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## N.T.S. 31C/11

# REPORT ON GROUND MAGNETOMETER SURVEY BLACK RIVER NORTH PROPERTY GRIMSTHORPE TOWNSHIP, ONTARIO

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For: Union Glory Gold Limited

August 11, 2016

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#### Summary

This report summarizes the results of a ground magnetometer survey on part of the Black River North Property in Grimsthorpe Township, Ontario. The survey was completed by property owners: Robert Dillman and James M. Chard in 2 days on July 28, 2016 and July 29, 2016.

Due to technical issues, the magnetic survey only covered claim 3006613. The survey detected several prominent magnetic responses in the south and southeast sections of the claim. The magnetic features occur close to VLF conductors and gold occurrences. The magnetic anomalies are believed to be caused by magnetite-bearing metasedimentary schists belonging to the Grimsthorpe Group.

#### Location, Property Ownership, Access

The Black River North Property is located approximately 185 kilometres northeast of Toronto, Ontario, Canada (Figure 1). The property is situated in Grimsthorpe Township in Hastings County (Figure 2).

The property sits within the Southern Ontario Mining Division. The property consists of two contiguous unpatented mining claims covering a total area of 80 hectares (Figure 3). The logistics of the mining claims are summarized in Table 1. Titles to the mining claims comprising the Black River North property are equally held by:

Robert J. Dillman of Mount Brydges, Ontario, James M. Chard of Cordova Mines, Ontario

The Black River North Property is currently under option to Union Glory Gold Limited.

The property has good seasonal road access via the Lingham Lake Forest Access Road which crosses through the property. The Lingham Lake Access Road intersects with the Skootamatta Forest Access Road 1.5 km north of the property. The Skootamatta Forest Access Road is also a seasonal road. The Skootamatta Forest Access Road extends from Wadsworth Lake located on the Weslemkoon Road to the town of Northbrook on Provincial Highway 41.







## Table 1. Claim Logistics

## Black River North Property Grimsthorpe Twp., Ontario

Claim	Location	Number	Size	Assessment	Amount	Assessment
		of Units	Hectares	Due Date	Due	Bank
3006613	Lot's 20 & 21, Conc. XIV S.1/2	2 units	40 ha	08/ 22/ 2016	\$800	\$284
4209865	Lot's 19 & 20, Conc. XV N.1/2	2 units	40 ha	04/ 07/ 2017	\$800	\$0

Title:

50% Robert J. Dillman 8901 Reily Drive Mount Brydges, Ontario N0L 1W0

50% James M. Chard

3495 Country Road 48 Cordova Mines, Ontario K0L 1Z0

#### Land Status and Topography

The entire Black River North Property is situated on lands designated as Crown Land by the Ministry of Northern Development, Mines and Forestry (Figure 3). The surface rights of the south half of lot 16, concession XIV, is designated as Surface Rights Only (S.R.O.) and title is held by the Queen of England.

The Black River North Property is at a mean elevation of 300 metres above sea level. The property has gentle topography with elevations ranging approximately 25 metres. The central region of the property is crossed by the Black River. The river is generally rocky and fast flowing and drains towards the southeast. The east side of the river is bounded by northwest-southeast orientated ridges of outcrop. The land west of the river is flat and partially covered by swampy ground. Outcrops less frequent and mostly occur in areas of higher relief.

Most of the property is covered by mixed forest dominated by spruce, pine, maple and poplar. Areas east of the river have been partially clear-cut and numerous new skidder trails have been constructed during recent logging activities.

#### **Regional and Local Geology**

The Black River North Property is underlain by Proterozoic geological units belonging to the Grimsthorpe Domain of the Central Metasedimentary Belt of the Grenville Structural Provincial (Figure 4).

The Grimsthorpe Domain is dominated by mafic metavolcanic and volcaniclastic metasedimentary rocks older than 1270 Ma (Easton 1992). The Grimsthorpe Domain includes:

- the younger Grimsthorpe Group, consisting mainly of metavolcanic-claste metasedimentary rocks and minor metavolcanic flows of the Tudor Formation, minimum age 1279 +/13 Ma (Easton 2004).

