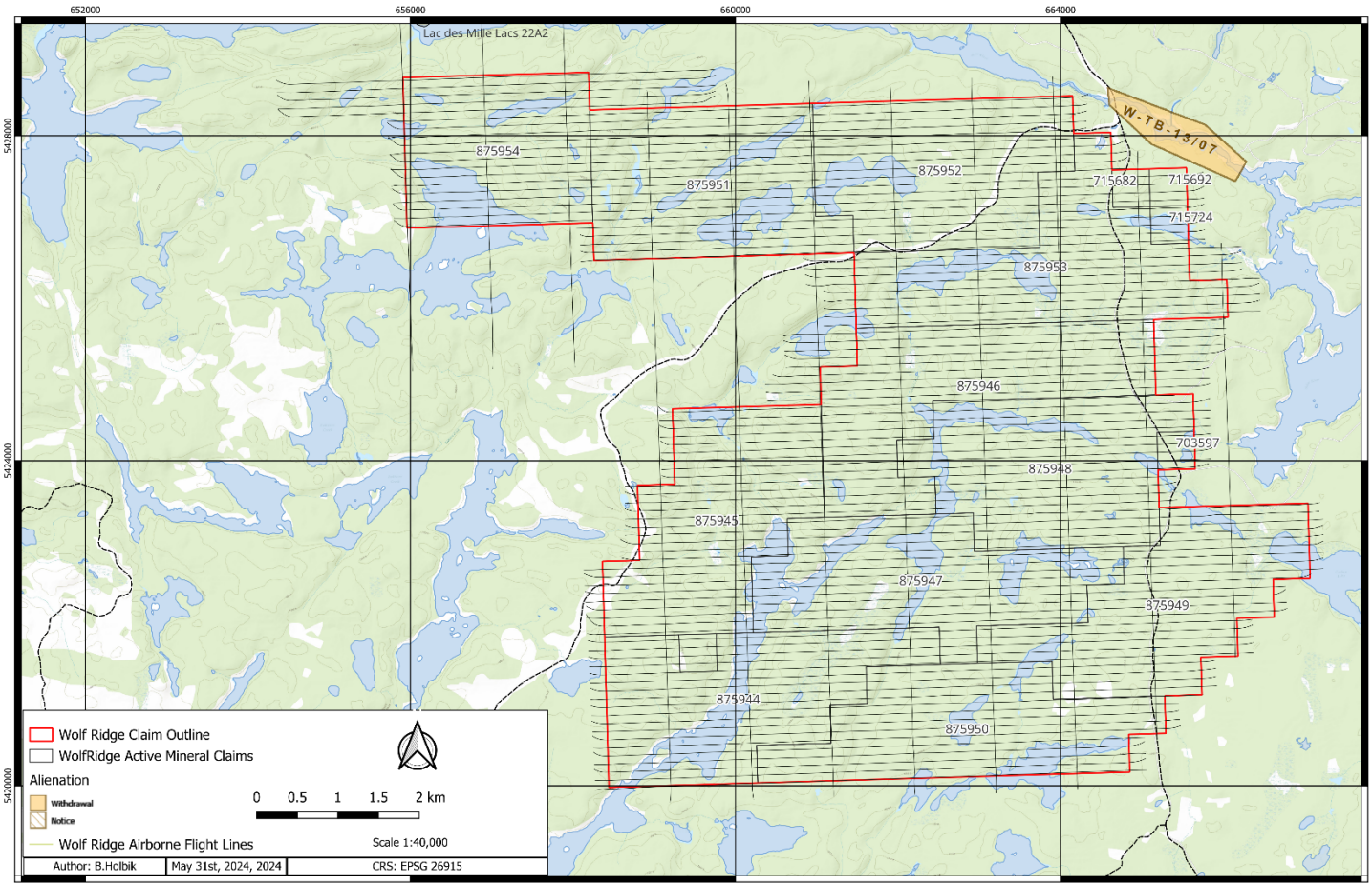


Figure 2. Wolf Ridge Block Flight Lines

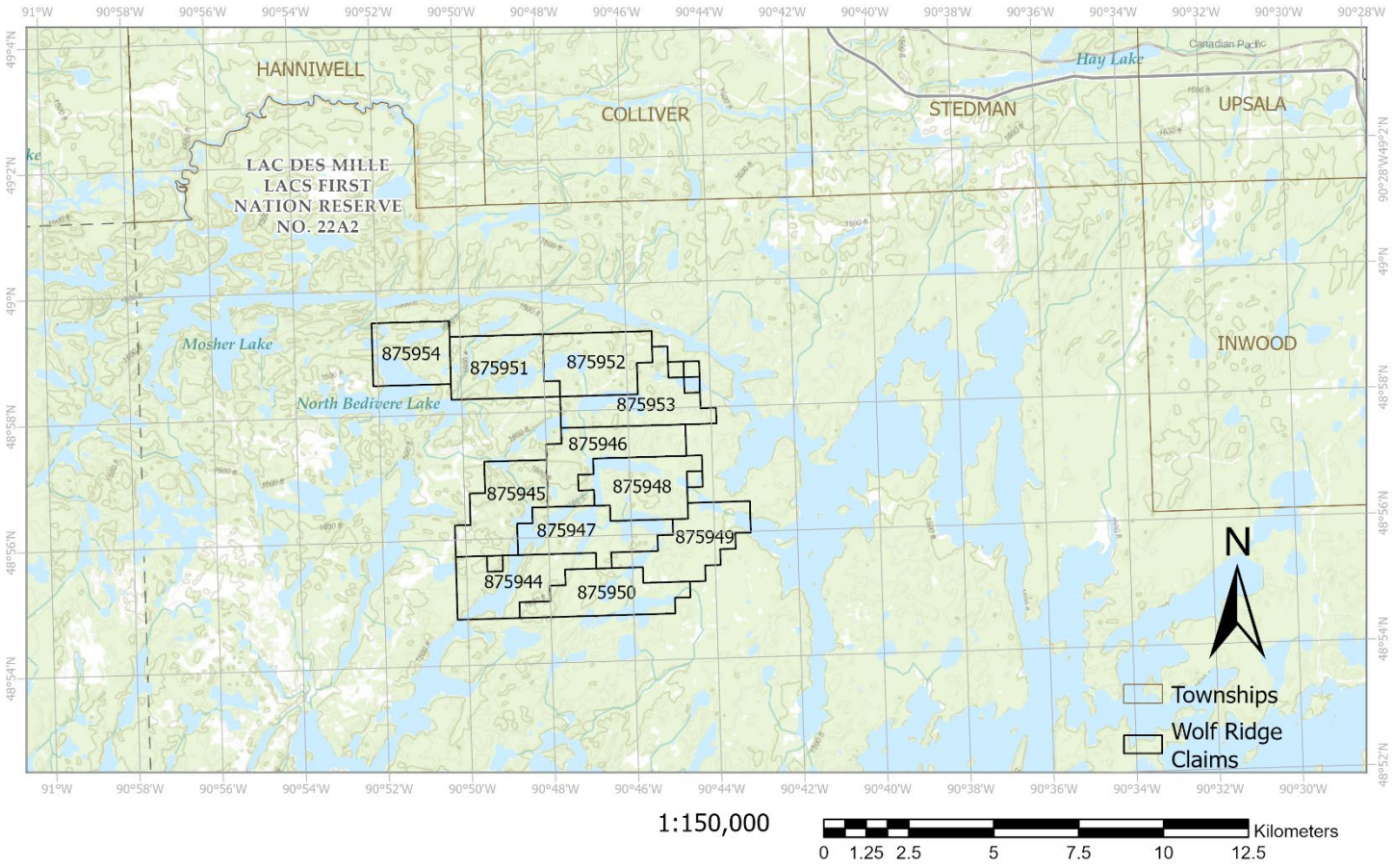


Figure 3. Wolf Ridge Property Claims and Townships UTM15. The appended EGL report has the flight line fabric whereas this map shows the claim numbers.

Claims and Tenure

The Wolf Ridge claim group consists of 11 composite, contiguous claim blocks as well as 4 individual claim cells (Figures 2 & 3). These claims are mostly within the Edwards Lake Area with a small portion of the eastern side of the claim group being part of Casino Lake Area. All claims are within the District of Thunder Bay in Northern Ontario.

Claim Numbers for the Wolf Ridge property (Single cell/**Multi-cell**):

715682	715742	715692	**875944**	**875945**	**875946**	**875947**
875948	**875949**	**875950**	**875951**	**875952**	**875953**	**875954**

Topography and Access

The Wolf Ridge property is covered by typical Northern Ontario boreal forest. With cover of Spruce, Balsam, Jackpine with some White pine, and Cedar in lower areas. Approximately 35% of the area is covered with lakes and marsh or swamp. Access to the property is gained via logging roads heading south of Trans-Canada Highway 17 approximately 10 kilometers southwest of Upsala. This logging which is currently underway has aided in giving easy access to the property and the fresh cutovers have exposed lots of outcrop that would be difficult to access to new outcrop or was previously covered.

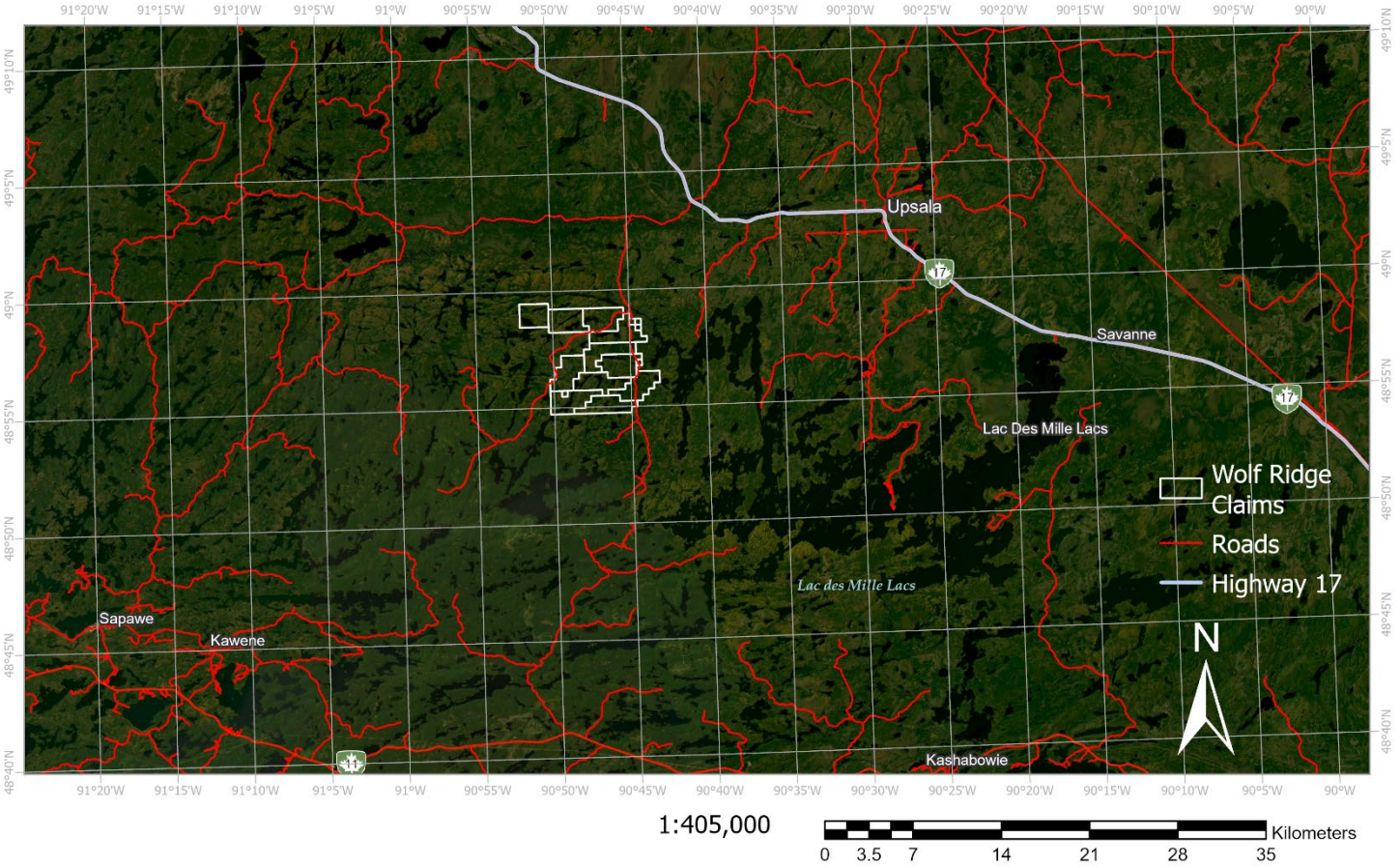


Figure 4. Topographic and Access Map for the Wolf Ridge Property UTM15N

Regional Geology

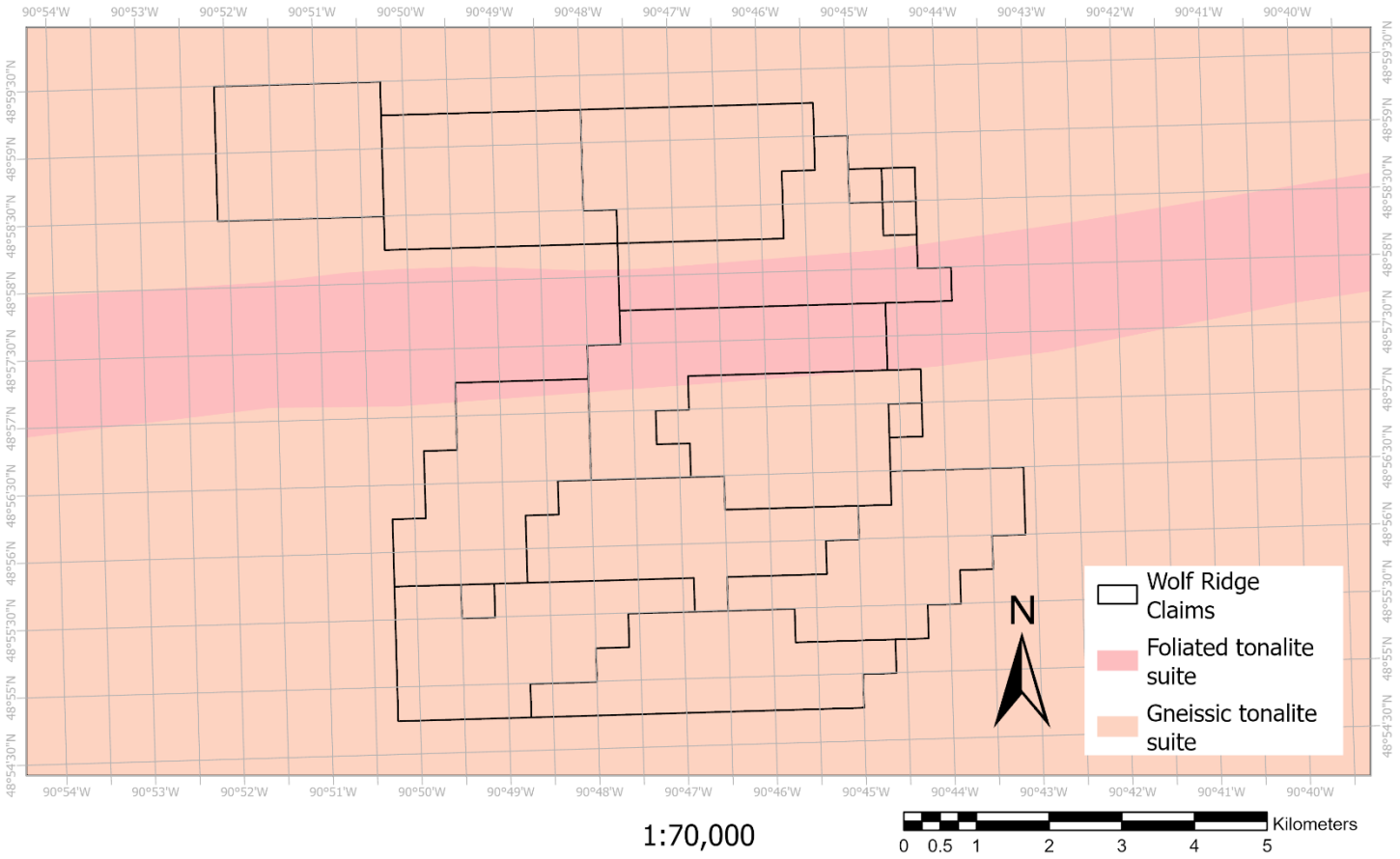


Figure 5. Bedrock Geology Map of the Wolf Ridge Property UTM15N

As can be seen from the map the main rock types within the claim group are a Gneissic Granodiorite to Tonalite suite and a central band of Granodiorite-Tonalite suite of Felsic Intrusive rocks. Indeed, these were the main rock types encountered in the field. The sampling was prioritized towards any pegmatitic diking discovered.

Most of the rock samples were of coarse-grained granitic dikes often reaching pegmatitic grain size. Several samples were also taken of altered volcanics and brecciated Ultramafic to test for the potential of gold mineralization. Sample descriptions are appended to this report.

The coarse-grained 'granitic' to pegmatitic dikes encountered ranged in width from 3cm to 1.5m in width and typically dipped very steeply. These dikes varied in composition but were 'granitic' or felsic intrusive units.

Previous Work

2017: Bold Ventures Inc, Nezaadikaang Economic Dev GP Inc. spent 16 days prospecting and took 38 grab rock samples for gold assay. Assessment ID for this work is *20000016958*.

There appears to be very little previous exploration recorded within the Wolf Ridge claim group. The Wolf Ridge property is thus a true grassroots property and remains highly prospective for Lithium given the highly anomalous lake sediment results in the area.

Current Work

Lake Sediment Sampling

The Ontario Geological Survey conducted a High-Density Lake Sediment and Water Geochemical Survey, in the Atikokan area of Northwestern Ontario with the aim of establishing new Au and PGE Exploration Targets (Dyer, 1999). The north arm of Bedivere Lake, in the southwestern portion of the claim block shows a cluster of lake sediment lithium anomalies. They returned the 6 highest lithium values, and the 9th highest value in the survey. Based on these results, exploration for LCT pegmatites is recommended based on the cluster of lake sediment lithium anomalies interpreted to be. located along a regional fault system. It should be noted that this southwestern area has not yet been prospected as the program was cut short due to weather.

Grass Roots Prospecting

October 18 to Oct 27th of 2023 Holbik Exploration conducted a prospecting program on the Wolf Ridge property in the search for Li-bearing pegmatites. A total of 41 hand/grab samples of outcrop were taken to ALS Laboratories in Thunder Bay for Au fire assay as well as 34 element ICP analysis. Prospecting and sampling work was performed by Dan C, Byron H, Noel S, Alexander T, and Jared B. Unfortunately, inclement weather conditions halted the program prematurely leaving lots of ground remaining open to prospecting.

Airborne Geophysical Survey

From August 6th, 2022, to August 9th, 2022, Expert Geophysics Limited conducted an airborne MobileMTm electromagnetic and magnetic survey over the Wolf Ridge block (Figure 2). This report highlights findings from a detailed survey report by Expert Geophysics appended (I) to this report. The Wolf Ridge Block survey was flown over the entire property with traverse azimuths of 90° and line spacings of 100 meters going for 89 runs totalling 653 kilometers (Line number 50120 to 51000), tie-lines perpendicular (0°) to the flights had 1000-meter spacings going for 11 runs totalling 81 kilometres (Line number 58900 to 59000). This totaled 734 kilometres covered with airborne surveying. The delivered data discussed in the EGL report consist of calibrations and specifications of the survey equipment. Positional data was recorded using UTM 15N and the lake sediment data gathered by the OGS was used to confirm the relationship between high apparent conductivity and Li anomalies. And it was suggested from EGL that the focus of following ground exploration activity and test drilling should be on conductive zones mapped on the property in the first 400-500 m depth ranges.

Discussion and Recommendations

Whilst the assay results from prospecting failed to discover any significant anomalous lithium or indicator elements for LCT pegmatites, there remains a significant portion of the claim block that hasn't been prospected due to weather shutting down the field work. Sample F009220 contained 450ppm Ni in rock described as mafic volcanic. It is recommended to complete this initial effort. The strongest Li sediment anomalies are in the North arm of

Bedivere Lake which has not been visited. Boat access should aid greatly in accessing the southwest area.

Additionally, the Airborne surveying conducted by EGL achieved the goal of better understanding the geology of the Wolf Ridge property and supports future northern groundwork on the property as high conductivity zones in the North arm are untested and unexplored.

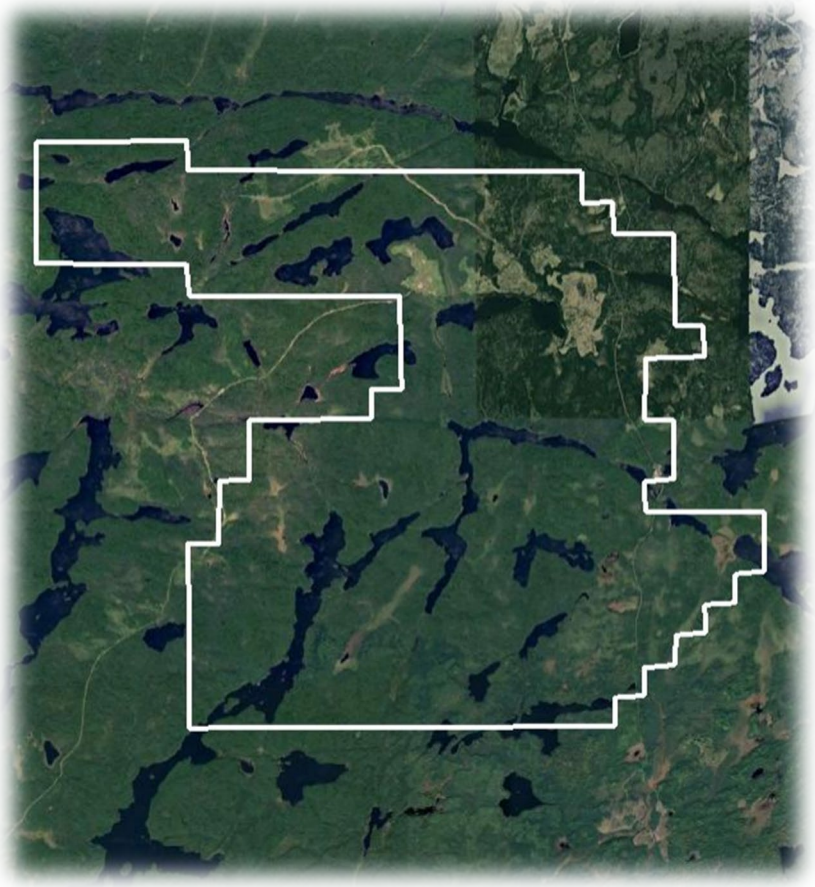
Certification

Works Cited

Appendix I: Expert Geophysics Airborne MobileMTm Electromagnetic & Horizontal Magnetic Gradient Survey – Wolf Ridge Block 2022

Data Acquisition and Processing Report

Helicopter-borne **MobileMTm** Electromagnetic & Horizontal Magnetic Gradient Survey





Wolf Ridge Block MobileMTm Project

in Northwest of Lac des Mille Lacs, Ontario, Canada
for International Lithium Corp.,
by Expert Geophysics Limited.

