

We are committed to providing [accessible customer service](#).

If you need accessible formats or communications supports, please [contact us](#).

Nous tenons à améliorer [l'accessibilité des services à la clientèle](#).

Si vous avez besoin de formats accessibles ou d'aide à la communication, veuillez [nous contacter](#).



---

# **Assessment Report Based on the 2021 Line Cutting and Surface Induced Polarization Survey**

## **Buried Treasure Project Doon and Yarrow Townships**

---

Steven Gregory, P. Geo

Area Geologist

KGHM International Ltd.

Exploration Services

February 2022

## Summary

This report describes line cutting and surface 3D induced polarization survey work programs completed in 2021 in Doon and Yarrow Townships at the Buried Treasure Property of FNX Mining Company Inc. (FNX), a subsidiary of KGHM International Ltd (KGHM). The geophysical survey was intended to identify the presence of disseminated sulfides (pyrite, arsenopyrite, etc.) that are often associated with lode gold deposits in greenstone terranes. It was also designed to identify the location and orientation of the main gold-hosting structure (the Cadillac Larder Lake Deformation Zone) as it passes through the property.

The line cutting portion of the program was completed in advance of the IP survey with the exception of the northeast corner of the property which was delayed due to ongoing logging activities. The line cutters were thus on the property working between Aug 3<sup>rd</sup> and 25<sup>th</sup> and from Oct 13<sup>th</sup> to Oct 18<sup>th</sup>. A total of 46.1km of lines were cut during these periods.

The Abitibi Geophysics surface induced polarization survey team mobilized to site on Sept 23<sup>rd</sup> and performed the survey between Sept 24<sup>th</sup> and Oct 28<sup>th</sup>. A total of 41.96km of lines were surveyed during this period.

All work was completed using handheld GPS in NAD83/ UTM Grid 17N.

The total expenditures for the work reported herein were CAD\$245,770.52.

## Table of Contents

Summary.....	1
List of Figures .....	3
List of Tables.....	3
Introduction.....	4
Property Location and Access.....	4
Claim Status.....	5
Indigenous Community Engagement .....	7
Regional Geology .....	8
Property Geology .....	12
Exploration History.....	14
Line-cutting and IP Survey.....	15
Line-cutting.....	15
Induced Polarization Geophysical Program .....	16
Introduction.....	16
Methodology .....	17
Results.....	19
Recommendations for Future Work .....	21
Expenditures.....	22
References .....	23
Statement of Qualification .....	25
Appendix A: Abitibi Geophysics Logistics Report.....	26
Appendix B: Receipts and Invoices.....	27

## List of Figures

Figure 1: Buried Treasure Property Location and Access .....	5
Figure 2: Buried Treasure Claims .....	7
Figure 3: Simplified Geology of the Abitibi Greenstone Belt (Jackson and Fyon, 1991). .....	9
Figure 4: Regional Geology and Structure of the Southern Abitibi (Ispolatov, V. et al, 2005).....	10
Figure 5: Distribution of Ore Deposits in the Southern Abitibi (Dubé and Gosselin, 2007).....	12
Figure 6: Regional and Property Scale geology.....	13
Figure 7: Line cutting plan and logging operations. ....	16

## List of Tables

Table 1: Summary of Individual Claim Units .....	6
Table 2: Buried Treasure Property 2021 Expenditure Summary .....	22

## Introduction

The Buried Treasure Property consists of 29 contiguous unpatented mining claims owned by FNX Mining Company Inc. (FNX), a subsidiary of KGHM International Ltd (KGHM).

In 2021, KGHM completed a cut grid and an induced polarization survey on the property. The line cutters were working on the property between Aug 3<sup>rd</sup> and Aug 25<sup>th</sup> and from Oct 13<sup>th</sup> to Oct 18<sup>th</sup>. A total of 46.1km of lines were cut.

The Abitibi Geophysics surface induced polarization survey team mobilized to site on Sept 23<sup>rd</sup> and performed the survey between Sept 24<sup>th</sup> and Oct 28<sup>th</sup>. A total of 41.96km of lines were surveyed during this period.

The objective of the induced polarization survey was to help define the Cadillac Larder Lake Break, which crosses the property, to estimate the thickness of sedimentary cover rocks, and to identify areas of anomalous resistivity and chargeability. The interpretation of the results of the geophysical survey has identified several targets for follow-up drill programs.

The Exploration Plan number for this work is PL-21-000043.

## Property Location and Access

The Buried Treasure Project area straddles the possible western extension of the Cadillac-Larder Lake Deformation Zone (CLLDZ) of the Abitibi greenstone belt. This structure is spatially related to many world-class gold deposits, including the Young Davidson Mine owned and operated by Alamos Gold Inc. and located 12 km east of the Buried Treasure Project area (Figure 1). The project area consists of 15 multi-cell claims and 14 boundary cell claims located in Doon and Yarrow townships, Larder Lake mining division.

The south side of the property is truck accessible by traveling southwest from the town of Kirkland Lake on highway ON-66 for approximately 60 kilometers, then on

the gravel Asbestos Mine Rd for another 12 kilometers. See Figure 1 for the property location and access.

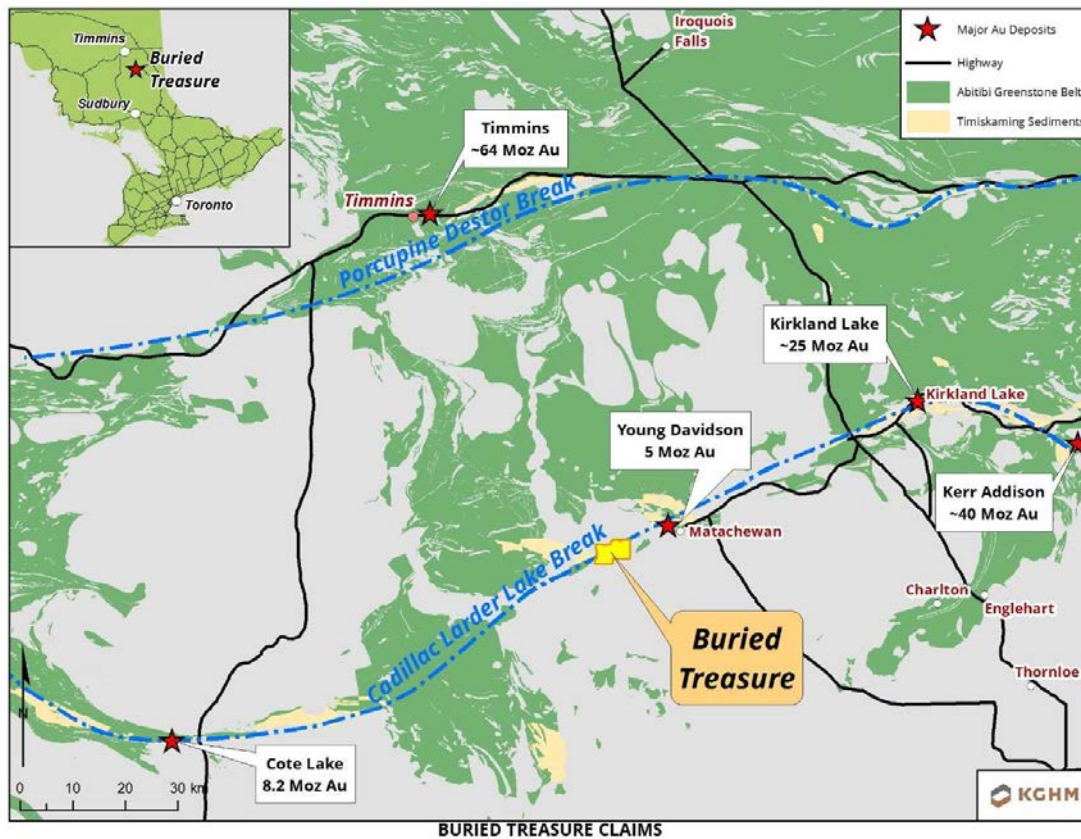


Figure 1: Buried Treasure Property Location and Access

## Claim Status

Claims in the project area were initially staked in early 2014 under the name Hidden Treasure. Additional claims were added in 2015 under the Buried Treasure banner and effectively doubled the size of the property package. KGHM dropped the Buried Treasure/Hidden Treasure claims in Spring 2017. However, they were re-staked in summer 2017 under the single name of Buried Treasure.

The Buried Treasure claims were in a “hold-special circumstances” after KGHM submitted an “Exclusion of Time” application to the Ministry of Energy, Northern Development and Mines (MENDM) in June. The claims were reverted to good

standing status by the MENDM on March 10<sup>th</sup>, 2021. This pushed the due date for assessment work submittal for these claims to March 10<sup>th</sup>, 2022.

The Buried Treasure claims cover an area of 9,172 hectares (Table 1). All mining claims in the Buried Treasure claim group are 100% owned by KGHM. A summary of these claims is shown in Table 1. For a layout of the Buried Treasure claims, see Figure 2.

*Table 1: Summary of Individual Claim Units*

Tenure Number	Tenure Type	Area (hectares)	Tenure Number	Tenure Type	Area (hectares)
100821	Boundary Cell	1.6	524637	Multi-Cell Claim	129.8
116531	Boundary Cell	1.5	524639	Multi-Cell Claim	129.8
144045	Boundary Cell	1.2	524640	Multi-Cell Claim	129.8
157444	Boundary Cell	15.6	524641	Multi-Cell Claim	129.7
157445	Boundary Cell	20.3	524642	Multi-Cell Claim	173.0
161431	Boundary Cell	9.7	524643	Multi-Cell Claim	173.0
212867	Boundary Cell	1.4	524644	Multi-Cell Claim	173.0
221589	Boundary Cell	1.3	524645	Multi-Cell Claim	129.8
229642	Boundary Cell	15.5	524646	Multi-Cell Claim	129.8
257560	Boundary Cell	1.4	524647	Multi-Cell Claim	173.1
262045	Boundary Cell	12.0	524648	Multi-Cell Claim	129.8
296201	Boundary Cell	15.6	524649	Multi-Cell Claim	129.8
327484	Boundary Cell	0.2	524650	Multi-Cell Claim	194.7
339951	Boundary Cell	15.5	524651	Multi-Cell Claim	151.5
			524652	Multi-Cell Claim	129.8
<b>Total Area</b>	(hectares)	2319.1			





Discussions with Temagami First Nation were initiated in May 2018, and resulted in the signing of an Exploration Agreement in October 2019. Discussions with Matachewan First Nation were initiated in May 2018, and resulted in the signing of a Memorandum of Understanding (MOU) with KGHM in January 2020. KGHM has maintained positive relations with the First Nation communities throughout the planning and implementation process for the line cutting and IP geophysical survey program in 2021. Much of the communication between the parties has been via numerous emails, video calls and telephone calls, and lesser in-person meetings at the Project site and at off site locations.

## Regional Geology

The KGHM claim group near Matachewan, Ontario is situated within the southern Abitibi greenstone belt of the Superior Province. The Abitibi Subprovince is an 800 by 300 km Archaean age greenstone belt located along the southern margin of the Superior Province. It is dominated by supracrustals and granitoid rocks having ages between 2.75 to 2.67 Ga. The Abitibi is unique among greenstone belts in that it has a high ratio of supracrustal to intrusive rocks, the largest greenstone belt in the world, has a generally low metamorphic grade, and has a long history of base and precious metal mining (Jackson and Fyon, 1991).

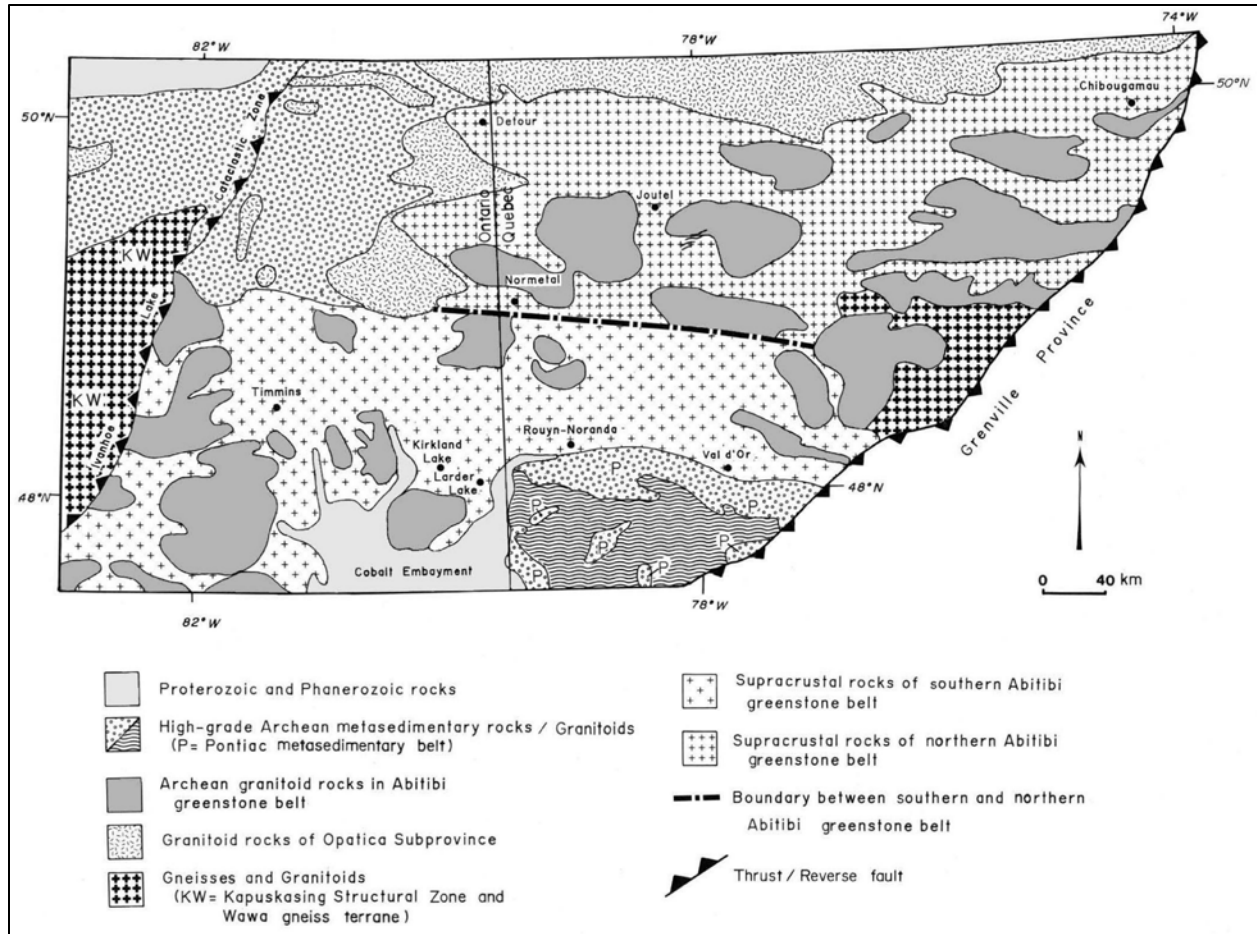


Figure 3: Simplified Geology of the Abitibi Greenstone Belt (Jackson and Fyon, 1991).

The southern Abitibi greenstone belt is primarily composed of metavolcanic and metasedimentary units, and synvolcanic peridotitic to granodioritic intrusions formed between 2.75 to 2.70 Ga. From 2.70 to 2.68 Ga large volumes of foliated tonalite-granodiorite batholiths were emplaced, followed by more massive granodiorite, granite, feldspar porphyry and syenite bodies (Jackson and Fyon, 1991). These rocks are unconformably overlain by belts of clastic sedimentary and volcanic rocks (Timiskaming assemblage) formed during syn- to late-orogenic extension at around 2.68 Ga; during this period the major “breaks” (ie. the Cadillac-Larder Lake Deformation Zone and the Porcupine-Destor Deformation Zone) were formed as deep-seated listric faults. By 2.67 Ga these faults were reactivated as thick-skinned thrusts; the mineral deposits forming proximal to the large breaks were preserved



in the footwall, while the hanging walls provided material filling the Timiskaming basins. From 2.65 Ga onwards, continued N-S shortening and thrusting degenerated to strike-slip deformation, resulting in lateral displacement of deposits having approximately ~10-100 km net offsets (Bleeker, W., 2012). Metamorphic grade within the supracrustal rocks is generally sub-greenschist to greenschist facies, and rises to amphibolite facies near some intrusions (Jackson and Fyon, 1991). See Figure 4 below for a geological and structural summary of the southern Abitibi region.

