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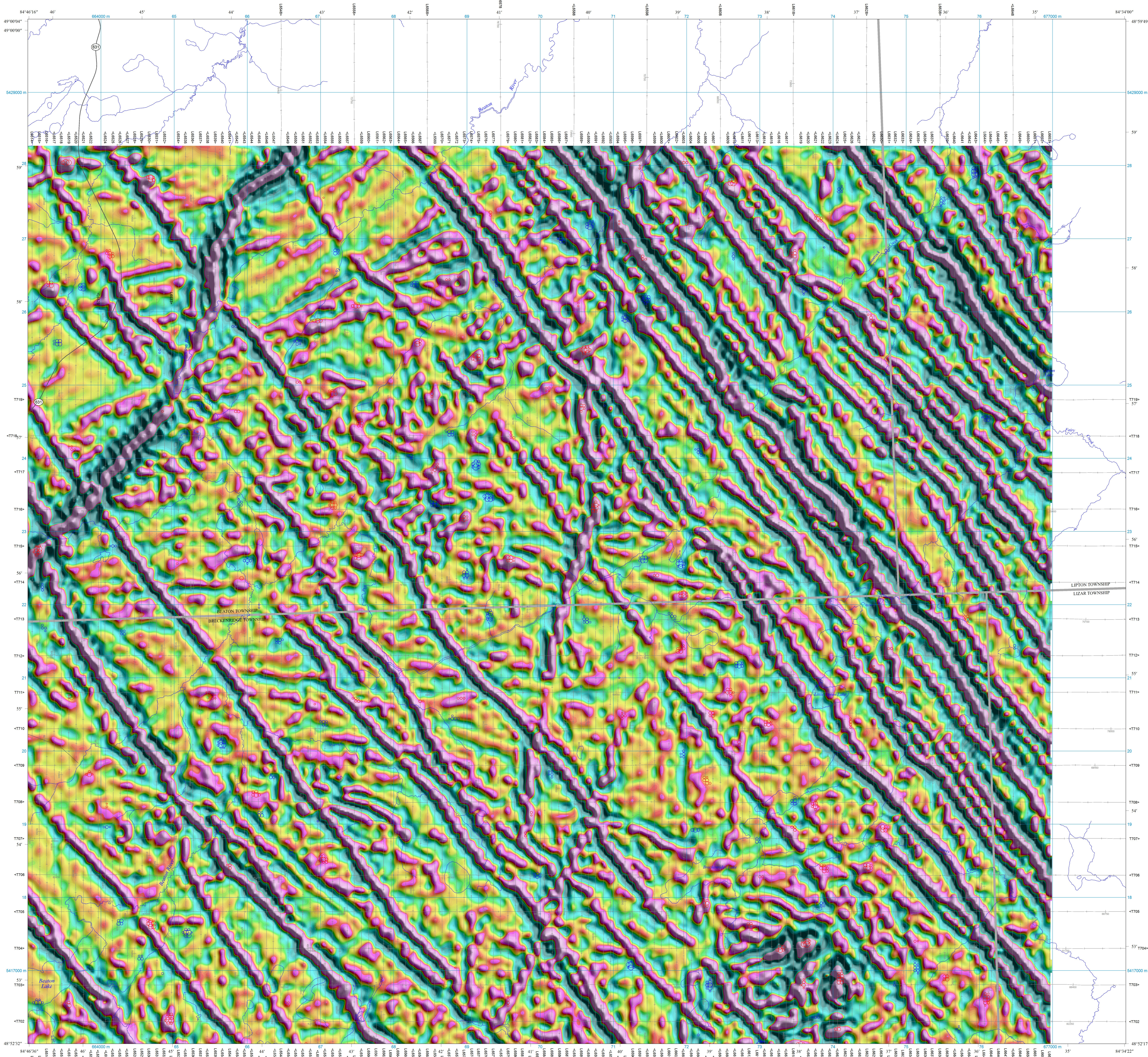
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Ontario Geological Survey 2021. Airborne magnetic and gravimetric surveys, shaded colour image of the second vertical derivative of the residual magnetic field and Keating correlation coefficients, Nameigos Lake area; Ontario Geological Survey, Map 60 492, scale 1:20 000.

