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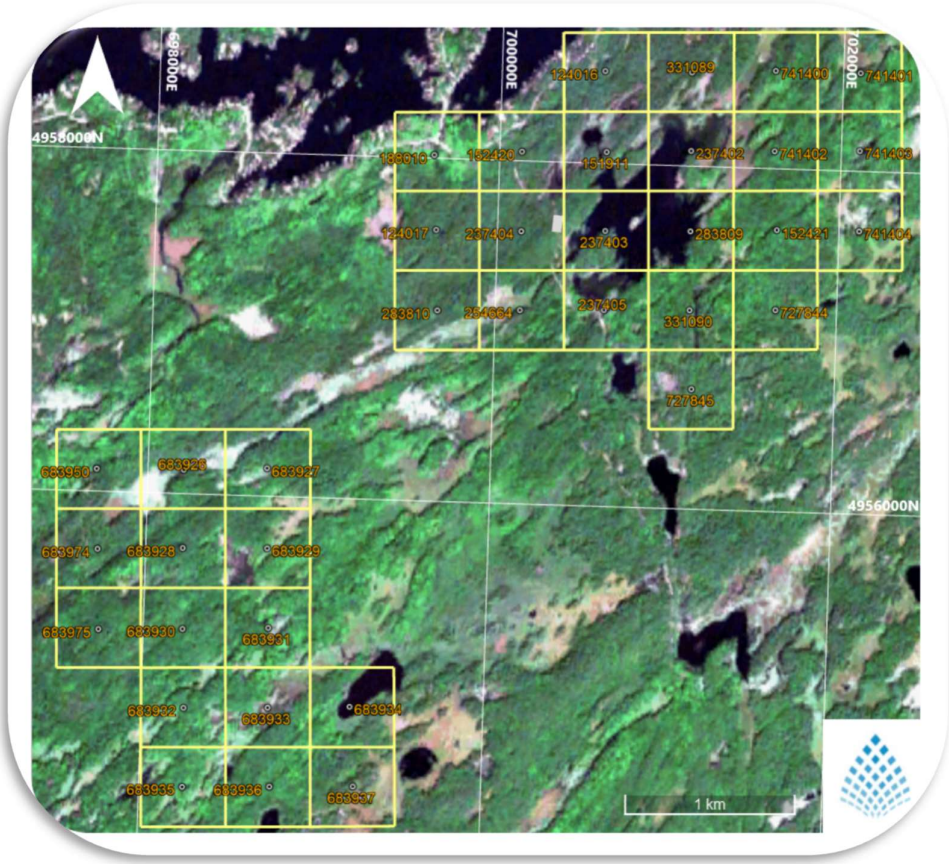
Assessment Report for the Loom Lake and Loom Lake West Claims, Galway Township, Ontario

UTM 17T 700000mE 4956000mN 302m asl

Report Prepared for
Earth Resources Limited,
1 Royal Birkdale Lane,
Thornhill,
Ontario Canada L3T-1V1



Report Prepared By:

Ryder & Associates,
118 Fletcher St.
Bradford, ON
L3Z-2Y9

15th MARCH 2023

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Ryder & Associates
118 Fletcher St.
Bradford, ON
Canada L3Z-2Y9

AFL Project Number LLAR2301

Effective Date: 15th March 2023
Signature Date: 15th March 2023

Author(s):

_____
John M. Ryder P.Geo. (ON # 2105)

Notice/Avis

This Assessment Report was prepared for Earth Resources Limited by Ryder & Associates, Bradford, ON, Canada. Estimates, information, conclusions, and recommendations are consistent with the information received from outside sources, information generated as a result of works overseen by the author, and the assumptions and conditions specified in this Assessment Report.

This Assessment Report is intended for Earth Resources Limited as part of a scope of work agreed with Earth Resources Limited under relevant securities legislation. Except for uses defined under the Ontario Mining Act all other uses are at the sole risk of the reader.

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Frontispiece: August 24th 2022 Sentinel False Colour Image with Claim Blocks

1.0 Summary

1.1 Scope of Work and Location

This report was prepared by Ryder & Associates ("RA") at the request of Earth Resources Limited ("EA") the registered owner of the claims. The purpose of this report is to satisfy assessment requirements for the Loom Lake and Loom Lake West Claims totalling 37 claims as described under Section 65 (1) of the *Mining Act* and Ontario Regulation 65/18.

The Loom Lake and Loom Lake West Claims are located in Southern Ontario, approximately 130 km directly North East of the city of Toronto and 20 km North-North East of the town of Bobcaygeon, in Galway Township on the 1:250,000 NTS sheet 031D (Figure 1)

Figure 1.1 Location Map

1.2 Tenure and Encumbrances

The two claim blocks, Loom Lake and Loom Lake West, total thirty-seven (37) mining claims, twenty-two (22) contiguous mining claims for Loom Lake and fifteen (15) contiguous mining claims for Loom Lake West in Galway Township for a combined area of 844.5 hectares.

The total required assessment work for both blocks is $12,000 with the Loom Lake claim block having a reserve of $26,236.00

As of the date of this report there are no encumbrances on the claims in question, save the requirement to file annual assessment.

1.3 History

Recorded exploration in Galway Township dates from 1954 and 73 assessment files are publicly available on the OGS GeoData Listing.

Apart from the development of limestone quarries in the township exploration was initially focussed on uranium, lead-zinc then vermiculite and graphite. The period of main exploration for vermiculite and graphite was from 1999 for vermiculite and from 2012 for graphite apart from historic graphite mining from 1896 to 1954 north of the claim blocks.

Exploration on the two claim blocks consisted of geological mapping, prospecting, till sampling, rock sampling, trenching, diamond drilling and laboratory testing of industrial mineral samples.

Several graphite and vermiculite zones of mineralization were outlined on the claim blocks.

Aster Funds Ltd., conducted and completed two remote sensing surveys, one in April – May 2021 and another during the August - September 2022 period. Both are reported herein.

Fred Archibald P. Geo continued vermiculite and graphite exploration in the region and on the two claim blocks mainly prospecting, outcrop sampling and laboratory testing of industrial minerals.

History of exploration in the township as applicable to the claim blocks is to be found in Appendix I.

1.4 Geology & Mineralization

The Loom Lake and Loom Lake West Claims are underlain mainly by Grenville carbonate metasedimentary rocks - marble, calc-silicate rocks intruded by early felsic granitic pluton in the south eastern quadrants of both claim blocks. A small area of Grenville mafic metavolcanic rocks is present in the eastern quadrant of the Loom Lake claim block

A number of graphite and vermiculite occurrences plus drilled uranium occurrence are reported from the claims.

1.5 Exploration

Long Wave InfraRed (LWIR) spectral surveying and data interpretation was conducted in May 2021 and Short-Wave InfraRed (SWIR) LDFC mapping in August 2022 utilizing proprietary algorithms to build a digital signal model of the spectral reflectance and emissivity emanating from the rocks at the claims area after water, vegetation, clouds, and cloud shadow had been removed.

A total of sixteen (16) long wave infrared (LWIR) spectra endmember minerals were identified including metallic minerals as target vector minerals (TVM's). In addition, a Linear Determinant Function Classifiers (LDFC) was constructed to produce a graphite and vermiculite predictor-fingerprint maps of the claims.

A total of seventeen outcrop sites with visible graphite were chip sampled on 3rd October 2021 (4 sites from continuous outcrop) and on April 25th - 26th 2022 (13 individual sites) on the Loom Lake claim block by Mr. Fred Archibald P. Geo. The objective of the sampling was to determine carbon content of the sampled outcrops. The samples were delivered directly to Actlabs in Ancaster, Ontario on October 4th 2021 and on 27th April 2022. The samples were assayed for carbon and four of the 2021 samples were also tested for gold and returned gold values less than 5ppb.

Based on the assay results of the October 2021 rock chip sampling two large rock (chip/channel) samples were collected by Mr. Fred Archibald P. Geo between December 12th and 14th 2021 and on

October 6th 2022 from the same continuous 100 metre outcrop site sampled in 2021 on the Loom Lake claim block. The December 2021 sampling comprised continuous chip and channel sampling by hammer and chisel/pick over the 100-metre continuous rock outcrop sampled in 2021. A total of 88 kilograms of rock material was collected for metallurgical testing and on January 5th 2022, the 88Kg sample was delivered to the SGS laboratory at Lakefield, Ontario for Scoping Level Floatation testing. A second large sample of 54 kilograms was collected by Mr. Fred Archibald P. Geo from the same location as the 88 kg sample in October 2022 using the same sampling methods and delivered directly on October 7th 2022 to the SGS laboratory at Lakefield, Ontario. The object of the sampling and processing was to produce a flotation concentrate for further specialized testing. A 3-kilogram flotation concentrate was produced at SGS Lakefield.

Two 0.5 kilo concentrate samples from the 3.3-kilogram flotation concentrate from SGS Lakefield were sent to Urbix Inc. of Arizona in January 2023 for further analysis and testing for bulk & tap density; particle size distribution and fixed carbon percentage.

All data locations are reported in UTM NAD 83 or WGH 84 latitude-longitude, zone 17.

1.6 Conclusions

The Long Wave Infrared remote sensing survey identified abundance areas of sixteen (16) minerals including graphite and vermiculite.

SWIR Linear Determinant Function Classifier (LDFC) predictor-Fingerprint Target maps outlined zones of potential graphite and vermiculite

The spectral surveys (LWIR & SWIR) outlined:

- Fifteen (15) potential graphite zones, six (6) on the Loom Lake and nine (9) on the Loom Lake West claim blocks.
- Sampling results for graphite concur with the spectral graphite bands on the Loom Lake claim block.
- Ten (10) potential vermiculite zones, four (4) on the Loom Lake and six (6) on the Loom Lake West claim blocks.
- The potential vermiculite bands trend NE-SW and average one (1) kilometre in length.
- Previous trenching coincides with four (4) of the spectral vermiculite bands.
- No high abundance of iron minerals detected on the claim blocks though minor to moderate goethite and pyrite identified on both blocks.

Rock chip sampling from 2021 confirmed an average grade of 3.75% Cg over 100 metres length of graphitic rock outcrop in the Loom Lake claim block compared to previous sampling over 245 metres length, some 15m to the west of the 2021 sample site, which returned an average grade of 2.75% Cg. The 2022 sampling confirmed graphite in other individual outcrops on claims #237404 and #254664.

Metallurgical test work at SGS, Lakefield confirmed that a flotation concentrate of over 95% C(t) could be produced from graphite occurring on the Loom Lake claim block.

Further work at SGS confirmed that a 98% Cg minus 100 mesh concentrate could also be produced.

Urbix testing was satisfactory with testing results reported in Appendix III

2.0 Introduction

2.1 Introduction and Terms of Reference

Earth Resources Limited retained Aster Funds Ltd., to conduct Long Wave Infrared (LWIR) and Short Wave Infrared (SWIR) surveys over the Loom Lake and Loom Lake West Claims. In addition, a proprietary analysis product called the Linear Determinant Classifiers Function (an n-dimensional linear regression- LDFC) was used to determine areal extent and intensity of exploration anomalies in graphite and vermiculite having a spectral fingerprint to individual local graphite and vermiculite occurrences. Metallurgical testing on a sample of graphite from the claims was conducted at SGS Lakefield, Ontario and results are reported herein.

2.2 Site Visits

No site visits were made.

2.3 Sources of Information

This Report is based, in part, on internal company technical reports, and maps, published government reports and public information. Several sections from assessment and technical reports authored by other geoscientists have been directly quoted or summarized in this Report.

2.4 Disclaimer

This technical report represents the professional opinions of Ryder & Associates as to the interpretations to be made and conclusions drawn in light of information made available to, inspections performed by, and assumptions made by the author using his professional judgment and reasonable care. This document has been prepared based on a scope of work agreed with Earth Resources Limited and is subject to inherent limitations in light of the scope of work, the methodology, procedures, and sampling techniques used. This document is meant to be read as a whole, and portions thereof should not be read or relied upon unless in the context of the whole.

The opinions expressed herein are based on data and information supplied by, or gathered from Earth Resources Limited, from regulatory filings of other companies, and from Government of Ontario geoscientific and related data. This document is written for the sole and exclusive benefit of Earth Resources Limited. Any other person or entity choosing to rely on this document does so at his/her own risk and the author disclaims all liability to any such person or entity.

Information on tenure was obtained from Earth Resources Limited and the Ontario government MLAS website.

Any statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this Report.

3.0 Properties Description

3.1 Project Location

The Loom Lake and Loom Lake West Claims totalling 37 Claims are located in Southern Ontario, approximately 120 km directly North East of the city of Toronto and 20 km North-North East of the town of Bobcaygeon, in Galway Township in the County of Peterborough. They lie on the 1:250,000 NTS sheet 031D and 1:50,000 NT sheet 031D/10. Central location point between the claims is at 699944 m E, 4956118 m N, UTM Zone 17T.