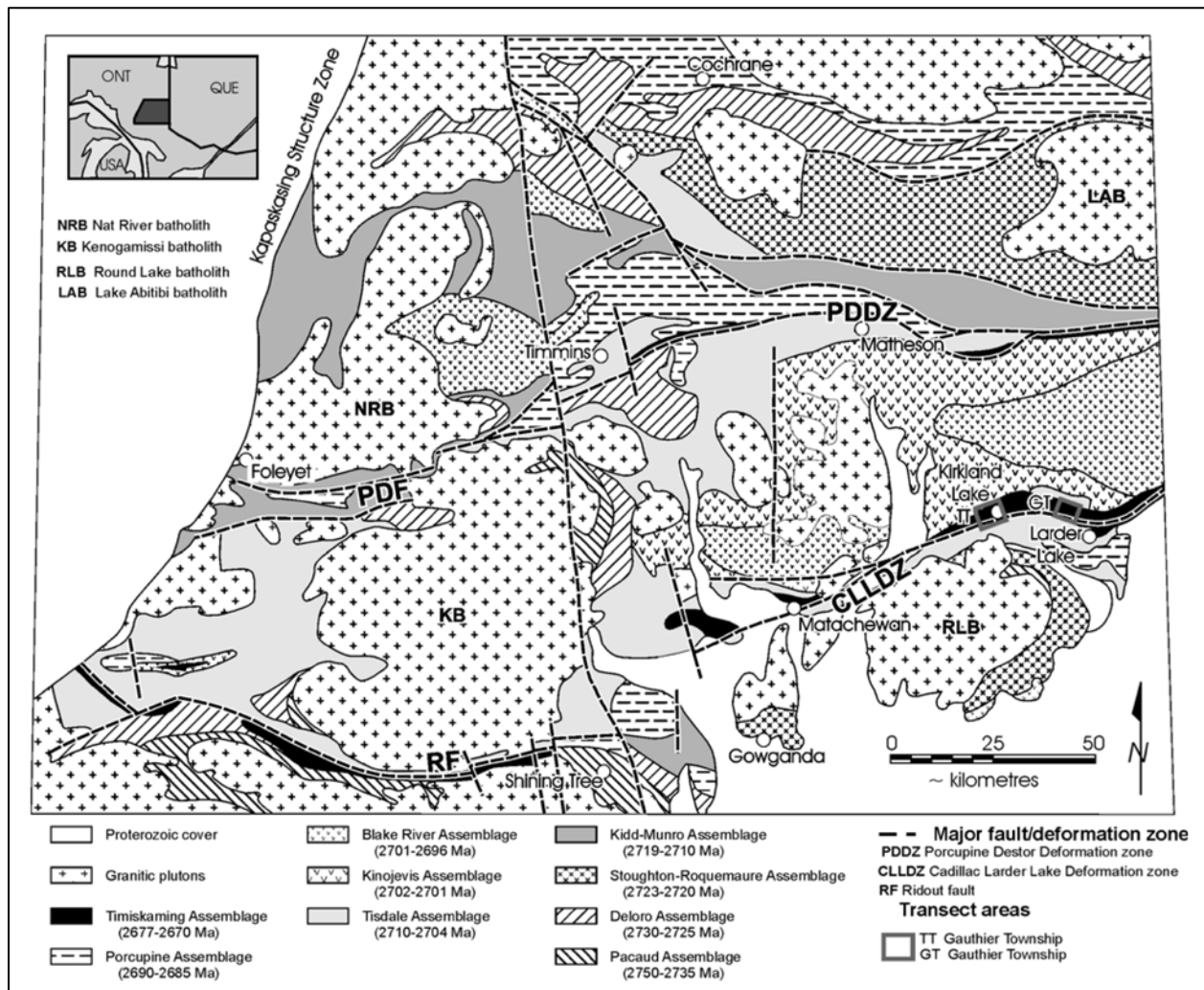


Figure 4: Regional Geology and Structure of the Southern Abitibi (Ispolatov, V. et al, 2005).

The Timiskaming assemblage hosts some of the largest Archaean orogenic gold deposits in the world, it is the youngest Archaean supracrustal unit of the Abitibi, and it is uniquely set between one phase of regional deformation and is followed by another. The assemblage is composed of clastic metasedimentary rocks and alkalic metavolcanic rocks. The metasedimentary rocks of the assemblage consist mainly of conglomerate containing distinctive red chert clasts, alkalic metavolcanic and intrusion clasts, and “green carbonate” clasts, along with cross-bedded sandstone. The alkalic rocks are commonly amygdaloidal and include pseudoleucite-bearing flows, and trachyte flows, tuffs and agglomerates. In places, Calc-alkalic metavolcanic rocks are reported to occur near the base of the assemblage (Jackson and Fyon, 1991).

The most prominent regional structure is the Cadillac-Larder Lake Deformation Zone (“CLLDZ”), an unconformity which marks the boundary between the Timiskaming (and “Timiskaming-like”) assemblages and the older supracrustal Archaean units. It is an approximately east-trending, steeply to moderately south-dipping shear zone that is continuous up to 250 km from Malartic, Quebec to Matachewan, Ontario. It has been proposed that the break extends even further to the west, through the Shining Tree and Swayze areas to the Ivanhoe Lake cataclastic zone, making the entire structure up to 350 km long (Jackson and Fyon, 1991).

Gold is spatially associated with the Timiskaming assemblage (and Timiskaming-like rocks) proximal to the CLLDZ, and is typically hosted in shear zones, quartz veins and carbonate-altered rocks.

The Abitibi is one of the most productive mining districts in Canada and contains 81% of the total gold produced domestically, including several world-class (<100 Mt Au) deposits (Dubé and Gosselin, 2007). In the southern Abitibi, mineralization occurs primarily along the major structural breaks, most notably the Porcupine-Destor Deformation Zone and the Cadillac-Larder Lake Deformation Zone (Figure 5).

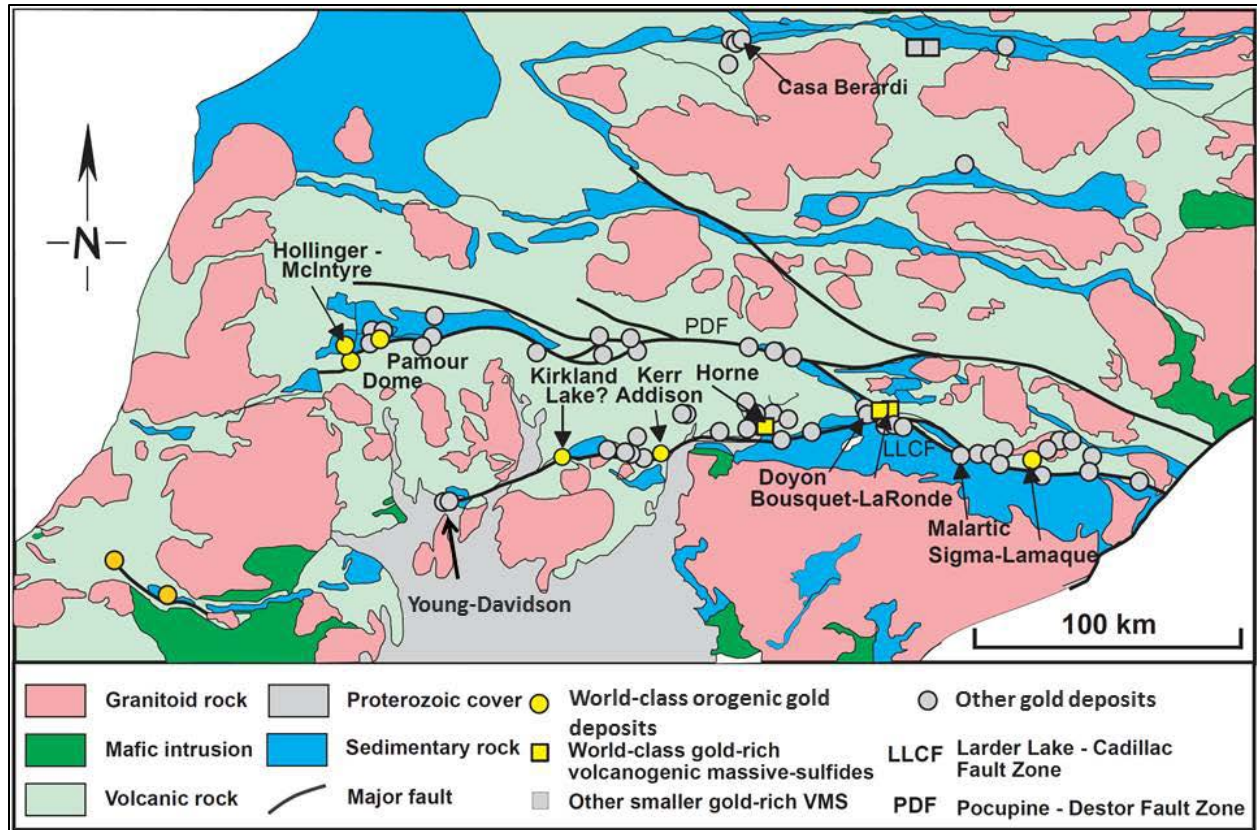


Figure 5: Distribution of Ore Deposits in the Southern Abitibi (Dubé and Gosselin, 2007)

## Property Geology

The KGHM claim group is located west of the Young-Davidson Mine along the inferred contact of the Cadillac-Larder Lake Deformation Zone (CLLDZ) within the southwestern region of the Abitibi greenstone belt. The bedrock has been interpreted to consist entirely of Proterozoic age sedimentary rocks of the Gowganda Formation, a part of the Huronian Supergroup (Jackson and Fyon, 1991). See Figure 6 for a map of the property geology.



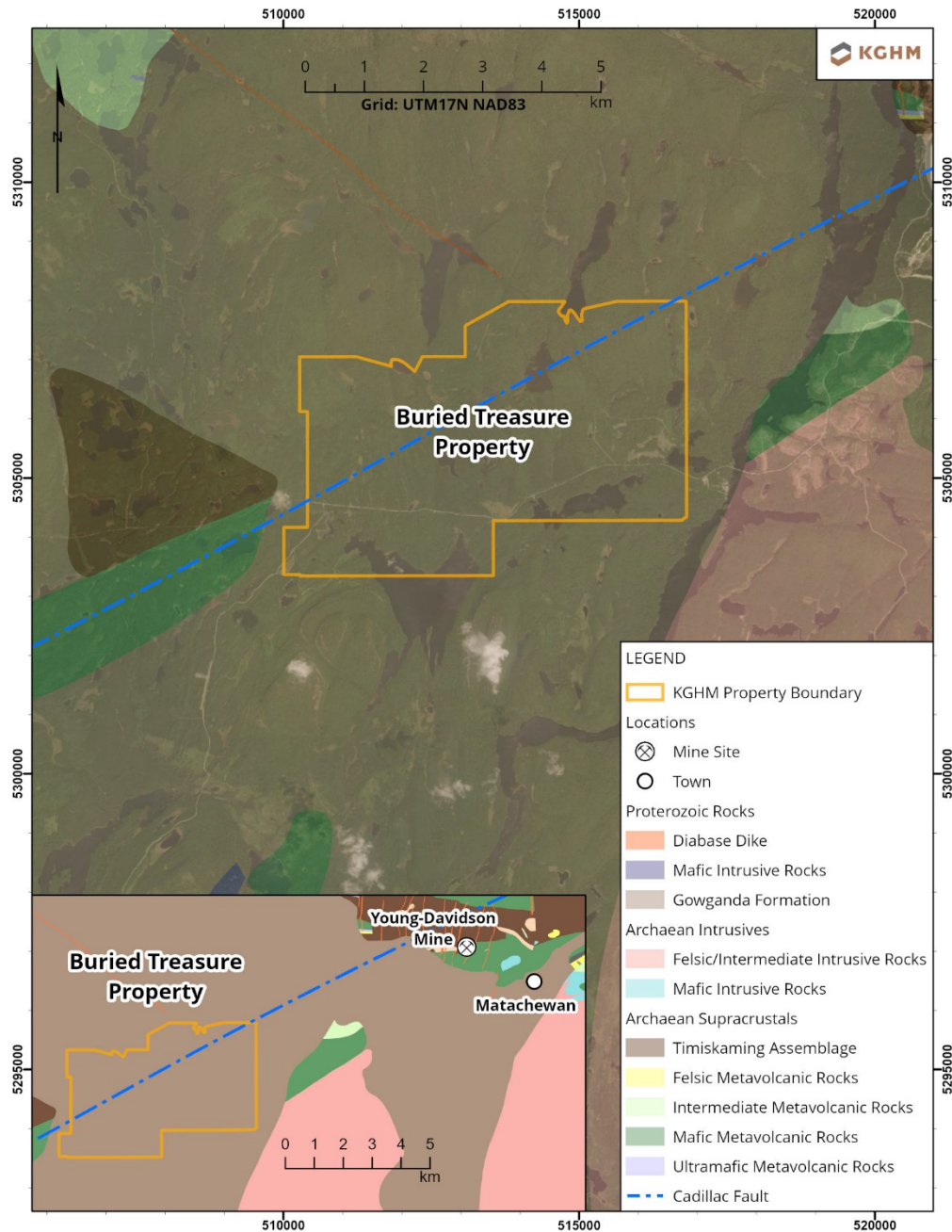


Figure 6: Regional and Property Scale geology (NAD83/ UTM Grid 17N).

The Gowganda Formation consists of distinct, diverse sequences of clast- and matrix-supported conglomerate, pebbly wacke, wacke, siltstone, mudstone and arenite (Jackson and Fyon, 1991). The Gowganda unconformably overlies Archaean age supracrustal and intrusive units, and in the project area is not known to be mineralized.

## Exploration History

Work has been conducted in the vicinity of the Doon Township claims intermittently since the 1960's under the direction of several operators. As the central Doon Township area (the location of the KGHM claim group) was observed to be covered in considerable overburden and till, most of the ground work was conducted in the areas immediately to the west and east of the KGHM claims. Below is a summary of work completed in or near the claim group staked by KGHM:

- 1945 (Coniagas Mines Limited)
  - Magnetic survey; prospecting. Strong negative magnetic anomaly trending ENE confirmed to be iron carbonate alteration in shear zones with quartz veining.
- 1963 (Canadian Aero Mineral Surveys Limited)
  - Airborne magnetic and EM survey; found two EM anomalies, 1 of which associated with “bog iron”, formed from breakdown of sulphides.
- 1964 (Laroma Midlothian Mines Limited)
  - Airborne geophysical survey
  - 401 ft diamond drill hole, intersecting pyrite-mineralized graphitic tuff / syenite porphyry rocks
- 1979 (Bagdad Exploration Association Inc.)
  - Soil sampling near “east nose of Archaean window”, returned Au values < 5ppb.
- 1987-1990 (Ontario Geological Survey)
  - Mapping of Doon and Yarrow townships, focusing on Huronian Supergroup.
- 1995-1997 (WMC International)
  - Mapping and sampling of exposed Archaean window in central west Doon Township (just west of KGHM claims).
  - Stripping of the CLLDZ around the exposed Archaean window (1995)
  - Till sampling program (1995-1996); heavy mineral concentrate returned anomalous gold values.
  - Quantum Geophysics contracted in 1996 to complete Schlumberger resistivity soundings east and west of the Archaean window to determine potentially mappable electrical contrast between Proterozoic cover and Archaean basement.
  - JVX Geophysics Ltd contracted in 1997 to complete additional infill IP/resistivity surveying in central Doon Township.
  - Diamond drilling program (1997); 7 holes (1372 meters) were drilled south of Asbestos Mine Rd, west of KGHM claim group, targeting 2 IP anomalies. Most significant result



was 610 ppb Au over 15.4 meters (including 2.1 g/t over 2 meters) in bleached, quartz/ankerite (fuchsite) zone in mafic volcanics.