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'Expert Geophysics' Job #22058
August, 2022

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1 Executive Summary

Expert Geophysics Limited (EGL) conducted a helicopter-borne **MobileMTm** electromagnetic and magnetic survey in Northwestern Ontario, Ontario, Canada for **International Lithium Corp.** over the Wolf Ridge block. Electromagnetic and horizontal magnetic gradient geophysical data were acquired using EGL's airborne **MobileMTm** system. Please refer to Appendix I for the Company Profile and Appendix II for a description of the **MobileMTm** technology.

The purpose of the survey was mapping bedrock structure and lithology, including possible alteration and mineralization zones, observing apparent conductivity corresponding to different frequencies, inverting EM data to obtain the distribution of resistivity with depth, and using VLF EM and magnetic data to study properties of the bedrock units. A total of 6 production flights were flown to complete 734 line-kilometers of the survey over a 70 sq.km area.

The survey was flown using a Bell 206L-1 helicopter, registration C-GPCX, of the aviation company Provincial Helicopters Ltd.. The survey production flights started on August 06, 2022 and data acquisition was completed on August 09, 2022. The survey operations were conducted from Ignace, ON, Canada.

The survey lines are oriented E-W (90°N) at 100 m spacing, while tie lines are oriented perpendicular to the survey lines and spaced at 1000 m.

The geophysical survey results are presented in the form of digital databases, maps, grids, sections, elevation slices and 3D voxels. The report describes the data acquisition, processing and inversion procedures, equipment and digital data specifications, and basic data analysis.

2 Introduction

This report describes the **MobileMTm** airborne electromagnetic and horizontal magnetic gradient survey that **Expert Geophysics Limited** (**EGL**, Appendix I) performed for **International Lithium Corp.** during the period from August 06, 2022–August 09, 2022, over the Wolf Ridge block located Northwest of Lac des Mille Lacs lake, Ontario, Canada. Electromagnetic passive fields and magnetic field data were gathered using the **MobileMTm** helicopter-borne system (Appendix II).

The Survey Area section of the report contains a description of the survey area and flight paths. The Field Operations section includes information about the operation flow, the airport and base station locations and flights dates. The Survey Equipment section describes the main and ancillary equipment used for data acquisition. The Data Processing and Deliverables Specifications section consists of main data processing and inversion procedures and final products description. The Survey results discussion section includes basic data analysis and recommendations for further data analysis.

The following table includes a brief reference of the survey specifications (Table 1).

Table 1 – Summary Project Information

Client:	**International Lithium Corp.**
Client contact:	Anthony Kovacs email: AnthonyKovacs@internationallithium.com phone #: +604 789 2689
EGL Job Number	#22058
Survey area location:	Northwestern Ontario, Ontario, Canada
Crew and aircraft location:	Ignace, ON, Canada
Mag Base station location:	WGS 84 UTM Zone 15N, 593246m E; 5476107m N
EM Ref station location 1:	WGS 84 UTM Zone 15N, 684365m E; 5382875m N
Block:	Wolf Ridge
Total line kms:	734 line-km
Total Survey Area:	70 sq.km
Traverse line direction/spacing:	90°; 100 m
Tie lines direction/spacing:	0°; 1000 m
Dates flown:	06/08/2022 – 09/08/2022
Helicopter:	Bell 206L-1, C-GPCX, Provincial Helicopters Ltd.
Average survey speed:	30 m/sec
Average Helicopter terr. clearance:	96 m
Average magnetometer clearance:	50 m
Average EM sensor clearance:	50 m
Coordinates Datum:	WGS 84
Coordinates Projection:	UTM Zone 15N, Central Meridian 93° W (Zone 15N)
MobileMTm extracted frequencies Hz:	84, 103, 138, 165, 209, 267, 339, 420, 533, 676, 844, 3394, 4274, 5382, 6786, 8550, 10768
VLF extracted frequencies, kHz:	21.40, 24.00

3 Survey Areas and Flight Specifications

The **MobileMTm** Wolf Ridge Block survey area is located Northwest of Lac des Mille Lacs lake, Ontario, Canada (Figure 1).



Figure 1 – Survey Area Location with respect to Upsala and Lac des Mille Lacs.

The survey was flown with a Bell 206L-1 helicopter, registration C-GPCX, operated by the aviation company Provincial Helicopters Ltd..

- Average terrain clearance of the helicopter during the survey was 96 m, at average speed 30 m/sec.
- Average terrain clearance of the magnetometer bird during the survey was 50 m.
- Average electromagnetic sensor terrain clearance 50 m.

3.1 Wolf Ridge Block

The **MobileMTm** Wolf Ridge Block is located Northwest of Lac des Mille Lacs lake, Ontario, Canada. Flight path over the survey block is presented in Figure 2.



Figure 2 – Wolf Ridge block flight path

The "WGS 84 /UTM Zone 15N" coordinate system information is displayed in Table 2. The survey flight lines specifications are in Table 3.

Table 2 – Coordinates of the survey block boundary (WGS 84,UTM Zone 15N)

Block Boundary			
X	Y	X	Y
654371	5428657	665896	5421532
659792	5428832	665956	5421216
659798	5428341	665492	5421003
664346	5428499	665481	5420724
664362	5427986	665050	5420599
664848	5428029	665066	5420195
664843	5427505	658389	5419965
665760	5427544	658242	5420074
665793	5426637	658089	5422662
666279	5426648	658602	5422793

Block Boundary			
X	Y	X	Y
666273	5426250	658607	5423672
666464	5426271	659104	5423814
666492	5425862	659082	5424639
666000	5425840	660376	5424754
666016	5425371	660562	5425512
665858	5425245	661097	5425682
665885	5424044	661108	5426080
665465	5423814	660846	5426200
665492	5423443	660851	5426479
667218	5423492	658051	5426435
667278	5422651	658029	5426861
666786	5422449	655785	5426883
666781	5422166	655703	5428275
666421	5422056	654354	5428237
666421	5421636	654365	5428663

Table 3 – Flight lines specifications for Wolf Ridge

Line spacing, m	Lines direction	Line numbers	# of lines	Line kms
100 m (traverse)	**90°**	**50120-51000**	**89**	**653**
1000 m (tie)	**0°**	**58900-59000**	**11**	**81**
Total			**100**	**734**

4 Field Operations

4.1 Operations schedule

The survey operations were conducted from Ignace, ON, Canada. The survey was executed in 6 production flights starting on August 06, 2022 and data acquisition was completed on August 09, 2022. A description of the daily survey activities is provided in Table 4.

Table 4 – Operations schedule

Date	Flight	Estimated flown km	Operation
6-Aug-22	F57-58	300	Production flights were completed. F58 not accepted.
7-Aug-22	F59-61	393	Production flights were completed.
8-Aug-22			Weather day.
9-Aug-22	F62-63	225	Production flights were completed.

4.2 Aircraft parking and base station locations

Locations of the aircraft parking, magnetic base station and MobileMTm reference base station are specified in Table 5.

Table 5 – Aircraft parking and base station locations

	Position
Aircraft parking	Ignace, ON, Canada
Mag base station	WGS 84 UTM Zone 15N 593246m E; 5476107m N
EM Ref station	WGS 84 UTM Zone 15N 684365m E; 5382875m N

4.3 Re-flights

Identified, during the survey quality control (QC), and re-flown flight-lines for the Wolf Ridge Block are specified in Table 6. Only accepted by QC lines data are included into the final databases.

Table 6 – List of re-flown lines

Line Number	Length, km	Reason
L50320 to L50690	241	Gyro inclinometer malfunction

4.4 Office and Field Personnel

The following personnel participated in the project support and field operations:

Project Managers: Andrei Bagrianski (EGL);

EGL Operator/Crew chief: Greg Luus (EGL);

EGL Operator: Wbeimar Guevara (EGL);

DataQC, Processor: Andrei Bagrianski (EGL), Julian Boada (EGL);

Pilots: Francis Macdonald (Provincial Helicopters Ltd.);

Final data processing, finals producing, report: Alexander Prikhodko (EGL), Emily Data (EGL), Aamna Sirohey (EGL), Fabiano Della Justina (EGL).

5 Survey Equipment and Specifications

5.1 Equipment composition

The main instrumentation installed on the **MobileMTm** tow-bird:

- Three orthogonal induction coils (0.7 m diameter each) to measure naturally occurring magnetic fields in the frequency range 90 Hz – 27,000 Hz
- Two Geometrics G822A Cesium Magnetometers of sensitivity of 0.001 nT/10 Hz sampling
- GPS antenna, installed on the towed-bird with the magnetometers.

The main instrumentation installed on the helicopter:

- EGL PC-104 based Data Acquisition System
- EGL Navigation system with Pilot Steering Indicator
- Smartmicro model UMRR-0A Radio Altimeter, 0 – 500 m range
- GPS antenna, installed on the helicopter tail

Base Stations and Ground Support instrumentation comprises:

- **MobileMTm** Ground Base Station, 4-channel (2 channels for signal and 2 channels for reference signal), to measure variations of the electric field in two directions with 4 pairs of electrodes. Electrical line length –100 m each line, direction YX –90 degrees, YZ –180 degrees.
- GEM Systems GSM-19 Base Station Magnetometer, 0.1 nT sensitivity, with data logger;
- A Field Data Processing Workstation and a full suite of software for the quality control and preliminary processing of the airborne geophysical data.

MobileMTm VLF specifications:

- VLF-EM System: EGL proprietary digital system
- Model: Matrix Plus
- Manufacturer: EGL
- Antenna: used in the MobileMT**m** three orthogonal coils (x,y,z)
- Primary Sources: up to 4 discrete frequencies (stations)
- Output Parameters: Amplitude (secondary field), vertical and planar ellipticities, azimuth, tilt angle
- Sample Rate: 0.1 second
- Gain: Constant gain setting
- Filtering: No filtering

MobileMTm EM specifications:

- Airborne receiver: Three orthogonal induction coils (0.7 m diameter each)
- Airborne shell: Aerodynamic shaped capsule
- Digitizing rate: 73,728 Hz
- Tow cable length: 55 m
- Ground sensors 4 pairs of electrodes
- Electrode separation 100 m
- EM base station line directions 90 °, 180 ° (base station 1);
- Frequency range: 90 Hz – 27,000 Hz
- Output computed parameters: Apparent conductivity for selected frequencies
- Output frequencies: Selectable from 90 Hz – 27,000 Hz depending on signal strength.

Selected frequencies and corresponded frequency gates are in Table 7

Table 7 – Frequency gates extracted from the data (Hz) for Wolf Ridge.

Start	End	Center
72.3	96.6	84.0
91.0	121.8	102.7
114.7	153.4	138.2
144.5	193.3	165.3
182.1	243.5	209.3
229.4	306.8	267.0
289.0	386.6	338.9
364.1	487.1	420.3
458.8	613.7	533.3
578.0	773.2	676.0
728.3	974.1	844.3
2913.1	3896.5	3394.4
3670.3	4909.3	4274.3
4624.3	6185.3	5381.8
5826.2	7793.0	6785.5
7340.6	9818.5	8549.7
9248.6	12370.6	10767.6

5.2 The Airborne Magnetometer System

The airborne magnetometer is a state-of-the-art system developed by EGL. It utilizes two Geometrics G822A cesium magnetometer sensors in the horizontal gradiometer configuration with a

separation of 4 m between two magnetic sensors, installed in the towed-bird and the high accuracy Larmor frequency counter developed.

The two cesium magnetic sensors are spaced at 4 meters apart. The position of the sensors is accurately estimated by the gyro inclinometer and the GPS antenna located on the frame. During the flight, the system measures the cross-line and in-line gradients which are used for calculation of the total horizontal gradient of the magnetic field.

5.3 The Airborne GPS Navigation System

EGL uses a proprietary GPS navigation system utilizing the GPS Receiver with Linx RXM-GNSS-TM GPS Engines. The key features of the GPS Receiver are:

- L1 1575.42MHz, C/A code
- 33-channel satellite tracking
- Position accuracy: 2.5m
- 10 Hz update rate
- Constellation System Support:
  - GPS
  - GLONASS
  - GALILEO
  - QZSS
- DGPS support:
  - (SBAS) Satellite-Based Augmentation System
  - (RTCM) Radio Technical Commission for Maritime Services
  - (WAAS) Wide-Area Augmentation System
  - (EGNOS) European Geo-Stationary Navigation System
  - (MSAS) MTSAT Satellite-Based Augmentation System
  - (GAGAN) GPS-Aided Geo-Augmented Navigation

An EGL Computer/Pilot Steering Indicator is used to compute the flight path grids in real-time onboard the helicopter (Figure 3, Figure 4).



Figure 3 – EGL Navigation Computer, Moving-map Display



Figure 4 – Pilot Steering Indicator and Radio Altimeter Indicator

5.4 Data Acquisition System

The data acquisition system features an EGL PC-104-based data acquisition system. The EGL data acquisition system is an instrument developed by EGL for airborne geophysical data acquisition tasks. It features EGL proprietary technology and software. The EGL data acquisition system simultaneously records data on internal flash disk and displays it on a color LCD display, at a repetition rate of 0.33 sec, for post-flight computer processing. The five main functions fulfilled by the data acquisition system are: 1) system control and monitoring, 2) data acquisition, 3) real-time data processing, 4) navigation, and 5) data playback and analysis.

5.5 Radar-Altimeter

A Smartmicro model UMRR-0A radar altimeter system records the ground clearance to an accuracy of 3% over a range of 0 ft to 1,640 ft (0 to 500 m). The altimeter is interfaced to the navigation system and the data acquisition system with an output repetition rate of 10 Hz and digitally recorded.

5.6 MobileMTm ground base station

The MMTm Ground Base Station comprises:

- 4 pairs of electrodes, 100 m separation each;
- Line directions 90 °, 180 ° (base station 1);

- EGL PC-104 based Data Acquisition System with a GPS system to record the GPS time together with the electric data;
- A power supply unit.

5.7 MobileMTm Magnetometer base station

The Magnetometer Base Station was a GSM-19 Overhauser magnetometer. The base-station magnetometer, with digital recording, operated continuously throughout the airborne data acquisition, with a sampling interval of 0.2 seconds, and sensitivity of 0.1 nT. The ground and airborne system clocks synchronized using GPS time, to an accuracy of far better than 1 second. At the end of the day's work, the digital data transferred from the base station's data-logger to the FWS. This base station located in a place with low magnetic gradient (less than 2nT/m). The base station sited away from moving steel objects, vehicles or hydro transmission lines to ensure minimum interference and noise levels.

5.8 Field Computer Workstation

The Field Data Processing Workstation (FWS) is a dedicated computer system for use at the technical base in the field. The workstation to be used on this project is designed for use with Geosoft OASIS Data Processing Software. It is also capable of processing and imaging all the geophysical and navigation data acquired during the survey, producing semi-final, preliminary-levelled maps.

The main features of the FWS are:

- Portability;
- Digital Data Verification - flight data quality and completeness were assured by both statistical and graphical means;
- Flight Path Plots - flight path plots quickly generated from the GPS satellite data to verify the completeness and accuracy of a day's flying;
- Versatility - the FWS used in both the field and the office. Data pre-processed in the field up-loaded to the computers at the Data Processing Centre to speed up data turnaround;
- Preliminary Maps - the FWS software permitted creation preliminary maps of the electromagnetic and magnetic data during the survey;
- Quality Control – acquired data quickly and efficiently checked for quality in the field on daily basis.

6 Data Processing and Deliverables Specifications

6.1 MobileMTm EM Data Processing

The data recorded by the towed bird sensors (three mutually orthogonal dB/dt components of the EM field) is first merged with the two recorded, mutually orthogonal components of the electric field from the stationary base station into one file. A proprietary program, developed by EGL, applies FFTs to the records of the merged file, and calculates the matrices of the relation between the magnetic and electrical field signals for different time bases and in the different frequency bands. The modulus of the determinant of each matrix is a rotation invariant parameter and is used as the main output parameter.

The frequencies extracted for data processing for the surveyed block are based on signal strength and local noise interference. The selected frequencies for the survey are presented in Table 7.

6.2 MobileMTm EM data inversions

The 2D inversion of MobileMTm EM data was performed for all surveyed lines using MARE2DEM 2021 version program code (Key, K., Ovall, J., 2011. *A parallel goal-oriented adaptive finite element method for 2.5-D electromagnetic modelling.* Geophys J Int 186, 137–154; Key, K., 2012*. Is the fast Hankel transform faster than quadrature?* Geophysics 77, F21–F30; Key, K., 2016, MARE2DEM: a 2-D inversion code for controlled-source electromagnetic and magnetotelluric data. Geophysical Journal International, 207(1), 571–588). The software is developed with support of the Electromagnetic Methods Research Consortium at Columbia University.

The main features and benefits of the MARE2DEM code include:

- It is the first goal-oriented adaptive finite element code for MT;
- Uses structured and unstructured model grids (mesh) with fully automatic unstructured mesh generation;
- Efficient inversion of long lines;
- Non-linear inversion using a fast parallel implementation of Occam's method, a regularized Gauss-Newton minimization technique;
- Magnetotelluric (MT) plane waves using total field or scattered field implementations;
- 2.5D EM problem statement (i.e. 3DEM field source in 2D conductive environment);

- Parallel calculation implementation;
- Open-source license and freely available.

The data inversion procedures include:

- Data preparation and its conversion for MARE2DEM input;
- Creation of the model grid (mesh). The grids consisted of approximately 6000-9000 cells for each inverted line (example provided in Figure 5);
- Inversions;
- Evaluating the results (RMS, data and model comparison), (Figure 6 & Figure 7);
- Import the inverted data into Geosoft for database and sections compilation.

The inversions are performed without any constraints with the uniform half space initial model.

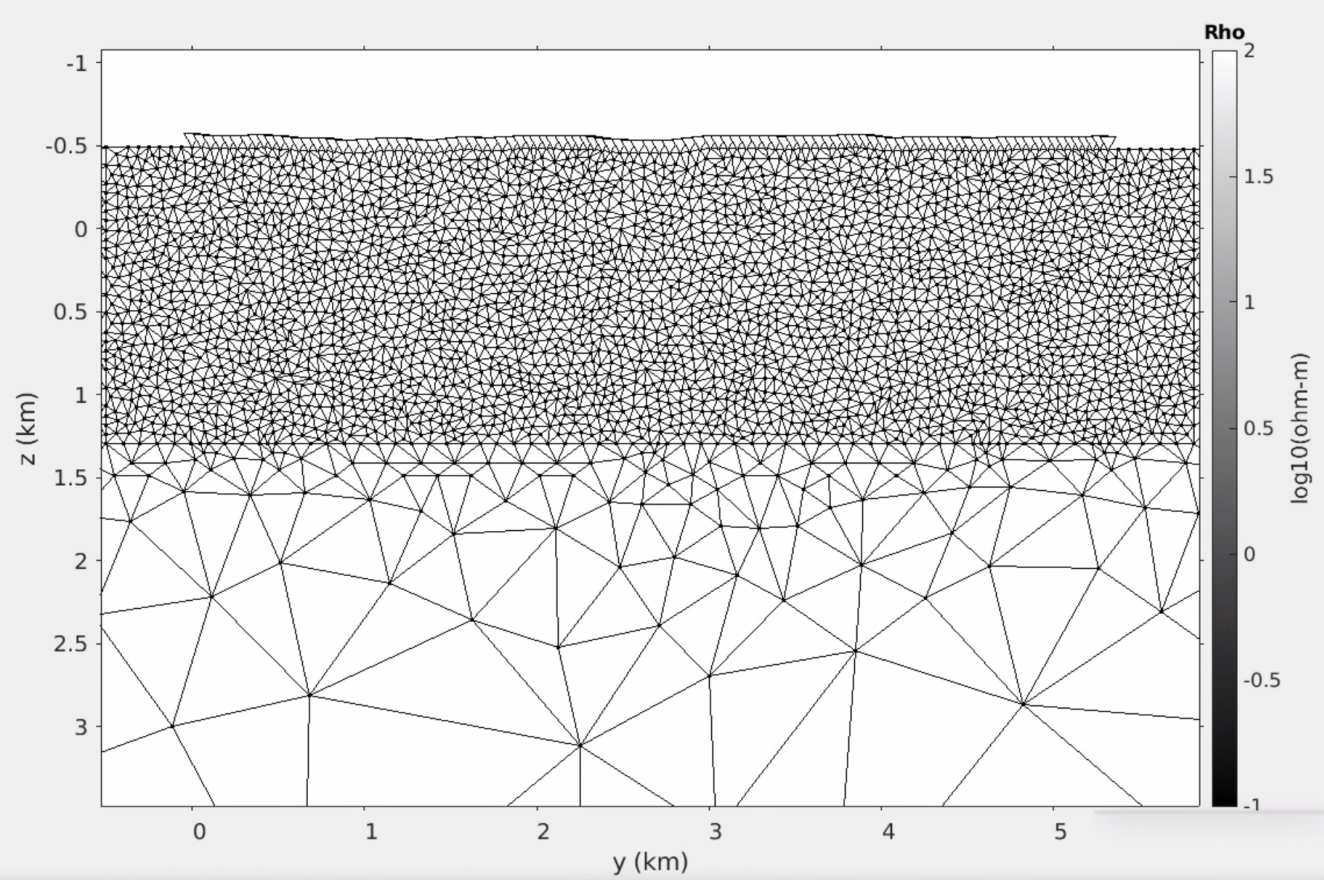


Figure 5 - Unstructured model mesh used as input to inversions.