- the older Canniff Complex dominated by massive and pillowed tholeiitic metabasalts, metagabbro and metaperidotite.

The property is situated over the unconformity between Grimsthorpe Group and the Canniff Complex (Figure 5). The unconformity is juxtaposed with the Black River. Outcrops east of the





river consist of metabasalts and metagabbro of the Canniff Complex. Outcrops west of the river consist of northwest trending schistose metasedimentary units and metavolcanic flows of the Grimsthorpe Group.

The Grimsthorpe Domain, notably along the Grimsthorpe-Canniff unconformity has been subjected to a variety of intrusive rocks including:

- northwest trending felsic aplite dikes
- east-west striking gabbroic dikes

The Grimsthorpe Domain in the area occupied by the property is sandwiched to the southwest by gabbro and diorite rocks of the Lingham Lake complex and to the northeast, by tonalite and granodiorite rocks of the Weslemkoon tonalite.

The Grimsthorpe Domain in the project area has been subjected to amphibolite-biotite facies metamorphism. Rock units generally trend northwest-southeast and dip vertical to steeply southwest. Metasedimentary units proximal to the Grimsthorpe-Canniff unconformity are variably sheared by northwest trending structures but are not extensively carbonated like other shear zones in the region. The entire sequence is crossed by a series of southwest to east-west orientated strike-slip faults. The younger crossing faults have offset the Grimsthorpe-Canniff unconformity with left-handed displacement.

#### **Economic Mineralization**

A series of gold occurrences have been found in the metasedimentary unit situated west of the Grimsthorpe-Canniff unconformity (Figure 5). The gold occurrences found on the property are part of a series of gold occurrences found along a 5 km section of the unconformity. Along this trend, gold occurs in a variety of settings including:

- deformed, sugary textured quartz veins mineralized with pyrite and arsenopyrite
- bluish-grey quartz stringers mineralized with pyrite and arsenopyrite
- silicified and breccia zones mineralized with pyrite and arsenopyrite.
- white crystalline quartz veins mineralized with pyrite, chlorite and carbonate.

Minerals indicating the presence of potential diamond-bearing rocks have been detected in till and stream sediment samples collected on the property. The minerals include chrome diopside indicative of a kimberlite source and Zn-chromite grains potentially representing Wawa-style lamprophyre. Diamond-bearing rocks have been recently reported to have been found several kilometres east of the property.

#### **History of Exploration**

In 1941 and 1942, the geology of Grimsthorpe Township and surrounding area was mapped by V. B. Meen on behalf of the Ontario Department of Mines. The area was re-mapped in 1990 by R. M. Easton of the Ontario Geological Survey. Prior to 1991, there is no record of mineral exploration in the area covered by the Black River North Property.

In 1991, gold was discovered along the Black River by the author. Between 1991 and 2003, the author and Jim Chard have completed various low-cost surveys to explore the extent of gold mineralization on the property and fulfil the rigorous duties of assessment work required to maintain claims. The surveys include: - prospecting, geological mapping, manual trenching, MMI and "B" horizon soil surveys, heavy mineral sampling, a ground radiometric survey, magnetometer and VLF surveys.

In March 2010, a radiometric survey was completed over the property by Jim Chard. The survey outlined discrete radioactive highs in the vicinity to the gold occurrences on the property. The weak anomalies are believed to be caused by potassic alteration occurring in the vicinity of the gold occurrences.

In 2012, property owners undertook a ground VLF-EM survey over the property. The survey detected several conductive features attributed to sulphide mineralization in metasedimentary schists. Low water in the Black River at the time of the survey lead to the discovery of a new gold occurrence in sheared metasedimentary schists situated close to the unconformity between the Grimsthorpe Group and Caniff Complex.

#### **Survey Dates and Personnel**

The ground VLF Electromagnetic (EM) survey over the Black River North Property was completed in 2 days during August 7, 2012 to August 11, 2012. The survey was performed by property owners: James M. Chard of Cordova Mines, Ontario and assisted by Robert Dillman of Mount Brydges, Ontario.