- 2008 (Golden Chalice Resources Inc.)
  - Magnetometer / VLF EM Survey on western edge of claim area
- 2011-2012 (Transition Metals Corp.)
  - Prospecting and mapping, examining older showings and localities drilled by WMC in 1997.
- 2014 (KGHM)
  - Soil gas hydrocarbon (SGH) survey across the claim group to determine the prospectivity of gold mineralization hidden beneath the Proterozoic age sediments of the Gowganda Formation. In total, 206 samples were collected from 195 sample sites over a period of five days.
  - The results of the survey yielded a gold signature rating of “4.5 out of 6.0”, indicating a sufficient level of confidence to warrant future follow up exploration programs.

## Line-cutting and IP Survey

### Line-cutting

KGHM contracted Exsics Exploration Limited (Exsics) of Timmins, Ontario to prepare the geophysical grid prior to the arrival of the IP survey crew. A 4 person team cut lines through the forest to a width of 1.5m and placed station identifying pickets every 25m along the N-S survey lines. The lines were cut straight, utilizing a GPS and were of sufficient width and clearing to allow for the unobstructed movement of geophysical survey technical staff and equipment. On the first day of the line-cutting program, a KGHM geologist travelled to Matachewan from Sudbury to review emergency response plans and to introduce the Exsics crew to the area.

On this trip, it was observed that a logging company was in the process of harvesting at the north end of lines 12, 13, 14, and 15 in the northeast quadrant of the grid (see Figure 7). It was decided to begin the line cutting on the west side of the grid, cut lines 1 through 10, and cut lines 11 through 15 up to the E-W tie line. The line cutting crew then temporarily left the property, with plans to return once the IP geophysical crew was approaching this area with their survey, and after the logging in the area was complete. Upon their return, Exsics was able to complete lines 11, 12, 14 and 15, but was unable to complete line 13 due to the logging activity.

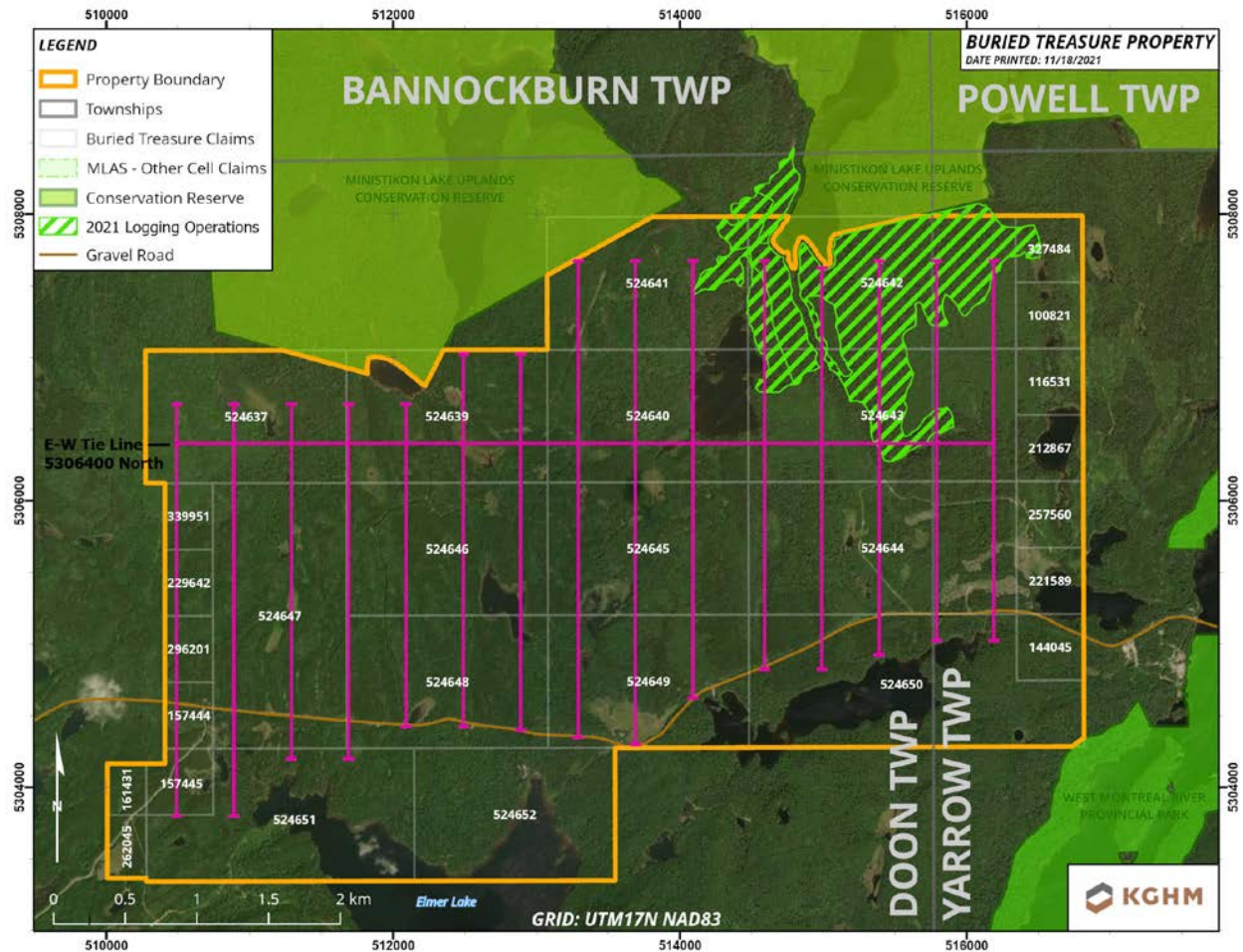


Figure 7: Line cutting plan and logging operations.

The line cutters were therefore on the property working between Aug 3<sup>rd</sup> and Aug 25<sup>th</sup> and from Oct 13<sup>th</sup> to Oct 18<sup>th</sup>. A total of 46.1km of lines were cut.

## Induced Polarization Geophysical Program

### Introduction

KGHM contracted Abitibi Geophysics to complete a N-S-oriented, surface induced polarization survey across the Buried Treasure Property. This survey was planned to track the interpreted Cadillac-Larder Lake Break across the property, to locate areas of anomalous chargeability/resistivity and to recommend areas to follow-up with drilling. The 5 man geophysical team arrived on site Sept 23<sup>rd</sup> and performed the

survey between Sept 24<sup>th</sup> and Oct 28<sup>th</sup>. A total of 41.96km of lines were read during the survey. The OreVision Induced Polarization (IP) survey was selected because of its ability to detect disseminated sulphide minerals and its capacity to penetrate several hundred feet of overlying sedimentary rock.

## Methodology

The OreVision survey completed along the 15 lines (L 1E to L 15E) was successful in mapping the resistivity and chargeability properties of the geological formations lying within the Buried Treasure Project. This survey was conducted using a pole-dipole configuration with an electrode spacing "a" of 50 m and "n" spacings of 1 to 30.

Quality control (QC) performed on the collected OreVision data validated 97.42% of the recorded readings.

The validated data was inverted in 3D using the Res3D platform. The Res3D software solves two inverse problems: the resistivity data are first inverted to recover the spatial distribution of electrical resistivities, and the chargeability data are inverted to recover the spatial distribution of polarizable particles in the rocks. This inversion is intended to better characterize the position, geometry, and physical parameters of the highlighted conductive, resistive, and polarizable sources.

From the recovered resistivity and chargeability earth models, plan contour maps of Resistivity (Figure 8) and Chargeability (Figure 9) as well as vertical sections were created. The Metal Factor and Gold Index values were calculated and are shown on plan contour maps (see Abitibi Report in Appendix A), as well as on the vertical sections.

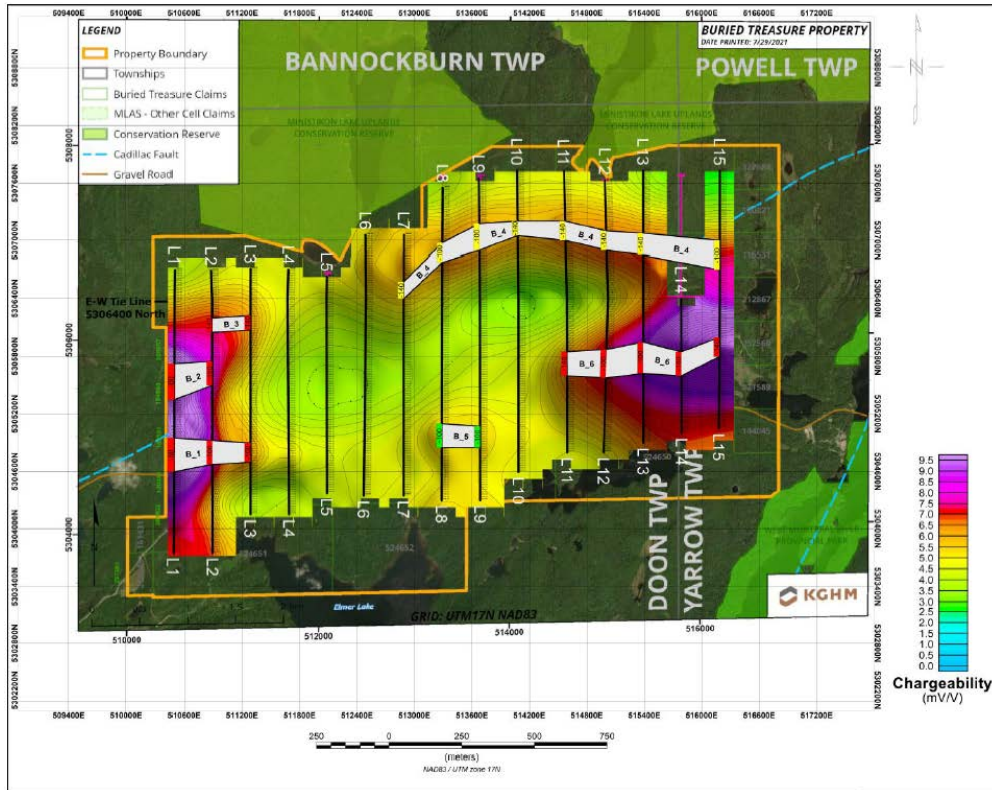


Figure 8: Chargeability grid at -100 m elevation with geophysical interpretation.

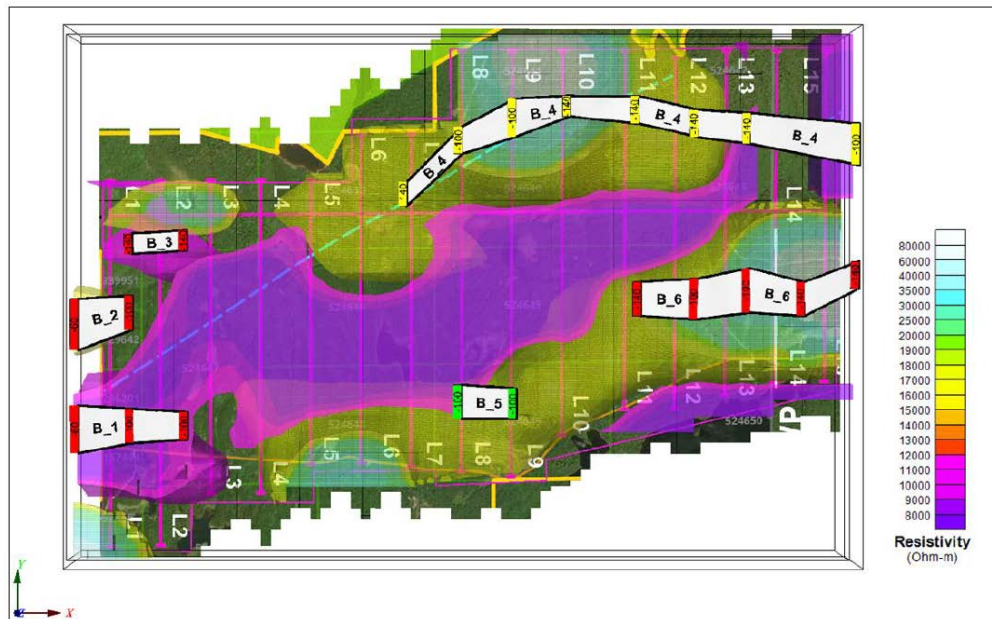


Figure 9: Shaded 3D resistivity model with the interpreted chargeable axis.



For additional technical details relating to the survey, refer to Appendix A: Abitibi Geophysics Report.

## Results

Finalized data was received from Abitibi Geophysics on December 10<sup>th</sup>, 2021. Deliverables were forwarded to EarthEx Geophysical Solutions for review. The deliverables included:

- Logistics report
- Horizontal Sections from 3D Model
  - Chargeability (at 50m, 100m and 200m depth)
  - Resistivity (at 50m, 100m and 200m depth)
  - Metal Factor (at 50m, 100m and 200m depth)
  - Gold Index (at 50m, 100m and 200m depth)
- Vertical Section Profiles for lines 1-15
  - Metal Factor
  - Gold Index
- Interpretation Files (in various formats)
- Interpretation Maps (at 100m depth)
  - Chargeability
  - Resistivity
  - Metal Factor
  - Gold Index
  - Proposed Drillhole Locations
- Voxels and Geosoft 3D Models
  - Chargeability
  - Resistivity
  - Metal Factor
  - Gold Index

- ArcGIS Ready files
  - Chargeability @50m, 100m and 200m depth
  - Chargeability Interpretation
  - Resistivity @50m, 100m and 200m depth
  - Resistivity Interpretation
  - Metal Factor @50m, 100m and 200m depth
  - Metal Factor Interpretation
  - Gold Index @50m, 100m and 200m depth
  - Gold Index Interpretation
  - Geology Interpretation
  - Proposed Drillholes Interpretation
- QAQC Processed Databases

Abitibi Geophysics identified any chargeable anomalies of interest with the help of the pseudosections, the 3D models, the vertical sections and the plan contour maps. Anomalies that appeared to be generated from the same source were grouped together as trends ('B' labels on Figure 9).

Anomalies with high chargeability that coincided with areas of very high resistivity (B-06 in Figure 9) were highlighted due to their resulting Gold Index ratio. This Index is useful for identifying zones that may host disseminated sulfides associated with silicified/carbonatized/albitized alteration zones.

Anomalies with high chargeability that coincide with areas of very low resistivity (B-01, B-02, B-03 in Figure 9) are also highlighted due to their resultant high Metal Factor. This factor is usually associated with semi-massive to massive sulfides as well as gold associated with disseminated sulfides in sheared and faulted environments.

Abitibi has also submitted drillholes that would test these potential targets in future drill programs.

Additional maps created by Abitibi Geophysics may be seen in Appendix A: Abitibi Geophysics Report

## Recommendations for Future Work

Based on the results discussed above, it is recommended that the targets provided by Abitibi Geophysics be tested through diamond drilling. 4 targets were highlighted as 1<sup>st</sup> priority targets (B-01, B-02, B-04 and B-06) and drillholes should be planned with these targets in mind.

KGHM is currently awaiting a review by its geophysical consultants (EarthEx Geophysical Solutions). EarthEx will validate the results of the Abitibi Geophysics work and fine-tune the targeting utilizing other publicly available geophysical information. In addition, EarthEx will provide recommendations for other geophysical work that can be completed to help further define the potential mineralized zones.