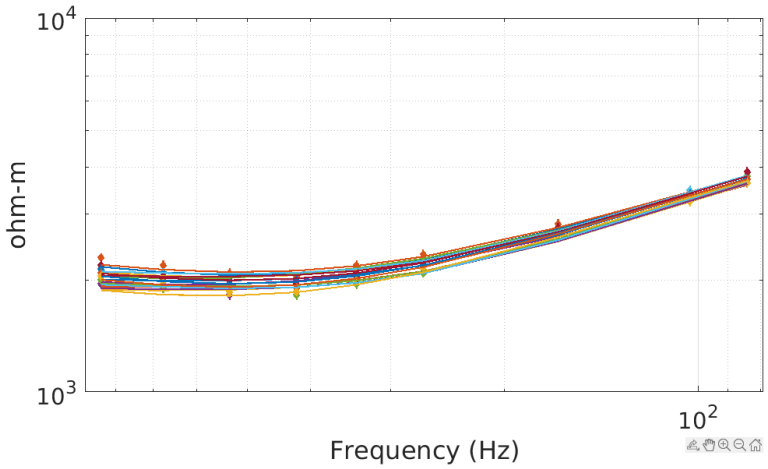


Figure 6 - Comparison of observed (points) vs. modelled apparent resistivity curves for stations along a line. Frequency increases to the left.

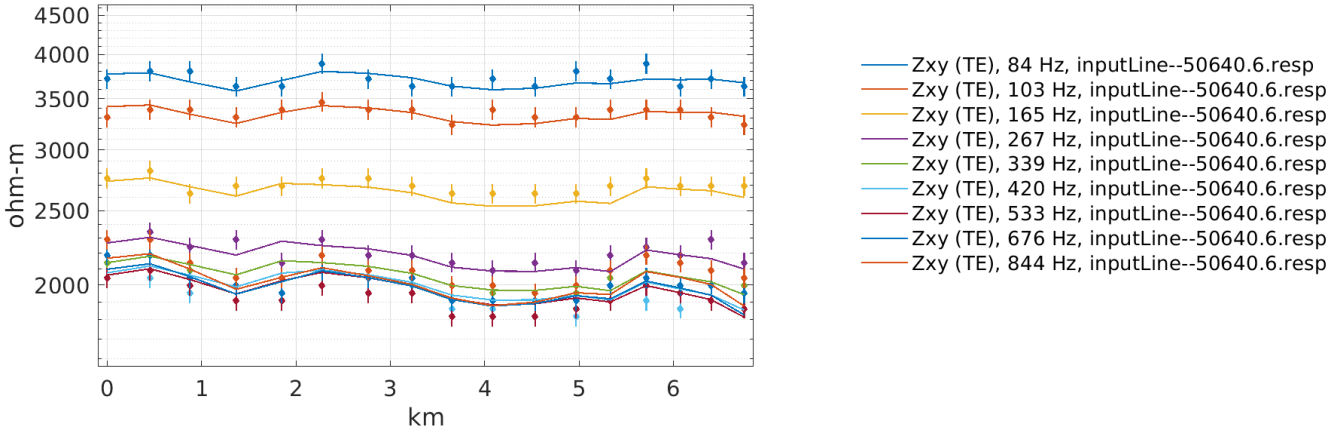


Figure 7 - Comparison of observed (points) vs solid (lines) apparent resistivity profiles along a line.

6.3 Magnetic Data Processing

Raw total magnetic field data are recorded at 0.1-second sampling intervals. The Earth's magnetic field is known to vary as a function of time. Time varying magnetic events such as magnetic storm transients and more regular diurnal variations which occur during the acquisition of magnetic data may affect the accuracy of the survey data and distort magnetic anomalies. Separation of the time-dependent variations in the magnetic field from a real geomagnetic anomaly requires an independent estimate of the transient magnetic field events. Base station magnetometer data provides this independent estimate. The diurnal base station data was analyzed for spikes and spurious sections which were manually removed from the dataset. A 20-point low pass filter was then applied to the diurnal data.

The magnetic data was corrected for diurnal variations, leveled and filtered. Raw magnetic data has initial preprocessing only (spike removal, short gaps interpolated). At the next stage, all the

magnetic data is processed by an adjustment procedure that statistically treats the line data. It is designed to recognize and remove systematic bias and small random errors in the data which can cause survey line mis-ties. Bias errors in the magnetic data arise from changes in the level of the total magnetic field.

To remove bias errors, each profile of a given data set in the survey was shifted up or down systematically by an amount such that the sum of the square of the mis-tie errors for that data set over the entire survey network is minimized. The systematic corrections are further constrained such that the sum of the systematic corrections is zero, effectively eliminating DC shifts to the network as a whole. After this systematic adjustment, the remaining intersection mis-ties were studied and removed. The final statistical choice of the data values at each intersection is a function of the reliability weights of each line for each data set. The random error correction for each data set prorated between intersections. After editing the adjusted line data for line pulls and data quality, they were input to a minimum curvature gridding algorithm and a grid produced.

Total Horizontal Gradient magnitude were obtained by computing the square root of the sum of the squared horizontal gradients (in-line and cross-line). However, unreliable cross-line gradient values due to the excessive rotation of bird from the origin were removed.

As additional products, the total magnetic intensity (TMI) and the calculated vertical gradient of the TMI (CVG_TMI) were produced.

6.4 VLF Data Processing

VLF-EM data were captured using the MobileMTm three components receiver. The instrument is capable of recording amplitude (secondary field), transmitter station azimuth (relative to aircraft orientation), vertical and planar ellipticities and tilt angle for multiple VLF frequencies.

For this project, the following VLF transmitters were monitored:

- Station JXN: Gildeskål, Norway – 16.40 kHz
- Station NWC: Exmouth, Western Australia – 19.80 kHz
- Station NSS: Annapolis, Maryland, USA – 21.40 kHz
- Station HWU: Rosnay, France – 21.70 kHz
- Station NAA: Rhauderfehn, Germany– 23.40 kHz
- Station NPM: Cutler, Maine, USA– 24.00 kHz
- Station NLK: Seattle, Washington, USA – 24.80 kHz

The 21.40 kHz and 24.00 signal were accepted and presented in the final database.

Processing of the raw amplitude data consisted of the following:

- Mask out any embedded “off-line” data
- Noise reduction filtering using non-linear Naudy filtering
- Initial levelling (mean subtraction)
- Fine levelling (micro-levelling)

The finalized data for accepted frequency(s) were presented as a series of amplitude colour images. High amplitude values correspond to conductive zones.

6.5 Ancillary data processing

Positions and altitudes of the magnetic sensor and EM receiver are derived from data of two GPS antennas (A – on the helicopter, B- on the magnetic sensor bird) and radar-altimeter positioned on the helicopter. A digital terrain model (DTM) channel has been calculated by subtracting the filtered radar-altimeter data from the GPS-A elevation.

6.6 Data Deliverables

EM Database: Wolf Ridge Block EM presented in Geosoft GDB format

- The database channels description is in the Table 8.

Table 8 – Geosoft 22058_WolfRidge_EM.gdb Data Format

Channel Name	Units	Description
xe:	metres	EM bird UTM Easting WGS 84 UTM Zone 15N
ye:	metres	EM bird UTM Northing WGS 84 UTM Zone 15N
ze:	meters	EM bird elevation above geoid
gtime:	Sec of the day	GPS time
RdAlt:	metres	helicopter terrain clearance from radar altimeter
alt_e:	Metres	EM bird terrain clearance
DTM:	metres	Digital Elevation Model
PLM:	Units	Powerline monitor
ac_84:	mS/m	Apparent conductivity for freq 84.0 Hz
ac_103:	mS/m	Apparent conductivity for freq 102.7 Hz
ac_138:	mS/m	Apparent conductivity for freq 138.2 Hz
ac_165:	mS/m	Apparent conductivity for freq 165.3 Hz
ac_209:	mS/m	Apparent conductivity for freq 209.3 Hz
ac_267:	mS/m	Apparent conductivity for freq 267.0 Hz
ac_339:	mS/m	Apparent conductivity for freq 338.9 Hz
ac_420:	mS/m	Apparent conductivity for freq 420.3 Hz
ac_533:	mS/m	Apparent conductivity for freq 533.3 Hz
ac_676:	mS/m	Apparent conductivity for freq 676.0 Hz

ac_844:	mS/m	Apparent conductivity for freq 844.3 Hz
ac_3394:	mS/m	Apparent conductivity for freq 3394.4 Hz
ac_4274:	mS/m	Apparent conductivity for freq 4274.3 Hz
ac_5382:	mS/m	Apparent conductivity for freq 5381.8 Hz
ac_6786:	mS/m	Apparent conductivity for freq 6785.5 Hz
ac_8550:	mS/m	Apparent conductivity for freq 8549.7 Hz
ac_10768:	mS/m	Apparent conductivity for freq 10767.6 Hz

The EM and MAG databases can be synchronized based on *gtime* channel.

Mag Database: Wolf Ridge Block Mag presented in Geosoft GDB format

- The database channels description is in the Table 9.

Table 9 – Geosoft 22058_WolfRidge_Mag.gdb Database Format

Channel Name	Units	Description
xm:	metres	mag bird UTM Easting WGS 84 UTM Zone 15N
ym:	metres	mag bird UTM Northing WGS 84 UTM Zone 15N
zm:	meters	mag bird elevation above geoid
XsL:	metres	mag left sensor UTM Easting WGS 84 UTM Zone 15N
YsL:	metres	mag left sensor UTM Northing WGS 84 UTM Zone 15N
ZsL:	meters	mag left sensor elevation above geoid
XsR:	metres	mag right sensor UTM Easting WGS 84 UTM Zone 15N
YsR:	metres	mag right sensor UTM Northing WGS 84 UTM Zone 15N
ZsR:	meters	mag right sensor elevation above geoid
xh:	metres	heli UTM Easting WGS 84 UTM Zone 15N
yh:	metres	heli UTM Northing WGS 84 UTM Zone 15N
zh:	meters	heli elevation above geoid
gtime:	Sec of the day	GPS time
RdAlt:	metres	helicopter terrain clearance from radar altimeter
alt_m:	metres	mag bird terrain clearance
DTM:	metres	Digital Terrain Model
GPS_B_LAT:	Decimal degrees	mag bird latitude, WGS84
GPS_B_LON:	Decimal degrees	mag bird longitude, WGS84
basemag:	nT	magnetic base station data
Magair_L	nT	measured magnetic field (left sensor)
Magair_R	nT	measured magnetic field (right sensor)
Magcorr_L	nT	corrected for diurnal total magnetic field (left sensor)
Magcorr_R	nT	corrected for diurnal total magnetic field (right sensor)
Hx	nT/m	in-line magnetic gradient
Hy	nT/m	cross-line magnetic gradient
THG	nT/m	total horizontal magnetic gradient
TMI_C:	nT	total magnetic intensity at center of mag sensors, levelled and microlevelled
CVG_TMI_C	nT	calculated vertical derivative of magnetic field

The EM and MAG databases can be synchronized based on *gtime* channel.

VLF Database: Wolf Ridge Block VLF presented in Geosoft GDB format

- The database channels description is in Table 10.

Table 10 – Geosoft 22058_WolfRidge_VLF.gdb Database Format

Channel Name	Units	Description
xe:	metres	EM bird UTM Easting WGS 84 UTM Zone 15N
ye:	metres	EM bird UTM Northing WGS 84 UTM Zone 15N
ze:	meters	EM bird elevation above geoid
gtime:	Sec of the day	GPS time
alt_e:	Metres	EM bird terrain clearance
DTM:	metres	Digital Elevation Model
Amplitude_1:	units	VLF secondary field amplitude for freq 21.4 kHz
Azimuth_1:	degree	transmitter station azimuth (relative to aircraft orientation) for 21.4 kHz
TiltAngle_1:		In-Phase [VLF Tilt] for 21.4 kHz
El_Vert_1:		Quadrature [VLF Vertical Ellipticity] for 21.4 kHz
El_Plan_1:		VLF Planar Ellipticity for 21.4 kHz
Amplitude_2:	units	VLF secondary field amplitude for freq 24.0 kHz
Azimuth_2:	degree	transmitter station azimuth (relative to aircraft orientation) for 24.0 kHz
TiltAngle_2:		In-Phase [VLF Tilt] for 24.0 kHz
El_Vert_2:		Quadrature [VLF Vertical Ellipticity] for 24.0 kHz
El_Plan_2:		VLF Planar Ellipticity for 24.0 kHz

Grids and Maps:

- Refer to Table 11 for summary of grids and maps (Appendix III) which accompany this report.

Table 11 – Lists of Wolf Ridge Block grids (in Geosoft format) and maps (in Geosoft and PDF formats).

Grids	Maps	Description
DTM:	22058_WolfRidge_DTM	Digital Terrain Model
TMI_C:	22058_WolfRidge_TMI	Total magnetic intensity, reduced to the pole
CVG_TMI_C:	22058_WolfRidge_CVG_TMI	Calculated vertical derivative of magnetic field, reduced to pole
Hx:	22058_WolfRidge_Hx	In-line magnetic gradient
Hy:	22058_WolfRidge_Hy	Cross-line magnetic gradient
THG:	22058_WolfRidge_THG	Total horizontal magnetic gradient
VLFAmplitude_1:	22058_WolfRidge_VLFAmplitude_1	Secondary field VLF amplitude at 21.4 kHz
VLFAmplitude_2:	22058_WolfRidge_VLFAmplitude_2	Secondary field VLF amplitude at 24.0 kHz
ac_84:	22058_WolfRidge_ac_84	Apparent conductivity for freq 84.0 Hz
ac_103:		Apparent conductivity for freq 102.7 Hz
ac_138:		Apparent conductivity for freq 138.2 Hz
ac_165:	22058_WolfRidge_ac_165	Apparent conductivity for freq 165.3 Hz
ac_209:		Apparent conductivity for freq 209.3 Hz

Grids	Maps	Description
ac_267:	22058_WolfRidge_ac_267	Apparent conductivity for freq 267.0 Hz
ac_339:		Apparent conductivity for freq 338.9 Hz
ac_420:		Apparent conductivity for freq 420.3 Hz
ac_533:	22058_WolfRidge_ac_533	Apparent conductivity for freq 533.3 Hz
ac_676:		Apparent conductivity for freq 676 Hz
ac_844:		Apparent conductivity for freq 844.3 Hz
ac_3394:	22058_WolfRidge_ac_3394	Apparent conductivity for freq 3394.4 Hz
ac_4274:		Apparent conductivity for freq 4274.3 Hz
ac_5382:		Apparent conductivity for freq 5381.8 Hz
ac_6786:		Apparent conductivity for freq 6785.5 Hz
ac_8550:	22058_WolfRidge_ac_8550	Apparent conductivity for freq 8549.7 Hz
ac_10768:		Apparent conductivity for freq 10767.6 Hz
DepthSliceASL	22058_WolfRidge_ResElev_XXXX	Resistivity Depth Slice from -1000 to 450 with 50m interval
ResSec	ResSec_LXXXX	Resistivity Line Sections with full depth range

Voxels:

- #22058_WolfRidge_InvRes_LEV-topoclip_win.geosoft_voxel

7 Survey results general analysis and recommendations

A MobileMTm airborne survey, including broadband natural electromagnetic fields, the earth's magnetic field, and EM VLF data measurements with precise positioning, has been successfully completed across the MobileMTm Wolf Ridge Block. Electromagnetic and horizontal magnetic gradient data were collected along: E-W survey lines nominally spaced at 100 m, and N-S tie lines nominally spaced at 1000 m. Electromagnetic readings were taken using an EGL AFMAG&VLF MobileMTm system consisting of an airborne three-component magnetic sensor, as well as a base station with two horizontal electric components. A caesium vapour magnetometer in a separate towed-bird was used for collecting measurements of the intensity of the earth's magnetic field.

Regional Geologic Context

The Wolf Ridge survey block is located 20 km southwest of the town of Upsala, and 125 km northwest of Thunder Bay. The Wolf Ridge block lies in the south central portion of the Wabigoon sub province within the Marmion Terrane of the western Superior Province of the Canadian Shield. The regional structural package of the Marmion Terrane is bounded in the west and northwest by the Western Wabigoon, and in the northeast by the Winnipeg River Terranes.

The property is a grass roots lithium prospect as identified in the "Ontario Geological Survey Resident Geologist Program Recommendations for Exploration 2021-2022". The report highlights lithium potential in the Bedivere-Lac des Milles Lacs area based on results for a lake sediment geological survey. The Ontario Geological Survey conducted a lake sediment geochemical survey covering the Atikokan area (Dyer, 1999). On the north arm of the Bedivere Lake, located approximately 10 km from the Wolf Ridge survey block, a cluster of lake sediment lithium anomalies returned the 6 highest lithium values, and the 9th highest value in the survey. Based on these results, exploration for LCT pegmatites is recommended based on the cluster of lake sediment lithium anomalies located along a regional fault system. Figure 8 shows the location of lake sediment lithium anomalies overlain atop of the regional geologic map. Figure 9 shows the bedrock geology of the survey area.

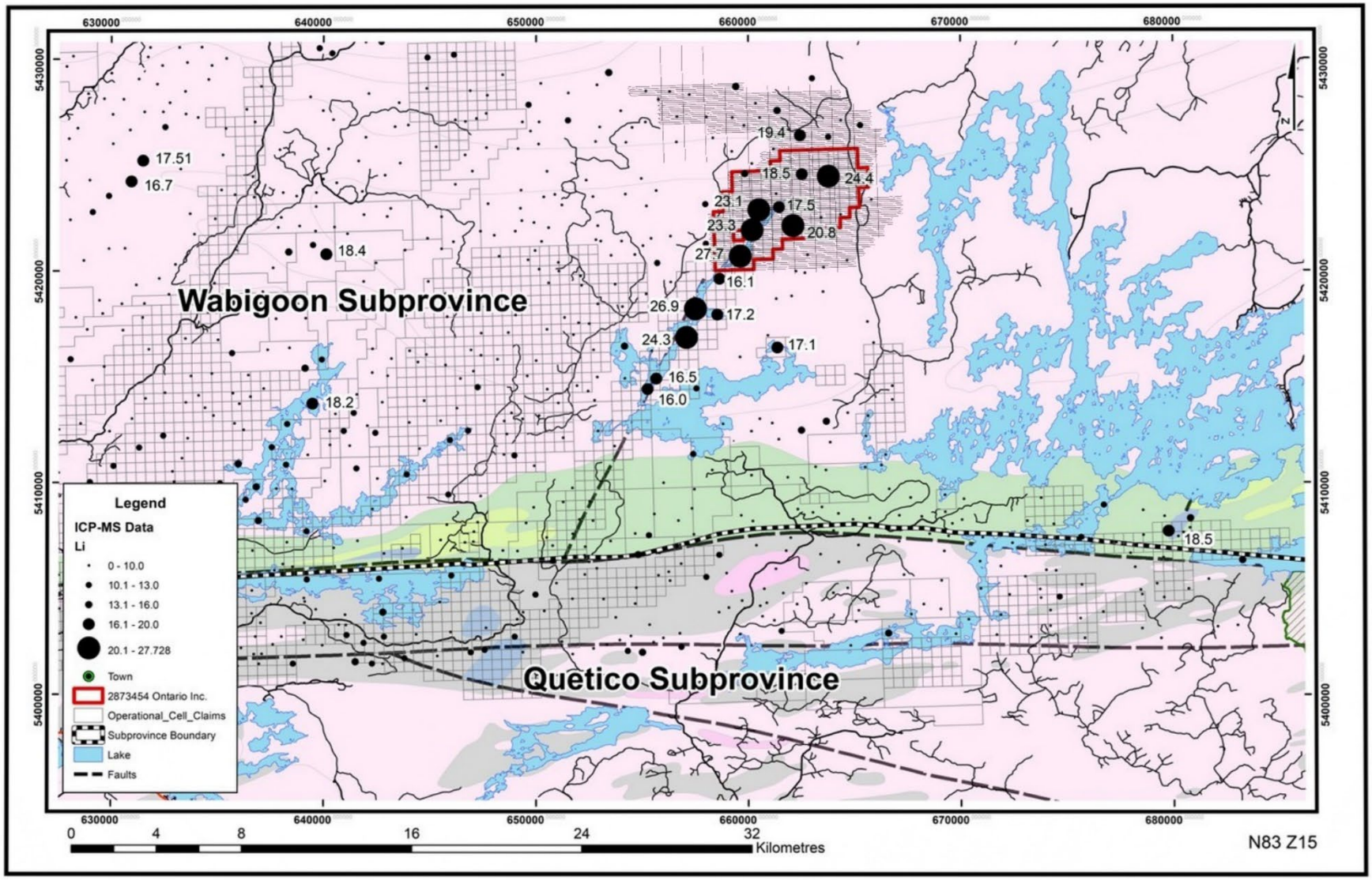


Figure 8 - Regional geological map (modified from OGS 2011) showing the location of the OGS lake sediment lithium anomalies (black dots with lithium values in PPM) (from Dyer 1999). Granitoid rocks shown in various shades of pink, metavolcanic rocks in shades of green, metasedimentary rocks in grey, and gabbroic intrusive rocks in blue. Adapted from https://m.ceo.ca/@newsfile/international-lithium-corp-options-wolf-ridge-lithium.