Figure 3.1 Claim Location Map

The claims blocks are located in, Concession 6 to concession 10, lots 20 to lots 33. The central location point between the claim blocks is at 699944 m E, 4956118 m N, UTM Zone 17T.

3.2 Tenure

The Loom Lake and Loom Lake West Claim Blocks are 640 metres apart at their nearest point and each claim block consists of contiguous claims of 22 and 15 claims each, 502.2ha and 342.3ha respectively. Six small areas of alienation land are present in the Loom Lake Claim Block (Figure 3.2 below).

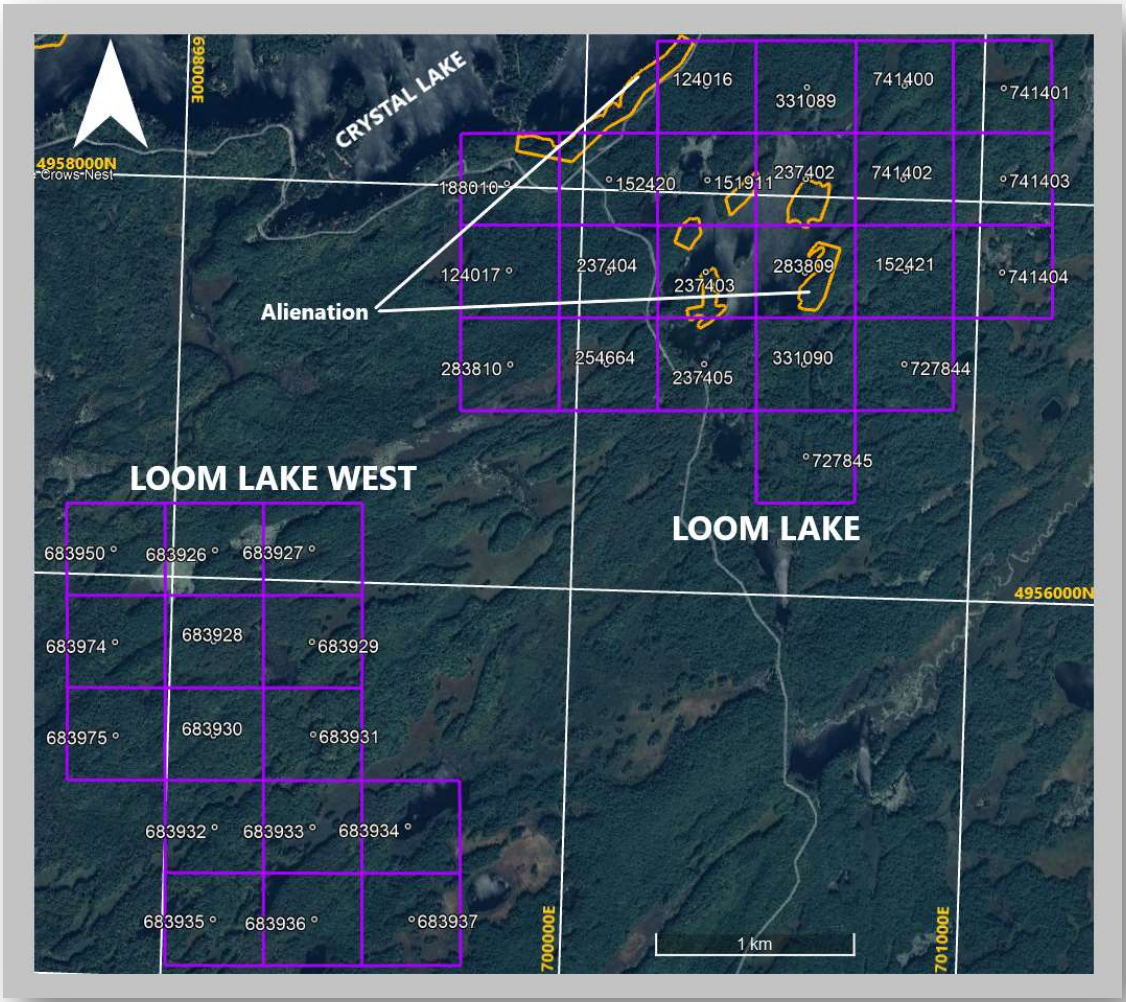

Figure 3.2: Loom Lake and Loom Lake West Claims

Details of the claims for each block are tabulated overleaf in Table 1 and Table 2.

LOOM LAKE CLAIM BLOCK								
Claim Number	Cell ID	Claim Holder	Claim Type	Township Galway	Registration Date	Anniversary Date	Work Amount	Reserve $
124016	31D16D386	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
124017	31D09L024	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
151911	31D09L006	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
152420	31D09L005	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
152421	31D09L028	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
188010	31D09L004	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
237402	31D09L007	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
237403	31D09L026	Earth Resources Limited	SMC	Galway	2022-08-01	2024-08-01	$400.00	0.00
237404	31D09L025	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
237405	31D09L046	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
254664	31D09L045	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
283809	31D09L037	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
283810	31D09L044	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
331089	31D16D387	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
331090	31D09L047	Earth Resources Limited	SMC	Galway	2018-04-09	2023-03-16	$200.00	1,874.00
727844	31D09L048	Earth Resources Limited	SMC	Galway	2022-05-22	2024-05-22	$400.00	0.00
727845	31D09L067	Earth Resources Limited	SMC	Galway	2022-05-22	2024-05-22	$400.00	0.00
741400	31D16D388	Earth Resources Limited	SMC	Galway	2022-08-01	2024-08-01	$400.00	0.00
741401	31D16D389	Earth Resources Limited	SMC	Galway	2022-08-01	2024-08-01	$400.00	0.00
741402	31D09L008	Earth Resources Limited	SMC	Galway	2022-08-01	2024-08-01	$400.00	0.00
741403	31D09L009	Earth Resources Limited	SMC	Galway	2022-08-01	2024-08-01	$400.00	0.00
741404	31D09L029	Earth Resources Limited	SMC	Galway	2022-08-01	2024-08-01	$400.00	0.00
22 Claims		**Earth Resources Limited**	**SMC**	**Galway**			**$6,000.00**	**$26,236.00**

Table 1: Loom Lake Claim data

LOOM LAKE WEST CLAIM BLOCK								
Claim Number	Cell ID	Claim Holder	Claim Type	Township Galway	Registration Date	Anniversary Date	Work Amount	Reserve $
683926	31D09L081	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683927	31D09L082	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683928	31D09L101	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683929	31D09L102	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683930	31D09L121	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683931	31D09L122	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683932	31D09L141	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683933	31D09L142	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683934	31D09L143	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683935	31D09L161	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683936	31D09L162	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683937	31D09L163	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683950	31D1OI100	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683974	31D1OI120	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
683975	31D1OI140	Earth Resources Limited	SMC	Galway	2021-11-08	2023-11-08	$400.00	0.00
15 Claims		**Earth Resources Limited**	**SMC**	**Galway**			**$6,000.00**	**$0.00**

Table 2: Loom Lake West Claim data

A total of $12,00.00 in work expenditures are required by March 16th 2023, November 8th 2023, May 22nd 2024 and August 1st 2024. Current work expenditures and reserve are in excess of this amount.

As the map-designated claims have pre-established positions, a legal survey of them is not required and none of the staked claims have been surveyed.

3.3 Permits

There are no permits required for current exploration works on the Loom Lake and Loom Lake West Claims apart from First Nations consultation which has commenced with the Curve Lake Band.

3.4 Royalties and Taxes

There are no royalties payable.

3.5 Environmental Liabilities

There are no known defined environmental liabilities.

4.0 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

4.1 Accessibility

Access to the claims is by exiting east onto Crystal Lake Road from Highway 121 at Union Creek 21 kilometres north of Bobcaygeon then using various gravel roads. The Loom Lake West claims are accessed by turning south onto a gravel road at 9.2 kms east of Union Creek just before The Crows Nest convenience store. The Loom Lake claims are accessed by a Fire Routes Access Road at approximately 13.5 kms east of Union Creek (Figure 4.1).

Figure 4.1: Claims Access

4.2 Climate

In the region the summers are comfortable; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *-13 °C* to *26 °C* and is rarely below *-23 °C* or above *30 °C*. Climatologic records for temperature, precipitation and cloud cover obtained from the Peterborough weather station are considered to be representative of the actual conditions in the claims area as seen in Figures 4.2, 4.3, 4.4 and 4.4.

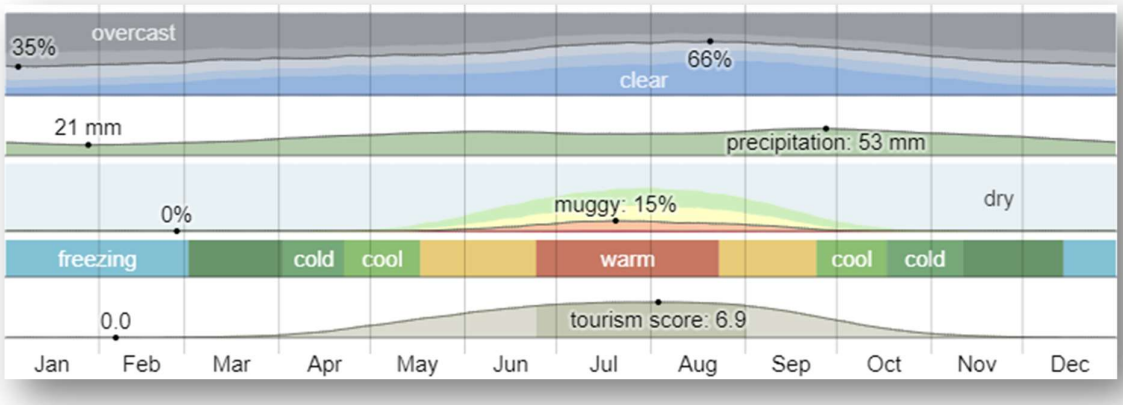

Figure 4.2: Climate Peterborough Airport Data (Weatherspark.com)

The *warm season* lasts for *3.7 months,* from *May 27* to *September 17*, with an average daily high temperature above *20 °C*. The hottest month of the year in Peterborough is *July,* with an average high of *25 °C* and low of *14 °C*. The *cold season* lasts for *3.4 months,* from *December 2* to *March 14,* with an average daily high temperature below *2 °C*. The coldest month of the year in Peterborough is *January,* with an average low of *-12 °C* and high of *-3 °C* (Figure 4.3)

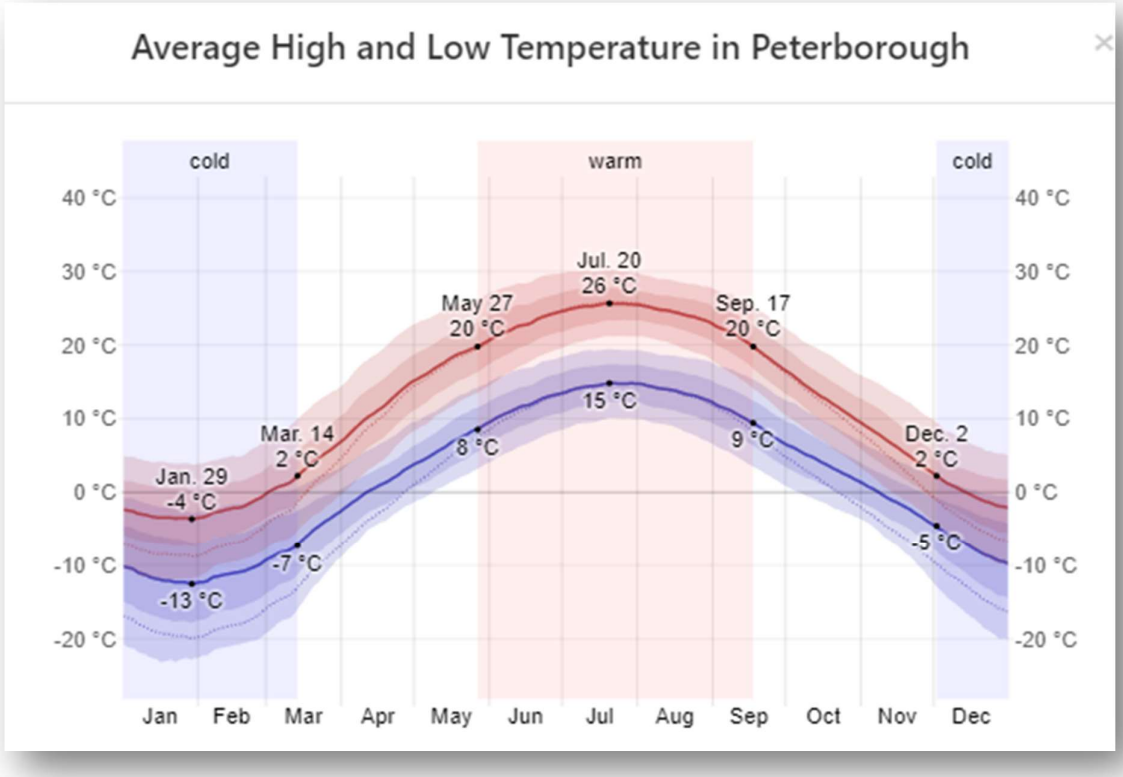

Figure 4.3: Temperature Data (Weatherspark.com)

**(The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.)*

The average percentage of the sky covered by clouds experiences significant seasonal variation over the course of the year. The clearer part of the year begins around May 30 and ends around October 25. In August on average the sky is clear, mostly clear, or partly cloudy 65% of the time.