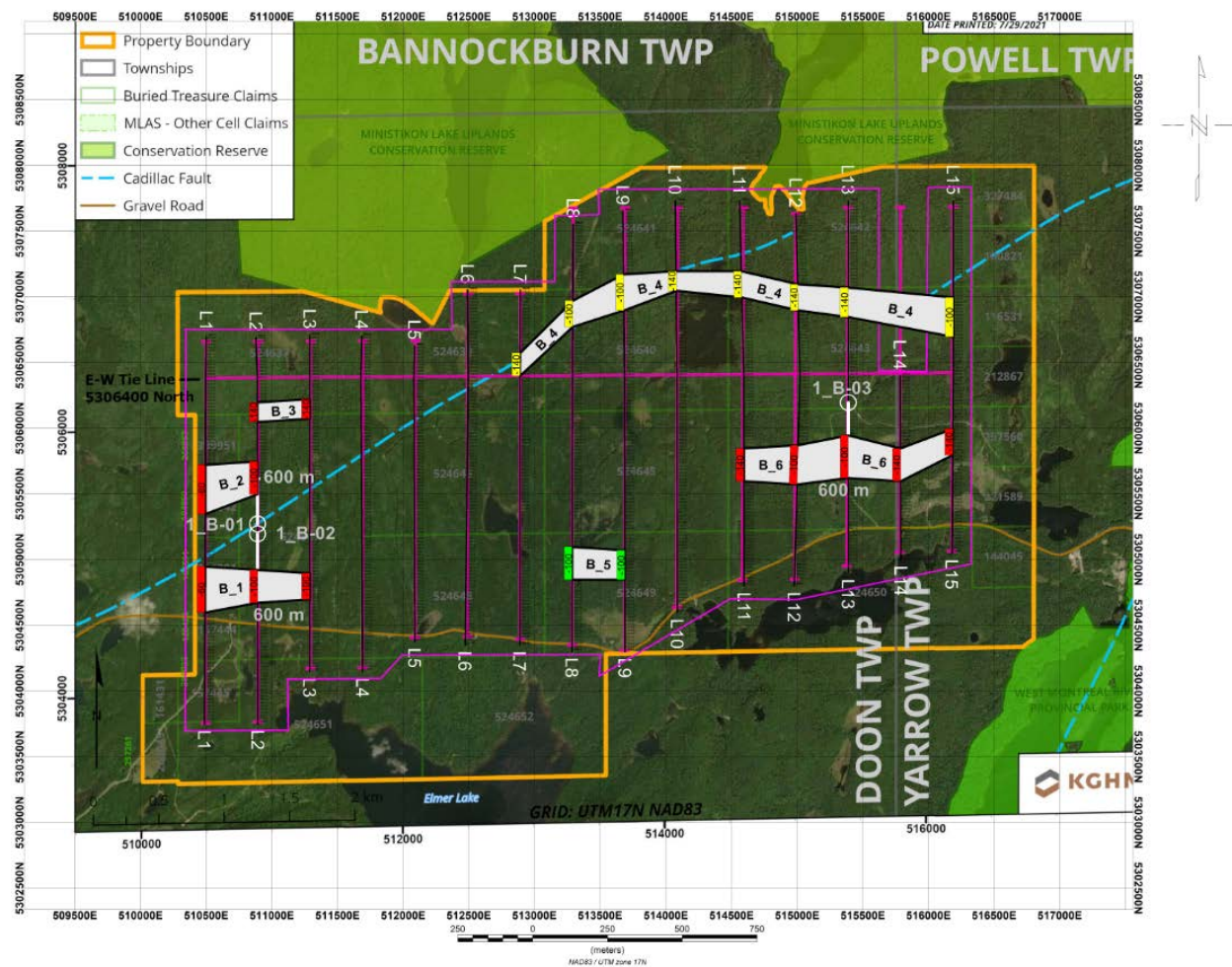


Figure 10: Zones of high chargeability shown with proposed drillhole locations.

## Expenditures

A total of \$245,770.52 was spent during the 2021 work programs on the Buried Treasure Property. A summary of expenditures is shown in Table 2. Copies of all receipts can be found in Appendix B.

Table 2: Buried Treasure Property 2021 Expenditure Summary

<b>Labour</b>	
Manager (Project Coordination) 2 days @ \$700/day	\$1,400.00
Area Geologist (Project Supervision/Planning/Report Writing/Site Visit): 9 days @ \$600/day	\$5,400.00
GIS Technician (Project Design/Analysis): 2 days @ \$350/day	\$700.00
<b>Subtotal</b>	<b>\$7,500.00</b>
<b>Contractors</b>	
Line Cutting (Exsics Exploration Ltd)	\$75,834.30
IP Survey (Abitibi Geophysics)	\$157,301.99
G/P consultant (EarthEx)	\$4,846.80
<b>Subtotal</b>	<b>\$237,983.09</b>
<b>Miscellaneous (Site Visit, Communications &amp; Safety)</b>	<b>\$287.43</b>
<b>2021 TOTAL</b>	<b>\$245,770.52</b>



## References

Ayer, J.A., Thurston, P.C., Bateman, R., Dubé, B., Gibson, H.L., Hamilton, M.A., Hathway, B., Hocker, S.M., Houlié, M.G., Hudak, G., Ispolatov, V.O., Lafrance, B., Leshner, C.M., MacDonald, P.J., Péloquin, A.S., Piercey, S.J., Reed, L.E. and Thompson, P.H. 2005. Overview of results from the Greenstone Architecture Project: Discover Abitibi Initiative; Ontario Geological Survey, Open File Report 6154, 146p.

Bleeker, W., 2012. Targeted Geoscience Initiative 4. Lode Gold Deposits in Ancient Deformed and Metamorphosed Terranes: The Role of Extension in the Formation of Timiskaming Basins and Large Gold Deposits, Abitibi Greenstone Belt – A Discussion. Summary of Field Work and Other Activities 2012, Ontario Geological Survey, Open File Report 6280, p. 47-1 to 47-12.

Bleeker, W., 2014. The Abitibi breaks: syn-orogenic extensional faults inverted as thick-skinned thrusts, and explaining the link with economic gold mineralization. GAC-MAC Joint Annual Meeting, May 21-23, Fredericton, Abstract Volume 37, p. 32-33.

Doutre, R., Micklethwaite, S., Ford, A., Haward, N. and McCuaig, T.C., 2014. Periodic Spacing of Orogenic Gold Deposits. SEG 2014 Conference, September 27-30, Keystone, Colorado.

Dubé, B., and Gosselin, P., 2007. Greenstone-hosted quartz-carbonate vein deposits, in Goodfellow, W.D., ed., Mineral Deposits of Canada: A Synthesis of Major Deposit-Types, District Metallogeny, the Evolution of Geological Provinces, and Exploration Methods: Geological Association of Canada, Mineral Deposits Division, Special Publication No. 5, p. 49-73

Evans, L., 2007. Technical Report of the Lower Boundary Zone, Lucky Zone, and Lower YD Zone Mineral Resource Estimates, Young-Davidson Property, Matachewan, Ontario. NI 43-101 Report, Scott Wilson Roscoe Postle Associates Inc.

Ispolatov, V., Lafrance, B., Dubé, B., Hamilton, M. and Creaser, R. 2005. Geology, structure, and gold mineralization, Kirkland Lake and Larder Lake areas (Gauthier and Teck townships): Discover Abitibi Initiative; Ontario Geological Survey, Open File Report 6159, 170p.

Jackson, S.L. and Fyon, J.A. 1991. The western Abitibi Subprovince in Ontario; in Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p.404-482.

Jensen, L.S., and Langford, F.F., 1985, Geology and petrogenesis of the Archean Abitibi belt in the Kirkland Lake area, Ontario: Ontario Geological Survey, Miscellaneous Paper 123, 130p.

Powell, W.G. 1991. The distribution, structural history and relationship to regional metamorphism of high-strain zones forming the Larder Lake-Cadillac deformation zone, Matachewan area, Abitibi Belt; Ontario Geological Survey, Open File Report 5789, 150p.

## Statement of Qualification

I, Steven Gregory of the City of Greater Sudbury, Province of Ontario, do hereby certify that:

1. I am a geologist residing at 37 Mary Ave, Naughton Ontario P0M 2M0.
2. I am a graduate of Carleton University (Ottawa, Ontario) having received a Bachelor of Science (Honours) in Earth Sciences in 2001.
3. I am a graduate of Laurentian University (Sudbury, Ontario) having received a Masters of Science (Geology) in 2007.
4. I have been practicing in my profession as a geologist continuously since Oct 4<sup>th</sup>, 2004.
5. I have been an employee of KGHM International Ltd. (formerly FNX Mining Company Inc.) from Oct 4<sup>th</sup>, 2004 to Present.
6. The information presented in this document is true and accurate to the best of my knowledge. This information was gathered from such various sources as assessment files, publications and contractor-provided reports.
7. I assisted in the planning and managed the line cutting and geophysical field work covered in this report.
8. I have no personal interest in the property covered by this report.

Dated in Sudbury, Ontario, this 18th day of February, 2022.

Respectfully Submitted,

A handwritten signature in black ink that reads "S.G. Gregory".

Steven Gregory, M.Sc., P. Geo.

Area Geologist

KGHM International Ltd.

February 18, 2022

## Appendix A: Abitibi Geophysics Logistics Report

The report provided to KGHM by Abitibi Geophysics, titled “Induced Polarization Survey – Configuration OreVision IP: Logistics and Interpretation Report” is included as an attachment with this report under the folder “\Appendix A – Abitibi Geophysics Report”.

INDUCED POLARIZATION SURVEY - CONFIGURATION

 **OREVISION IP**

LOGISTICS AND INTERPRETATION REPORT

PREPARED FOR



## **BURIED TREASURE PROJECT**

DOON & JARROW TOWNSHIPS, ONTARIO

DECEMBER 2021



Abitibi Geophysics, Head Office  
1740, Sullivan road, suite 1400  
Val-d'Or, QC, Canada, J9P 7H1

Phone: 1.819.874.8800  
Fax: 1.819.874.8801  
info@ageophysics.com

**21NT049-P2**



## TABLE OF CONTENTS

1. Research Objective.....	1
2. Implemented Solution .....	3
3. Geophysical Interpretation .....	7
4. Conclusion and Recommendations.....	12
Appendix A: Project Overview .....	19
Appendix B: Data Acquisition .....	21
Appendix C: Data Processing and Deliverables .....	24
Appendix D: Bibliography .....	27

## LIST OF TABLES

Table 1. OreVision® Drilling Targets on the Buried Treasure Project.....	13
Table 2. Quality Statistics – OreVision®.....	23
Table 3. Maps Produced.....	26

## LIST OF FIGURES

Figure 1. Geological and structural map of the Matachewan area (modified from Ayer et al., 2003), including the IP survey grid of Buried Treasure Project.....	2
Figure 2. To the left, conventional IP pseudosections. To the right, OreVision® IP pseudosections demonstrating the increased depth of investigation. ....	4
Figure 3. A conventional IP survey allows the detection of the roof of this body buried at 50 m depth (top vertical section). OreVision® also allows to define the vertical extension (bottom section).....	4
Figure 4. OreVision® can detect a very deep source even below another. ....	5
Figure 5. Demonstration of the efficiency of increasing the “n” factor versus the “a” spacing to see deeper. ....	5
Figure 6. Receiver ElrecPRO and SwitchPRO 240 from IRIS Instruments, automatically performing a series of several thousand compliance tests. ....	6
Figure 7. Horizontal resistivity slice at an elevation of -100 m underlain by the topographic grid (SRTM1 Canada). ...	8
Figure 8. Chargeability grid at -100 m elevation with geophysical interpretation. ....	10
Figure 9. Shaded 3D resistivity model with the interpreted chargeable axe .....	11
Figure 10. General location of the Buried Treasure Project.....	19
Figure 11. Mineral claims and OreVision® survey coverage over the Buried Treasure Project. ....	20
Figure 12. Transmitted signals across C <sub>1</sub> – C <sub>2</sub> . ....	22
Figure 13. Linear windows (1 s pulse). ....	22



## 1. RESEARCH OBJECTIVE

In September and October of 2021, Abitibi Geophysics performed an IP survey on behalf of FNX Mining at the Buried Treasure Project, approximately 10 kilometers southwest of the Young-Davidson mine, near the town of Matachewan, Ontario.

The survey grid is within the southwestern portion of the Abitibi Greenstone Belt. The geology consists of an Archean basement overlain by the Early Proterozoic sedimentary rocks of the Gowganda Formation (Figure 1). This formation comprises a continuous sedimentary sequence, including basal conglomerate, greywacke, argillite, arkose, and quartzite. Based on the previous investigations conducted near this survey area (e.g., Border property, SEMECO Incorporated), sulphides (principally pyrite, with local trace of chalcopyrite) occur sporadically as fracture-fillings, with associated replacement minerals, hosted in sedimentary rocks. Sulphide mineralization appears to be fracture-controlled over many parts, associated with well-developed schistosity, veining, and localized shearing (Stephens, 2016).

Deformation structures in the Gowganda Formation are localized in the NE-SW trending Cadillac-Larder Lake Fault (CLLF), and associated splay faults are intersected by north-south-trending shear zones (Figure 1). This fault system is of economic importance because of its spatial association with orogenic gold deposits. Recent structural data indicates that the Young-Davidson gold deposit and the several surrounding ones are associated with the development of the CLLF western extension. Past surveys conducted within the Gowganda Formation indicated that Au can be remobilized from the Archean basement into the deformed Proterozoic rocks (Hodgson, 2011). In this case, the lack of known gold deposits within this formation can be partially attributable to the Proterozoic sedimentary cover, which masks the CLLF for more than 30 km (Rabeau et al., 2011; Stephens, 2016).

The purpose of the IP survey of the Buried Treasure Project is to prospect for mineralization similar to that found in the nearby Young-Davidson mine and associated with the CLLF. An OreVision® Induced Polarization (IP) survey was selected because of its ability to detect massive and disseminated sulphide minerals and its capacity to penetrate several hundreds of feet of overlying sedimentary rock.

However, apart from the mineral composition of the rock that affects the chargeability response, grain size, porosity, clay mineral content and electrolyte composition are other dominant components affecting the IP response. The chargeability response in rocks becomes higher when the sulphide content is higher and lower when the grain size is larger, while the value of the resistivity does not fall continuously with the increase of the sulphide content. The presence of clay in the rock strongly influences the IP response. Clay minerals interacting with groundwater can produce polarization phenomena and decrease the resistivity. Consequently, the effectiveness of detecting sulphide deposits depends on the evolution of each of these parameters between the minerals and their host rocks (Yatini et al., 2016).