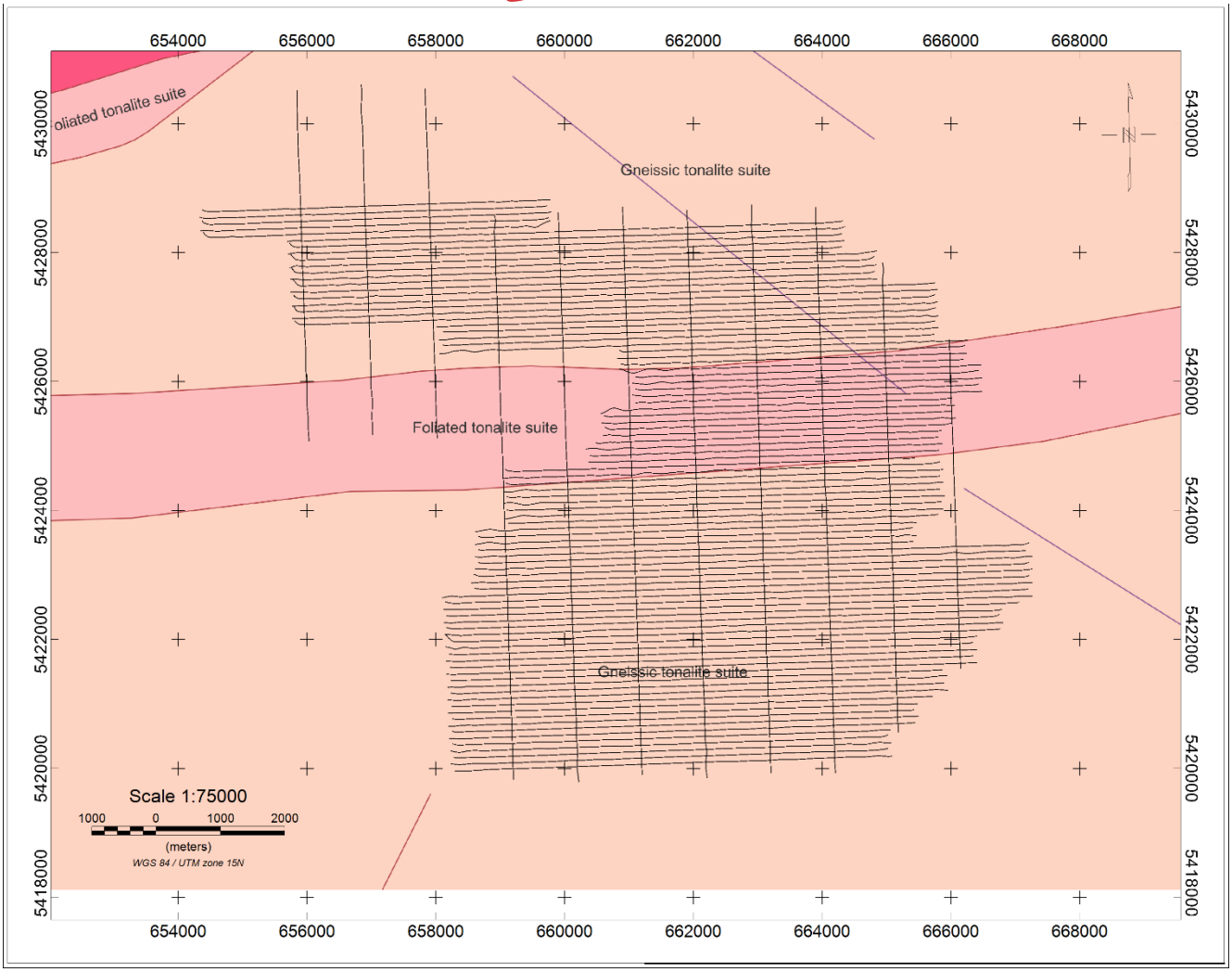


Figure 9 - Bedrock geology in the survey block area.

Basic geophysical data analysis

The purpose of the survey was mapping bedrock structures and lithology, including possible alteration and mineralization zones reflected in the electrical and magnetic properties of rocks. The airborne geophysical survey results are presented as apparent conductivity corresponding to different frequencies, resistivity-depth profiles determined from inverting EM data, available VLF EM data, as well as magnetic field data and its derivatives. The report is followed by digital databases, separate for each method, processed and calculated data grids, maps, and resistivity-depth products – elevation slices, sections and a 3D voxel representation. The standard EM data inversion was based on a 2.5D model.

The electrical properties of the rock assemblages in the survey area are reflected in the distribution of apparent conductivities related to different frequencies and in the inverted resistivity-depth distributions. The apparent conductivity parameter describes an inhomogeneous geoelectrical environment in terms of a homogeneous earth that would produce the same measurement and refers to the depth relative to total conductance below the measurement station and a specific frequency. In general, depth of investigation increases with decreasing frequency and total conductance. The non-linear and complex relation is solved by inversions of the 'apparent conductivity - frequency' data into 'resistivity – depth' distributions.

LCT Pegmatites are related to orogenic belts, such as the Archean-Proterozoic greenstone belts of Canada. From a geodynamic perspective, prospective LCT pegmatites are found and should be explored for in areas that underwent crustal growth and reworking of voluminous metasedimentary source material which, coupled with a heat source, mobilized the ore forming elements from the source rock to form peraluminous melts. Although the use of geophysical methods for pegmatite exploration has faced challenges due to the small size of pegmatites, and also possible lack of contrast in petrophysics of pegmatites with respect to the host rock, geophysical data can aid in identifying potential pathways for migration of enriched mineral fluids, involved in the formation of pegmatites. The MobileMT data analysis combined with Li geochemical anomalies distribution on the survey block confirms the concept.

The overall resistivity distribution of the surveyed area is presented in the 3D resistivity voxel (Figure 10). The lateral and in-depth distribution of the resistive and conductive zones are presented in the resistivity-(ASL) depth slices (example Figure 11, and in Appendix III) and in the resistivity sections following the report, and examples in Figure 12, Figure 13, Figure 14.

The general resistivity distribution picture consists of two main parts: 1) deep, more or less uniform and resistive half-space, roughly, below 400-500 m depth from surface; 2) top part with resistivity differentiations and comparatively conductive zones and structures. The map of resistivity distribution on the 200 m ASL depth level, followed by positions of Li geochemical anomalies, shows the high correlation between the Li anomalies and the conductive zones (Figure 11). Positions of some Li anomalies are presented above resistivity sections along three lines (Figure 12, Figure 13, Figure 14) what confirms spatial relation between the geochemical anomalies and conductive zones.

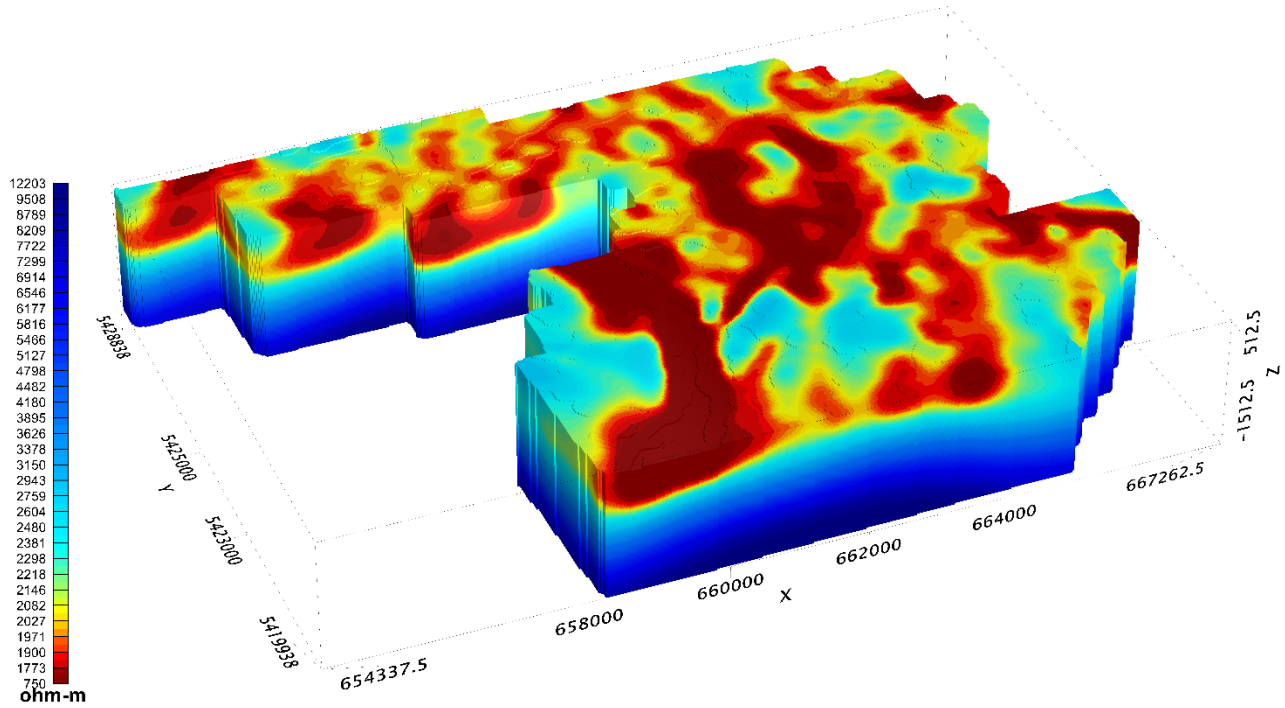


Figure 10 – Resistivity voxel in 3D view of the surveyed area.

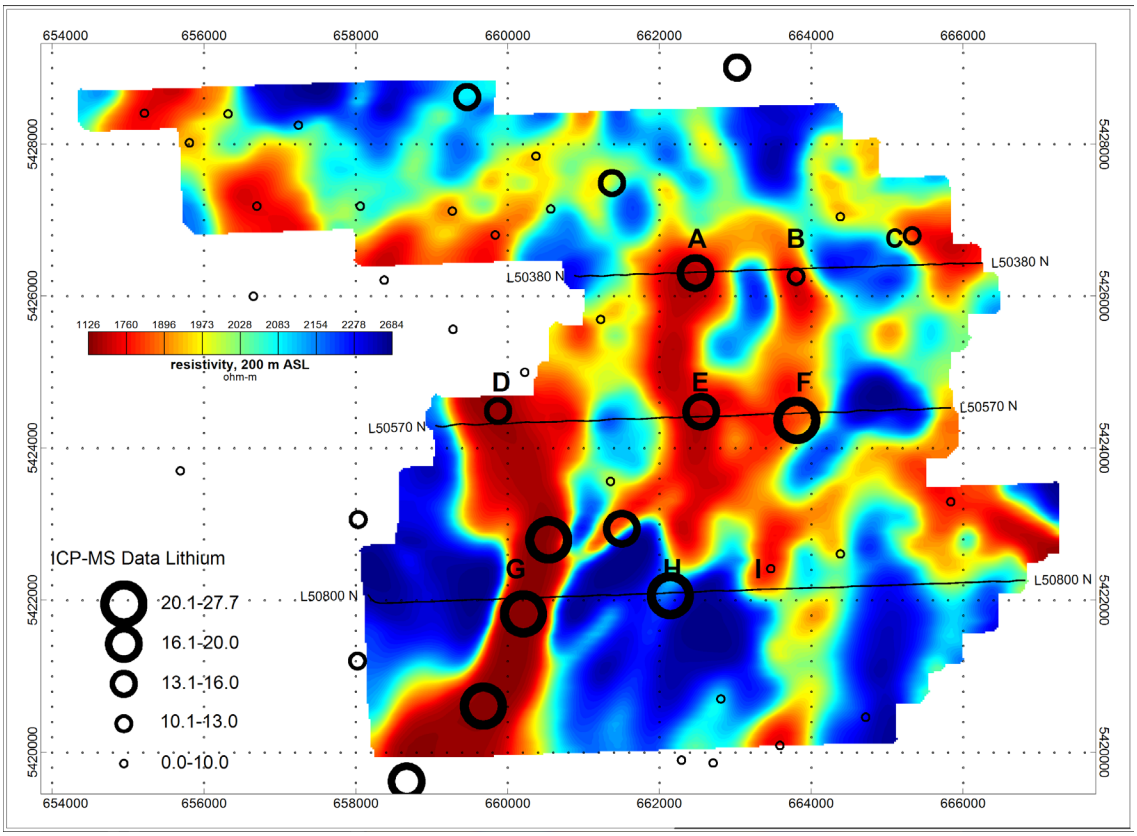


Figure 11 – Resistivity depth slice on 200 m ASL color grid with position of geochemical anomalies (ppm) from the map on Figure 8

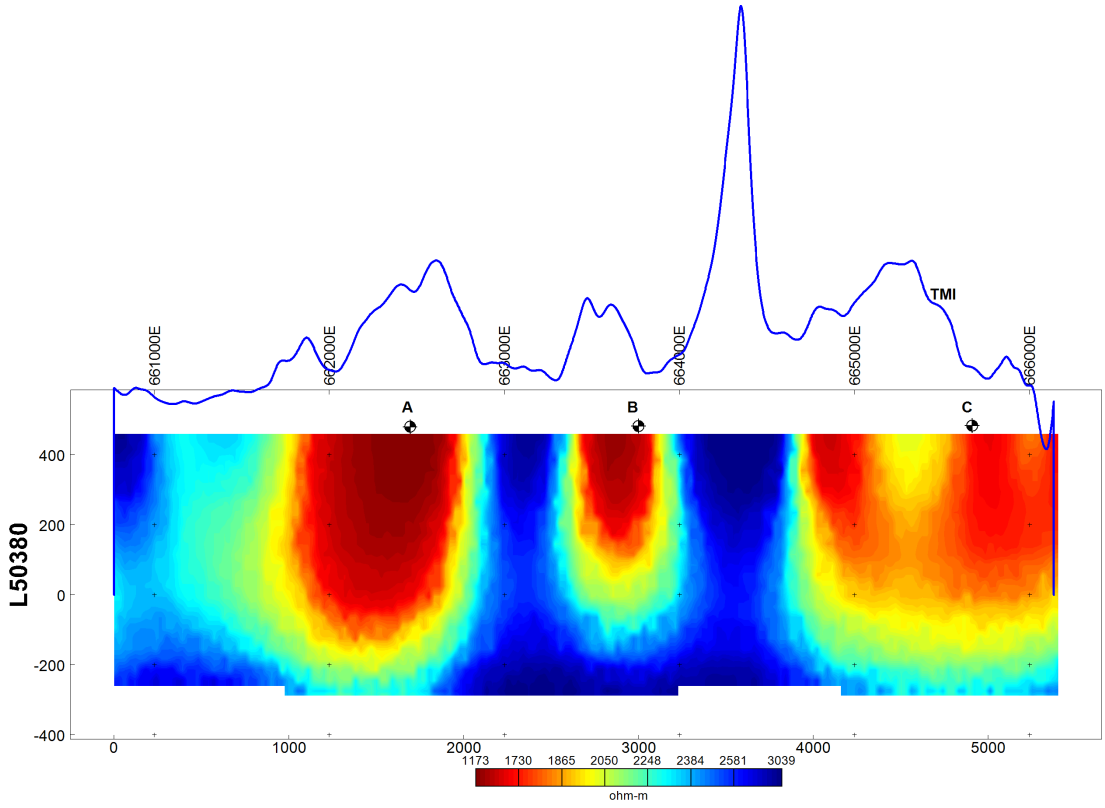


Figure 12 – Resistivity section along the 50380 survey line (in Figure 11)

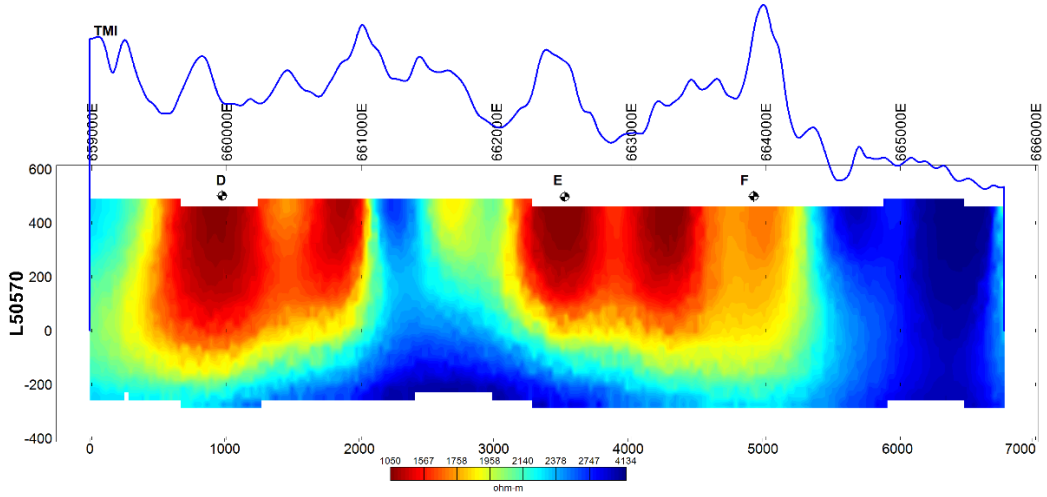


Figure 13 - Resistivity section along the 50570 survey line (in Figure 11)

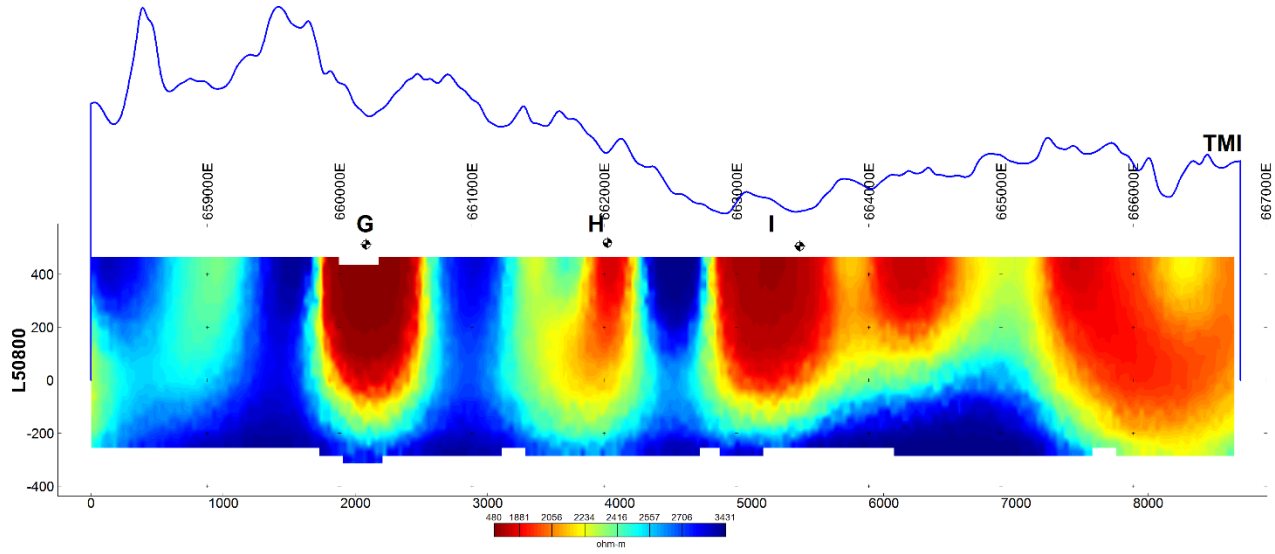


Figure 14 - Resistivity section along the 50800 survey line (in Figure 11)

Since the conductive zones begin from near surface (dipping up to ~400 m below the surface), the Li geochemical anomalies correlate very well with conductive zones on apparent conductivity distribution corresponded to high frequencies (example in Figure 15 is for 8550 Hz).

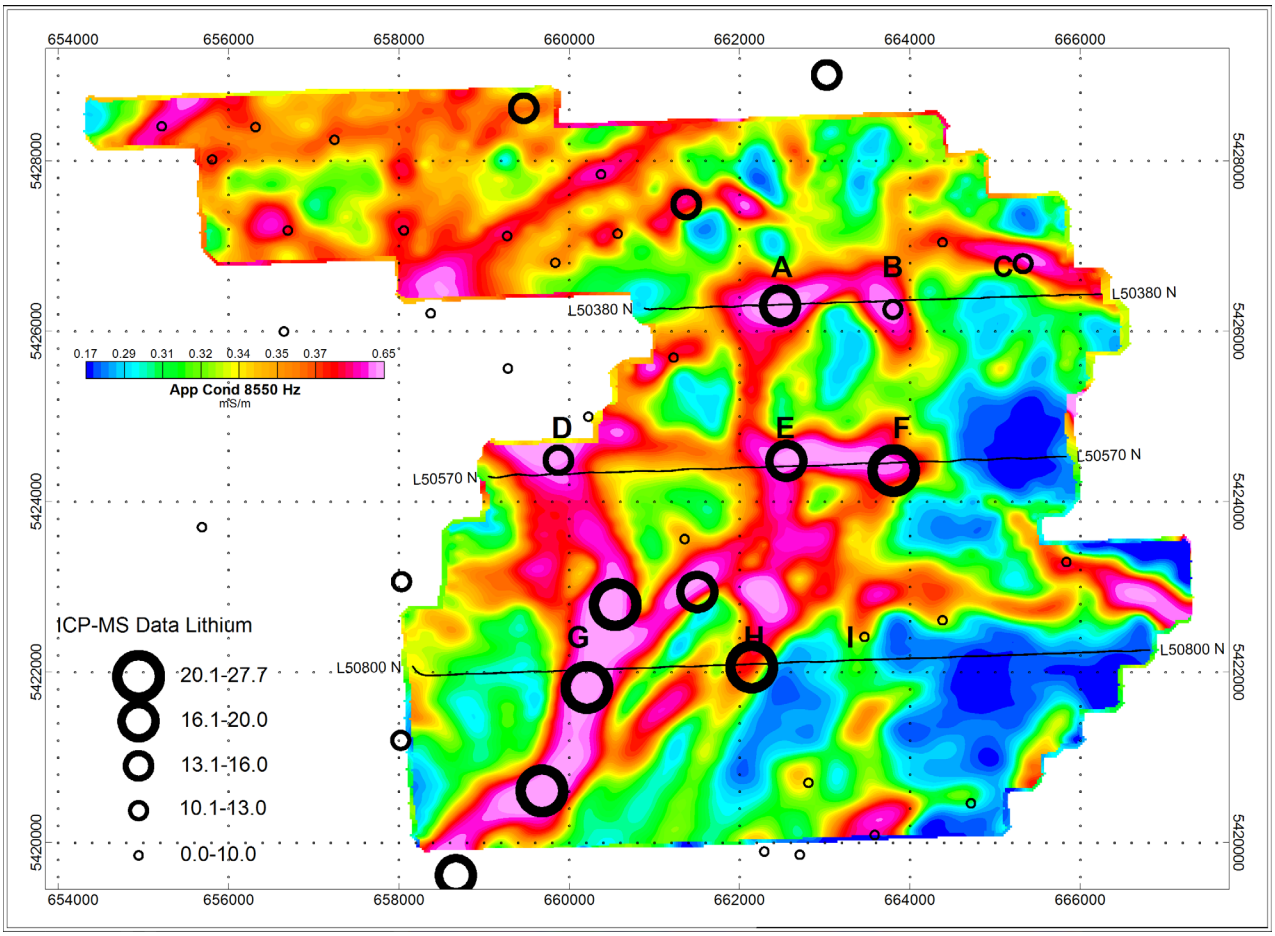


Figure 15 – apparent conductivity color grid corresponded to frequency 8550 Hz with position of Li geochemical anomalies

A map of the total magnetic intensity is provided in Figure 16. As the magnetic field distribution along survey lines (magnetic field profiles on Figure 12, Figure 13, Figure 14) and the plan view with overlapped conductive anomalies contours (Figure 16) show the absence of spatial relations between magnetic anomalies and conductive zones.