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SURVEY PARAMETERS

AIRCRAFT
 Type: Cessna® 208B Grand Caravan®
 Registration: C-GSSJL

MAGNETOMETER
 Type: Geometrics Ltd. G-822A cesium split beam
 Sensitivity: 0.005 nT
 Noise level: 0.0005 nT
 Sample interval: 10 readings per second
 Sensor location: tail stinger
 Compensation: Sander Geophysics Ltd. AIRComp
 Data acquisition: SGDAS

AIRBORNE GRAVIMETER SYSTEM
 Type: Sander Geophysics Ltd. AIRGrav
 Initial sample interval: 128 readings per second
 Final sample interval: 2 readings per second
 Noise level: -0.2 mGal, with half sine wave resolution of 1.8 to 2 km

NAVIGATION SYSTEM
 GPS receiver: NovAtel® OEM7B
 GPS sample interval: 10 readings per second
 Laser altimeter: Riegl® LD60-114-HP
 Radar altimeter: Thomson-CSF ERT 530A
 Radar sample interval: 10 readings per second
 Barometric altimeter: Honeywell Senotek digital barometric pressure sensor
 Barometric sample interval: 10 readings per second
 Video flight-path camera: Datavise Video Systems™ E600
 Navigation acquisition: SGDAS

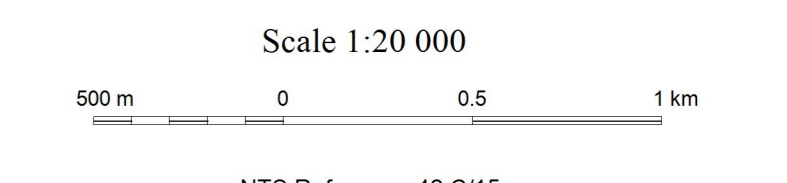
BASE STATION
 Type: Geometrics Ltd. G-822A cesium split beam
 Magnetometer sample interval: 10 readings per second
 GPS sample interval: 10 readings per second

SURVEY SPECIFICATIONS
 Survey dates: July 31 to October 6, 2015
 Nominal aircraft terrain clearance: 80 m
 Control-line spacing: 500 m
 Traverse-line direction: north-south
 Control-line direction: east-west

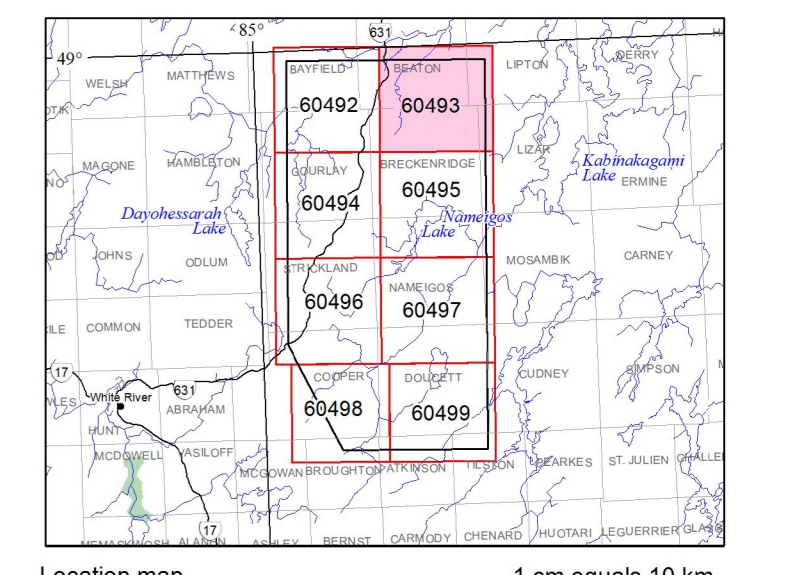
CO-ORDINATE SYSTEM
 Projection: Universal Transverse Mercator
 Datum: NAD83
 Central meridian: 87°W (UTM zone 18N)
 Central scale factor: 0.9998
 False easting: 500 000 m
 False northing: 0 m



Ontario Geological Survey
MAP 60 493
AIRBORNE MAGNETIC AND GRAVIMETRIC SURVEYS
 Shaded colour image of the second vertical derivative of the residual magnetic field and Keating correlation coefficients
NAMEIGOS LAKE AREA