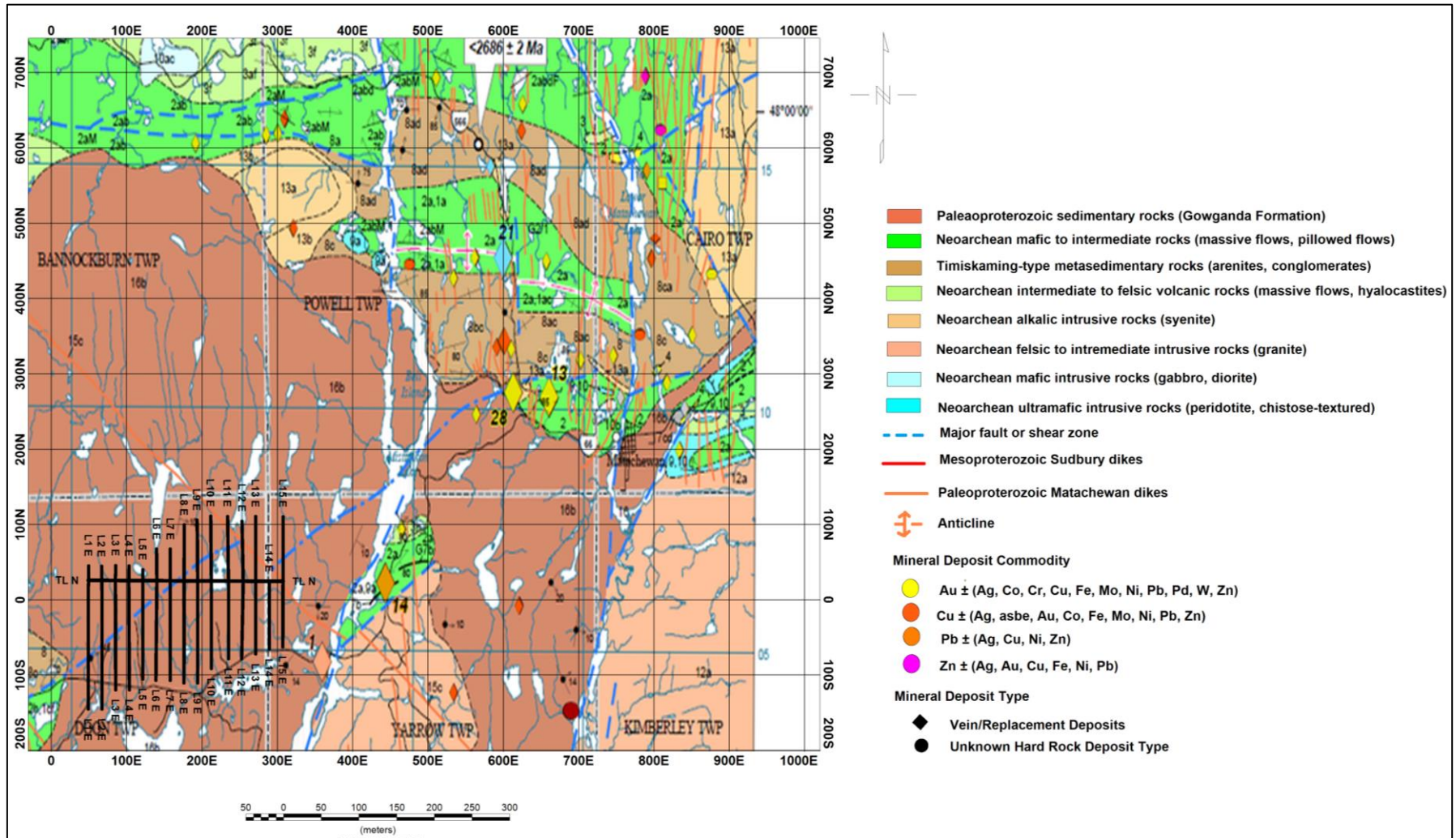


Figure 1. Geological and structural map of the Matatchewan area (modified from Ayer et al., 2003), including the IP survey grid of Buried Treasure Project.





## 2. IMPLEMENTED SOLUTION

The basic field implementation of IP is simple. An electrical current (**I**) is sent through the ground, via a pair of current electrodes ( $C_1$ - $C_2$ ). The primary voltage difference  $\Delta V_p$  between two potential electrodes ( $P_1$ - $P_2$ ) allows for the determination of the apparent resistivity,  $\rho_a$  of the subsurface. The apparent resistivity is expressed in ohm-m ( $\Omega m$ ) and is proportional to the difficulty of the electric current to circulate in the ground. In the absence of a solid metallic conductor, the resistivity will be largely dependent on the porosity of the rocks. The following geological phenomena will act on the resistivity of the rock formations:

<u>Decrease</u>	<u>Increase</u>
Clay weathering	Carbonatation
Fracturing	Silicification
Shearing	Sericitization
Metamorphism	Albitization
Dissolution	Compaction
Saltwater	Metamorphism

The electrical current (**I**) will also charge the surface of the metallic minerals with the ions present in the groundwater, like little batteries in the ground. Once the current (**I**) is switched off, those batteries will discharge. The receiver records that weak secondary voltage difference  $\Delta V_s$  decaying with time between the two potential electrodes ( $P_1$ - $P_2$ ). The **chargeability** is the measure of this IP effect and is proportional to the total surface of metallic minerals in the subsurface rocks in contact with groundwater, just like lead plates in acid in a car battery. The secondary voltage  $\Delta V_s$  is normalized by the primary voltage difference  $\Delta V_p$  and by the acquisition time interval; the chargeability is therefore expressed in mV/V. In order to produce an anomaly, the grains do not need to be connected together, unlike electromagnetic (EM) methods.

Resistivity / induced polarization surveys are therefore very useful in mineral exploration to detect:

- Occurrences of disseminated sulphides (as low as 0.5%) to which gold, silver, copper, molybdenum, etc. could be associated. When disseminated in a silicified, carbonated sericitized or albitized rock, the apparent resistivity will rise above the level of the other host rocks, facilitating the interpretation of these occurrences.
- Semi-massive to massive, non-conductive clusters (rich in sphalerite, silicified or electrically discontinuous).
- Massive clusters that do not offer good coupling with EM fields (vertical cylinder or small lenses).



The main disadvantage of IP surveys is that other chargeable minerals exist, such as graphite, clay minerals and some oxides. From a geological point of view, IP responses are almost never uniquely interpretable. The power of the IP technique can also be greatly diminished by the presence of a conductive overburden layer covering the basement rock. The OreVision® approach fills this gap while offering many advantages over conventional methods:

- Improved penetration through conductive overburden.
- Greater depth of investigation (2 to 4 times higher than conventional techniques, Figure 2).
- Better near surface resolution.
- Increased definition of the vertical extent of sources (Figure 3).

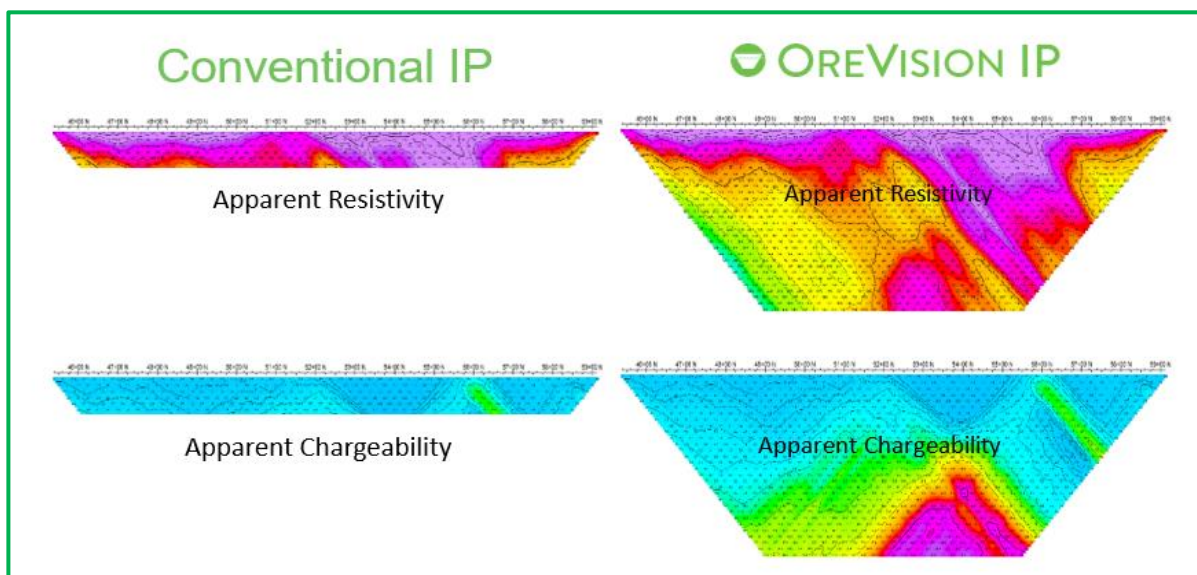


Figure 2. To the left, conventional IP pseudosections. To the right, OreVision® IP pseudosections demonstrating the increased depth of investigation.

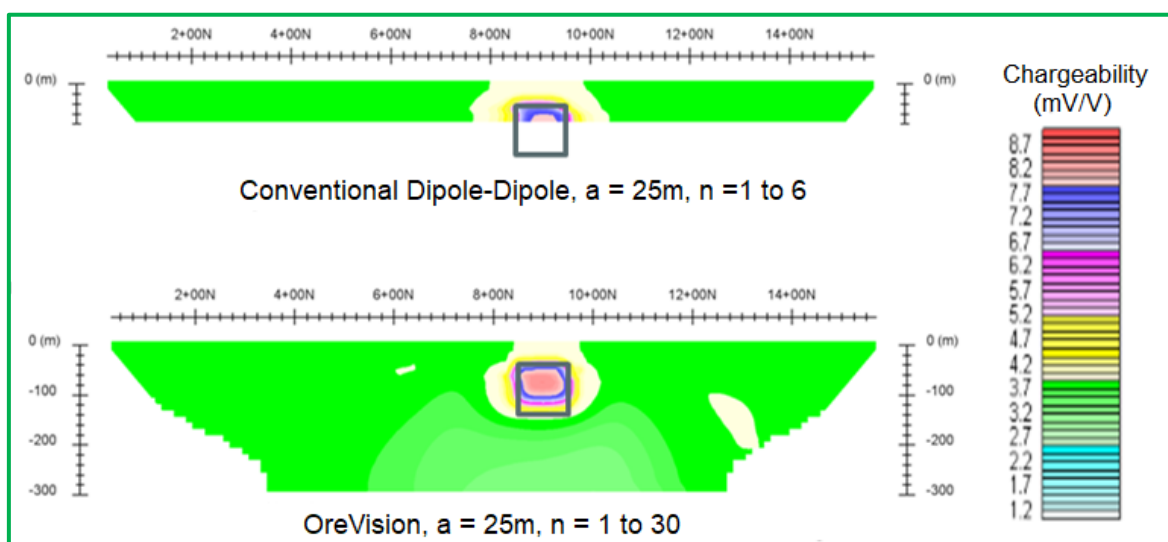


Figure 3. A conventional IP survey allows the detection of the roof of this body buried at 50 m depth (top vertical section). OreVision® also allows to define the vertical extension (bottom section).



- Enhanced discrimination of one source overlying another (Figure 4).

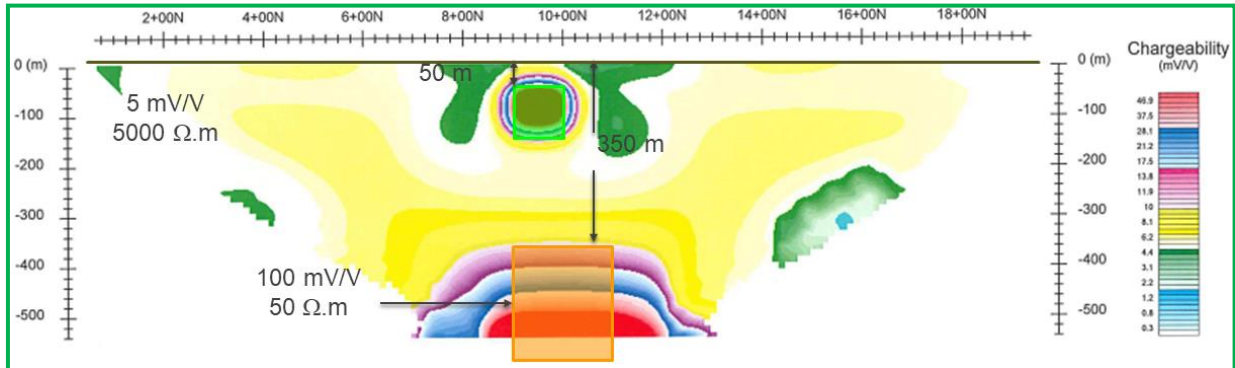


Figure 4. OreVision® can detect a very deep source even below another.

- Higher data density, providing comprehensive coverage.
- More reliable 3D data inversions, allowing accurate drill targets to be delivered.

The OreVision® system was designed with the following consideration in mind. Figure 5 compares the difference in resolution between increasing the "n" factor versus using larger "a" spacing. For a body buried at 200 m depth, the top section shows the inefficiency of 200 m "a" spacing with "n" factors 1-6. The middle section shows a very weak response, below the normal noise level, with an "a" spacing of 100 m. The bottom section shows that this same body is easily detected with "a" spacing of 25 m and "n" factors from 1 to 30.

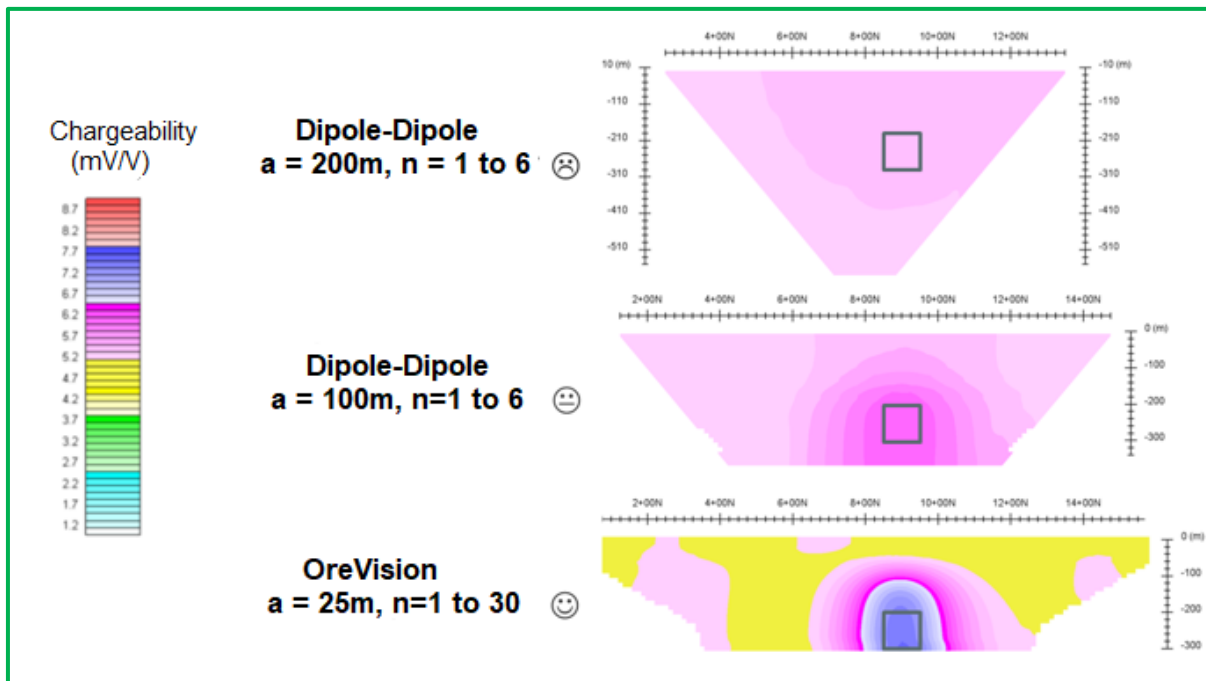


Figure 5. Demonstration of the efficiency of increasing the "n" factor versus the "a" spacing to see deeper.



To achieve this degree of resolution, the following technological advances have been made:

- The development of a special 24-conductors cable with triple electrical insulation that ensures faultless measurements.
- The design and construction of an electronic switch (up to 240 channels) for automatic addressing of measuring electrodes, without numbering or connection errors (Figure 6).