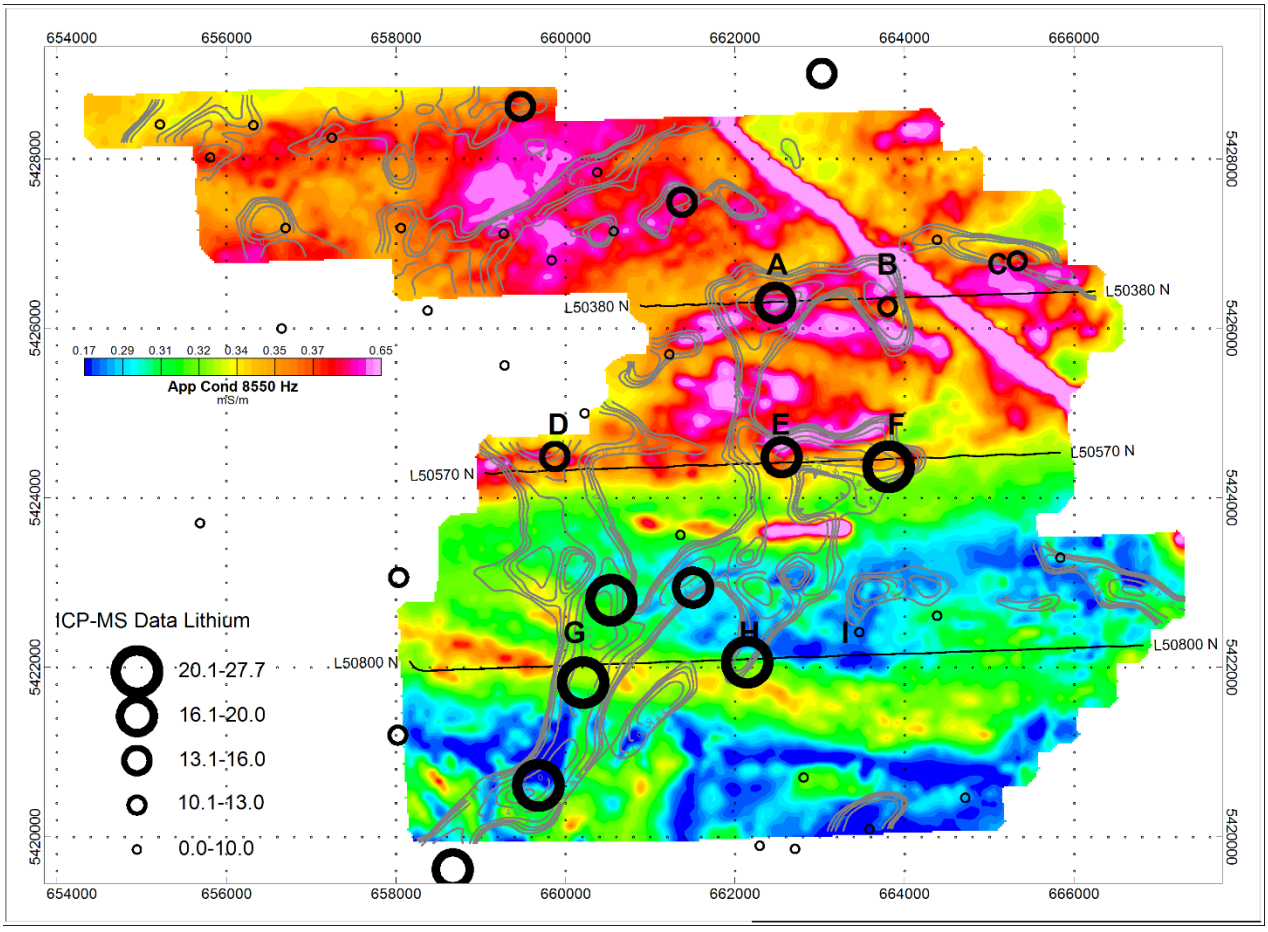


Figure 16 – Magnetic field color grid with overlapped high apparent conductivity anomalies contours (8550 Hz) and Li geochemical anomalies positions.

It is recommended to analyze all geophysical data, MobileMTm EM, VLF and magnetic in relation to an exploration model considered for the surveyed area and integrate these data with other available geological and geochemical information, for refining targets, follow-up groundwork and ultimately drilling planning. The focus of following ground exploration activity and test drilling should be on conductive zones mapped on the property in the first 400-500 m depth range.

References

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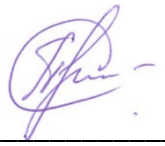
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Alexander Prikhodko, Ph.D., P.Geo



October 10, 2022
MobileMTm Job#22058 for International Lithium Corp.



Appendix I Company Profile

About us

Expert Geophysics Limited is based in Toronto, Canada.

President and founder, **Andrei Bagrianski**, Ph.D., P.Geo., has over 35 years of professional experience in the acquisition, processing, and interpretation of airborne and ground geophysical data for a wide range of applications. From 2002 to 2016, he was Chief Operating Officer and General Manager at Geotech Ltd. Andrei has been directly involved in contracting, organizing, and supervising hundreds of airborne geophysical surveys on all continents except Antarctica. Andrei has extensive international field work experience that includes projects in Australia, Brazil, Bolivia, Colombia, Ecuador, Peru, Botswana, Malawi, South Africa, Libya, USA, Canada, Russia, Kazakhstan, and India.

Petr Kuzmin, Ph.D., the designer of the **MobileMTm** system, has over 40 years of experience in the development of ground and airborne TDEM, MT, and IP methods, equipment, and software. Working for Geotech Ltd., Canada, from 2000 until 2009, Dr. Kuzmin was the principal designer of the award winning systems VTEM, ZTEM, and AirMt. Since 2009, Dr. Kuzmin has completed a number of successful developments: ground AFMAG, ultra-fast airborne TD (HiRes), airborne VLF system, an airborne navigation system, a high accuracy magnetometer counter, and the MobileMTm. Dr. Kuzmin holds a doctorate in Geophysics, has authored nearly 20 patents, and published over 40 technical papers.

Vice President and Chief Geophysicist, **Alexander Prikhodko**, Ph.D. in geoscience, P.Geo., Executive MBA, has previously held Chief Geophysicist position, for 10 years, in a gold-platinum mining company extensively used in its mineral exploration programs borehole, ground and airborne geophysics. He has been associated with the airborne geophysics industry since 2005 (Aeroquest Limited and Geotech Ltd.) holding management positions as Regional General Manager, Data Interpretation Manager, Director of Geophysics and working on exploration projects for diverse commodities in regions over the world. He is an author and co-author of many publications dedicated to airborne EM. In 2019 he was awarded Barlow Medal for Best Geological Paper published in CIM publications (Canadian Institute of Mining, Metallurgy and Petroleum).

Services

Expert Geophysics Limited specializes in airborne geophysical surveys with advanced electromagnetic systems. **EGL** offers surveying with **Mobile MagnetoTellurics** (**MobileMTm**), the most advanced generation of airborne AFMAG technologies. The patent pending **MobileMTm** technology utilizes naturally occurring electromagnetic fields in the frequency range of 25 Hz – 30 000 Hz. The **MobileMTm** technology is the product of extensive experience in developing equipment and signal/data processing algorithms for natural electromagnetic fields measurement. **MobileMTm** combines the latest advances in electronics, airborne system design, and sophisticated signal processing techniques.

Appendix II MobileMTm Electromagnetic Technology



MobileMTm (Mobile MagnetoTellurics) is a newly developed approach to electromagnetic data acquisition from synchronized a towed three component inductive magnetic sensor and grounded two orthogonal electric lines. The system is designed and implemented in order to overcome existing limitations of airborne techniques based on passive electromagnetic fields principles and, ultimately, for improving exploration efficiency. MobileMTm, however, is a smaller version of MobileMT with two magnetic sensors in the horizontal magnetic gradiometer configuration.

MobileMTm is a passive airborne electromagnetic technique that records magnetic (in the air) and electric (on the ground) fields generated by natural sources in the audio frequency range. The natural electromagnetic primary field sources for MobileMTm are considered with frequencies ranging from 90 Hz to 27 kHz (ELF+VLF). The exploration system includes two pairs of grounded electric wire lines, one of them is for reference signal, and moving three-component inductive coil system softly suspended and with low-noise signal amplifiers for magnetic field measurements (dB/dt) in three orthogonal directions. A crucial element of the technology is the capability of aerial acquisition magnetotelluric data in four decades frequency band. Field data are acquired using stationary orthogonal pairs of electrical field sensors (grounded wire dipoles) and towed magnetic field detectors (three orthogonal induction coils).

In order to continue evolution of the airborne electromagnetic passive fields technology and in comparison with the last AFMAG development (Bob Lo, 2009) the current development is focused on:

- Expanding measured frequencies range into high end to complement deep exploration with near surface, shallow and medium depth of investigation;
- Increasing sensitivity and reducing system noise level to provide with data at low natural electromagnetic fields signal conditions especially in the range of the last hundred – first thousands Hz frequencies band where the field spectral density is lowest (dead-band);
- Providing ability to recover electrical properties differences between geological boundaries of any direction, including and between horizontal and vertical boundaries;
- Increasing spatial and frequency data resolution;
- Measuring of elements of admittance-type transfer functions of the magnetotelluric field.

Theory and Method

Some part of the thunderstorm energy is converted into electromagnetic fields that are propagated in the ionosphere-Earth interspace. These electromagnetic fields and the currents induced by these fields in the subsurface are used in audiomagnetetotelluric prospecting to measure the electrical resistivity of geological environment.

Measuring telluric currents induced by the natural electromagnetic fields in the subsurface on the ground synchronised with measuring the magnetic components of the natural audio frequency electromagnetic fields in the air and mutual processing both airborne and ground data (Figure 1) is a way to improve the quality and increase informative of the measured airborne data. In practice the reference fields may be measured by inductive coils or grounded electric lines (Labson et al., 1985). To obtain accurate signal of the natural field spectrum and eliminate noise spectra of sensors we use electrical field measurements at the base station. One of the reasons of choosing electrical components for reference is capacity to control the natural signal strength in the wire lines. Each electrical field component on the base station is registered independently from two sensors, signal and reference, which is utilized to eliminate the data bias distortions (Labson et al., 1985). This technical solution is critically helpful in periods of weak natural field signals in some frequency bands.

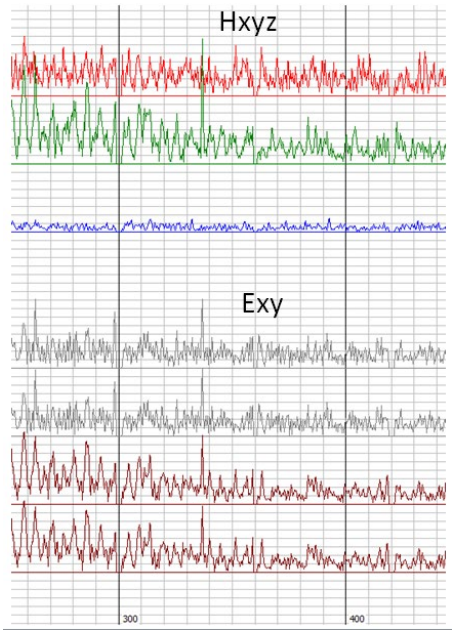


Figure 1. A section of time series of *E*xy and *H*xyz data

Exploiting signals of two horizontal electric components along with three magnetic components we can process them with the magnetotellurics response functions based on linear relations between components of the electric and magnetic fields. In general, processing of the field data is based on the Larsen and Chave robust remote-reference method (Chave et al., 1987; Larsen, 1989). The data processing program merges the stationary measured electrical two horizontal components and the moving orientation irrelevant receiver of three magnetic field components into one file. The program applies FFT technique to the recordings and calculates the matrixes of the relations between the electric and magnetic signals (six admittances) on the different time bases and in different frequency bands. In the result of modular computation of the matrixes determinants, as rotation invariant parameters, we calculate apparent conductivity in mS/m as a parameter of EM mapping. The rotation invariant parameters are free from the receiver motion distortions. The admittances (***Y***) are represented as the electric field horizontal vectors projection into the space of the magnetic field three components. In other words, the combined system measures combination of tensor and scalar (rotational invariant) components as the transfer function of a total magnetic field, through the three orthogonal directions measurements of an airborne receiver, to the two orthogonal horizontal directions of electric field measured at a ground base location. Generalizing the Weiss-Parkinson relationship (Berdichevsky and Zhdanov, 1984), such as that measured three orthogonal magnetic field components (***H***xyz) are linearly related to the horizontal electric fields measured on the ground (***E***xy, reference), with adoption it to the admittances domain (***Y***):

$$\begin{bmatrix} Hx \\ Hy \\ Hz \end{bmatrix} = \begin{bmatrix} Yxx & Yxy \\ Yyx & Yyy \\ Yzx & Yzy \end{bmatrix} \begin{bmatrix} Ex \\ Ey \end{bmatrix} \quad (1)$$

Solutions of the equations are obtained by averaging over a number of closely spaced frequencies **Error! Reference source not found.**(Table below).

An example of frequency windows used for harmonics averaging. Base 15 Hz, Gates ratio 2.

N	Window, Hz		
	start	end	mid
1	15	30	23
2	30	68	49
3	68	135	101
4	135	270	203
5	270	540	405
6	540	1080	810
7	1080	2160	1620
8	2160	4320	3240
9	4320	8640	6480
10	8640	17280	12960
11	17280	28800	23040

The windowing way is flexible and can be optimized depending on signals, cultural noise and an exploration task.

H (magnetic) and ***E*** (electric) components time series data, fully synchronized, digitized and recorded at 73,728 Hz frequency, is converted from time to frequency domain using FFT technique. The complex data spectrums (field examples in 2 and 3) is expressed in apparent conductivity (σ) equivalent to its real part:

$$\boldsymbol{\sigma = \mu\omega|Y^2|} \qquad (2)$$

where ***Y*** is the determinant of the corresponded matrix in (1); $\boldsymbol{Y^2}$ = im($\boldsymbol{Y^2}$)/re($\boldsymbol{Y^2}$); μ is the magnetic permeability of free air and ω is the angular frequency.

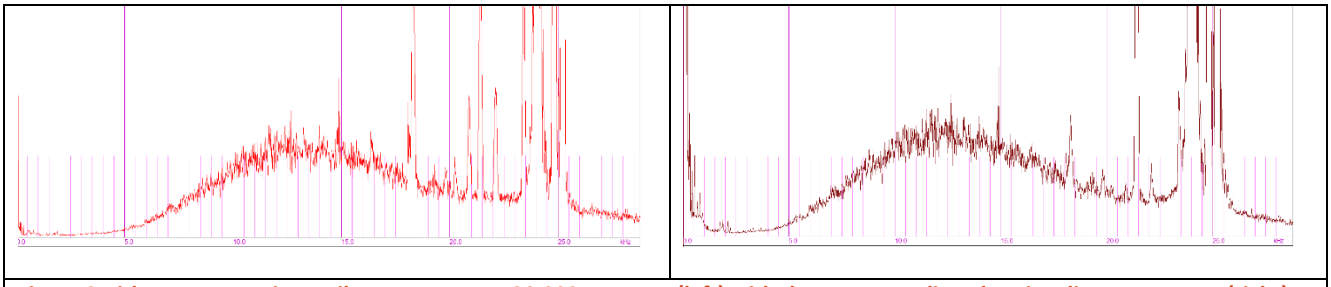


Figure 2 Airborne magnetic X-coil spectrum up to 30,000 Hz range (left) with the corresponding electric X-line 1 spectrum (right)

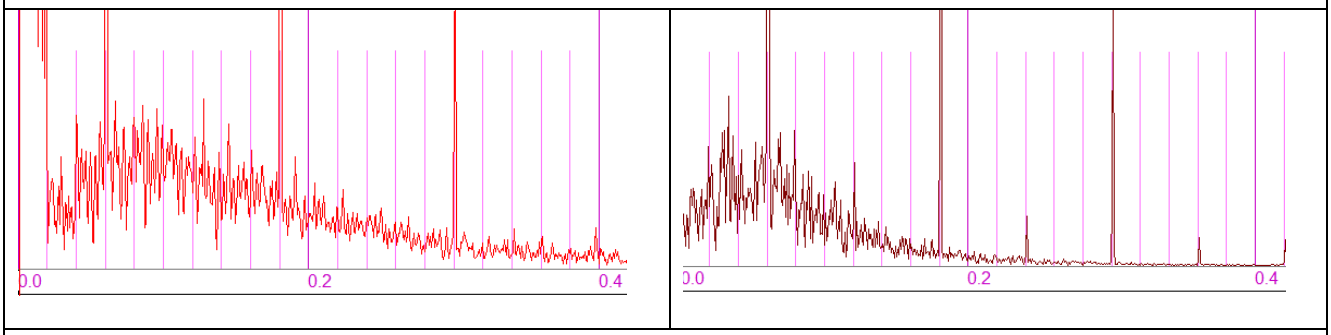


Figure 3 Airborne magnetic X-coil spectrum up to 400 Hz range (left) with the corresponding electric X-line 1 spectrum (right)

References

Berdichevsky, M.N., and M.S. Zhdanov (1984), Advansed theory of deep geomagnetic sounding: Elseiver.

Chave, A. D., Thomson, D. J., and Ander, M. E. (1987), On the Robust Estimation of Power Spectra, Coherences, and Transfer Functions: Journal of Geophysical Research, **92**, 633-648.

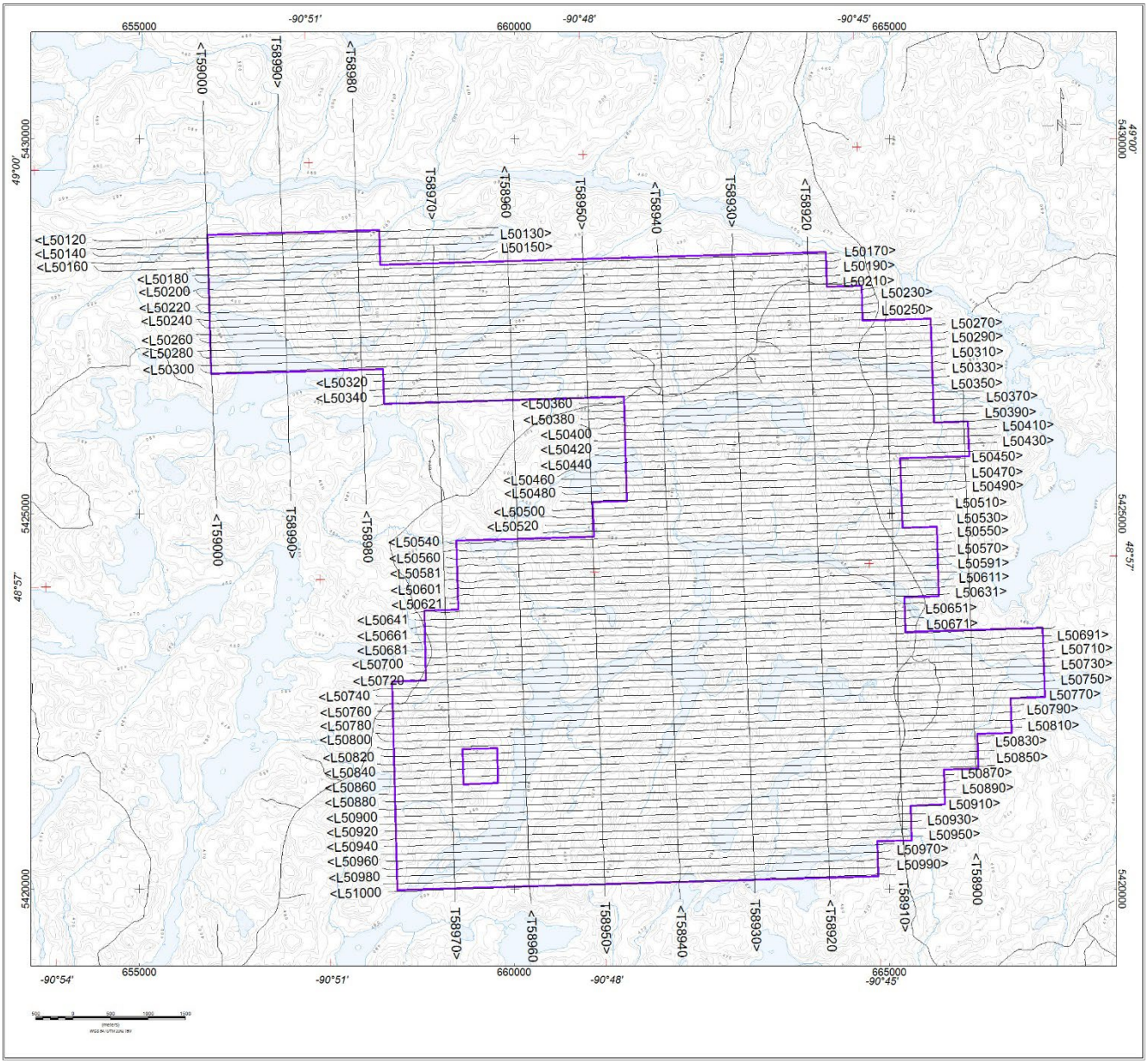
Labson, V.F., A.Becker, H.F.Morrison, and U.Conti (1985), Geophysical exploration with audio frequency natural magnetic fields: Geophysics, **50**, 656-664.

Larsen, J. C. (1989), Transfer functions: smooth robust estimates by least-squares and remote reference methods: Geophysical Journal International, **99**, 645-663.

Lo, B., J. Legault, P.Kuzmin (2009), Z-TEM (airborne AFMAG) tests over unconformity uranium deposits. Extended Abstract 20th International Geophysical Conference and Exhibition, Adelaide, South Australia.