The cloudier part of the year begins around October 25 and lasts until May 30. The cloudiest month of the year in Peterborough is January, during which on average the sky is overcast or mostly cloudy 64% of the time.

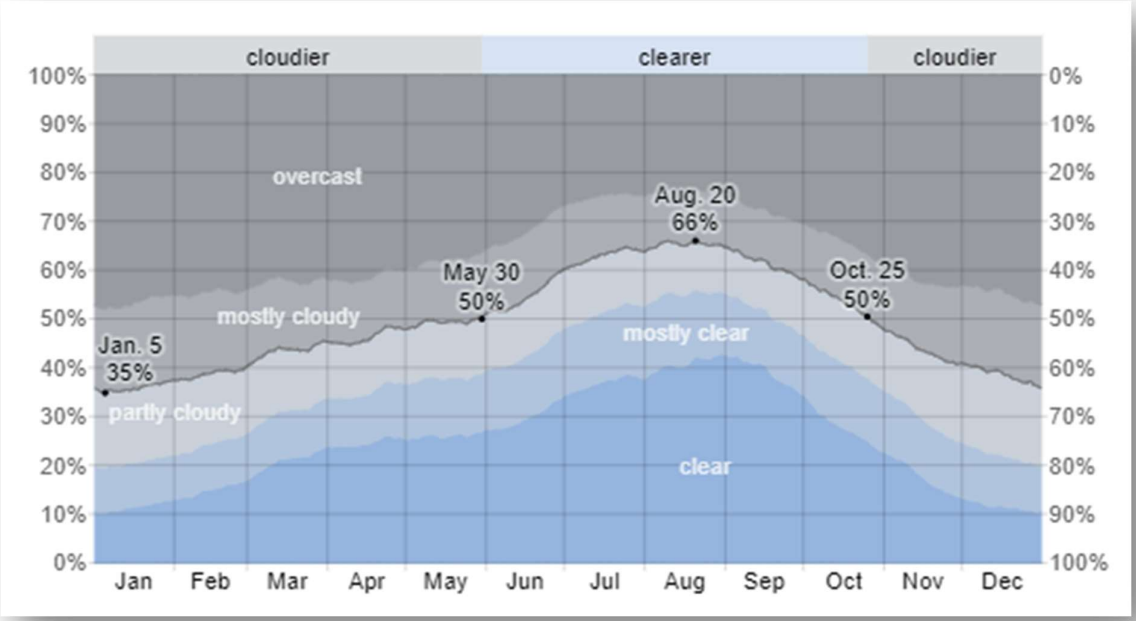

Figure 4.4: Cloud Data (Weatherspark.com)

The wetter season is from March 31 to December 2, with a greater than 21% chance of a given day being a wet day. The month with the most wet days is September, with an average of 8.2 days with at least 1 millimetre of precipitation.

The drier season lasts 3.9 months, from December 2 *to* March 31. The month with the fewest wet days is February, with an average of 4.1 days with at least 1 millimetre of precipitation. The most common form of precipitation changes throughout the year with snow from December 30th to March 3rd.

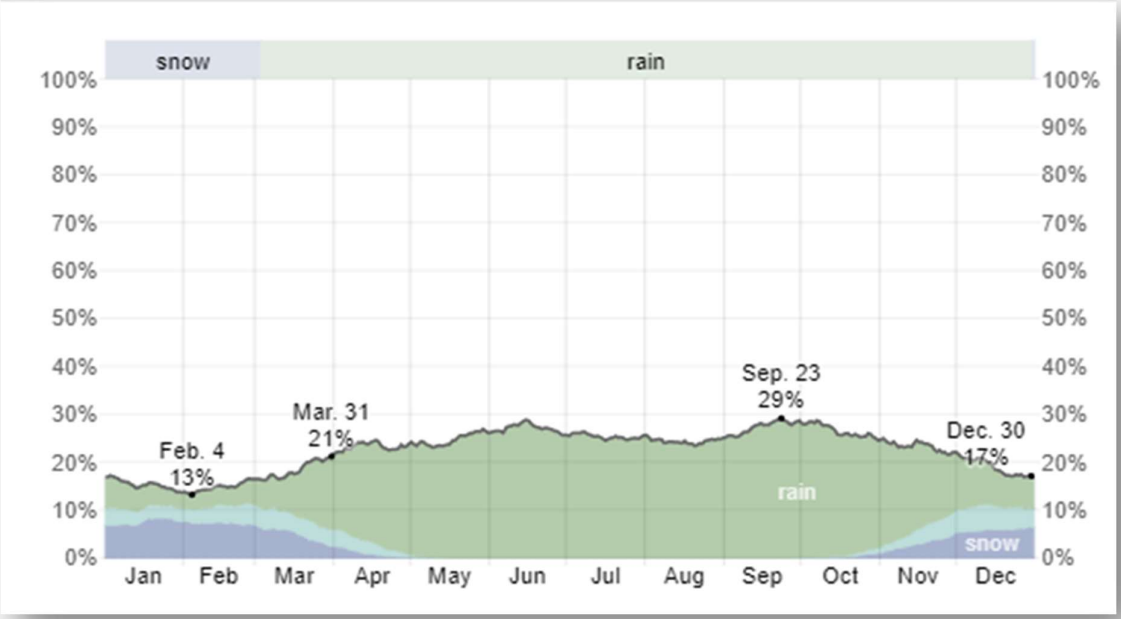

Figure 4.5: Precipitation Data (Weatherspark.com)

4.3 Local Resources

There are many businesses and support services including fuel, stores, hospital, policing, mining contractors, an airport, railway, and a helicopter base located in the town of Peterborough, 49 kilometres south of the claims.

4.4 Infrastructure

There is presently no infrastructure on the claims apart from hydro lines and gravel roads for cottages. Abundant water supply is available from nearby Loom Lake and Crystal Lake.

4.5 Physiography

Within the claim blocks topographic relief is generally flat with an average of 10 metre elevation difference. The lowest point is at 283 metres (asl) in the Loom Lake West claim block while highest point is in the Loom Lake claim block at 321 metres (asl).

Vegetation is characterized from dense bush to wide open areas of mature to semi-mature birch, maple, white pine, spruce and cedar. An open forest, mainly of deciduous trees covers approximately 70%-80% of the claims with elongate swampy areas (very light yellowish coloured areas) trending in a North-East/South-West direction on the claim blocks. The NDVI (Normalized Difference Vegetation Index) Short Wave InfraRed (SWIR) Sentinel satellite image, taken on November 14th 2022 is shown below (Figure 4.6).

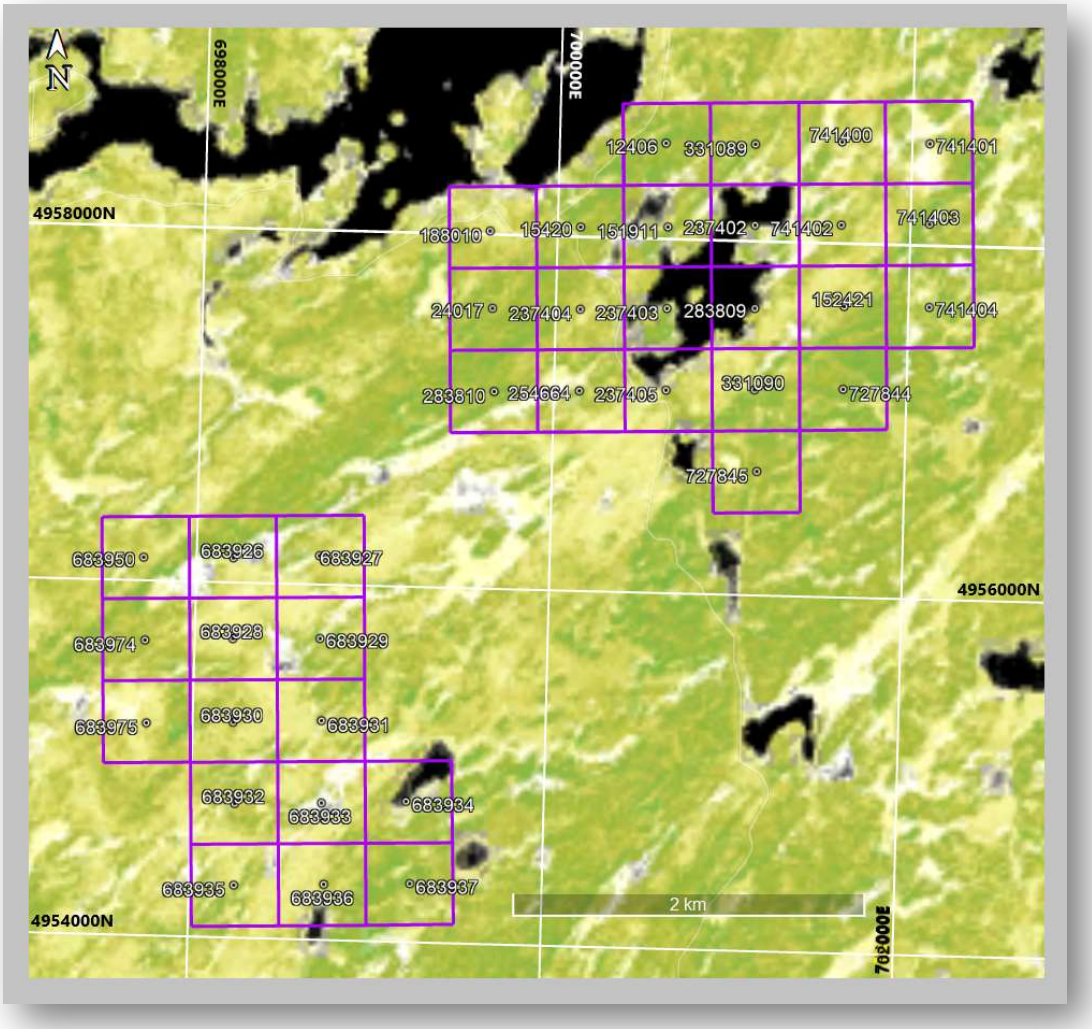

Figure 4.6: Sentinel SWIR NDVI Image

*The NDVI is a dimensionless index that describes the difference between visible and near-infrared reflectance of vegetation cover and can be used to estimate the density of green on an area of land. Very low values of NDVI (0.1 and below) correspond to barren areas of rock, sand, snow, roads (White). Moderate values (0.2 to 0.3) represent shrub; grassland and/or wetland (very light green, yellowish), while high values (0.6 to 0.8) indicate temperate forests (Dark Green). Colour variations change dependent on the season and the image below was taken on November 14th 2022.

The area was glaciated during the Pleistocene. In areas where geological trend is in a north-south direction the rocks have been scoured cleanly and little to no glacial till has been deposited. In areas where the geological trends are east-west, there is some glacial till deposited at the bases of hills and at the edge of valleys where there are catch-basins. In some cases, there is 1.0 to 3.0 metres of glacial till which is deposited intermittently (generally within the east-west valleys. The claims are covered by a discontinuous thin layer of drift over extensive Precambrian Carbonate metasedimentary rocks of marble, calc-silicate rock and skarns.

5.0 History

The Loom Lake and Loom Lake West Claims are located in Galway township and a list of exploration work conducted on the claim blocks is to be found in Appendix 1.

Graphite was mined within the Bancroft Terrane between 1896 to 1954. There are some two dozen historical graphite occurrences in Cardiff and Monmouth Township while there are only two historical graphite occurrences in Galway Township.

Vermiculite mineralization was discovered in Cavendish Township to the east of Galway Township, in 1950, and several vermiculite mining permits and mining operations have been established in the area up to 2009. Regis Resources Inc. (Vermiculite Canada) operated a vermiculite mining and vermiculite marketing operation between 2005 and 2009 near Mississauga Landing.

In the 1950's and 1960's extensive exploration for uranium was carried out in the Township, specifically Crystal and Loom Lake areas utilizing radiometric surveys and diamond drilling. In 1956 between September and October Newkirk Mining completed a eight (8) hole drill programme for uranium on the Loom Lake claim block. No drilling recorder on the loom Lake West claim block. Uranium results ranged from 0.001% to 0.037% U2O3 over five feet intervals in a few drill holes.