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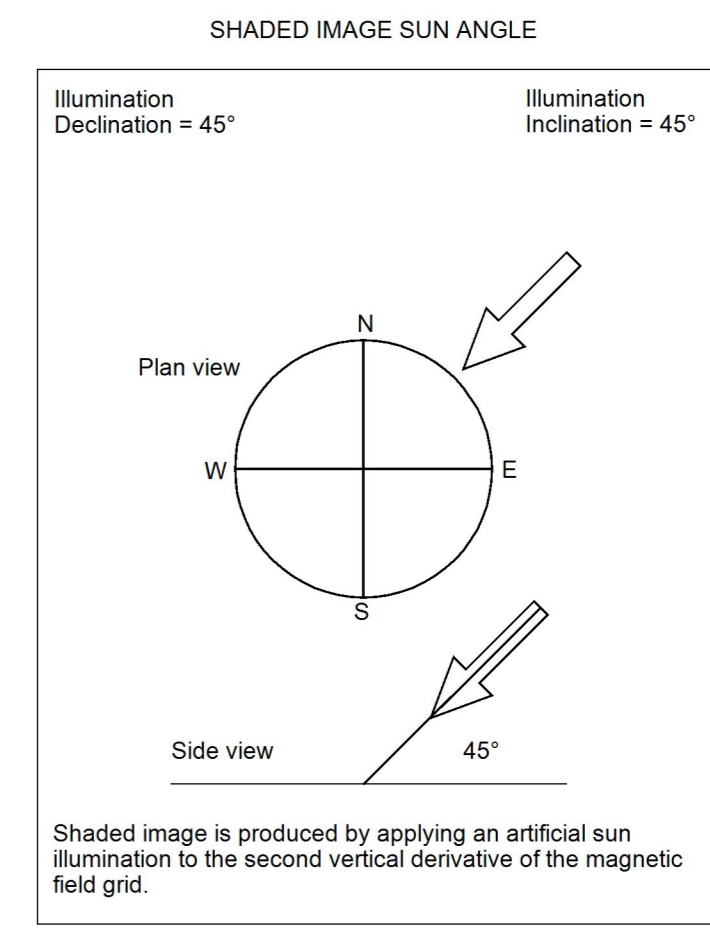


DESCRIPTIVE NOTES

INTRODUCTION
 The data comprising this map are derived from the results of an airborne magnetic and gravimetric survey carried out by Sander Geophysics Ltd. The survey was flown using a Cessna® 208B Grand Caravan® aircraft. The aircraft was equipped with a Geometrics Ltd. magnetic sensor, a Sander Geophysics Ltd. AIRGrav airborne gravity system, a GPS navigation system and a digital data acquisition system.

SECOND VERTICAL DERIVATIVE OF THE MAGNETIC FIELD
 The second vertical derivative of the magnetic field is the rate of change of the magnetic field in the vertical direction. Computation of the second vertical derivative removes long wavelength features of the magnetic field and significantly improves the resolution of closely spaced and superposed anomalies. The values for the second vertical derivative of the magnetic field were computed directly from the gridded gradient-enhanced residual magnetic intensity data using a fast Fourier transform.

The shaded relief parameters are:
 Illumination inclination: 045°
 Illumination declination: 045°