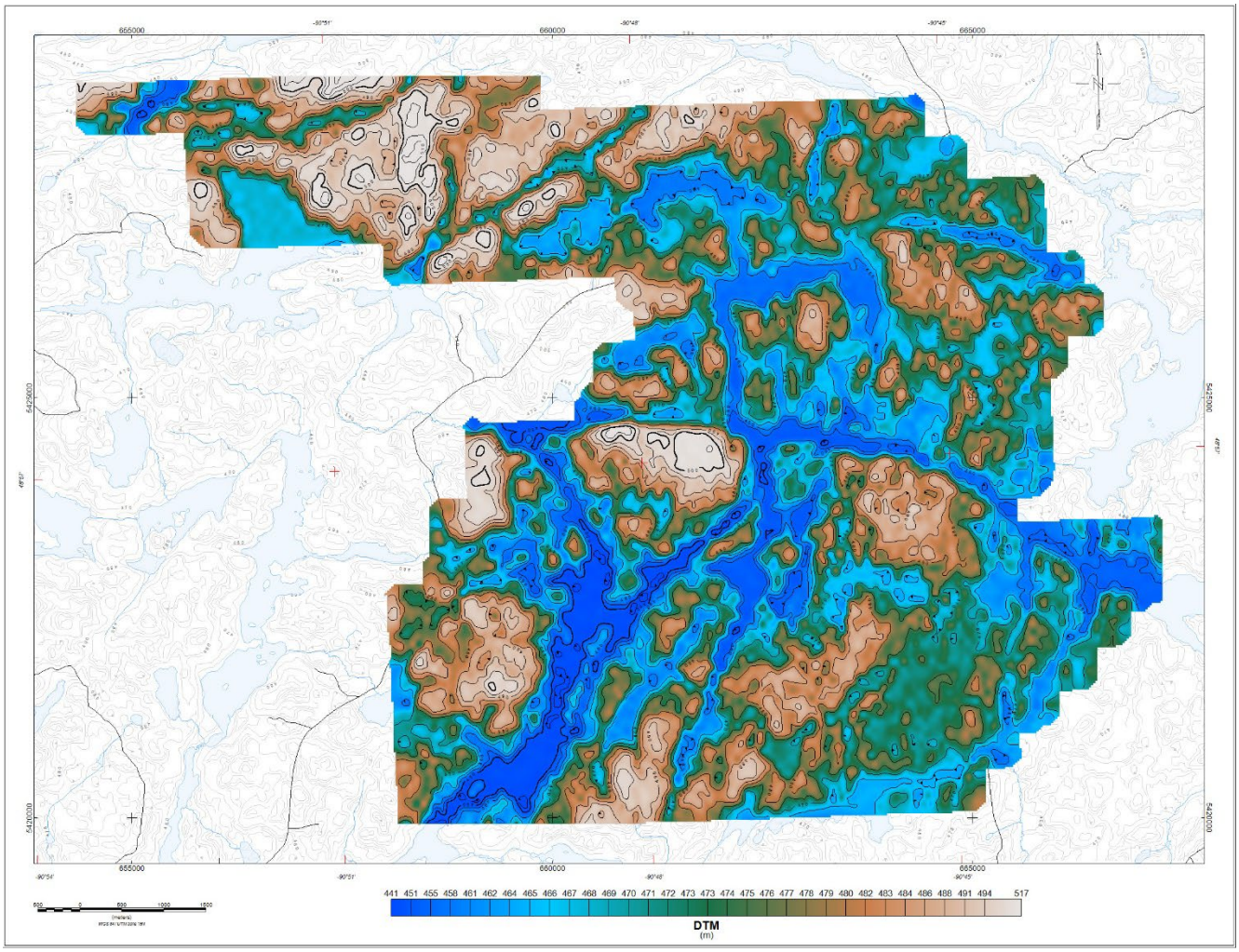
Appendix III MobileMTm maps images[1]

Wolf Ridge Block

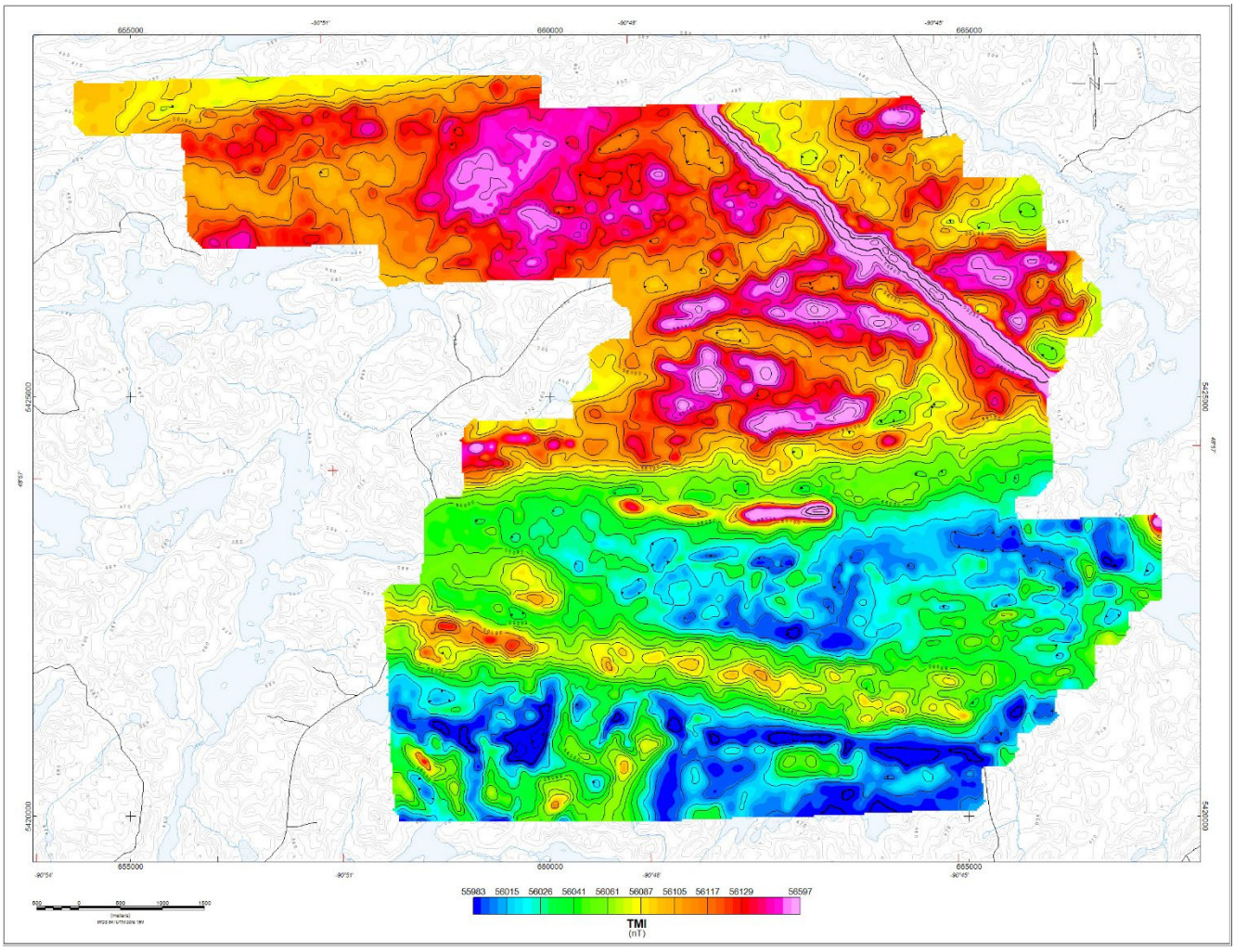


Line Path with Claims Boundary

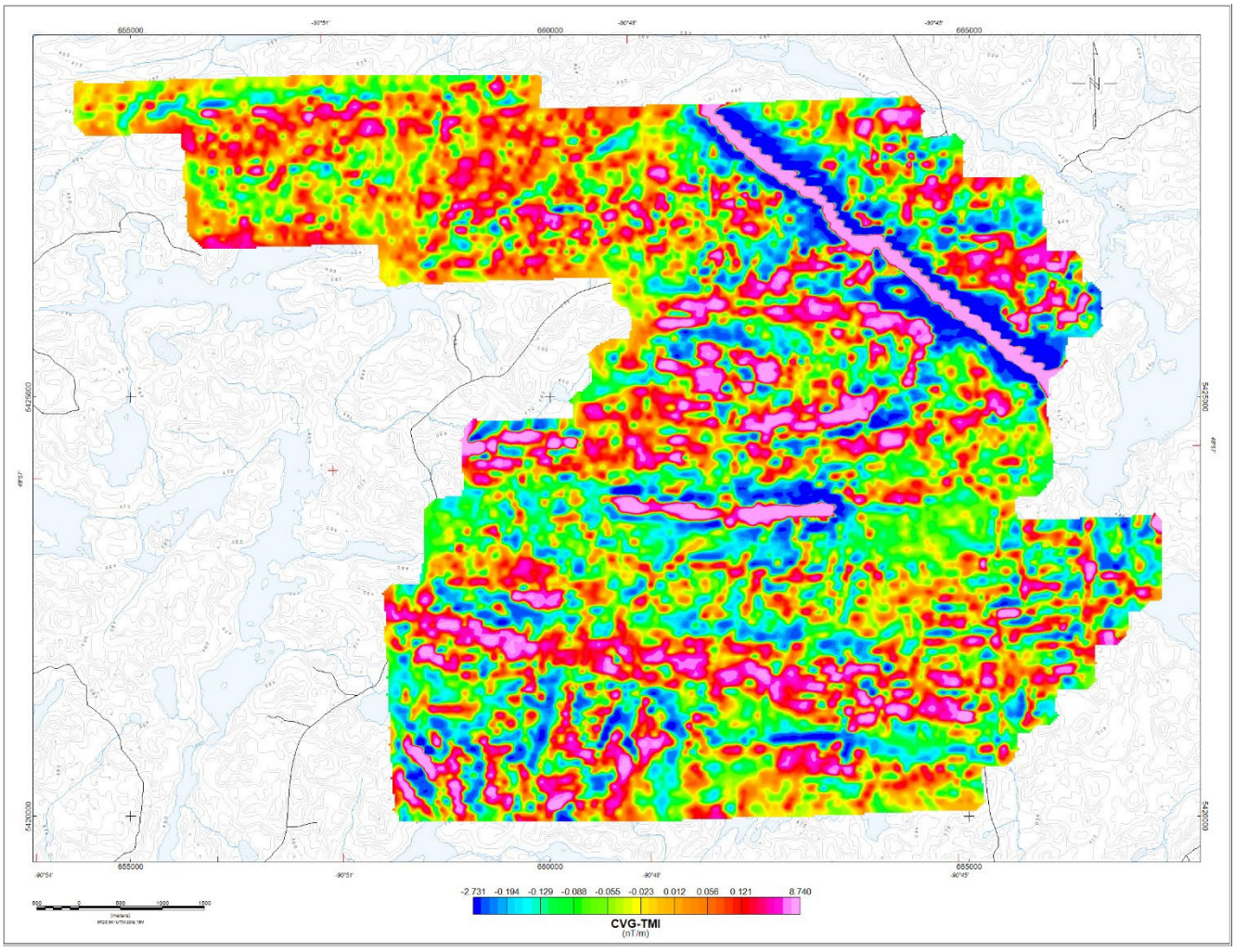
[1] Only selected maps are presented in the Appendix. A full set of maps is following the report in geosoft and pdf formats.



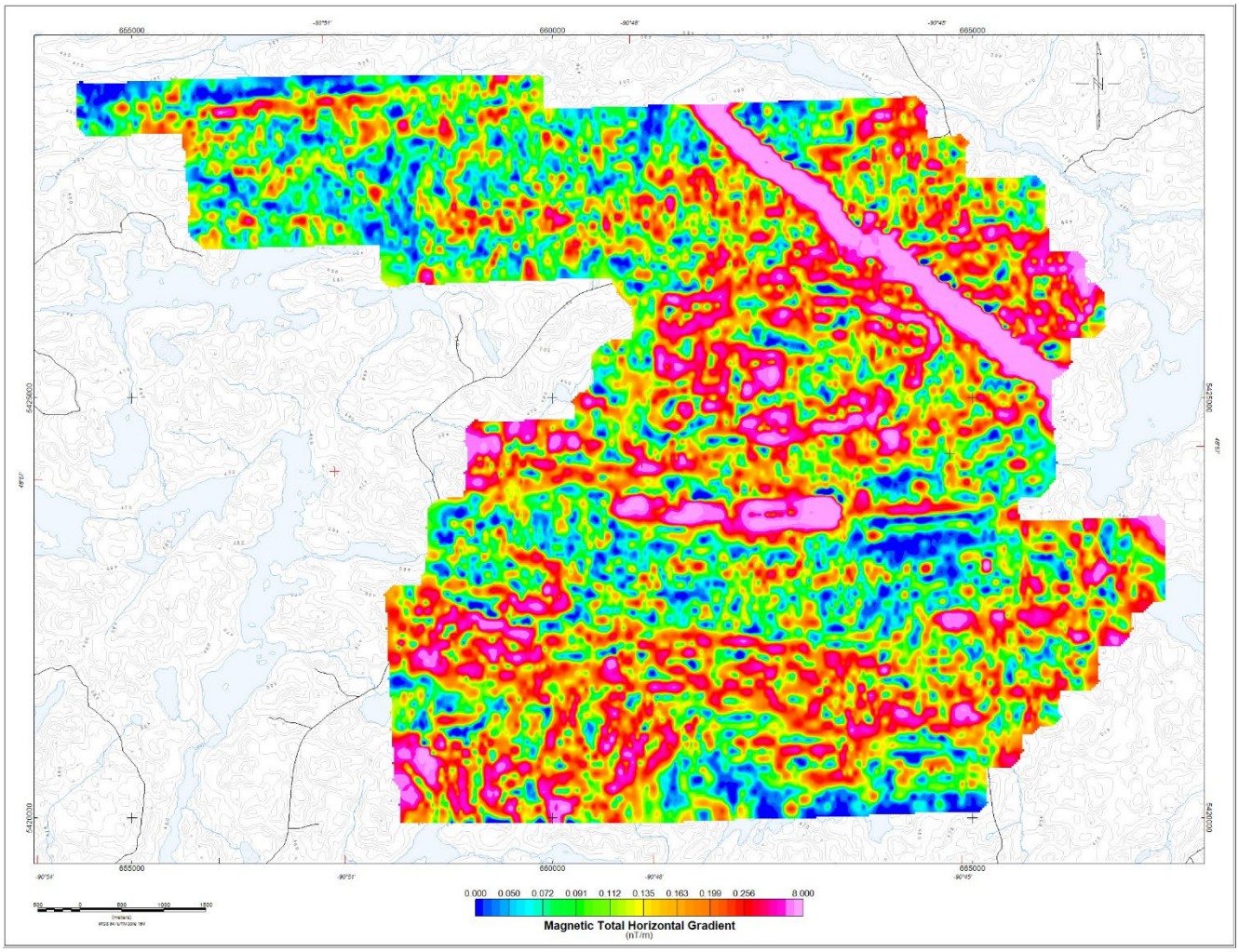
Digital Terrain Model (DTM)



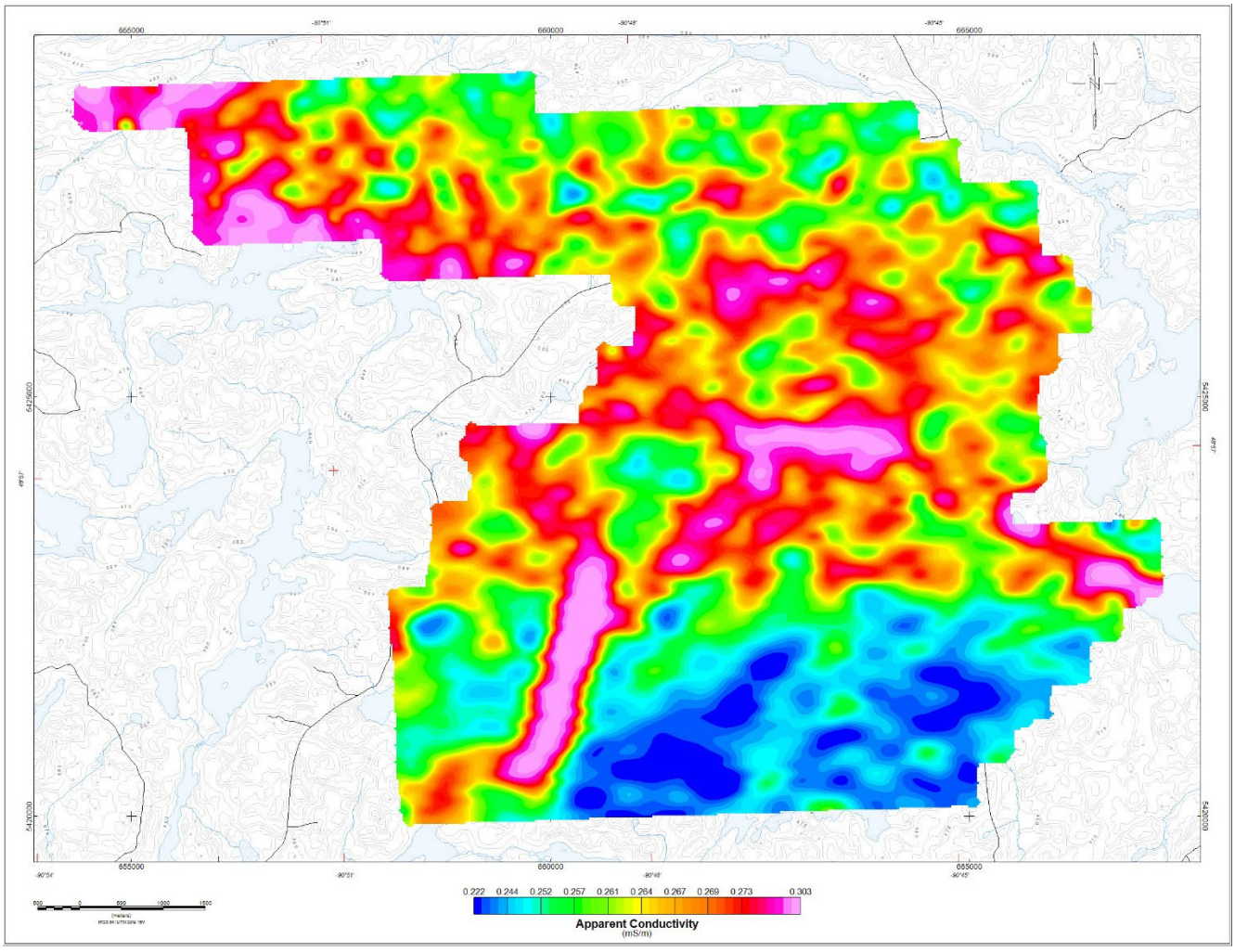
Total Magnetic Intensity (TMI)



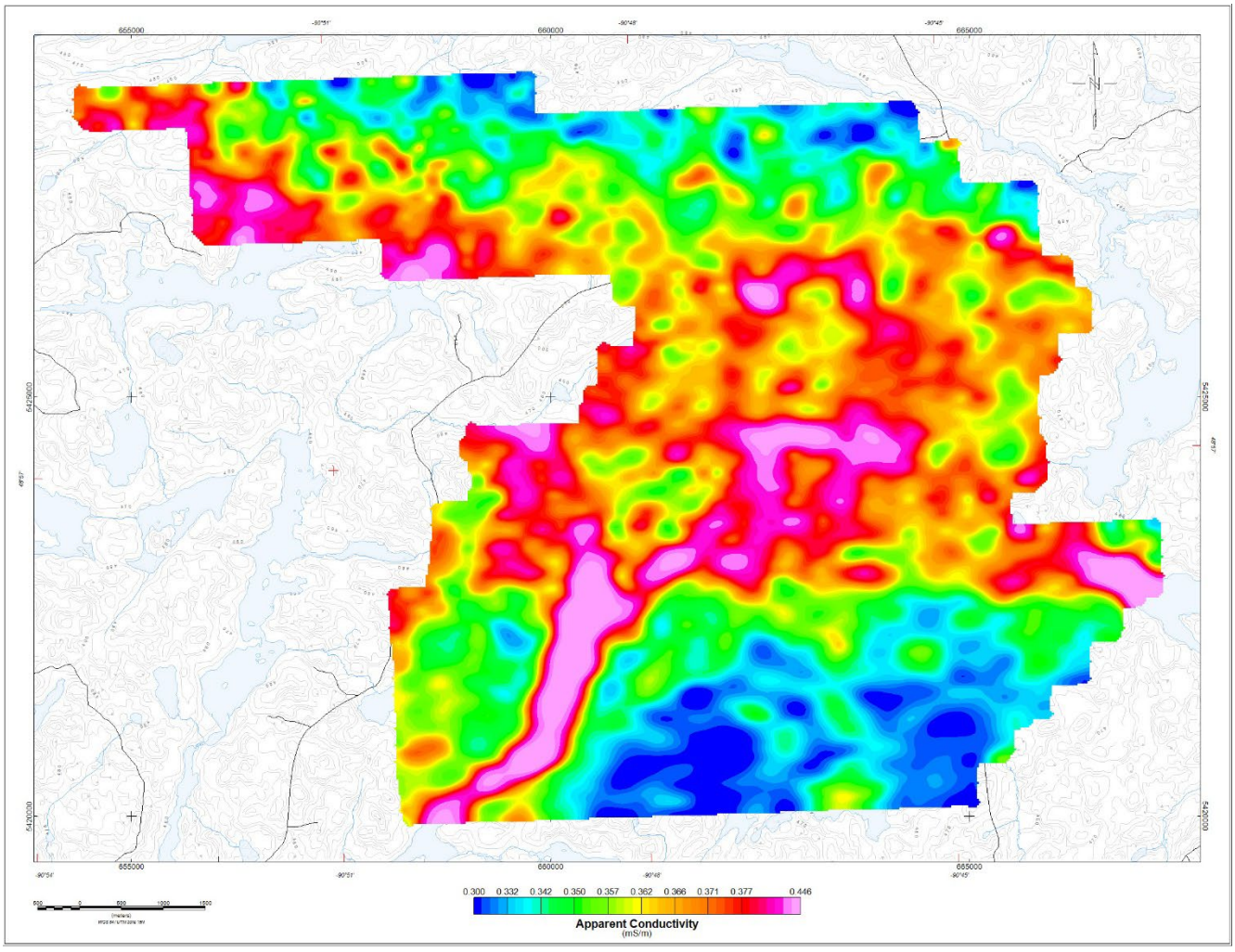
Calculated Vertical Gradient of Total Magnetic Intensity (CVG-TMI)