Extensive exploration since the 1970's for vermiculate was conducted on crown lands by Frederick Archibald and Earth Resources Limited in Galway Township and adjacent Townships.

The 1999 – 2001 exploration programmes of Archibald delineated numerous bands of vermiculite in Galway Township and in the Loom Lake claims area vermiculite zones were outlined by trenching.

In 2003 graphite was discovered by Archibald during a trenching programme for vermiculite in Galway Township. Systematic exploration for graphite did not commence until late 2012. The main exploration focus was on a graphite occurrence located near Bass Lake while in the Loom Lake and Loom Lake West Claims area a graphite zone has been outlined for over 1600 meters in length. In one location along the zone chip sampling over a length of 245 meters returned an average value of 2.75%C(g). Individual samples in the same area returned values from 2.33% C(g) to 4.15% C(g).

In summary, the following exploration techniques were employed in exploration for graphite and vermiculite:

- Geological reconnaissance and mapping,
- Prospecting,
- Soil /till sampling
- Rock Sampling,
- Trenching by backhoe excavator
- Trench chip and channel sampling
- Diamond drilling,
- Ground Geophysics (induced polarization and magnetometer survey)
- Whole rock/multi-element analyses.
- Metallurgical testing

Relevant exploration trenching, drilling and results for graphite and vermiculite are shown in Figures 5.1 and 5.2 overleaf.

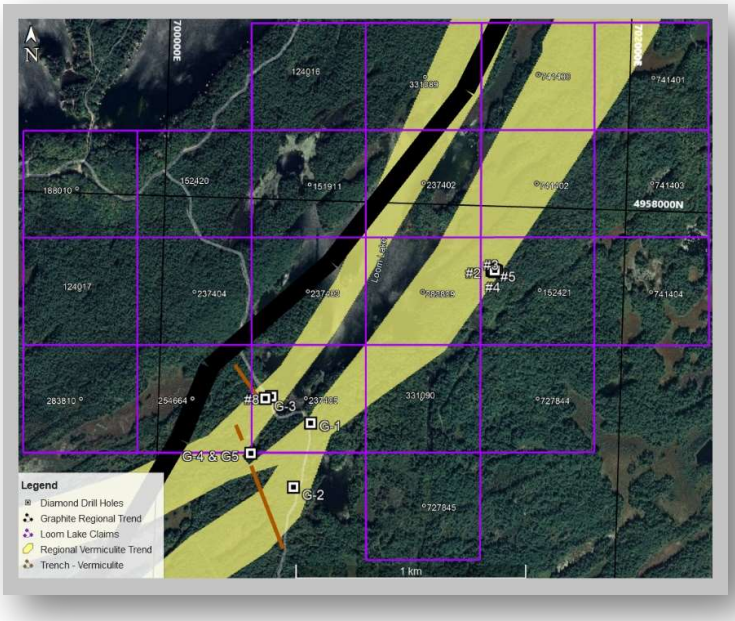

Figure 5.1: Loom Lake – Historical Exploration

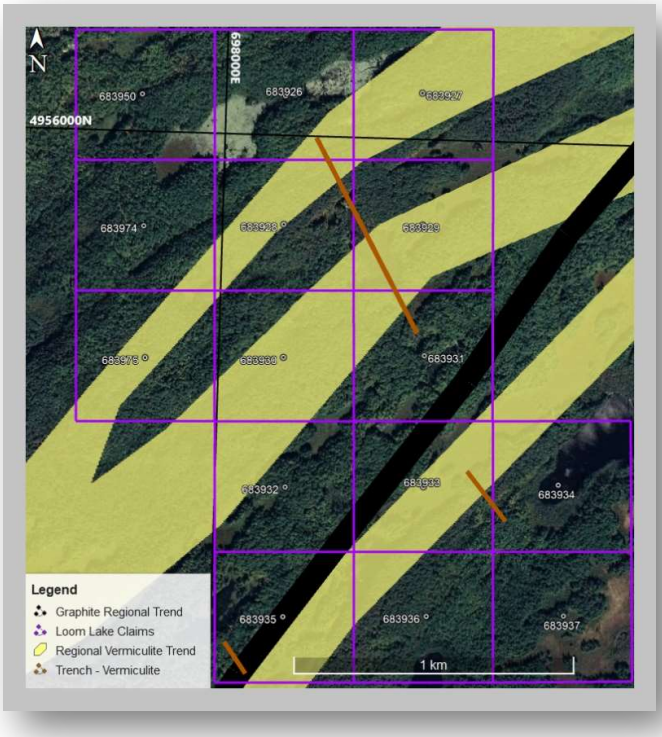

Figure 5.2: Loom Lake West- Historical Exploration

6.0 Geological Setting and Mineralization

6.1 Regional & Local Geology

The structural geology of the Grenville Province is Complex and is dominated by large-scale regional fold structures that have been folded and re-folded by tectonism, high-grade metamorphism, and intrusive activity. Data in the following section is largely from Easton (1992).

The Palaeozoic rocks unconformably overlie the Central Metasedimentary Belt, Tectonites and Felsic Volcanics of the Grenville Province as shown below in Figure 6.1.

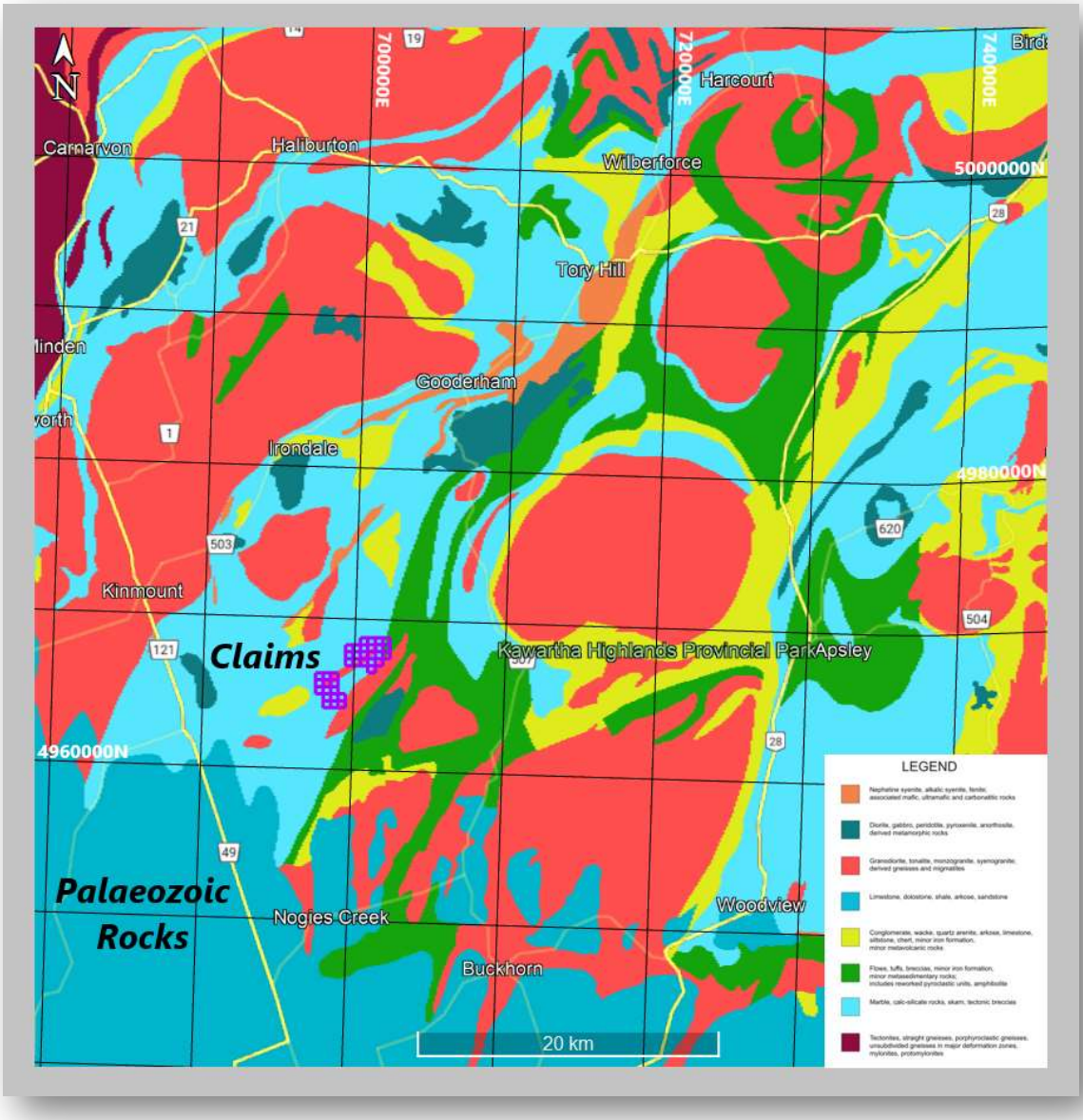

Figure 6.1: Regional Geology Map (OGS 1:250,000 Scale)

The supracrustal rocks and older gneissic rocks have been intruded by several intrusive suites. From oldest to youngest, these are the tonalite to granodiorite rocks of the Anstruther and Burleigh gneiss

complexes (circa 1290 Ma), gabbroic rocks of the Salmon Burn intrusive complex (circa 1240 Ma), granitic rocks of the Methuen suite (circa 1230 to 1210 Ma) and granitic rocks of the Catchacoma suite (circa 1067 Ma).

The main structural trends are north-south; northwest-south east and north east–south west. The North-south and the north west-south–east structures are related to the terrane margins and tectonites (Figure 6.2). Faulting is directly related to two major tectonic divisions of the Central Metasedimentary Belt.

(1) The Bancroft terrane

(2) The Harvey–Cardiff domain.

Figure 6.2. Terranes

The Bancroft Terrain consists mainly of carbonate (deformed calcitic and dolomitic marbles) and siliciclastic (quartzo-feldspathic gneisses and Para amphibolite) metasedimentary rocks from shallow marine type environments. These units have been intruded by syenites and granites at 1279 to 1220 Ma (Miller, 1983). The Metamorphic grade in the Bancroft terrane and the northern sub domain reached middle to upper amphibolite facies. Both claim blocks are in the Bancroft Terrane some 500 metre west of the Terrane boundary with the Harvey – Cardiff terrane.

The Harvey–Cardiff domain contains abundant mafic to felsic metavolcanic rocks, in addition to carbonate and siliciclastic metasedimentary rocks. It can be further subdivided into a northern sub domain consisting mostly of metavolcanic and carbonate metasedimentary rocks; and a southern sub domain consisting mainly of gneissic rocks. Metamorphic grade in the northern sub domain reached middle to upper amphibolite facies while in the southern sub domain reached upper amphibolite facies conditions sufficient to induce partial melting to form migmatites.

Rocks of both the Bancroft terrane and the Harvey–Cardiff domain have been subjected to polyphase folding and faulting associated with regional metamorphism.

The Laurentian Margin/Bancroft Terrane border consists of a two (2) to twelve (12) kilometres wide Tectonite unit composed of tectonites, straight gneisses, and porphyroclastic gneisses, unsubdivided gneisses in major deformation zones, mylonites and protomylonites.

6.2 Loom Lake and Loom Lake West Claims Geology

Based on Ontario Geological Survey Mapping (1:250,000 scale) and prospecting by Archibald, both claim blocks are underlain by

1. Carbonate metasedimentary rocks marble, calc-silicate rocks and amphibolitic rocks of the Grenville Supergroup.
2. Early felsic plutonic rocks -granodiorite, tonalite, monzogranite, syenogranite etc.
3. Metavolcanic rocks including amphibolite in the north -easter quadrant of the Loom Lake claim block.

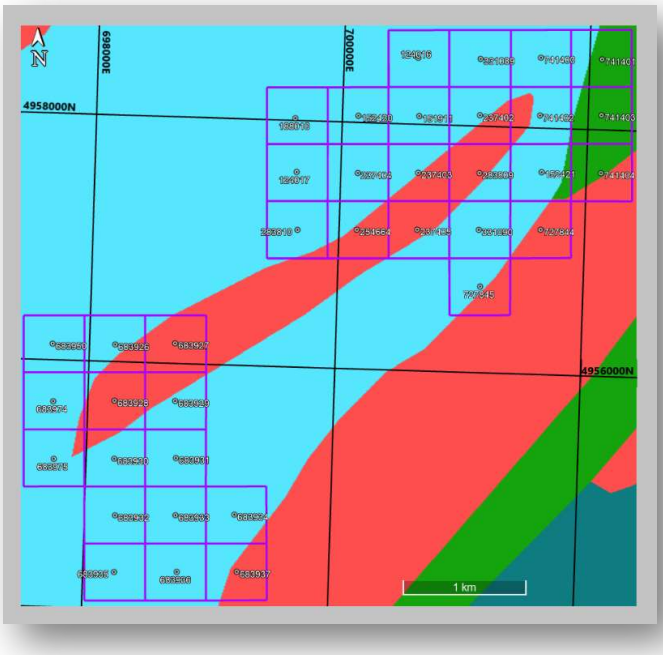

Figure 6.3 Loom Lake and Loom Lake West Claims Geology

The local geology is made up of a series of intercalated and fault truncated zones within biotite-gneissic marbles, syenitic marbles, and amphibolitic (clastic metasediment) marbles.