#### **Survey Logistics**

The ground magnetometer survey was completed on a GPS controlled grid using the same coordinates used for the radiometric survey in 2010 and the VLF-EM survey in 2012. The grid consists o flagged lines spaced 100 metres apart with stations flagged at 25 metre intervals along the survey lines. Magnetometer readings were recorded at 12.5 metre intervals along each survey line. A Compass and GPS was used to navigate and calculate distances between readings. A Garmin GPS model GPSmap 60Cx was used for the survey. Appendix I. lists the GPS coordinates for each of the survey lines. A total of 4.8 km's of lines were surveyed.

The magnetometer survey was completed using a Gem Systems proton magnetometer/ gradiometer model GMS-19T. The specifications of the instrument are appended to this report.

Magnetic readings recorded during the survey are plotted on maps appended to this report. The maps are at a scale of 1 : 2,500. Readings were corrected for diurnal variations periodically monitored at a base station during the survey. The base station is located on the Lingham Lake Access Road at UTM: 303976mE, 4967075mN.

#### **Survey Results**

The magnetic susceptibility of the rocks within the survey area range from 54,998 nT to 60,714 nT. Two areas with magnetic intensities greater than 60,000 nT were detected in the south and southeast sections of the claim. The south anomaly extends for approximately 100 metres trending north between line 5+00S at 2+75E and 4+00S at 3+50E. The southeast anomaly is formed by several strong magnetic lobes trending northwest between line 3+00S at 4+50E to 6+25E and line 5+00S at 5+85E. The magnetic anomalies appear to be associated with metasedimentary rocks belonging to the Grimsthorpe Group.

#### **Discussion of Results**

The magnetic anomalies in the south and southeast section of the claim are coincident with conductive features found by the VLF survey completed in 2012. Prospecting on the claim after the recent magnetic survey resulted in the discovery of fine grained massive magnetite mineralization in rusty metasedimentary schists. The mineralization outcrops on line 3+00S at 5+75E. The mineralization occurs in the central section of the southeast magnetic anomaly and

very close to VLF-EM conductor BRN-3. The mineralization is likely the cause of the geophysical anomalies. An assay of a sample of the mineralization is pending.

The magnetic anomaly situated west of the road in the south part of the claim is close to conductor BRN-1. Very little work has been done in this area.

The gold occurrences on claim 3006613 are situated on the margin of the magnetic anomaly in the southeast corner of the claim. The spatial relationship with local magnetics suggests the gold occurrences are related. Prospecting after the recent magnetometer survey revealed the area between the two gold occurrences is covered by a gravel deposit and no outcrop could be found.

#### **Conclusions and Recommendations**

A compilation of magnetic and electromagnetic geophysical data reveals a spatial relationship between the Black River North and Christie gold occurrences. Further work is recommended to explore the gold occurrences and to explore the magnetic features as potential base metal targets. Trenching is recommended to expand the exposures of the gold occurrences. Pending assay results, trenching is also recommended to exposure the magnetite mineralization discovered on line 3+00S, 5+75E.

Respectfully Submitted,

24 S/mm

Robert J. Dillman P.Geo., B.Sc. August 11, 2016

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#### Robert J. Dillman P.Geo, B.Sc. ARJADEE PROSPECTING 8901 Reily Drive, Mount Brydges, Ontario, Canada, N0L1W0 Phone/ fax (519) 264-9278

#### **CERIFICATE of AUTHOR**

I, Robert J. Dillman, Professional Geologist, do certify that:

1. I am the **President** and the holder of a **Certificate of Authorization** for:

ARJADEE PROSPECTING 8901 Reily Drive Mount Brydges, Ontario, Canada N0L1W0

- 2. I graduated in 1991 with a **Bachelor of Science Degree** in **Geology** at the **University of Western Ontario.**
- 3. I am an active member of:

Association of Professional Geoscientists of Ontario, APGO Prospectors and Developers Association of Canada, PDAC

- 4. I have been a **licensed Prospector in Ontario** since 1985.
- 5. I have worked continuously as a **Professional Geologist** for 25 years.
- 6. Unless stated otherwise, **I am responsible** for the preparation of all sections of the Assessment Report titled:

#### REPORT ON GROUND MAGNETOMETER SURVEY BLACK RIVER NORTH PROPERTY GRIMSTHORPE TOWNSHIP, ONTARIO

dated, August 11, 2016

7. I am not aware of any material fact or material change with respect to the subject matter of the Assessment Report that is not contained in the Assessment Report and its omission to disclose makes the Assessment Report misleading.