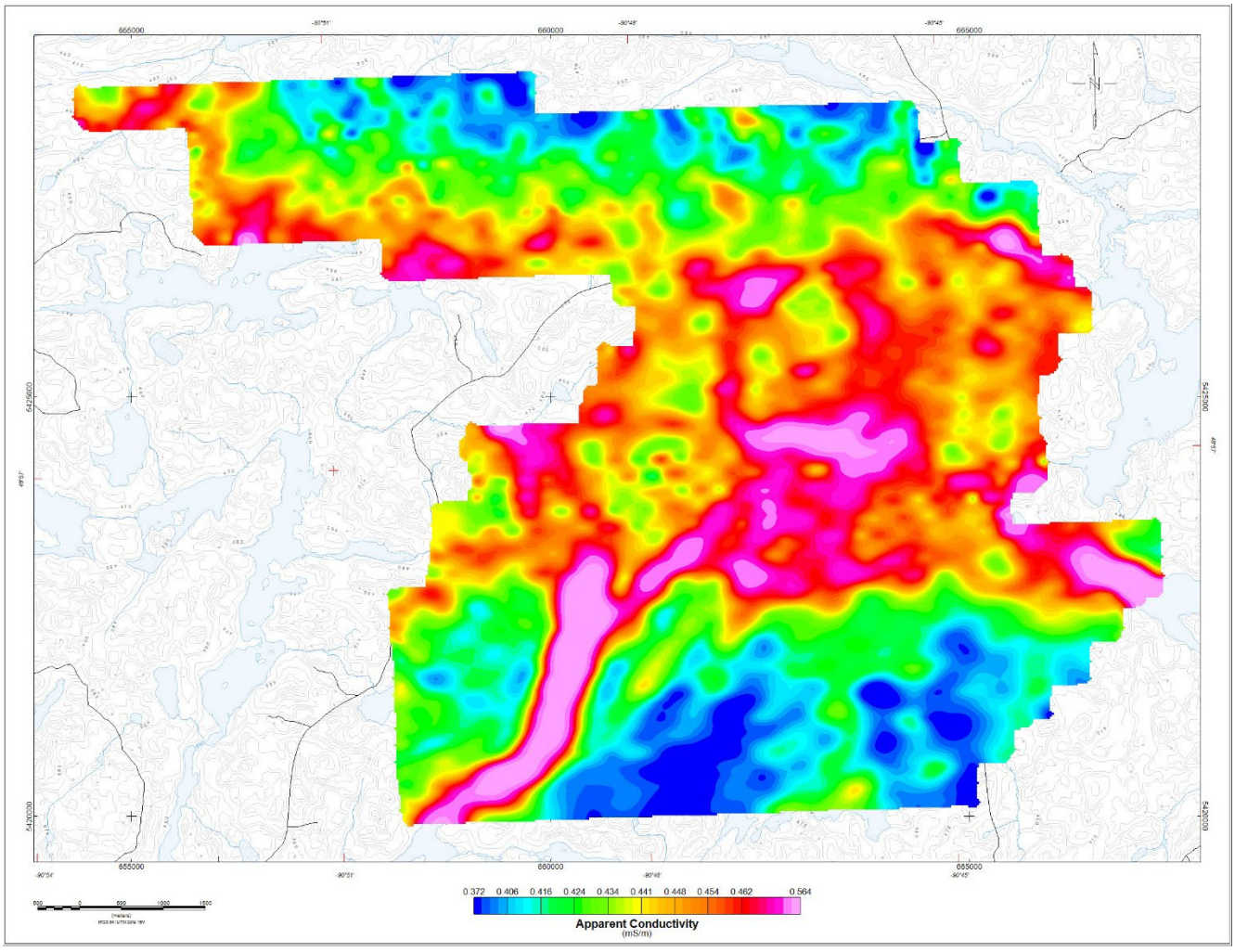
Magnetic Total Horizontal Gradient (THG)



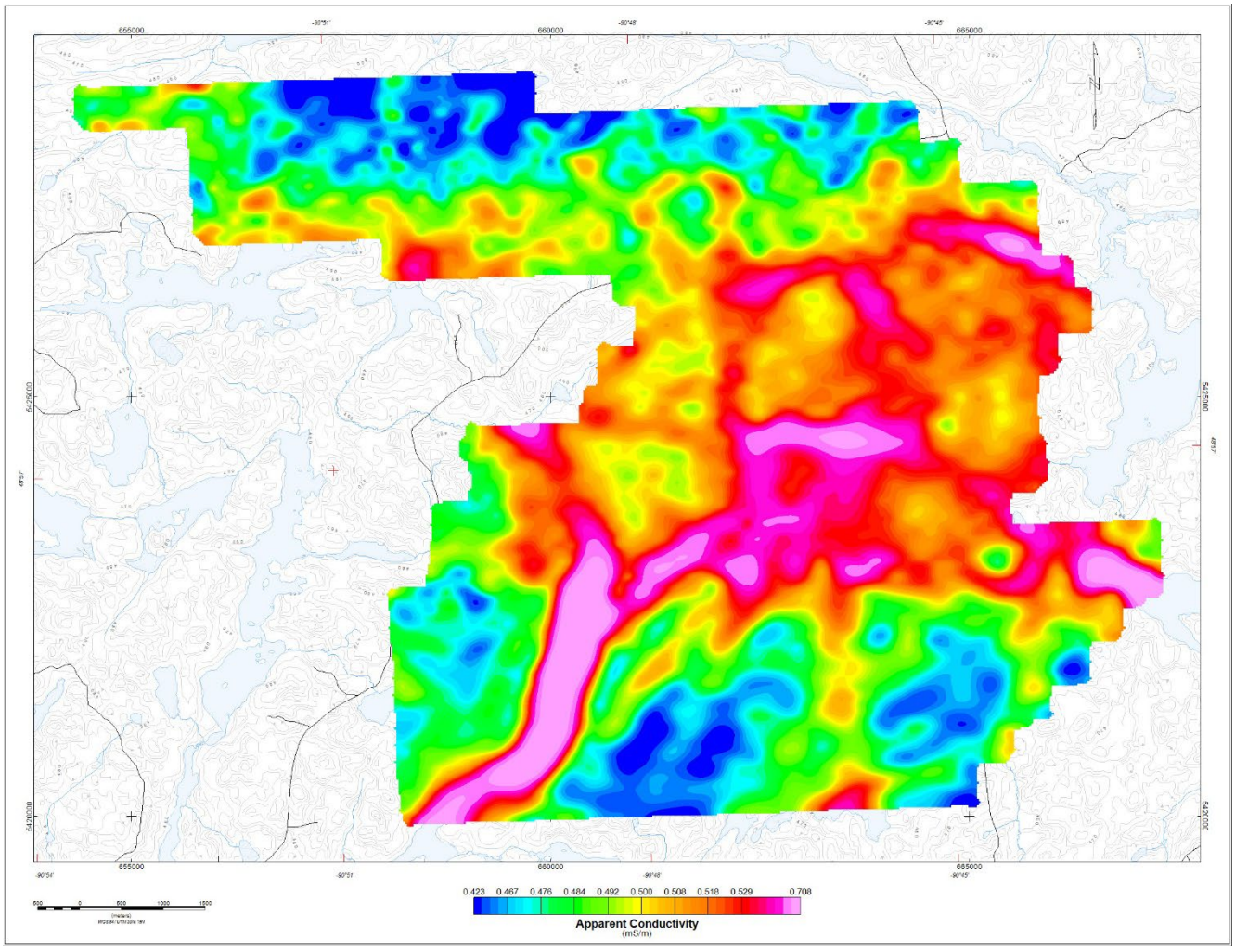
Apparent conductivity (84 Hz)



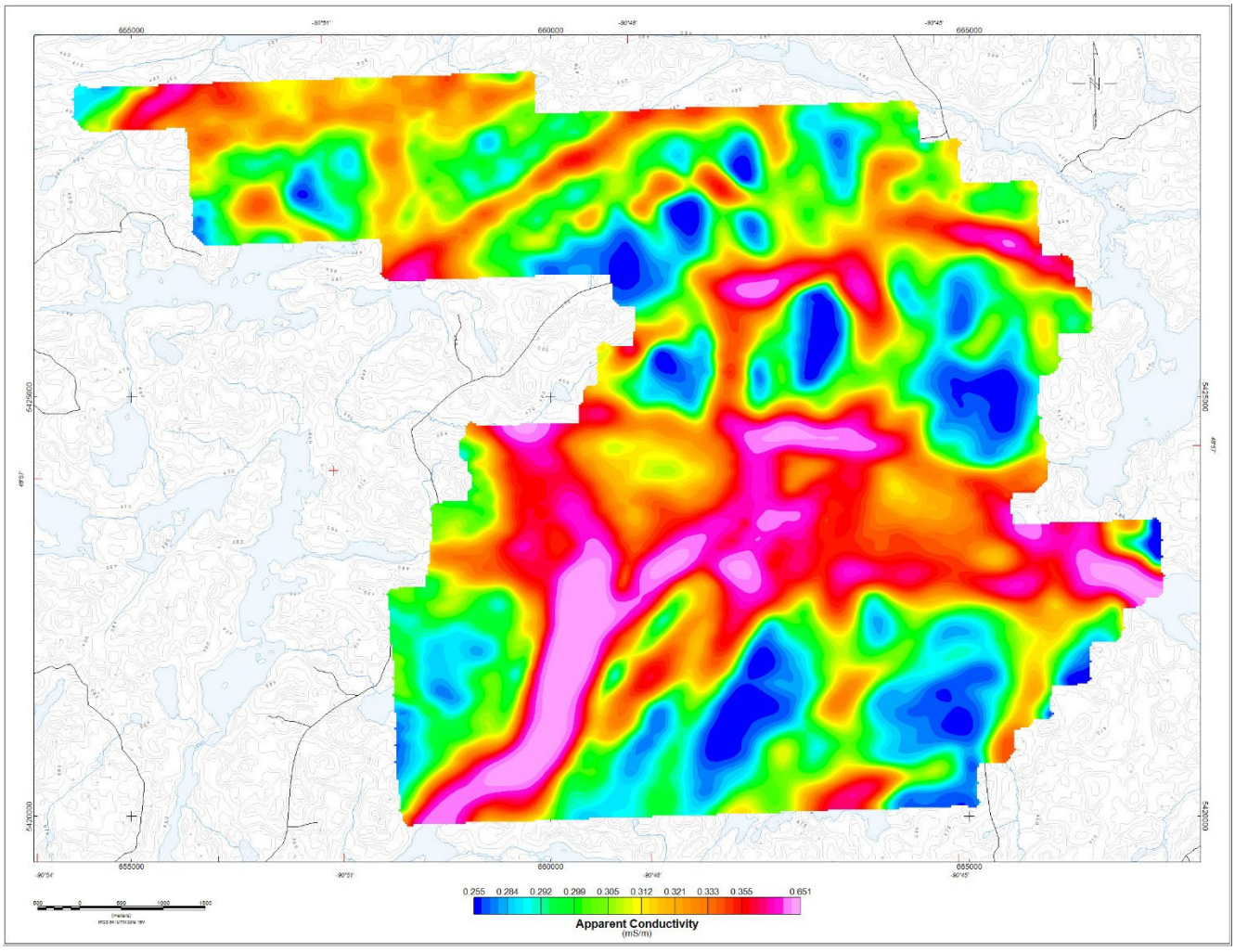
Apparent conductivity (165 Hz)



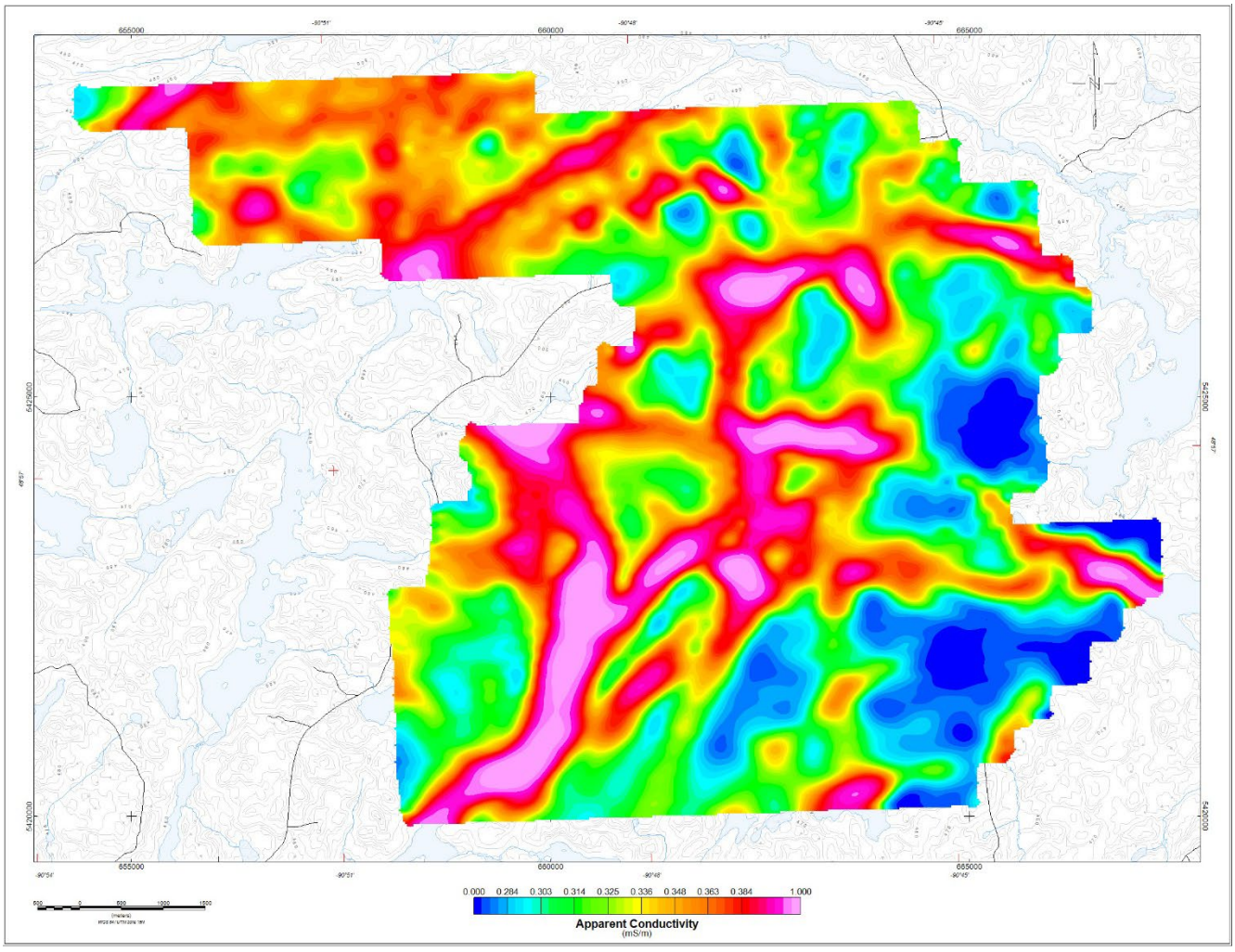
Apparent conductivity (267 Hz)



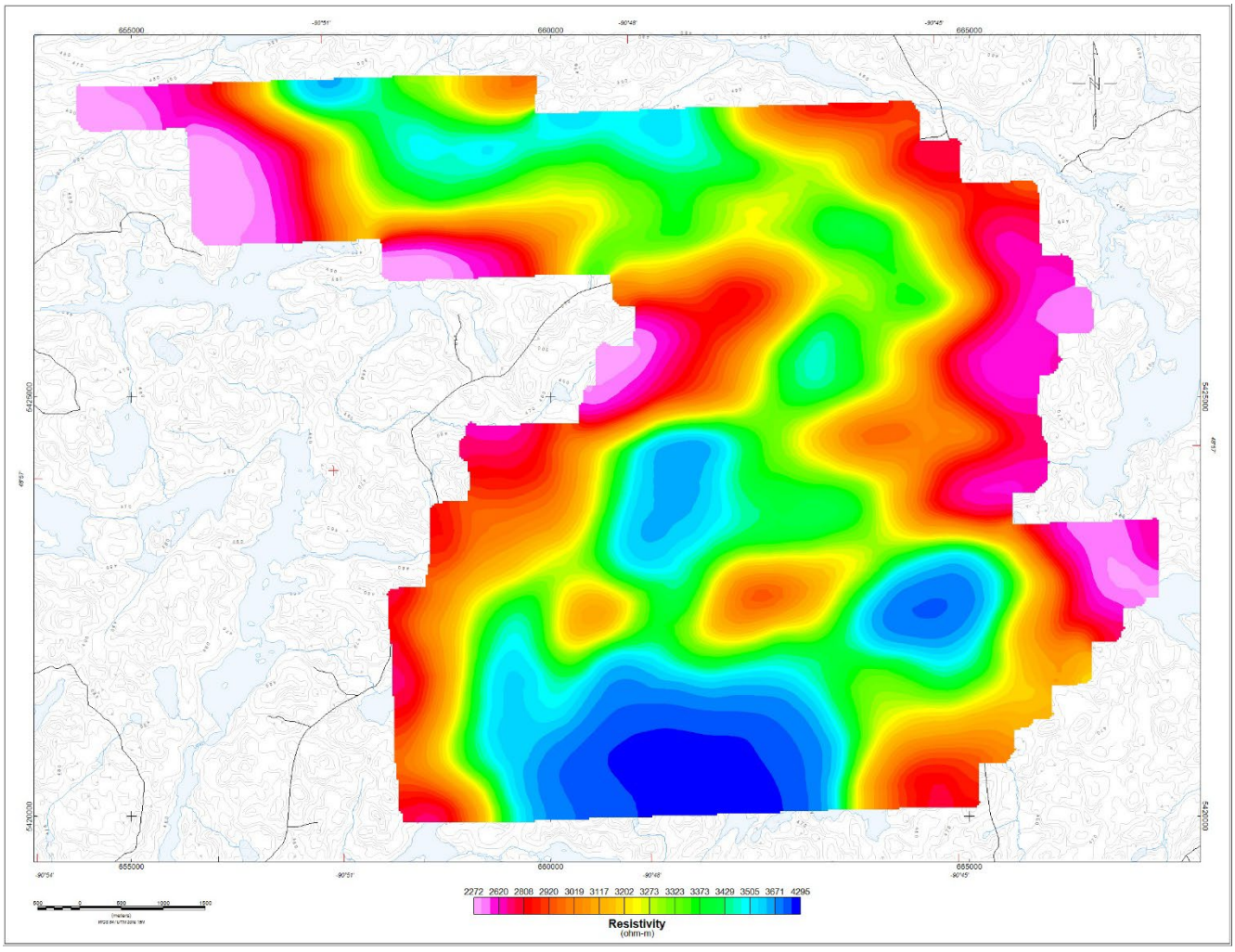
Apparent conductivity (533 Hz)



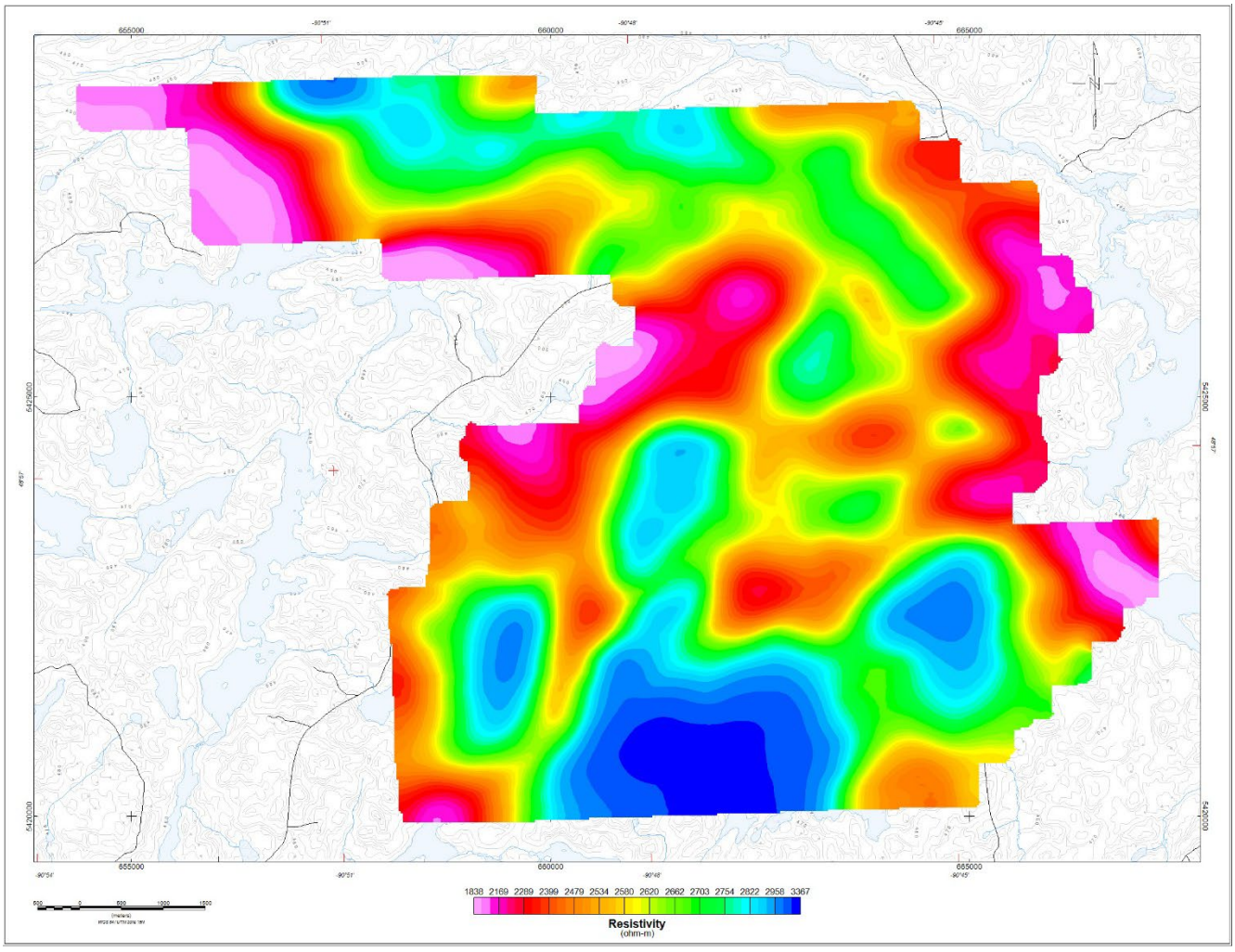
Apparent conductivity (3394 Hz)