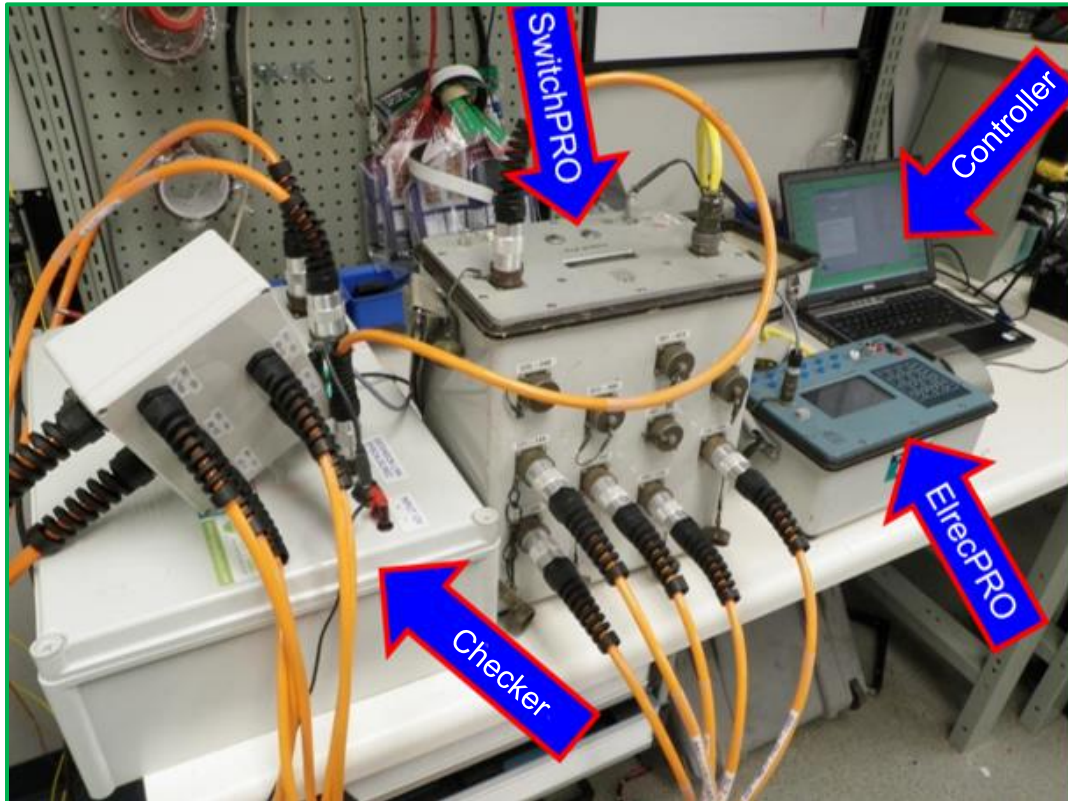


Figure 6. Receiver EelecPRO and SwitchPRO 240 from IRIS Instruments, automatically performing a series of several thousand compliance tests.

- The development by our partner IRIS Instruments of a powerful transmitter (13 A) that is transportable by a single operator.
- The optimization of our current injection method to maximize the signal-to-noise ratio.
- The streamlining of field operations allowing productivity like that of conventional approaches, therefore at a comparable price.
- The implementation, on a cloud platform, with a powerful algorithm that allows us to perform 3D inversions with less approximation than conventional solutions.



### 3. GEOPHYSICAL INTERPRETATION

This OreVision® survey carried out along 15 profiles (L 1E to L 15E) was successful in mapping the resistivity and chargeability properties of the geological formations lying within the Buried Treasure Project. This survey was conducted using a pole-dipole configuration with an electrode spacing "a" of 50 m and "n" spacings of 1 to 30.

Quality control (QC) performed on the collected OreVision® data validated 97.42% of the recorded readings.

The validated data was inverted in 3D using the Res3D platform. The Res3D software solves two inverse problems: the resistivity data are first inverted to recover the spatial distribution of electrical resistivities, and the chargeability data are inverted to recover the spatial distribution of polarizable particles in the rocks. This inversion is intended to better characterize the position, geometry, and physical parameters of the highlighted conductive, resistive, and polarizable sources.

From the recovered resistivity and chargeability earth models, plan contour maps of Resistivity (8.2) and Chargeability (8.3) as well as vertical sections were produced. The Metal Factor and Gold Index values are calculated and shown on plan contour maps (8.4 & 8.6), as well as on the vertical sections. The reader is requested to consult Appendix C for the meaning of the Metal Factor and Gold Index parameters and to follow the description of the results using the Geophysical Interpretation map (10.0) as well as the figures included in this section of the report.

The interpretation was conducted by first highlighting the chargeable anomalies with the help of the pseudosections, the recovered 3D models, the vertical sections and plan contour maps. These observed anomalies are indicated on the vertical sections. The anomalies which seem to be produced by the same anomalous sources are grouped together as polarizable axes or trends. The anomalies are ranked according to their priority (importance), strength, chargeability/resistivity associations, and general strike orientation and then transposed onto the Geophysical Interpretation map (Plan 10.0).

#### □ **RESISTIVITY**

The resistivity features have been interpreted by studying the apparent resistivity pseudosections as well as the true-depth sections, and the plan maps (depth slices), extracted from the resistivity 3D model at elevations of 200 m, 50 m and -100 m (see maps 8.2\_200, 8.2\_50, and 8.2\_-100).

High resistivity and low resistivity zones have been outlined in blue and pink on the Geophysical Interpretation map (10.0). The resistive zones are marked by resistivity values greater than 30 000 Ohm-m, while the conductive zones are marked by resistivity values less than 15 000 Ohm-m.

The recovered resistivity model is characterized by a dynamic range of resistivity values ranging from approximately 4000 to 90 000 Ohm-m. As shown in map 10.0, two highly resistive zones are highlighted, one in the eastern part of the survey grid between L 11E and L 15E, and one more in the northern part between L 8E and L 12E.

One NE/SW trending relatively conductive zone (< 15 000 Ohm-m), approximately 6.5 km long, is highlighted within the survey area, extending from L 1E to L 15E (Figure 7). This trend seems to extend in the northwest corner of the survey grid displaying a circle shape. This conductive trend also appears to be associated with the CLLF zone.

As shown in Figure 7, there is no significant correlation between the topographic relief and the resistivity response of the study area.



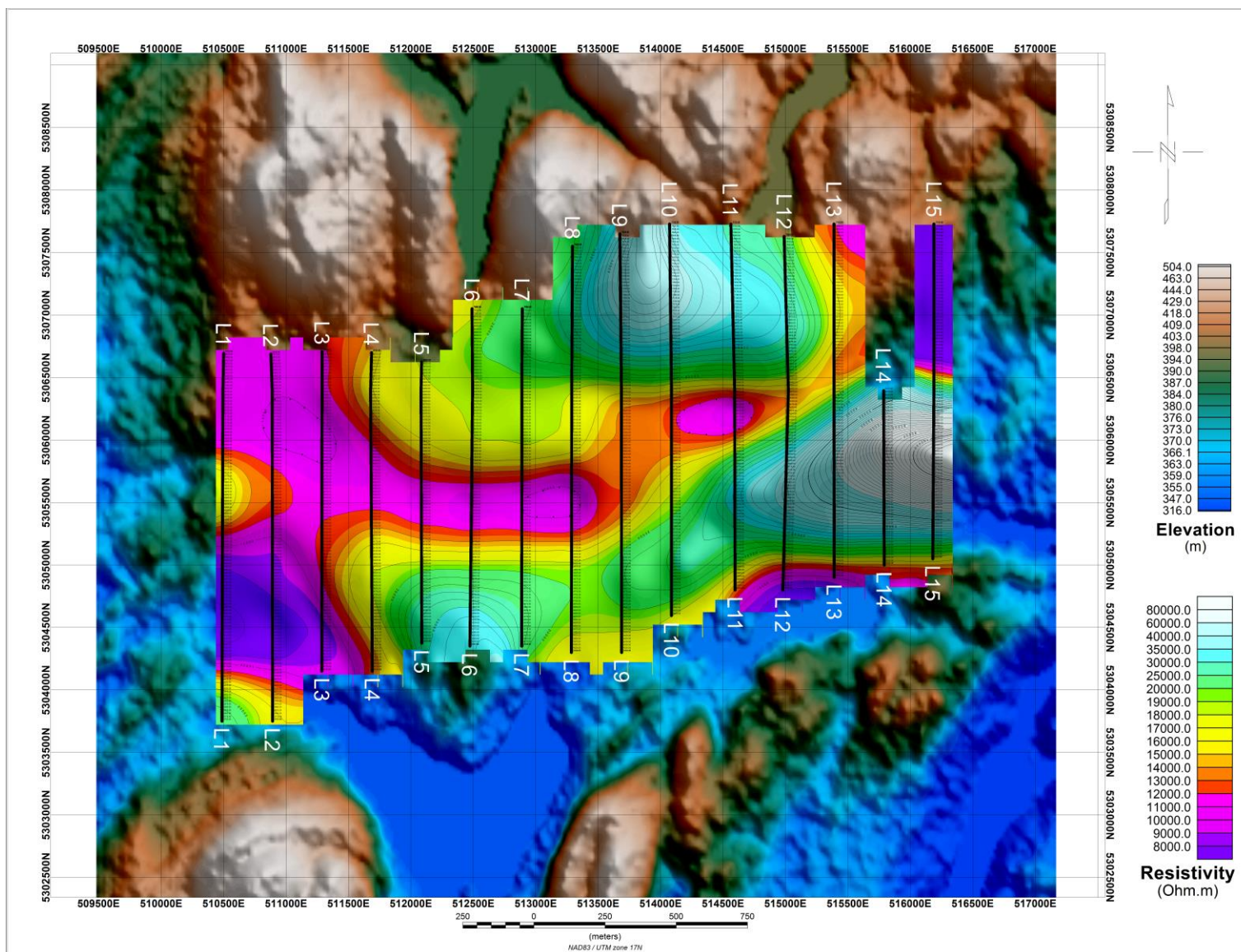


Figure 7. Horizontal resistivity slice at an elevation of -100 m underlain by the topographic grid (SRTM1 Canada).



## □ CHARGEABILITY

The overall apparent chargeability values are distributed over a range of amplitudes varying from 2.3 to 13.7 mV/V, above a background of approximately 3.3 to 4.5 mV/V. The interpreted anomalous trends display low (< 4-6 mV/V), and moderate chargeable zones (> 7 mV/V).

Following a detailed interpretation of the apparent pseudosections, as well as the inverted vertical sections, six (6) anomalous trends were detected within the Buried Treasure Project. The surface projections of those interpreted anomalies are illustrated on the Geophysical Interpretation map (10.0). A description of the interpreted anomalous trends is written below and further explanation on the selected targets can be found in Table 1 “Drilling Targets on the Buried Treasure Project”.

These chargeable axes are roughly oriented in an east-west direction. The discontinuous character of the interpreted trends and the occasional change in their direction are likely due to the late fault zones affecting the study area (Figure 8).

B-01, B-02, B-03 and B-06 are considered first priority polarizable axes, because of their higher chargeability responses and their association with very low resistivity (Metal Factor; B-01, B-02, and B-03), as well as very high resistivity (Gold Index; B-06).

Five (5) DDHs are recommended to test these IP axes (see Table 1). Two of the proposed drill holes are highlighted in low resistivity zones (Metal Factor), and three in high resistivity zones (Gold Index).

### **First Priority**

**B-01** and **B-03** are short and moderately chargeable axes, extending from L 1E to L 3E and L 2E to L 3E, respectively. These chargeable trends are associated with a very low resistivity zone (<12 000 Ohm-m; see Figure 9) and are well-defined by the Metal Factor. One drill hole (1\_B-01) is recommended on L 2E to test this anomaly, near to the CLLF zone (Figure 8).

**B-02** is a well-defined and moderately chargeable axis, located between L 1E and L 2E, that lies within a moderately resistive body (>14 000 Ohm-m; see Figure 9). This source, located in the western part of the survey grid, displays a low to moderate Gold Index and a moderate Metal Factor. One drill hole (1\_B-02) is recommended on L 2E to test this anomaly, adjacent to the CLLF zone.

**B-06** is a well-defined, moderately chargeable axis, located between L 11E and L 15E. This chargeable axis is found within a strongly resistive environment. We recommend testing this chargeable axis on L 13E (1\_B-06b) which coincides with a strong Gold Index zone (see Table 1).

### **Second Priority**

**B-04** is a long, east-west trending, weakly to moderately chargeable axis. This source is well-defined in most locations and is located within a moderately to strongly resistive environment, between L 7E and L 15E in the north-northeastern part of the grid (Figure 8). The B-04 targets are potentially the eastern extension of B-02 and/or B-03 which is probably the result of late breaking faults affecting the region.

### **Third Priority**

**B-05** is a very short, weak chargeable axis, which follows a moderately resistive environment. This source is located between L 8E and L 9E in the southern part of the survey grid (Figure 8).



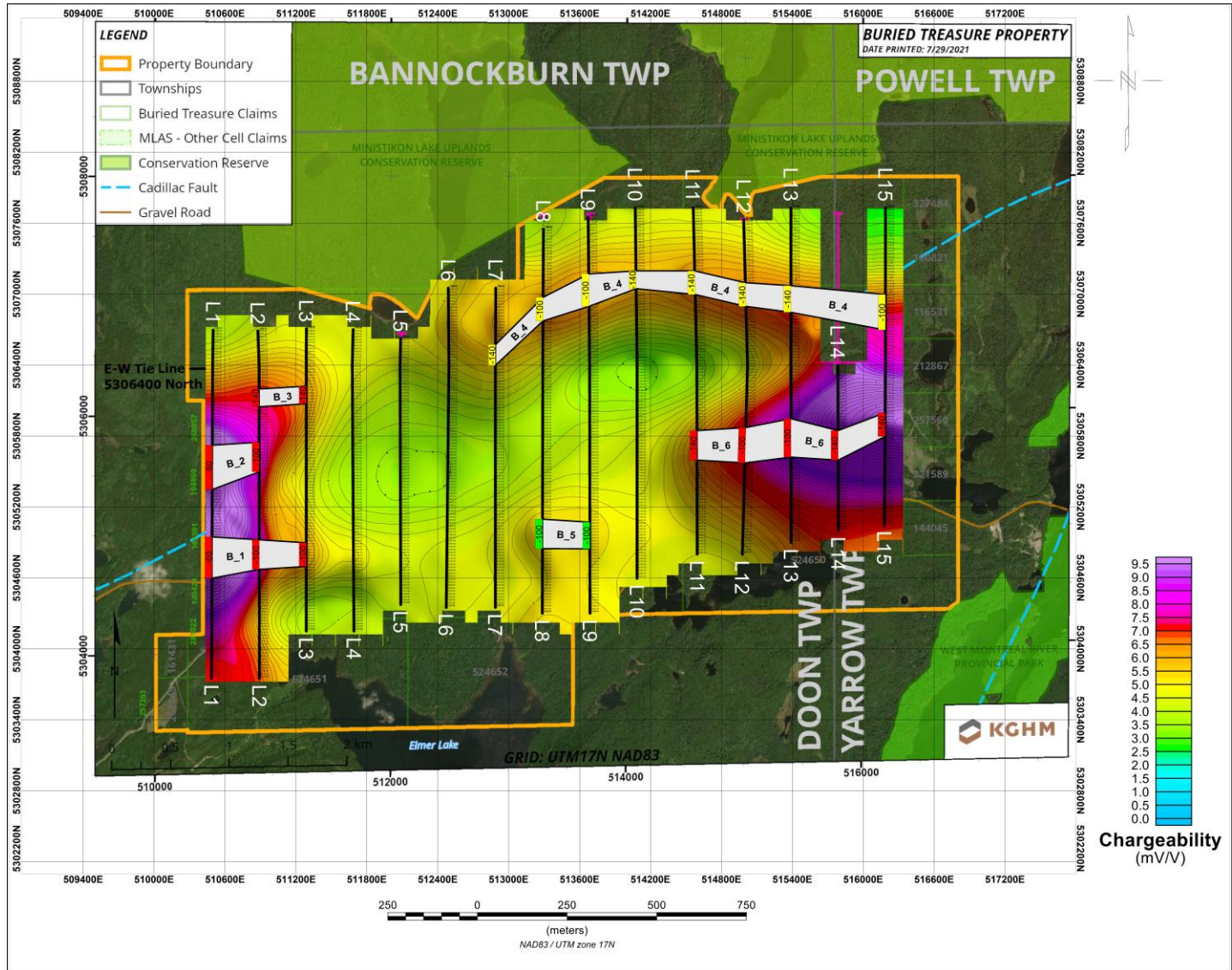


Figure 8. Chargeability grid at -100 m elevation with geophysical interpretation.