In the claim blocks a ductile deformation zone, the Salerno Creek deformation zone, formed between 1211 and 1052 Ma and is the boundary between Bancroft terrane and Harvey–Cardiff domain. It is present in the south eastern quadrants of both claim blocks (Figure 6.4).

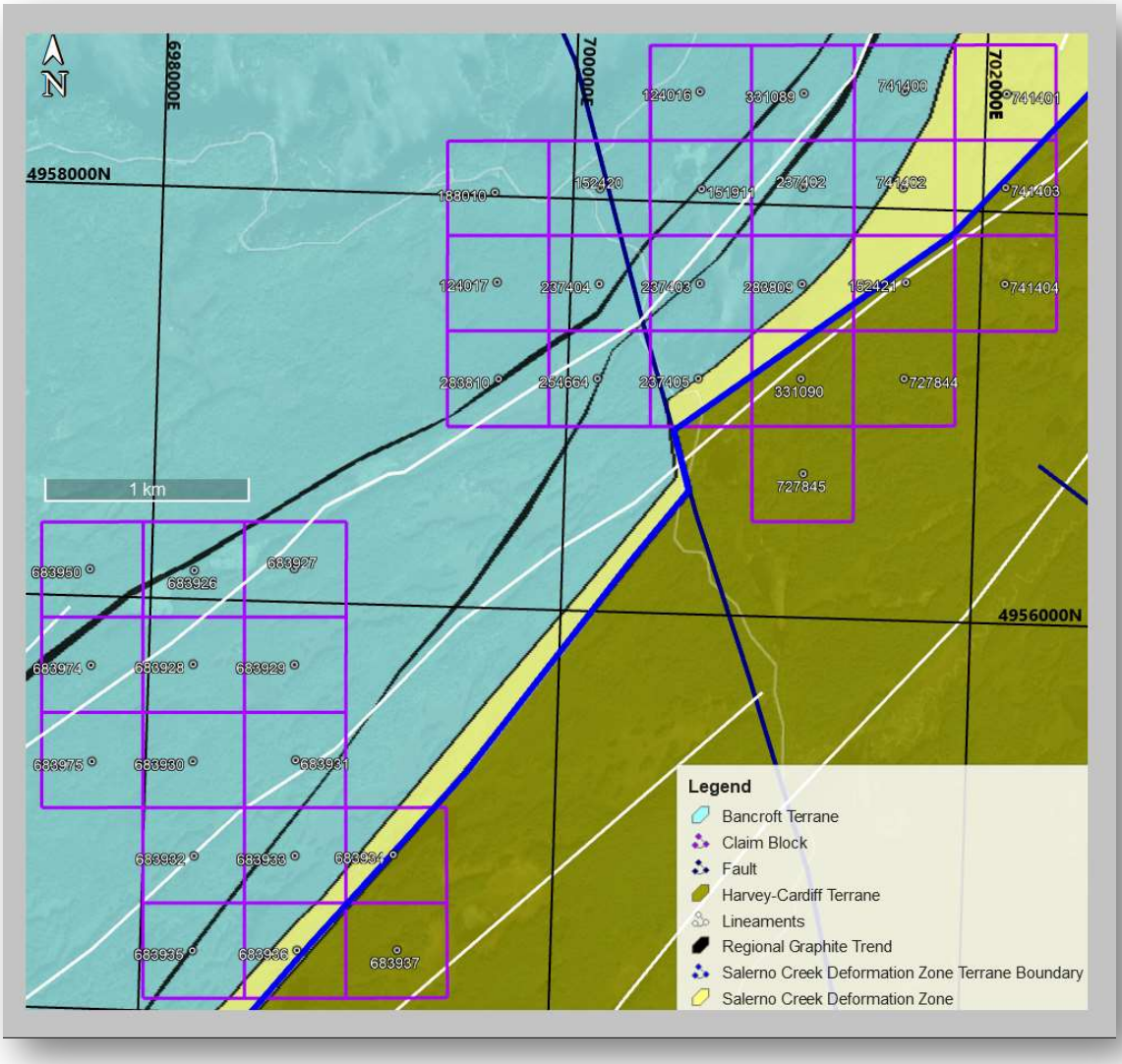

Figure 6.4: Structural Geology Claim Blocks

6.3 Mineralization

Within a 40-kilometre radius of the claims over 500 mineral occurrences that include uranium, iron, precious metals, base metals, molybdenum, graphite and vermiculite are known. The majority of these mineral showings are in close proximity to the old workings/abandoned mine sites.

The chart below shows the breakdown of the mineral occurrences recorded with uranium dominating followed by “other” which is dominantly mineralogical specimen sites plus some garnets, actinolite, tourmaline etc. Iron which includes pyrite, magnetite and limonite is the second most common mineral occurrence. Molybdenum is the third commonest mineral recorded. Base metals

predominate over gold (+/- silver) and include five cobalt locations. Non metallic minerals, graphite and vermiculite are more common in the survey area than reported by the OGS.

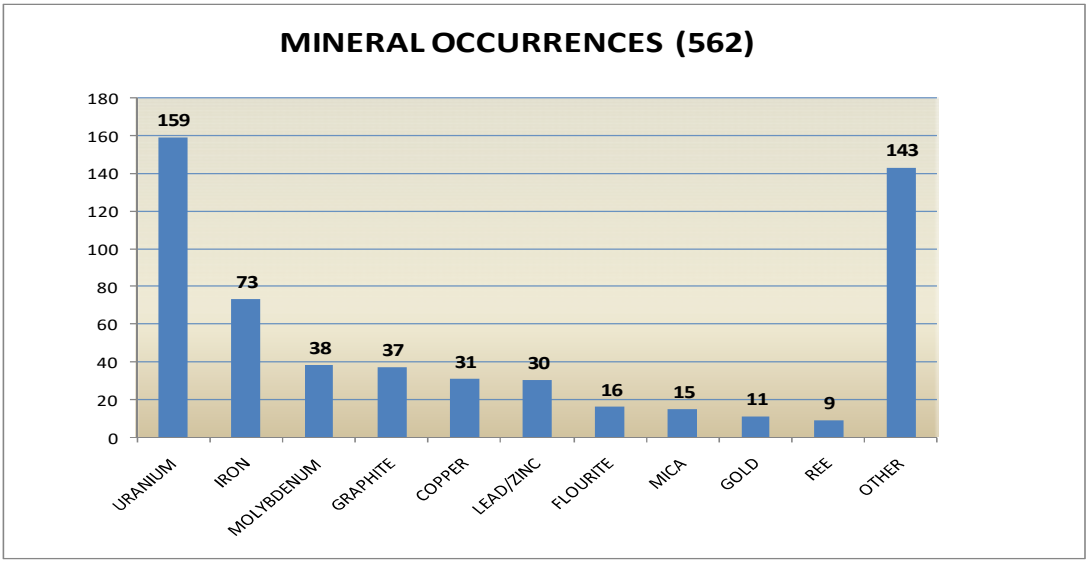

Figure 6.5 Histogram Plot. Distribution of Mineral Occurrences

Graphite occurrences dominate in the Bancroft terrane, straddling the Bancroft/Harvey–Cardiff Terrane border. Geological mapping compilations by F.T. Archibald from decades of mapping and prospecting outlined two north east–south west trending graphite belts:

- Eastern Graphite Belt
- Western Graphite Belt

The bifurcating eastern graphite belt is the south western extension of the Wilberforce-Harcourt historic graphite trend which bifurcates southwards with the eastern belt bifurcating in the Loom Lake area (Figure 6.4). On a regional scale the Eastern Graphite Belt occurs adjacent to and in juxtaposition to the Bancroft Terrane/ Harvey Cardiff Terrane structural boundary on both claim blocks (Figure 6.4)

The graphite zones are associated with sheared and folded calcitic marbles and amphibolite gneiss units; usually along the contacts between these two rock units. Graphite zone widths range from 10m to 100m and up to 245m in the Loom Lake claim block and channel sampling in 2022 at 25 m intervals over 100 metres of outcrop returned grades of 2.89% C(g) to 4.78%C(g). One sample of outcrop returned a value of 9.26% Cg.

Graphite-bearing lenses within the Salerno Creek deformation zone though outside the claim blocks averaged between 1.6% graphite to 2.6% graphite over significant widths.
Vermiculite occurrences that are hosted in dolomite marble and siliceous dolomite marble units in the claim block owe their existence to intense chemical weathering of marble units. Trenching outlined zones of vermiculite with grades > 20% vermiculite within these units and others.

Figure 6.6 based on exploration by Archibald and from the OGS database, shows the known mineral occurrences on the claims and in their immediate vicinity.

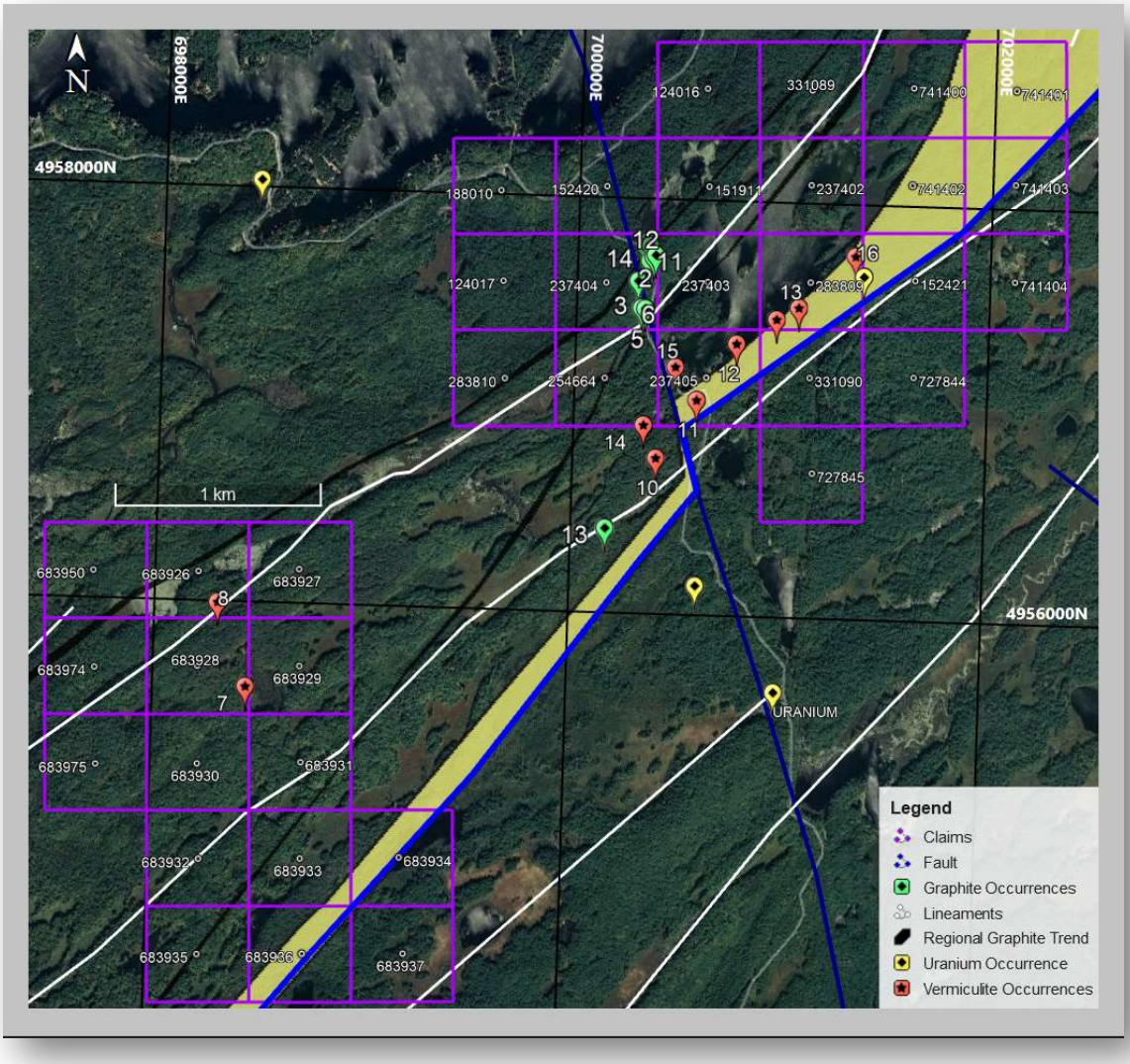

Figure 6.6: Mineral Occurrences – Claim Blocks

7.0 Exploration

Exploration consisted of a remote sensing LWIR (long wave infrared) spectral analysis survey over the Loom Lake and Loom Lake West Claims in April – May 2021 by Aster Funds Ltd., Toronto, Ontario. As well, a SWIR (short wave infrared) survey and Vermiculite and Graphite SWIR Linear Determinant Classifiers (LDFC) were constructed in August 2022 for specific graphite and vermiculite occurrences in the general area.