#### Dated this 11th day of August, 2016

Robert James Dillman Ariadee Prospecting P.Geo

PROTEINIO MEMBER 0530 0530

## Appendex 1.

## UTM Coordinates for Survey Lines

### NAD 87 Zone 17

Line	UTM West	UTM East
0+00	303517mE, 4967223mN to	304302mE, 4967496mN
1+00	303550mE, 4967128mN to	304334mE, 4967401mN
2+00	303584mE, 4967035mN to	304367mE, 4967307mN
3+00	303617mE, 4966940mN to	304402mE, 4967214mN
4+00	303650mE, 4966846mN to	304384mE, 4967096mN
5+00	303684mE, 4966752mN to	304407mE, 4967014Mn

#### **APPENDIX F: GSM-19T MAG / GRAD SPECIFICATIONS**

Sensitivity	0.15 nT @ 1Hz / 0.05 nT @ 41Iz
Resolution:	0.01nT (gamma), magnetic field and gradient.
Accuracy:	+/- 0.2 nT @ 1 Hz
Range:	20,000 to 120,000nT.
Gradient Tolerance:	Over 7,000nT/m
Operating Interval:	3 seconds minimum, faster optional. Readings initiated from keyboard,
	external trigger, or carriage return via RS-232C.
Input / Output:	6 pin weatherproof connector, RS-232C, and (optional) analog output.
Power Requirements:	12V, 200mA peak (during polarization), 30mA standby. 300mA peak in
	gradiometer mode.
Power Source:	Internal 12V, 2.6Ah sealed lead-acid battery standard, others optional.
	An External 12V power source can also be used.
Battery Charger:	Input: 110 VAC, 60Hz. Optional 110 / 220 VAC, 50 / 60Hz.
	Output: dual level charging.
Operating Ranges:	Temperature: - 40°C to +50°C.
	Battery Voltage: 10.0V minimum to 15V maximum.
	Humidity: up to 90% relative, non condensing.
Storage Temperature:	-50°C to +50°C.
Display:	LCD: 240 X 64 pixels, OR 8 X 30 characters. Built in heater for operation
	below -20°C.
Dimensions:	Console: 223 x 69 x 240mm.
	Sensor Staff: 4 x 450mm sections.
	Sensor: 170 x 71mm dia.
	Weight: console 2.1kg, sensor and staff assembly 2.2 kg.
VLF	
Frequency Range:	15 - 30.0 kHz
Parameters Measured:	2 relative components of horizontal field. Absolute amplitude of total field.
Resolution	0.1%.
Number of Stations:	Up to 3 at a time.
Storage:	frequency in- and out-of-phase vertical and both horizontal components for
	each selected station.
Terrain Slope Range:	$0^{\circ}$ - 90° (entered manually).
Sensor Dimensions:	140 x 150 x 90 mm. (5.5 x 6 x 3 inches).
Sensor Weight:	1.0 kg (2.2 lb.).

GEM Systems, Inc. Advanced Magnetometers For more technical information, visit www.gemsys.ca





**GSM 19T Magnetometer** 







7+00E 8+00E 1000 304302mE 4967496mN 304334mE 4967401mN 下 1 Х outcrop 304367mE 4967307mN pit Χ **VLF-EM Conductor** Au gold arsenopyrite asp 304402mE pyrite ру 4967214mN magnetite mag **Contour Interval** 1500 nT 304384mE 4967096mN 1000 nT **INSTRUMENT: GEM SYSTEMS GSM-19T**  $|\Lambda|$ 304407mE 4967014mN 4967000mN **GROUND MAGNETOMETER SURVEY** TOTAL MAGNETICS: CONTOURED DATA **BLACK RIVER NORTH PROPERTY GRIMSTHORPE TWP., ONTARIO** UNION GLORY GOLD LIMITED DATE: JULY, 2016 SURVEY BY: RJD, JMC Scale: 1: 2500 DRAWN BY: RJD