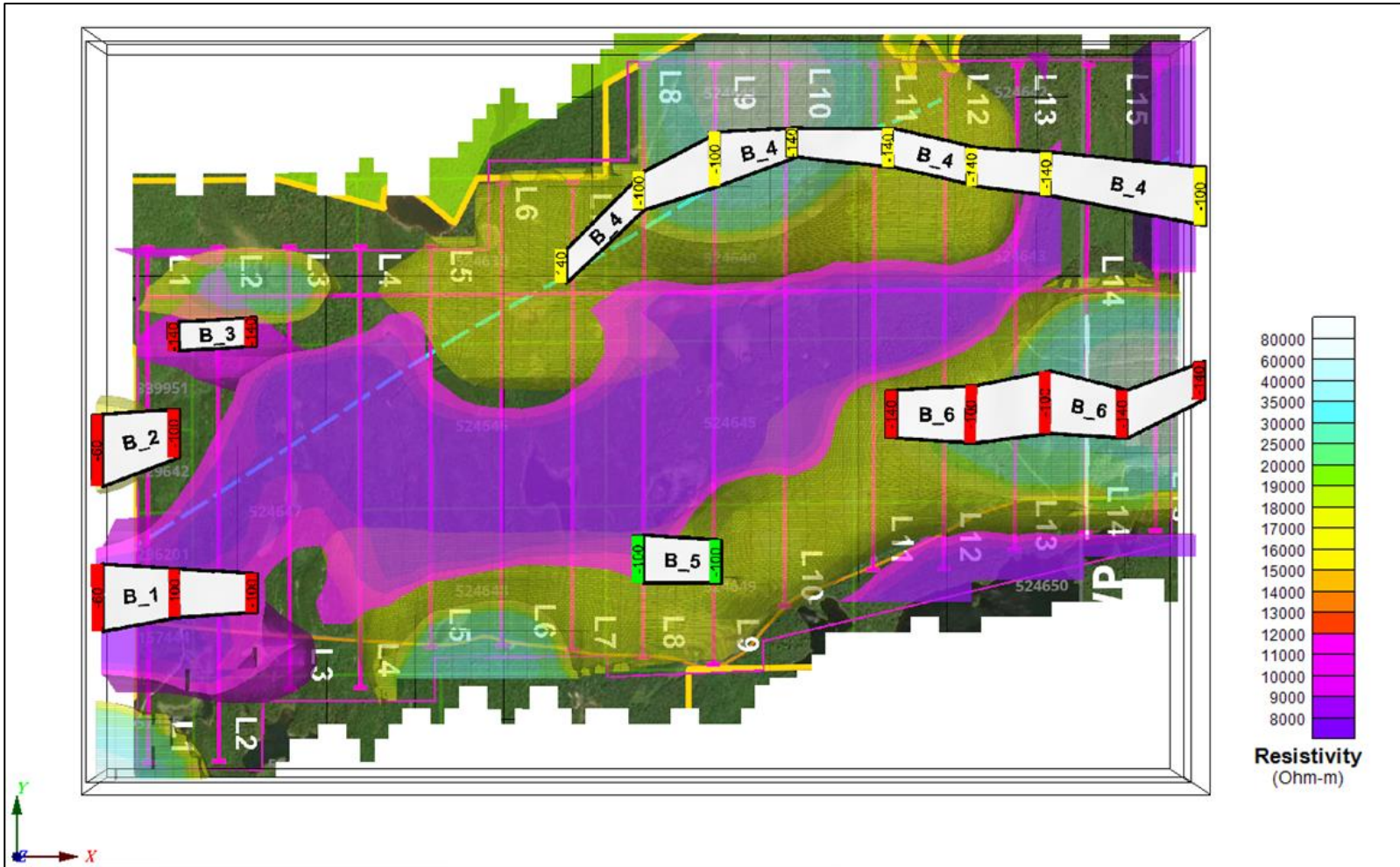


Figure 9. Shaded 3D resistivity model with the interpreted chargeable axe



## 4. CONCLUSION AND RECOMMENDATIONS

The OreVision® survey has allowed us to identify several distinctive resistivity and conductivity zones, associated with some representative chargeable axes within the Buried Treasure Project. Using the available information, we have reviewed the priority and the importance attached to these targets.

### **PROSPECTING**

As shallow anomalies (outcropping or subcropping) are not observed in the study area, no prospecting is recommended at this time.

### **DRILLING**

A drilling program has been recommended to test some of the chargeable axes (targets) outlined in this report, particularly those that have not been drilled before.

Table 1 lists the proposed drill holes and their characteristics as well as the location and description of the associated targets. These initial holes should be planned to intersect the centres of the targets as outlined in the interpreted depth sections.

The table includes images of the selected drill targets.

To note that in some cases, there is no clear indication of the dip of certain targets; geological information should be reviewed to determine the optimum angle, and especially, azimuth for drilling.

### **OREVISION® SURVEY EXTENSION**

This survey has identified interesting polarizable anomalies within some resistive and conductive environments which could be associated with the known shear zone (CLLF) and the targeted mineralization. While possible drilling locations on these anomalies have been provided, it is advisable to do so only if geologists with FNX Mining Company Inc. deem that conditions for gold depositions are present in these structures.



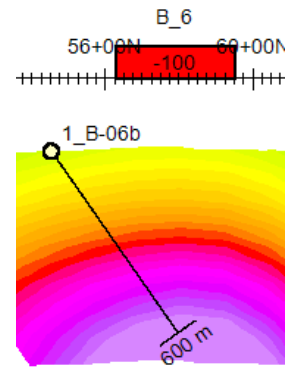
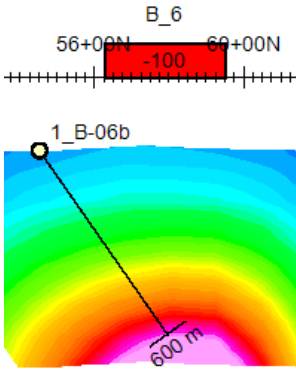
**Table 1. OreVision® Drilling Targets on the Buried Treasure Project**

Target (Priority_Anomaly)	Type / Target Interest	Location of the Drill Target			Proposed Drillhole			Target Visual
		Line	Station	Elevation (to centre)	Station	Azimuth (°)	Dip (°)	
1_B-01	<p>A well-defined and strongly chargeable target, found within a high conductivity zone.</p> <p>The co-location of low resistivity and strong chargeability makes this an attractive Metal Factor target.</p>	L 2E	48+00N	-100 m	52+00N	180	-55	<p><b>Chargeability</b></p> <p><b>Metal Factor</b></p>



Target (Priority_ Anomaly)	Type / Target Interest	Location of the Drill Target			Proposed Drillhole			Target Visual
		Line	Station	Elevation (to centre)	Station	Azimuth (°)	Dip (°)	
1_B-02	<p>Well-defined chargeable target found within a moderately resistive environment, nearby a conductivity zone.</p> <p>This target happens to be particularly well-defined with a moderate Metal Factor response.</p>	L 2E	56+00N	-100 m	52+75N	0	-55	<p><b>Chargeability</b></p> <p><b>Metal Factor</b></p>



Target (Priority_ Anomaly)	Type / Target Interest	Location of the Drill Target			Proposed Drillhole			Target Visual
		Line	Station	Elevation (to centre)	Station	Azimuth (°)	Dip (°)	
1_B-06b	<p>This target is found within one of the most chargeable zones of the survey grid.</p> <p>This proposed chargeable target is well resolved and located within a highly resistive environment.</p> <p>Very strong Gold Index response.</p>	L 13E	58+25N	-100 m	54+50N	0	-55	 <p style="text-align: center;"><b>Chargeability</b></p>  <p style="text-align: center;"><b>Gold Index</b></p>



Target (Priority_ Anomaly)	Type / Target Interest	Location of the Drill Target			Proposed Drillhole			Target Visual
		Line	Station	Elevation (to centre)	Station	Azimuth (°)	Dip (°)	
1_B-06a	<p>This source is deep and located within a region of high resistivity.</p> <p>This proposed DDH target is associated with a moderately high chargeability zone within a moderate Gold Index response.</p> <p>This target is found along a highly magnetic trend.</p>	L 11E	56+00N	-140 m	52+75N	0	-55	<p><b>Chargeability</b></p> <p><b>Gold Index</b></p>



Target (Priority_ Anomaly)	Type / Target Interest	Location of the Drill Target			Proposed Drillhole			Target Visual
		Line	Station	Elevation (to centre)	Station	Azimuth (°)	Dip (°)	
2_B-04	<p>Located in a second priority trend that runs continuously across the north-northeastern part of the survey grid.</p> <p>This target is an interesting trend, located very close to the CLLF zone within a dipping resistor and a moderate Gold Index.</p> <p>Its centre is deep seating, possibly deeper than this survey's DOI.</p> <p>Also associated with a highly magnetic zone.</p>	L 10E	71+25N	-140 m	68+00N	0	-55	<p style="text-align: center;"><b>Chargeability</b></p> <p style="text-align: center;"><b>Gold Index</b></p>



The author is confident that the Buried Treasure Project offers potential for discovering new mineralized zones and that the drill holes recommended for the investigation of the anomalous sources identified by the present survey will be positive.

However, our knowledge of the property's geology is not as thorough as the geologist of FNX Mining Company Inc. Our interpretation and recommendations are mainly based on the observed geophysical responses.

In order to maximize the outcome of the present results, FNX Mining Company Inc. should, ensure all available geoscience information is compiled, assess and, if necessary, redefine the priority and nature of the recommendations proposed in this report.



Y.K

Yasaman Khajehnouri, CEP,  
Candidate to the Engineering Profession

Respectfully submitted,  
Abitibi Geophysics Inc.



Pam Coles, P.Geo.,  
Chief Geophysicist  
PGO #2612

YK/si





## APPENDIX A: PROJECT OVERVIEW

- ❑ **PROJECT ID** **Buried Treasure Project**  
(Our reference: 21NT049-P2)
- ❑ **CUSTOMER** **FNX Mining Company Inc.**  
410 Falconbridge Road, Unit 4  
Sudbury, ON, Canada  
P3A 4S4
- ❑ **REPRESENTATIVE** **Steven Dunlop**  
General Manager  
[Steve.Dunlop@ca.kghm.com](mailto:Steve.Dunlop@ca.kghm.com)
- ❑ **LOCATION** **Matachewan, Ontario**  
Located at latitude 47°54'17.5" N, longitude 80°49'17.5" W  
NAD83 / UTM zone 17N: 513 338 mE, 5 305 740 mN  
NTS sheet: 41P15
- ❑ **NEAREST SETTLEMENT** **Matachewan:** Located approximately 15 km west of the survey area.
- ❑ **ACCESS** Access to the Buried Treasure Property is via highway 566 from Matachewan (west edge of town). A maintained gravel road (Asbestos Mine Rd) is used to access the west side of the property from highway 566.

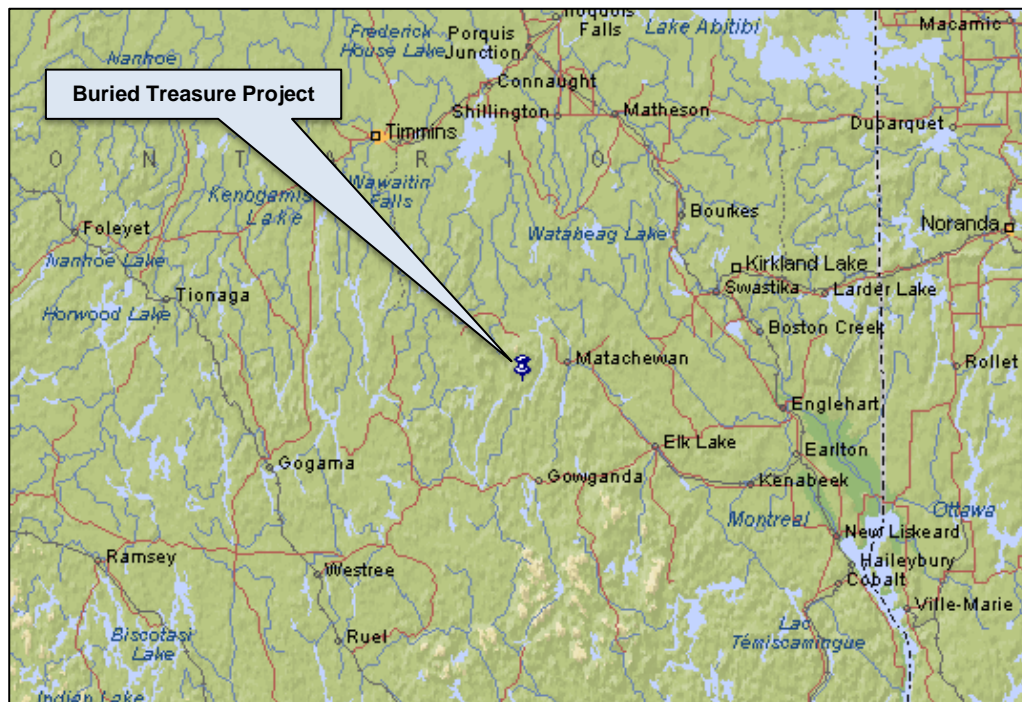


Figure 10. General location of the Buried Treasure Project.



- ❑ **CULTURAL FEATURES** No cultural features were observed on the survey grid.
- ❑ **GEOMORPHOLOGY** The topography of the Buried Treasure Project is rather rugged. Elevations range from approximately 315 m to 554 m, above sea level. Hydrographically, numerous wetlands (swamps) and a few small lakes are found within the project area. The survey grid is bound to the southwest by Elmer Lake. The survey grid also contains several rocky and sandy terrains.
- ❑ **SURVEY GRID** The OreVision® survey covered 15 lines (L 1E to L 15E) ranging in length from 2.3 km to 3 km and spaced approximately every 400 m.
- ❑ **LAND TENURE** The OreVision® survey encompasses the mineral claims shown in Figure 11 below.
- ❑ **COORDINATE SYSTEM** Local datum: NAD 83  
Projection type: Universal Transverse Mercator (UTM)  
Zone: 17N

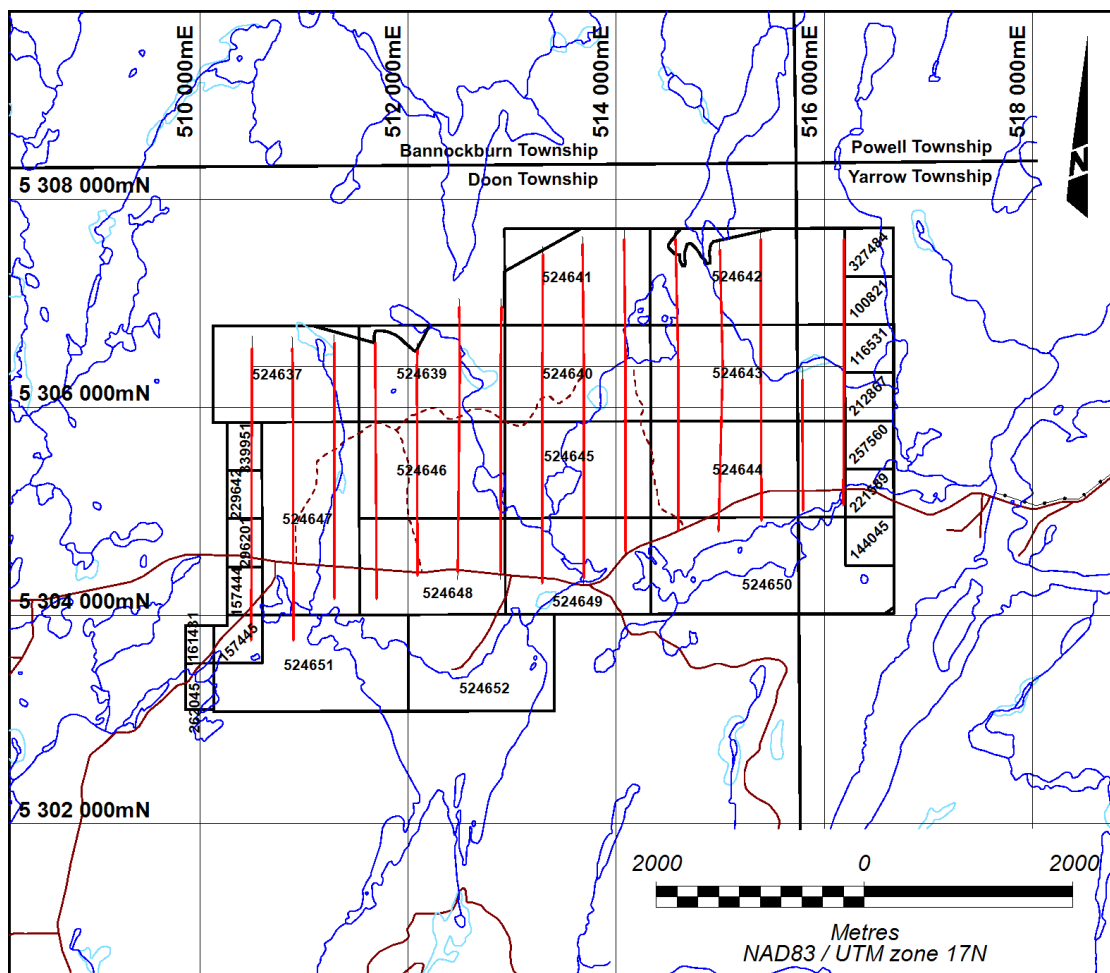


Figure 11. Mineral claims and OreVision® survey coverage over the Buried Treasure Project.