Target Vector Minerals (TVM's) were identified and mapped for metallics on the claims.

LWIR imagery is collected by the Japanese Aster satellite which was launched in December 1999. The spatial resolution is 90 m and five spectral bands of thermal reflectance's are collected in the range 8.29, 8.63, 9.07, 10.66 and 11.32 microns. The data was downloaded from the Japanese Space Agency site MADAS - AIST (gsj.jp) for the Loom Lake and Loom Lake West Claims by Aster Funds Ltd, Toronto, Ontario on April 20th 2021.

SWIR imagery is collected by the European Space Agency's (ESA) Sentinel satellites and the SWIR data with 20 metre resolution was downloaded from the Sentinel-2 download site https://scihub.copernicus.eu/dhus/ for the Loom Lake and Loom Lake West Claims by Aster Funds Ltd, Toronto, Ontario on August 10th 2022.

In 2021 and 2022 rock chip sampling, semi bulk sampling and metallurgical testing for graphite was conducted on the Loom Lake claim block, claims #254664 and #237404.

7.1 Spectral Analysis (LWIR)

Aster Funds Ltd offers bespoke proprietary spectral analyses of deposit-relevant mineral abundance and distribution on exploration and mining properties. Aster Funds Ltd takes the Long Wave Infrared (LWIR) thermal signals and processes them through proprietary methods to stitch Aster scenes together, leaving out cloud and cloud shadow; water bodies; vegetation; and overburden. The Spectral Analysis of the resultant scene is used to map mineral 'endmembers' over client exploration and mining properties.

The ground-penetrating nature of infrared radiation in the long-wave bands and the emissive properties of minerals allows for sixteen (16) spectral LWIR endmembers to be derived for each survey (Figure 7.1).

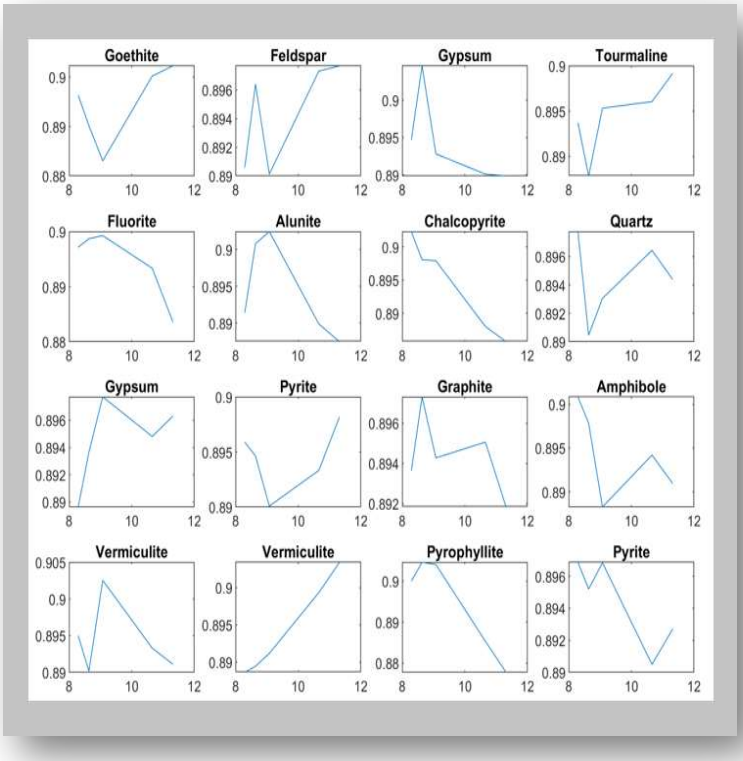

Figure 7.1. LWIR Spectral endmembers and their interpreted mineral.

Due to the emissivity property of minerals, the spectral signature for graphite and vermiculite may be mapped beneath vegetation. They have distinctive spectral shapes in the longwave infrared [LWIR] region of the electromagnetic spectrum (Figure 7.2).

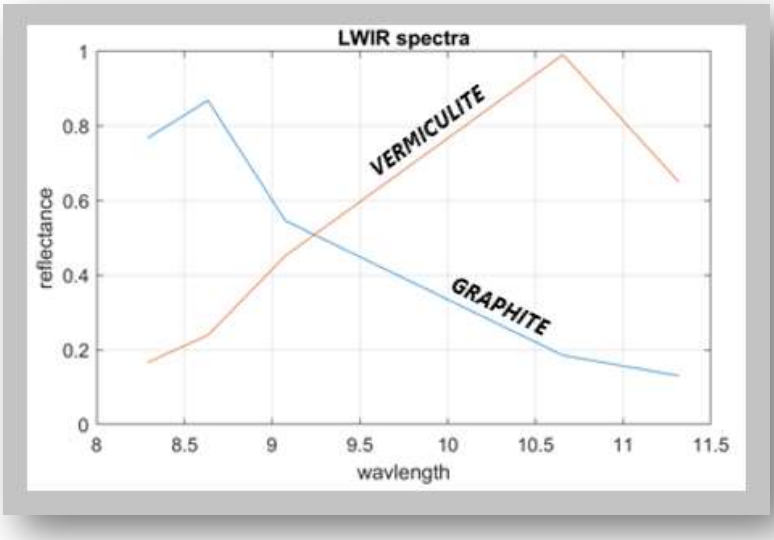

Figure 7.2 Vermiculite & Graphite Spectra

Interpretation of the mineral abundances is carried out by comparing their corresponding spectral endmembers to 324 library spectra collected by Johns Hopkins University. The closet matches with their correlation coefficients are tabulated below (Table 3).

ENDMEBER NUMBER	INTERPRETED MINERAL	CORRELATION COEFFICIENT
Em#1	GOETHITE	95%
Em#2	FELDSPAR	91%
EM#3	GYPSUM(1)	99%
EM#4	TOURMALINE	98%
EM#5	FLOURITE	94%
EM#6	ALUNITE	99%
EM#7	CHALCOPYRITE	99%
EM#8	QUARTZ	86%
EM#9	GYPSUM(2)	98%
EM#10	PYRITE (1)	97%
EM#11	GRAPHITE	91%
EM#12	AMPHIBOLE	96%
EM#13	VERMICULITE (1)	91%
EM#14	VERMICULITE (2)	100%
EM#15	PYROPHYLLITE	99%
EM#16	PYRITE (2)	99%

Table 3: LWIR Endmember Minerals & Coefficient Percent

* *Several minerals: Gypsum (Em#3 & Em#9), Vermiculite (Em #13 & Em#14) and Pyrite (Em#10 & Em#16) occur more than once. This could be on account of the endmembers not being pure minerals or an effect of grain size and/or texture which modifies the spectral response.*

Endmember identification with a particular mineral may be erroneous based on their correlation coefficient as only five thermal bands are collected by the satellite. However, for exploration purposes, once the combination and spatial relationship of mineral abundance**s** that occurs at a location of geological and/or economic mineral interest is identified then those areas where the same spectral pattern is found are worthy of examination.

Several minerals: gypsum, pyrite and vermiculite occur more than once. This could be on account of the endmembers not being pure minerals or an effect of grain size and/or texture which modifies the spectral response.

In summary, the spectral mixture paradigm of decomposing multiband Aster thermal data into a linear combination of sparse non-negative spectral abundances is remarkably effective for inferring mineral distributions. Each abundance corresponds to a spectral endmember which may be identified through comparison to a library of spectra measured in a laboratory.

The distribution of the 16 endmember minerals on the claims is shown in Figures 7.8 to 7.23 and it is as if the Client properties is analyzed for geological and deposit relevant exploration from the basis of 100% outcrop. The various endmember colour patterns on the maps reflect the degree of

endmember abundance from low endmember abundance (blue) to high endmember abundance (red). White areas reflect absence of the endmember.

For the Long Wave Infrared survey, the minimum resolvable unit (pixel) is 90m x 90m and the signal emanates from the bedrock. If Aster Short Wave Infrared is used, the minimum resolvable distance is 30m x 30m, but the signal emanates from the first millimetre of surface content, whatever it may be. Satellite revisit time to a particular area is about two weeks, giving a digital reference time series for any physical point. Historical spectral analysis surveys are available for Long Wave Infrared to the present day and Short-Wave Infrared (SWIR) to 2008 for the Aster Terra satellite. However, the European Sentinel satellites are currently acquiring SWIR/VNIR data with up to 10 metre resolution.

Some of the minerals and elements that have been used in previous Spectral Analysis surveys include: alunite, tourmaline, quartz, and kaolinite for epithermal gold deposits; augite, epidote, and goethite for host rocks in which volcanogenic massive sulphides and base metals deposits are found; pyrrhotite and pyrite for nickel and copper deposits; and monticellite for diamond deposits. Other searches can be made subsequent to the initial search to define specific deposit-type minerals.

7.2 Spectral Analysis (SWIR)

For Aster Short Wave Infrared, the minimum resolvable distance is 30m x 30m, but the signal emanates from the first millimetre of surface content, whatever it may be. Sentinel -1 and Sentinel-2A satellites of the European Space Agency was used for the SWIR survey as they have a minimum spatial resolution of 10 metres. The current survey was conducted at 20m resolution.

The VNIR/SWIR cameras of the Sentinel satellites sense the top millimeter of the surface bedrock, clays etc. and where minerals associated with buried deposits can leave geochemical fingerprints as small amounts of minerals mixed into the regolith from buried ore deposits can be unmixed from Sentinel-2 VNIR/SWIR imagery at very high spatial resolution (10 m). Using a proprietary spectral unmixing algorithm, we unscrambled the data and estimated abundances of the various minerals which contribute to the observed response. We identified these spectral endmember responses by comparing them to mineral spectra measured by the USGS in a laboratory.

Spatial resolution of Sentinel imagery varies from 10 to 60 m, consisting of 13 spectral bands from 443 to 2190 nm with a spatial resolution of 10 m (four visible and near-infrared bands), 20 m (six red edge and shortwave infrared bands) and 60 m for three atmospheric correction bands which were not used to estimate spectral abundances.

SWIR surveys for minerals are not normally used in areas of vegetation though in the claim block, open areas and lack of foliage in the Fall plus past SWIR surveys for graphite and Vermiculite in the region proved successful.

For SWIR data processing the following steps were undertaken:

Step #1: Obtain best image.

The survey area is generally cloudy relatively cloud free for 100+ days a year from May to September year long so a cloud and cloud shadow free Sentinel-2 data image was chosen.

Step #2: Digitally remove water bodies.

Any water bodies in the area were masked

Step #3: SWIR Atmospheric effects correction.

Data for atmospheric effects were corrected on the ten spectral reflectance bands which were all resampled to a common spatial resolution of 15metres.

Step #4: Derive spectral endmembers and their abundances

Utilizing the same algorithms as for the LWIR data unmixing resulted in the identification of 16 SWIR endmembers spectra as seen in Figure 6.5 below, four of which are vegetation.