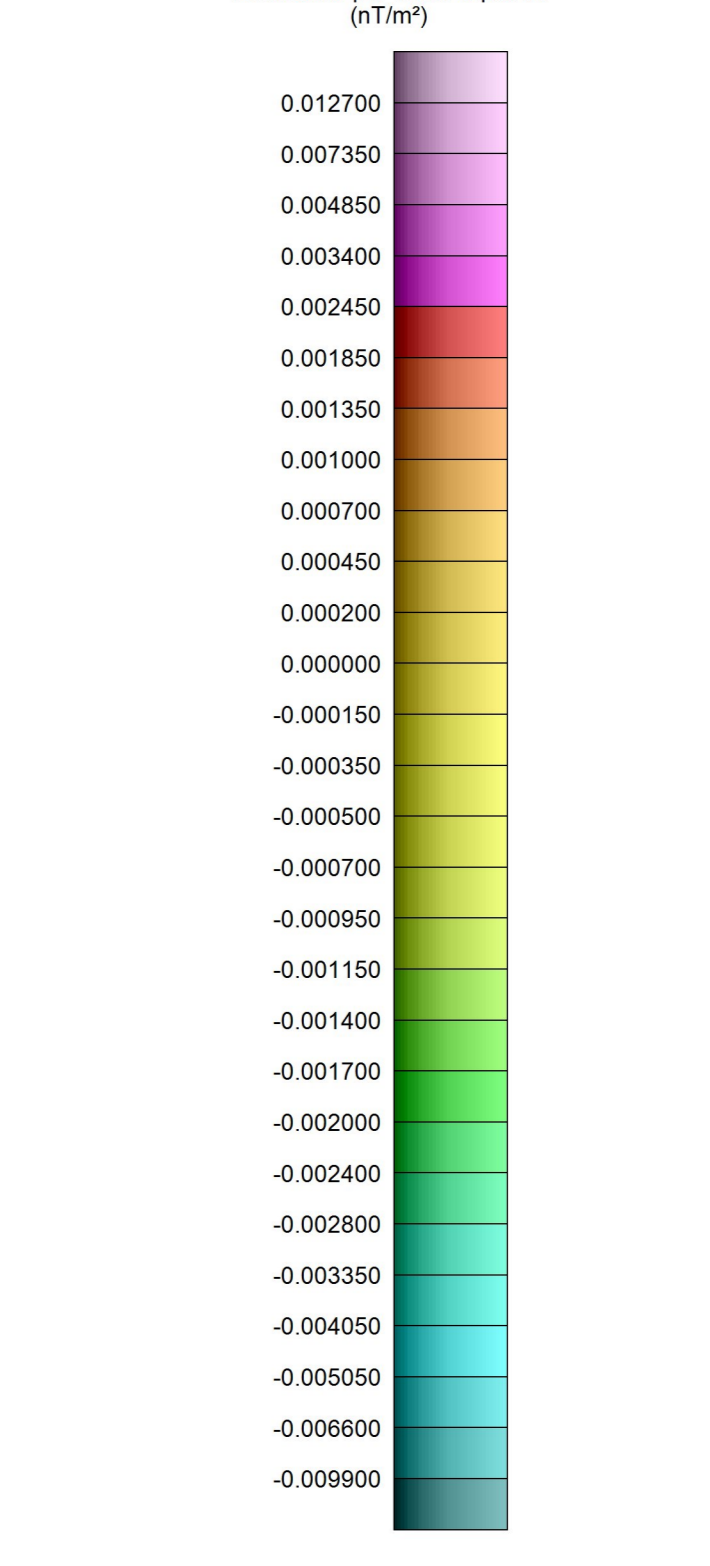


LEGEND

KEATING CORRELATION COEFFICIENTS

Positive correlation	Negative correlation

SECOND VERTICAL DERIVATIVE OF THE RESIDUAL MAGNETIC FIELD GRID



Possible kimberlite targets have been identified from the residual magnetic intensity data, based on the identification of roughly circular anomalies. This procedure was automated by using a known pattern-recognition technique (Keating 1995), which consists of computing, over a moving window, a first-order regression between a vertical cylinder model anomaly and the gridded magnetic data. Only the results where the absolute value of the correlation coefficient is above a threshold of 75% were retained. The results are depicted as circular symbols, scaled to reflect the correlation value. The most favourable targets are those that exhibit a cluster of high-amplitude solutions. Correlation coefficients with a negative value correspond to reversely magnetized sources. It is important to be aware that other magnetic sources may correlate well with the vertical cylinder model, whereas some kimberlite pipes of irregular geometry may not.

The cylinder model parameters are as follows:
 Cylinder diameter: 200 m
 Cylinder length: infinite
 Overburden thickness: 5.5 m (average)
 Magnetic inclination: 74.3° N
 Magnetic declination: 7.0° W
 Window size: 10 × 10 cells (400 m × 400 m)

SOURCES OF INFORMATION

Base map information derived from the Land Information Ontario Data Warehouse, Land Information Ontario, scale 1:50 000, with modifications by staff of the Ministry of Northern Development, Mines, Natural Resources and Forestry.

Magnetic declination, for centre of the map area, was approximately 7.43° W in 2021, and was calculated using the International Geomagnetic Reference Field (IGRF-13, version December 2019).

Keating, P. B.: 1995. A simple technique to identify magnetic anomalies due to kimberlite pipes. Exploration and Mining Geology, v. 4, no. 2, p. 121-125.

ACKNOWLEDGMENT

The geophysical data that comprise this survey were generously donated by the Nuclear Waste Management Organization (NWMO). The survey was flown for the NWMO under the original name of "Township of White River and Area".

CREDITS

Data acquisition and data compilation by Sander Geophysics Ltd., Ottawa, Ontario for Nuclear Waste Management Organization, Toronto, Ontario.

Data reprocessing and map production by Scott Hogg and Associates Ltd., Toronto, Ontario.

Contract management, base maps and map surrounds by the Ministry of Northern Development, Mines, Natural Resources and Forestry, Sudbury, Ontario.

Every possible effort has been made to ensure the accuracy of the information presented on this map; however, the Ministry of Northern Development, Mines, Natural Resources and Forestry does not assume liability for errors that may occur. Users should verify critical information.

Corresponding digital data for this survey are available from the following Ontario Geological Survey publication:
 Ontario Geological Survey 2021. Ontario airborne geophysical surveys, magnetic and gravimetric data, grid and profile data (ASCII and Geosoft® formats) and vector data, Nameigos Lake area. Ontario Geological Survey, Geophysical Data Set 1250.

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