## APPENDIX B: DATA ACQUISITION

- ❑ **PERSONNEL**

Ezekiel Charlebois Sciscioli,	Crew chief
Martial Girard,	Field assistant and Rx operator
Henry-Philippe Bauer,	Field assistant
Samuel Labre.	Field assistant
Pascal Renard,	Field assistant
John Shesha,	Field assistant
Ederson Alejandro Villamizar	Field assistant
Carole Picard, Tech.,	Plotting
Yasaman Khajehnouori, CEP	QC, interpretation and report
Pam Coles, P.Geo.,	Final quality control and validation of product conformity
  
- ❑ **ECOLOGO**

Abitibi Geophysics adheres to the Ecologo Certification for the mining exploration industry. This certification promotes the widespread application of environmental, social, and economic practises of the highest standards. Abitibi Geophysics conforms to the standardized requirements of this certification and those of the government ministries related to these practices. The conditions for the execution of exploration work set by the governing bodies and any agreement between the claim owners and concerned Aboriginal communities are followed rigorously.
  
- ❑ **SECURITY AND ENVIRONMENT**

As part of the Abitibi Geophysics Inc. EHS program, crew members received first aid training and were provided with the safety equipment and specialized training for the induced polarization technique.

One incident was reported during this project:  
The project crew chief injured his hand while carrying an instrument. The injury was treated immediately, and no additional treatment was required.
  
- ❑ **TYPE OF SURVEY** Time Domain Resistivity / Induced Polarization
  
- ❑ **CONFIGURATION** OreVision® "a" = 50 m / "n" = 1 to 30
  
- ❑ **COVERAGE** 40 km
  
- ❑ **ACQUISITION** September 23<sup>h</sup> to October 28<sup>h</sup> 2021
  
- ❑ **IP TRANSMITTERS (TX)**

**IRIS Instruments TIPIX, s/n: 16, 38**  
Maximum output: up to 2.2 kW or 13 A or 1800 V  
Power supply: Honda 2000 VA  
Electrodes: shape memory alloy  
Resolution: 1 mA on output current display  
Waveform: bipolar square wave with 50% duty cycle  
Pulse duration: 1 second

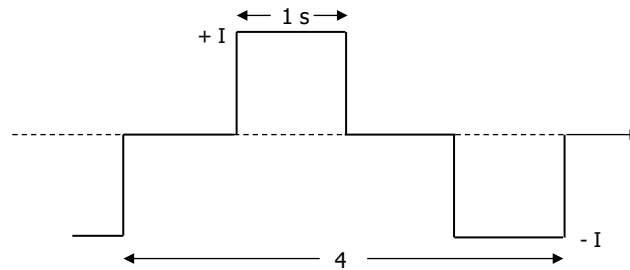


Figure 12. Transmitted signals across C<sub>1</sub> – C<sub>2</sub>.

□ *IP RECEIVERS (RX)*

**IRIS Elrec-PRO with integrated SwitchPRO: s/n 478, 479 and 480**  
Electrodes: shape memory alloy

**V<sub>P</sub>** Primary voltage measurement:

- ✧ Input impedance: 100 MΩ
- ✧ Resolution: 1 μV
- ✧ Typical accuracy: **0.2%**

**M<sub>a</sub>** Apparent chargeability measurement:

- ✧ Resolution: 0.01 mV/V
- ✧ Typical accuracy: 0.4%
- ✧ Linear sampling mode: 20-time slices (M<sub>1</sub> to M<sub>20</sub>)
- ✧ All gates are normalized with respect to a standard decay curve for QC in the field.

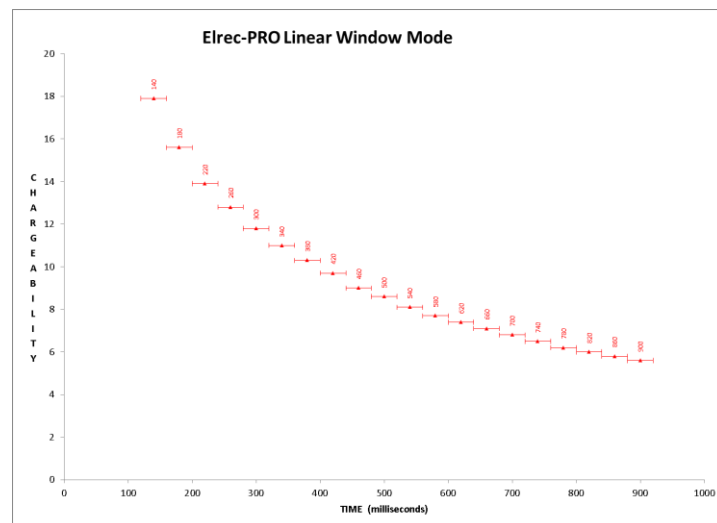


Figure 13. Linear windows (1 s pulse).

□ *APPARENT RESISTIVITY CALCULATION*

$$\rho_a = 2 \cdot \pi \cdot \frac{V_P}{I} \cdot n \cdot (n + 1) \cdot a \quad (\Omega \cdot m)$$

Cumulative error: 5% max, mainly due to chaining accuracy.



□ **QUALITY CONTROL**  
(RECORDS AVAILABLE UPON  
REQUEST)

**Before the survey:**

- ✓ Transmitter and motor generator were checked for maximum output using calibrated loads.
- ✓ Receiver was checked using the Abitibi Geophysics SIMP™ certified and calibrated  $V_p$  and  $M_a$  signal simulator.

**During data acquisition:**

- ✓ Rx and Tx cable insulation were verified every morning.
- ✓ Data was reviewed using Prosys II® allowing a daily monitoring of data quality and survey efficiency.
- ✓ Sufficient pulses were stacked: a minimum of 8 pulses for every reading.
- ✓ A minimum of 6 current electrodes and saltwater were used at each station.

**At the Base of Operations:**

- ✓ Field QCs were inspected and validated.
- ✓ Each IP decay curve was analyzed with our proprietary Geosoft GX, *InteractiveAnomaly*®. The gates that were rejected were not included in the calculation of the plotted  $M_a$ .

The first step in processing OreVision® data is quality control. To ensure consistent and efficient quality control Abitibi Geophysics has developed *InteractiveAnomaly*®. This Geosoft GX analyzes the normalized decay curve for each reading within the data set. Only readings that successfully pass quality control will be used to calculate the final chargeability. Following this automated procedure, the apparent resistivity and apparent chargeability pseudosections are reviewed and further manual QC is conducted.

□ **QUALITY STATISTICS**

**Table 2. Quality Statistics – OreVision®**

<b>Buried Treasure Project</b>	
Average contact resistance across Rx dipole (P <sub>1</sub> -P <sub>2</sub> )	<b>7.7 kΩ</b>
Average injected current to Tx dipole (C <sub>1</sub> -C <sub>2</sub> )	<b>1100 mA</b>
Average $V_p$ measured across Rx dipole (P <sub>1</sub> -P <sub>2</sub> )	<b>594.3 mV</b>
Observed windows found to fit a pure electrode polarization relaxation curve	<b>90.33 %</b>
Average deviation of the validated, normalized windows with respect to the mean chargeabilities.	<b>0.3 mV/V</b>



## APPENDIX C: DATA PROCESSING AND DELIVERABLES

### ☐ *RES 3D INVERSION*

Quality control (QC) performed on the collected OreVison® data validated 97.42 % of the recorded readings. The validated data were inverted using Res3D software to recover the apparent resistivity and chargeability values. This software is able to invert 3D apparent resistivity and chargeability volumes using a regular grid of surface electrodes.

The software generates a model consisting of rectangular prisms (blocks) and applies several features to optimize the least-squares routine for faster completion of large datasets.

For this project, the mesh block model was divided into an optimized non-uniform rectangular mesh of 101 x 577 x 24 active cells with average values of 100 m in easting (X), 12.5 m in northing (Y), and depth layers ranging from 10 m to 650 m in depth (Z downward). The inversion model consists of 17 layers and 172 975 cells. This modeling area was overlain by topographical data and padding cells were added on either side of the x and y axes. The cells below the surface defined the model, and the inverse problem was therefore formalized by inverting the 17 261 data points to recover the resistivity and chargeability values in those cells.

The resistivity and IP models both converged 10 iterations.

### ☐ *LIMITATIONS OF THE 3D INVERSION TECHNIQUE*

Inversions cannot create information that is not already in the raw data set (pseudosections), i.e., the limitations of the technique and array that was used will still prevail. However, noise is efficiently rejected, near-surface effects are easily identified and complex responses, such as two adjoining sources, a wide body or a dipping geological contact, are well resolved.

In the absence of hard constraining data about the subsurface geometry of the mineralization and considering the non-uniqueness of the geophysical inversion methods, any recovered electrical distribution is only one of an infinite number of possible distributions that could explain the observed data.

### ☐ *RESISTIVE SOURCES*

For chargeable and resistive sources, the depth extension may seem limited (the inversion seems to close at depth). This is a limitation of the electrical method and not of the inversion. Above a resistive body, the current lines are diverted to follow the easier (more conductive) path. Therefore, the investigation of depth is deficient in the contribution of the deepest part of the chargeable body. In fact, it can be assumed that these bodies extend at depth.



☐ *METAL FACTOR*

From the recovered resistivity and chargeability models from the 3D inversion, the Metal Factor has been calculated as follows:

$$\text{Metal Factor (MF)} = (\text{chargeability} / \sqrt{\text{resistivity}}) \times 1000$$

This parameter particularly highlights regions of low resistivity and high chargeability usually associated with semi-massive to massive sulphides as well as gold associated with disseminated sulphides in sheared or faulted environments.

Note that a conductive zone with little or no chargeable association will still result in a high Metal Factor. This signature would be typical of a shear zone (ionic conductor) where sulphides were destroyed, thus producing no chargeable anomaly. This type of Metal Factor anomaly should still be considered in precious metals exploration, even in the absence of a chargeable anomaly.

The resistivity and chargeability data should always be consulted prior to drawing any conclusions from the Metal Factor. The Metal Factor does not highlight resistive and chargeable zones as well as the Gold Index.

The Metal Factor Maps (8.4) display the results of this calculation. The Metal Factor is included with the vertical sections for each line.

☐ *GOLD INDEX*

From the recovered resistivity and chargeability models from the 3D inversion, the Gold Index has been calculated as follows:

$$\text{Gold Index (GI)} = (\text{Chargeability}^2 \times \text{Resistivity} / 1000)$$

This parameter particularly highlights regions of high resistivity and chargeability which are amenable to hosting disseminated sulphides in quartz veins or associated with silicified / carbonatized / Albitization alteration zones. Note that a resistive zone with little or no chargeable association will still result in a high Gold Index. This signature would be typical of an indurated (very resistive) zone in which electrolyte could not circulate to charge the metallic grains due to a lack of porosity. This Gold Index anomaly should still be considered in precious metals exploration, even in the absence of a chargeable anomaly.

The resistivity and chargeability data should always be consulted prior to drawing any conclusions from the Gold Index. The Gold Index does not highlight conductive and chargeable zones as well as the Metal Factor.

The Gold Index Maps (8.6) display the results of this calculation. The Gold Index is included with the vertical sections for each line.





❑ **DIGITAL DATA**

The maps, pseudosections and true depth sections are delivered in the Oasis Montaj map file and PDF formats. The maps are also delivered in the PNG, MapInfo, GeoTIFF, DXF and ArcView file formats.

A copy of all survey acquisition data (ASCII text format), processed data (Geosoft Montaj databases) and the inversion voxels are also delivered.

**Table 3. Maps Produced**

Map Number	Description	Scale
<b>OreVision® Survey</b>		
15 Plates L 1E to L 15E	Apparent Resistivity and Chargeability Pseudosections	1:5000
	Vertical Sections with calculated <i>Metal Factor</i>	1:20 000
	Vertical Sections with calculated <i>Gold Index</i>	1:20 000
8.2_-100	Inverted Resistivity at an Elevation of -100 m ( $\Omega$ .m)	1:10 000
8.2_50	Inverted Resistivity at an Elevation of 50 m ( $\Omega$ .m)	1:10 000
8.2_200	Inverted Resistivity at an Elevation of 200 m ( $\Omega$ .m)	1:10 000
8.3_-100	Inverted Chargeability at an Elevation of -100 m (mV/V)	1:10 000
8.3_50	Inverted Chargeability at an Elevation of 50 m (mV/V)	1:10 000
8.3_200	Inverted Chargeability at an Elevation of 200 m (mV/V)	1:10 000
8.4_-100	Calculated Metal Factor at an Elevation of -100 m	1:10 000
8.4_50	Calculated Metal Factor at an Elevation of 50 m	1:10 000
8.4_200	Calculated Metal Factor at an Elevation of 200 m	1:10 000
8.6_-100	Calculated Gold Index at an Elevation of -100 m	1:10 000
8.6_50	Calculated Gold Index at an Elevation of 50 m	1:10 000
8.6_200	Calculated Gold Index at an Elevation of 200 m	1:10 000
10.0	Geophysical Interpretation	1:10 000

Our Quality Control System requires every final map to be inspected by at least two qualified persons before being approved and included within a final report.



## APPENDIX D: BIBLIOGRAPHY

Daniels, B., Lin, S., Zhang, J., Linnen, R., 2013. Structural and Mineralogical Evidence for Paleoproterozoic Hydrothermal Activity at the Young-Davidson Mine, Matachewan, Ontario.

Hodgson, C., 2011. Deformation of the Gowganda Formation, Matachewan area, Ontario, by post-Early Proterozoic reactivation of the Archean Larder Lake – Cadillac break, with implications for gold exploration. *Canadian Journal of Earth Sciences* 29, 1580–1589. <https://doi.org/10.1139/e92-124>

Rabeau, O., Legault, M., Cheilietz, A., Jébrak, M., Royer, J.-J., Cheng, L., 2011. Gold Potential of a Hidden Archean Fault Zone: The Case of the Cadillac-Larder Lake Fault. *Exploration and Mining Geology* 19, 99–116. <https://doi.org/10.2113/gsemg.19.3-4.99>

Stephens, J., 2016. 2015 and 2016 Field Work Report - Border Property.

Yatini, Santoso, D., Laesanpura, A., Sulistijo, B., 2016. Influence of physical parameters to time domain induced polarization (TDIP) response. Presented at the THE 4TH INTERNATIONAL CONFERENCE ON THEORETICAL AND APPLIED PHYSICS (ICTAP) 2014, Bali, Indonesia, p. 030010. <https://doi.org/10.1063/1.4943705>

## Appendix B: Receipts and Invoices

Records of expenditures for the 2021 exploration program are included as an attachment with this report under the folder “Appendix B – Invoices and Receipts”.