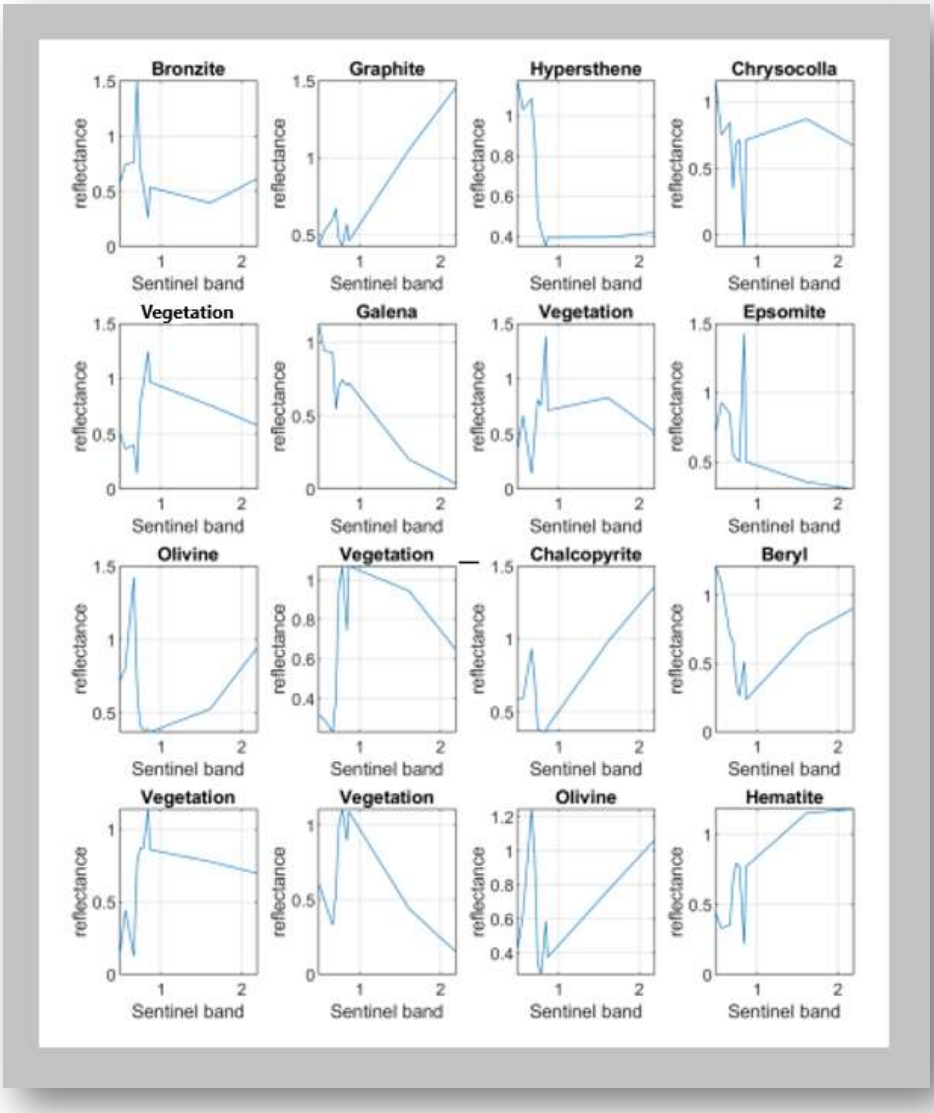

Figure 7.3: SWIR Endmember Spectra

Figure 7.4 below represents the laboratory spectra for vermiculite and graphite compared to the spectra for endmember #2.

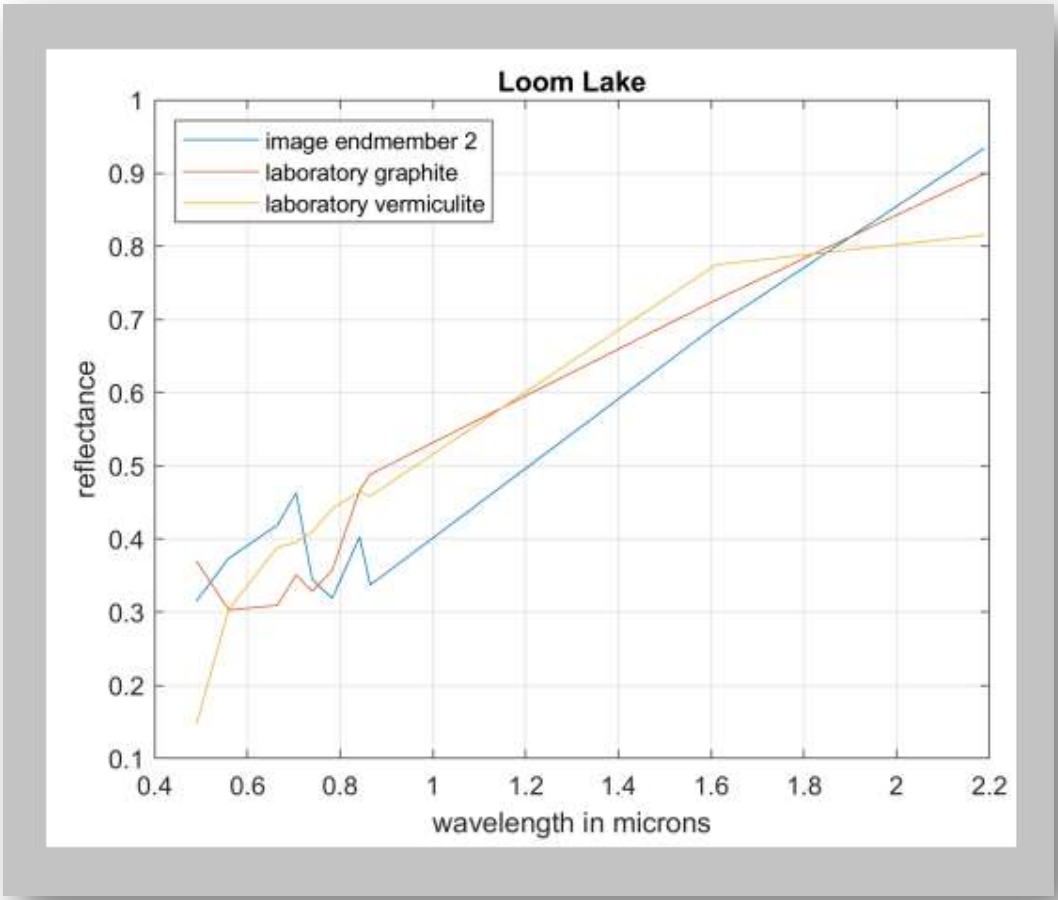

Figure 7.4: Laboratory Vermiculite & Graphite Spectra

<u>Step #5</u>: Correlate endmembers to minerals

Interpretation of the mineral abundances was carried out by comparing their corresponding spectral endmembers to 481 library spectra collected by the USGS. The SWIR spectra for the 16 endmembers identified and tabulated for the Sentinel survey area are shown in Table 4 overleaf.

ENDMEBER NUMBER	INTERPRETED MINERAL	CORRELATION COEFFICIENT
Em#1	BRONZITE	72%
Em#2	GRAPHITE	97%
Em#3	HYPERSTHENE	79%
Em#4	CHRYSOCOLLA	61%
Em#5	VEGETATION (1)	77%
Em#6	GALENA	95%
Em#7	VEGETATION (2)	76%
Em#8	EMSOMITE	53%
Em#9	OLIVINE (1)	68%
Em#10	VEGETATION (3)	93%
Em#11	CHALCOPYRITE	93%
Em#12	BERYL	83%
Em#13	VEGETATION (4)	93%
Em#14	VEGETATION (5)	79%
Em#15	OLIVINE (2)	73%
Em#16	HEMATITE	87%

Table4: SWIR Endmembers and Mineral Correlations

Step #6: Production of geo-referenced endmember/mineral maps

Individual plots for each endmember abundance including the endmembers identified as vegetation were compiled within the Sentinel-2 survey area. The various endmember colour patterns on the maps reflect the degree of endmember abundance from low endmember abundance (blue) to high endmember abundance (red). White areas reflect absence of the endmember.

The abundance SWIR images (16) are supplied as geotiff images and the distribution of the 16 endmember minerals on the claims is shown in Figures 7.24 to 7.31

Five endmembers were identified as vegetation:

- Em #5
- Em#7
- Em#10
- Em#13
- Em#14

and Figure 7.6 shows that they correlate well to the NDVI (Figure 7.6)

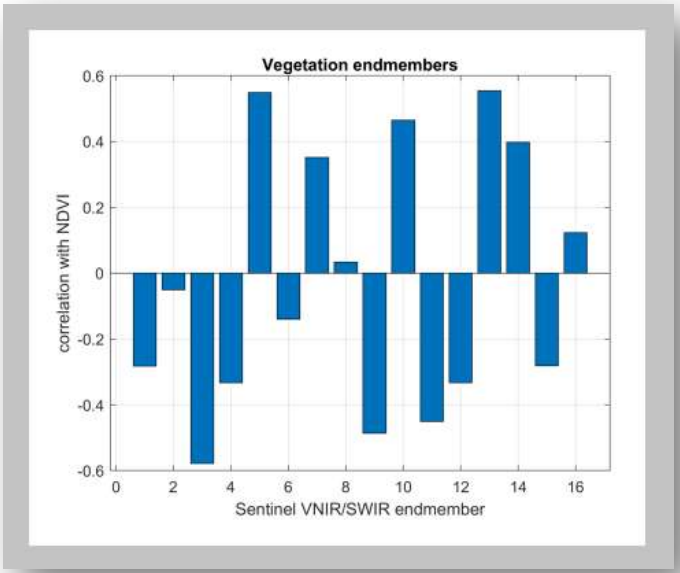

Figure 7.5: NDVI Correlation with Endmembers

7.3 SWIR Linear Determinant Classifier Functions

In the case of LDFC one LWIR endmember is used to define deposits, an example spodumene for lithium where a linear discriminant function from univariate statistics is used. A standard regression equation is used where values above the line of best fit qualify and values below the line of best fit are rejected. The LDF chart is a simpler classifier using a linear manifold in 16-dimensional space.

For the graphite and vermiculite LDFC Predictor-Fingerprint mapping a number of occurrences located on the Loom Lake claim block area were selected as trainers. Two locations for vermiculite and twelve (12) locations for graphite were used as trainers as shown in Figure 7.6.

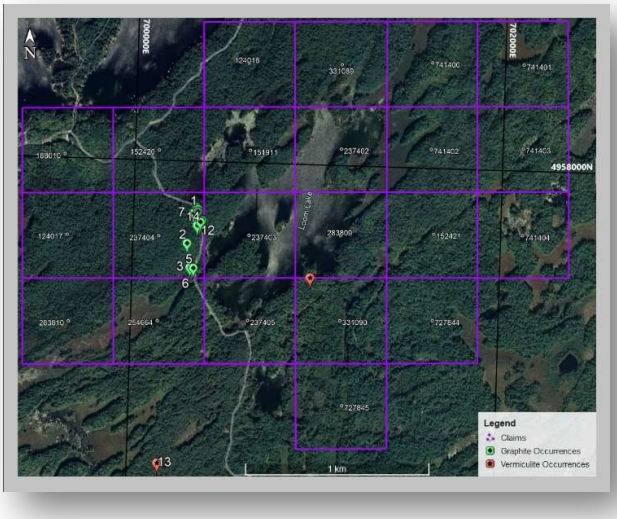

Figure 7.6: Graphite & Vermiculite Trainers

SWIR linear quadratic discriminant function classifiers were produced for both graphite and vermiculite with vegetation endmembers #10, #5 and #13 as the main drivers. Vermiculite properties such as a soil aerator, water and nutrient retainer makes it an ideal candidate for SWIR Vermiculite mapping by proxy with vegetation endmembers.

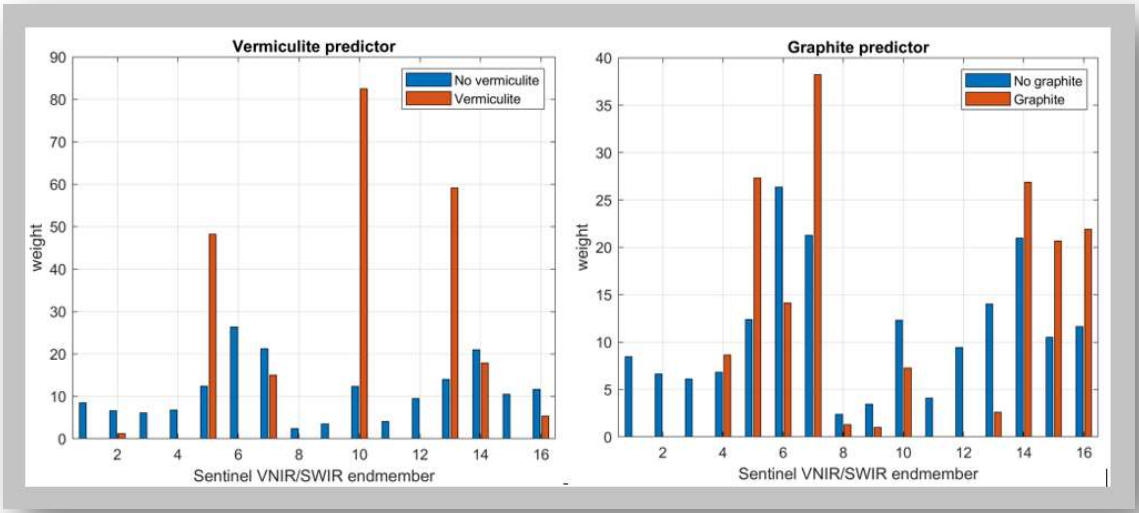

Figure 7.7: SWIR LDFC Graphs – Vermiculite & Graphite

Figures 7.8 to 7.39 overleaf and following pages show the mineral distribution and abundance maps for each of the thirty-two long wave infrared minerals identified on the claims. The various endmember mineral colour patterns on the maps reflect the degree of endmember abundance from low endmember abundance (blue) to high endmember abundance (red). White areas reflect absence of the endmember.