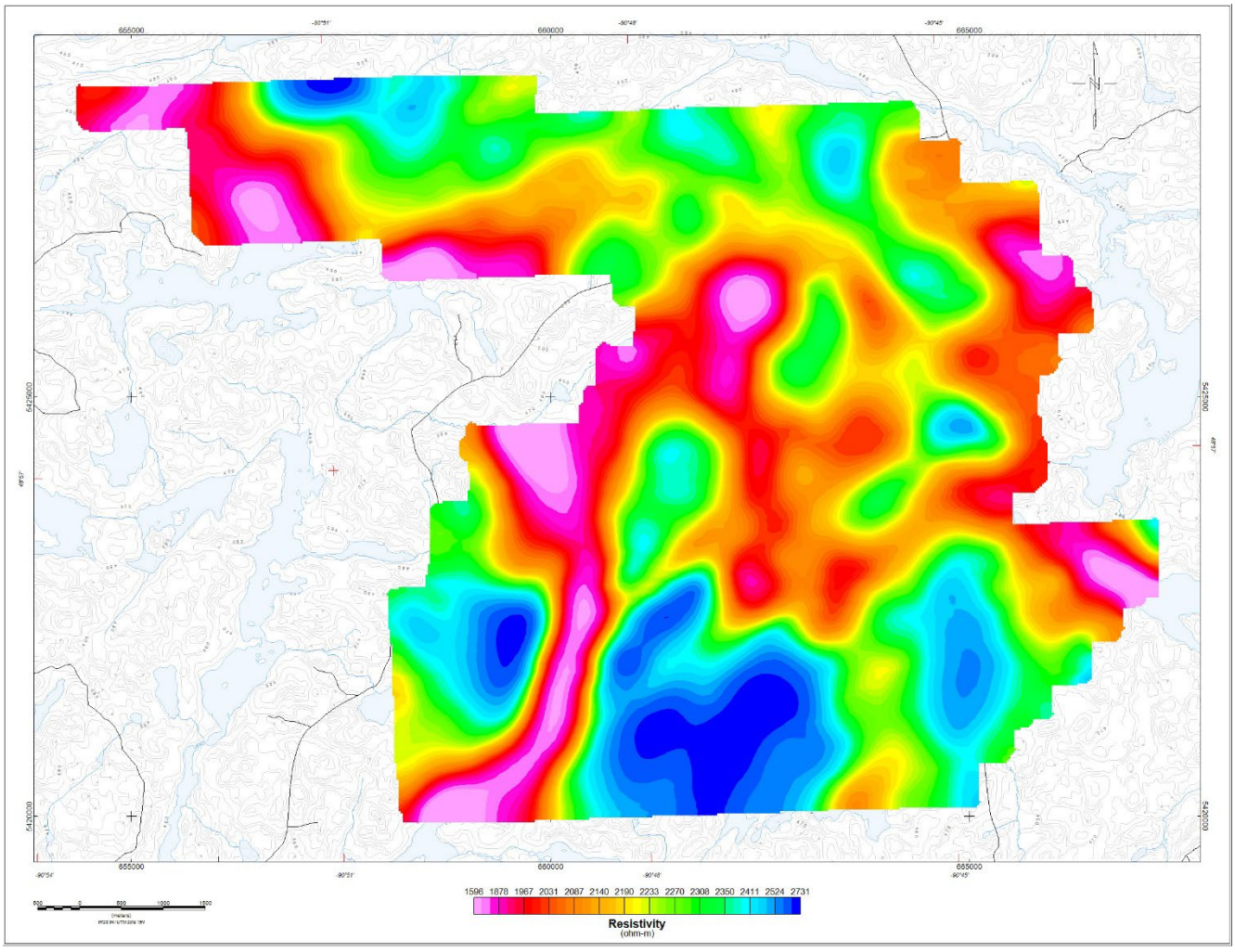
Apparent conductivity (8550 Hz)



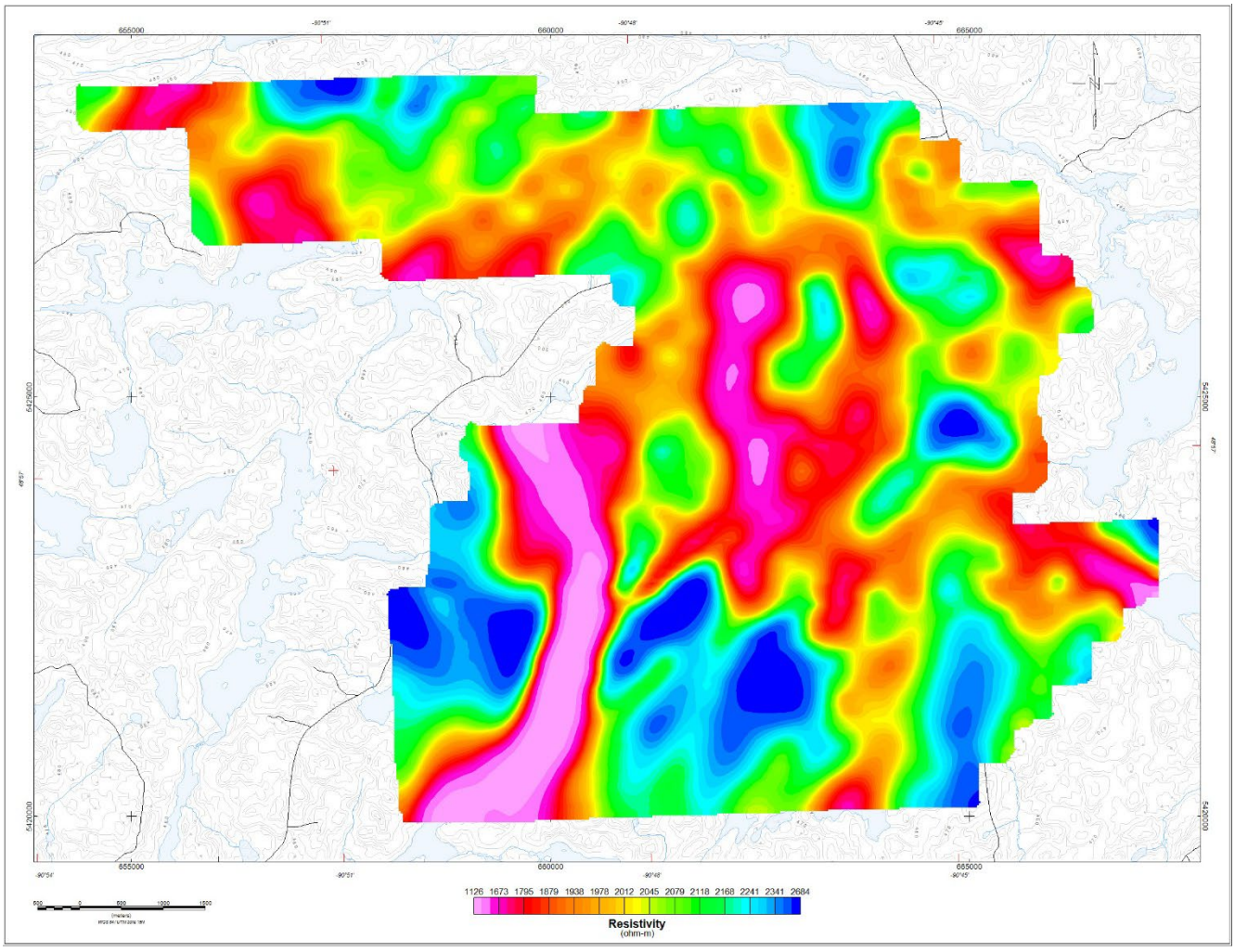
Resistivity at elevation of -400 m ASL (determined through inversions)



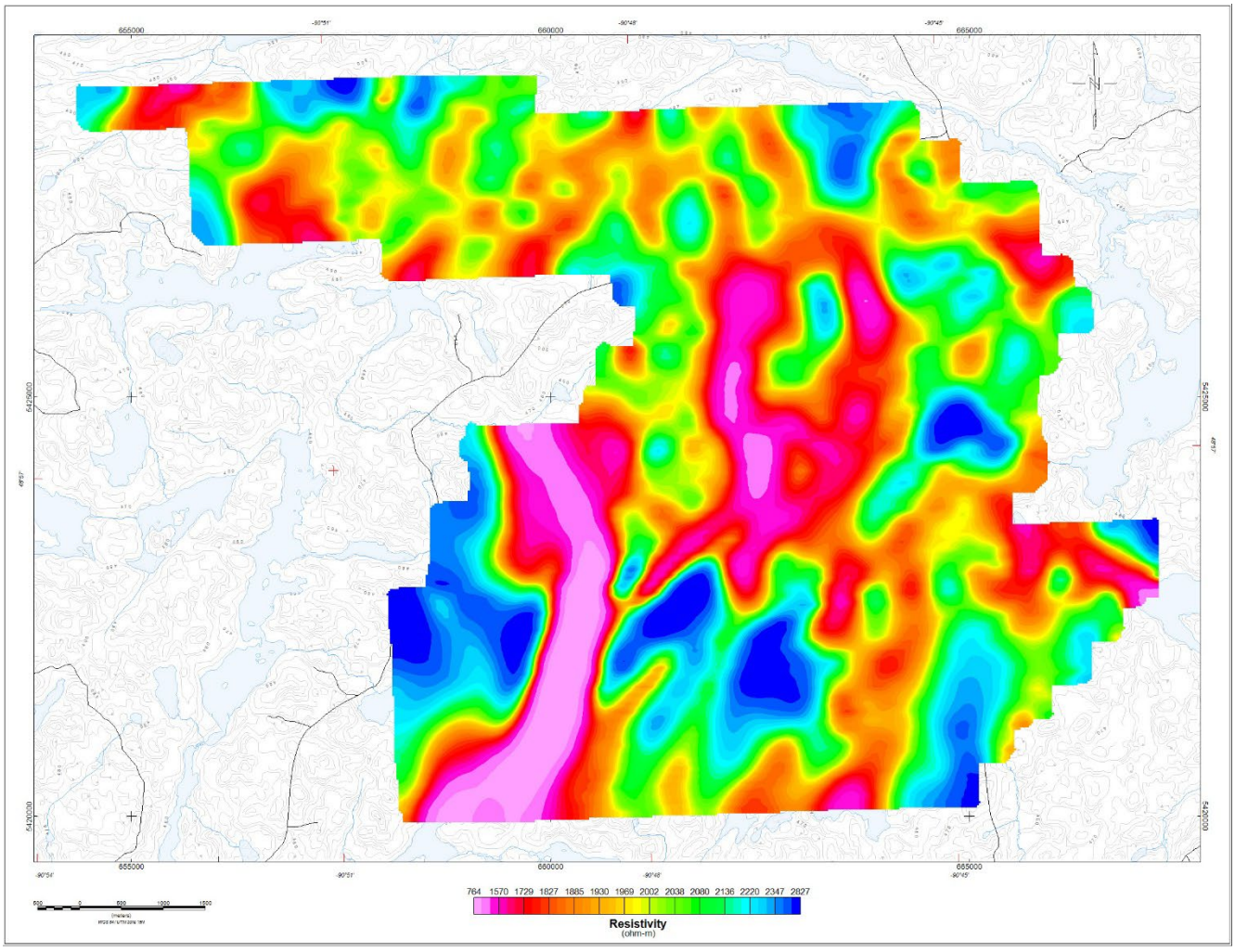
Resistivity Elevation at -200 m ASL



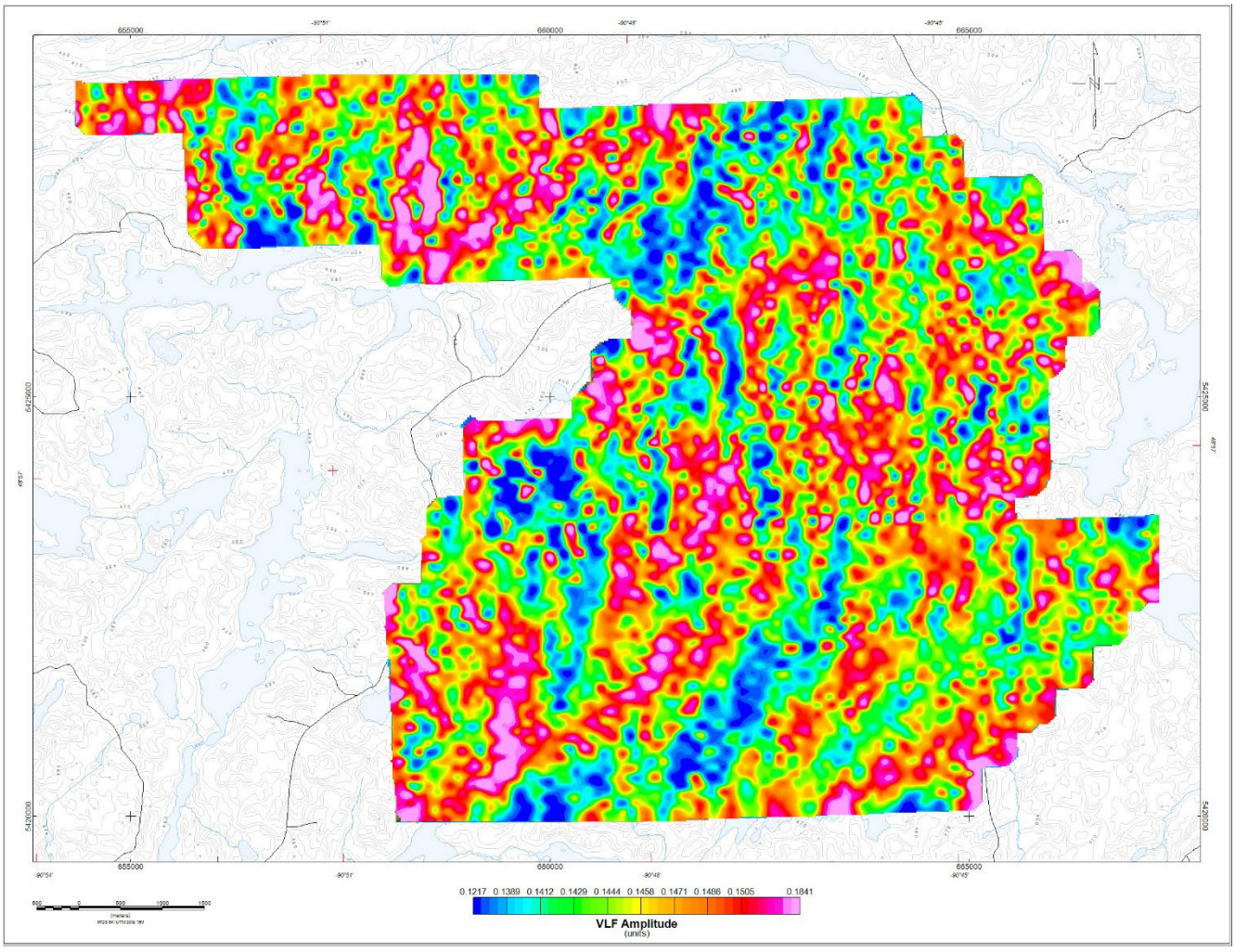
Resistivity Elevation at 0 m ASL



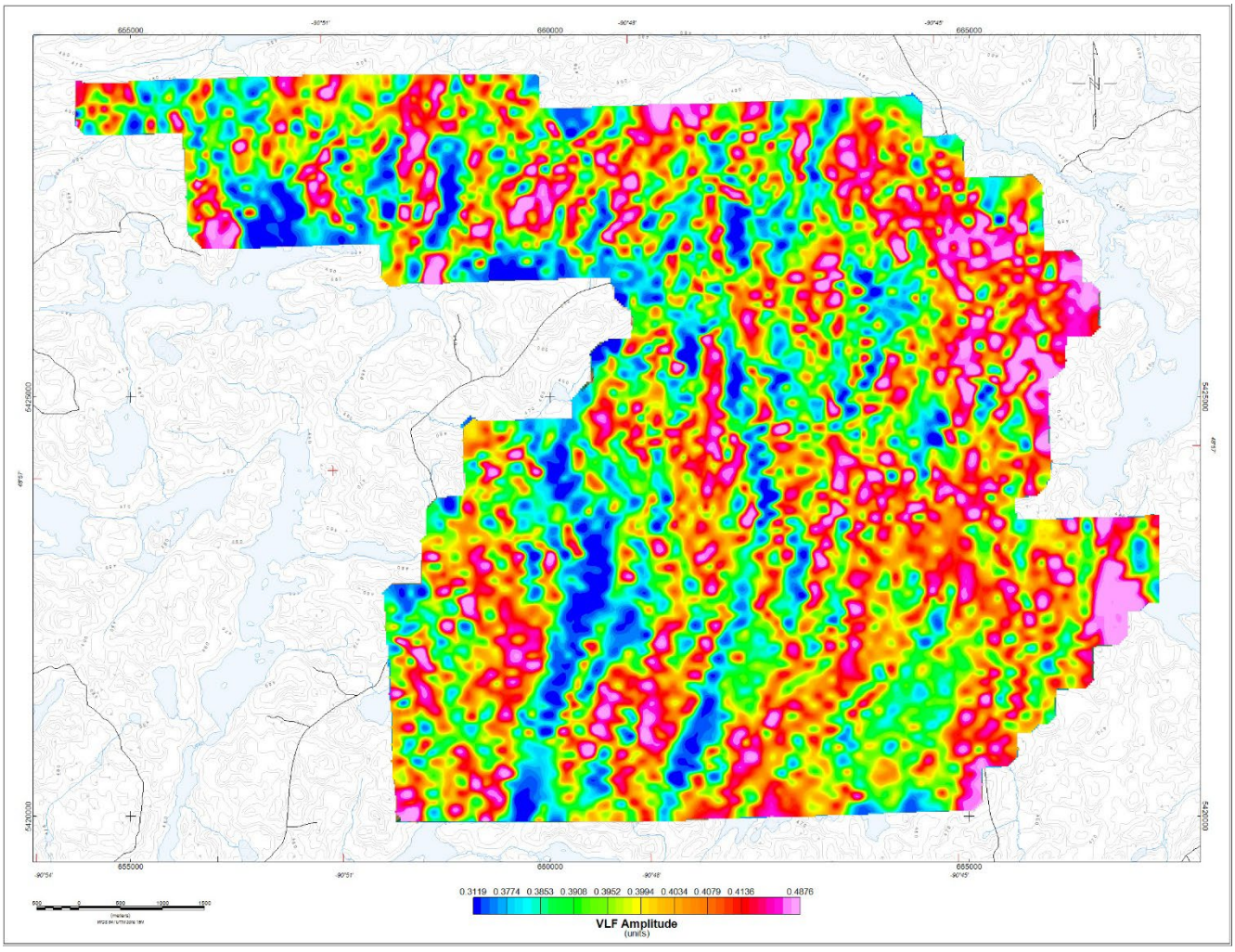
Resistivity Elevation at 200 m ASL



Resistivity Elevation at 400 m ASL



VLF Amplitude Map (21.40 kHz)



VLF Amplitude Map (24.00 kHz)

Appendix II: Wolf Ridge Property Claims and Flight Line

676000
680000
684000
5428000
5424000
5420000
Lac des Mille Lacs 2342
875954
875951
875952
715682
715692
715724
W-TB-13/07
875953
875946
703597
875948
875945
875947
875949
875944
875950
Wolf Ridge Claim Outline
WolfRidge Active Mineral Claims
Alienation
Withdrawal
Notice
Wolf Ridge Airborne Flight Lines
0
0.5
1
1.5
2 km
Scale 1:25,000
Author: B.Holbik
May 31st, 2024, 2024
CRS: EPSG 26915

Invoice_ID	Vendor	Date	Subtotal	HST/GST	Eligible Expenditure	Claim Block	Details
22058-01	Expert Geophysics	06/20/2022	$ 42,834.00	$ 5,568.42	$ 42,834.00	Wolfridge	50% Deposit
22058-02	Expert Geophysics	06/29/2022	$ 38,550.60	$ 5,011.58	$ 38,550.60	Wolfridge	25% deposit for mob and
22058-03	Expert Geophysics	08/04/2022	$ 4,283.40	$ 556.84	$ 4,283.40	Wolfridge	Five percent (5%) Final Products delivery
					$ -		
				Total	$ 85,668.00		
					734.00		Total Line KM's flown
					640.00		Total Elegible Line KM's flown
					$ 133.8563		Total Costs per Line KM

Claim Cell	number of	Work	Flight Line	Flight Line	Expenditure
703597	1	$ 400.00	2289.30	2.29	$ 307.00
715682	1	$ 400.00	2293.80	2.29	$ 308.00
715692	1	$ 400.00	1830.40	1.83	$ 246.00
715724	1	$ 400.00	2288.30	2.29	$ 307.00
875944	25	$ 10,000.00	57629.40	57.63	$ 7,715.00
875945	25	$ 10,000.00	59600.10	59.60	$ 7,978.00
875946	25	$ 10,000.00	56489.40	56.49	$ 7,562.00
875947	25	$ 10,000.00	57757.40	57.76	$ 7,732.00
875948	25	$ 10,000.00	60158.60	60.16	$ 8,053.00
875949	25	$ 10,000.00	58229.90	58.23	$ 7,795.00
875950	24	$ 9,600.00	56961.00	56.96	$ 7,625.00
875951	25	$ 10,000.00	59791.80	59.79	$ 8,004.00
875952	25	$ 10,000.00	59086.10	59.09	$ 7,910.00
875953	25	$ 10,000.00	57447.80	57.45	$ 7,690.00
875954	20	$ 8,000.00	48042.10	48.04	$ 6,431.00
	TOTALS	**109200**		**639.90**	**$ 85,663.00**