Figures 7.40 and 7.41 show the different LDFC predictor-fingerprint target maps for vermiculite and graphite. The LDFC predictor-fingerprint target maps are colour coded to visually assist with correlation to the LWIR fingerprint of the trainer deposit(s) where the warmer the colour the greater the correlation.

In summary, *"the end products are known as SWIR LDFC predictor-fingerprint target maps which outline areas in both claim blocks that have the same/similar LWIR fingerprint as the trainer mineral deposit(s). The degree of correlation with the trainer deposit(s) is shown by the warmer the map colours the higher the prediction of mineralization where for example* red colours equate with a greater than 90% correlation with the deposit(s) used as trainers.*"*

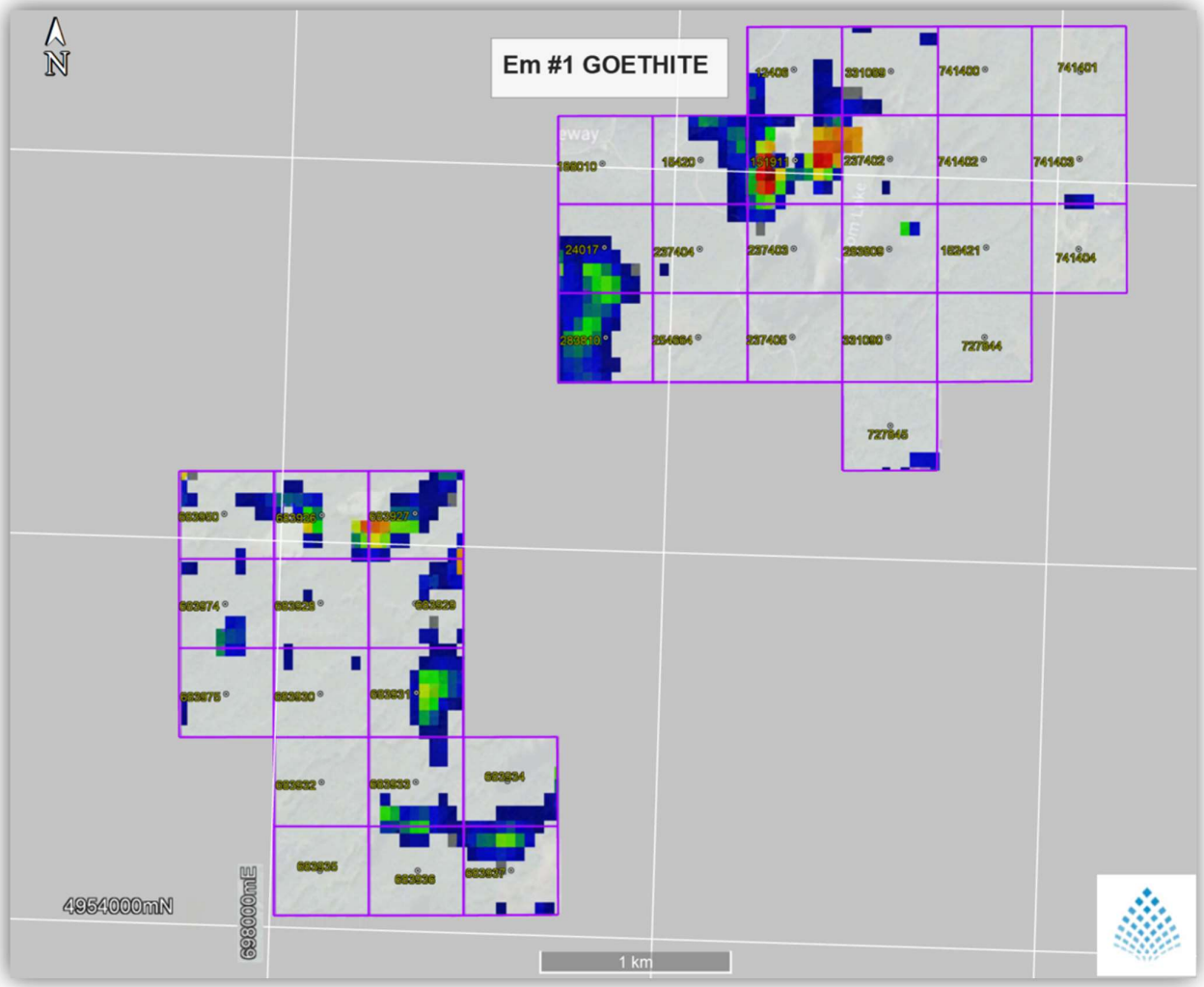

Figure 7.8 Long Wave Infrared Survey: Goethite Abundance Map

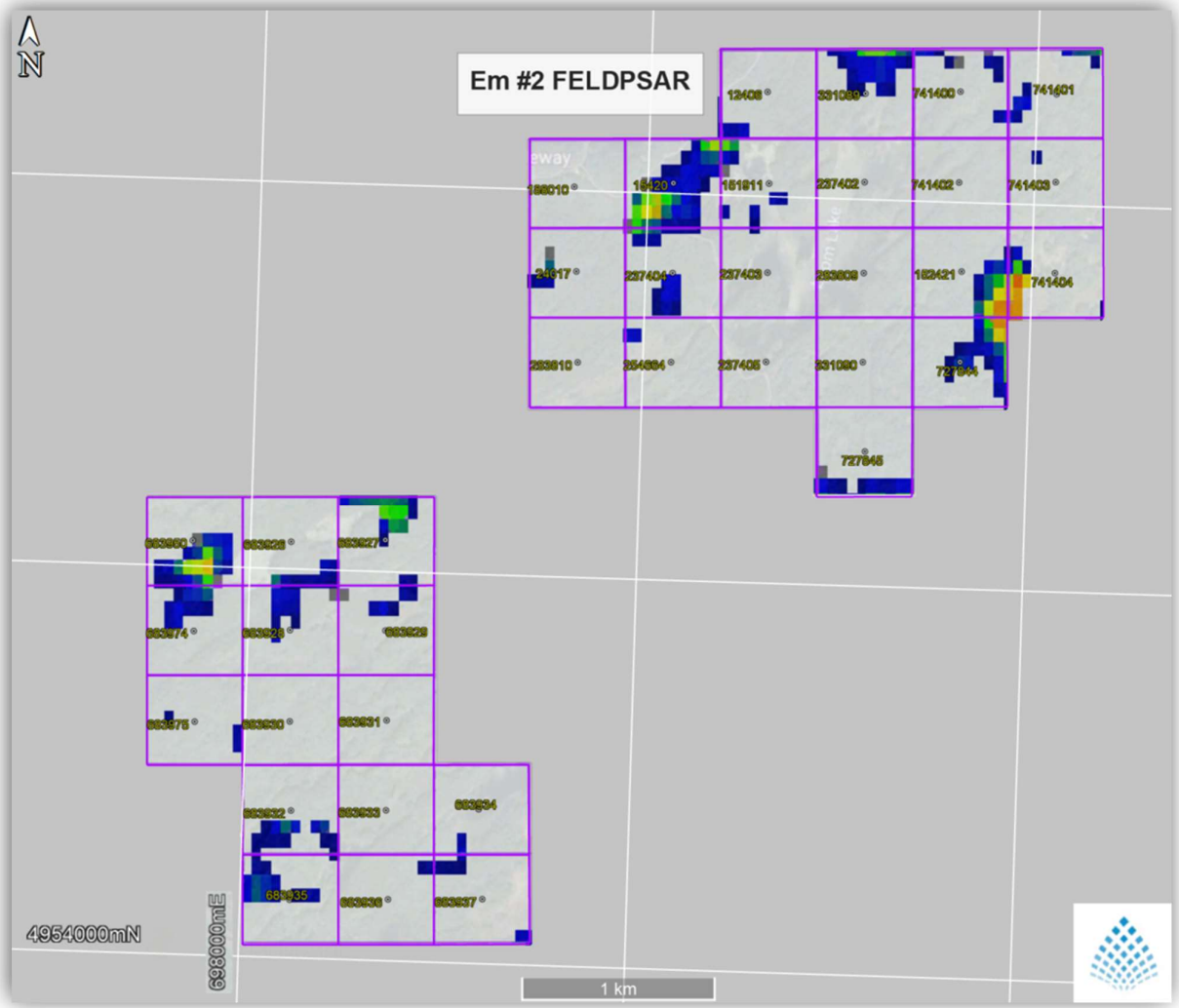

Figure 7.9 Long Wave Infrared Survey: Feldspar Abundance Map

Figure 7.10: Long Wave Infrared Survey: Gypsum (1) Abundance Map

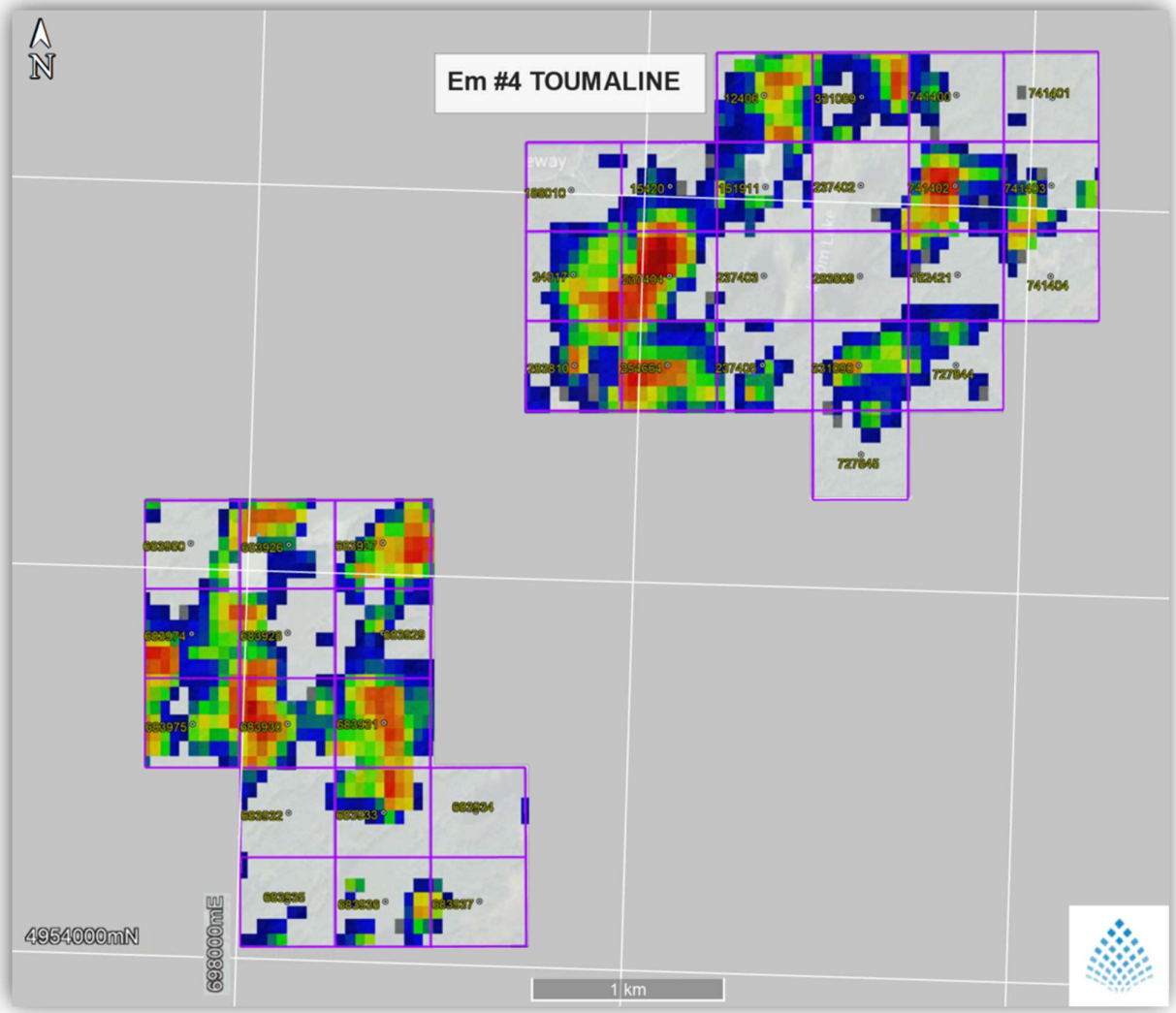

Figure 7.11 Long Wave Infrared Survey: Tourmaline Abundance Map

Figure 7.12 Long Wave Infrared Survey: Flourite Abundance Map

Figure 7.13 Long Wave Infrared Survey: Alunite Abundance Map

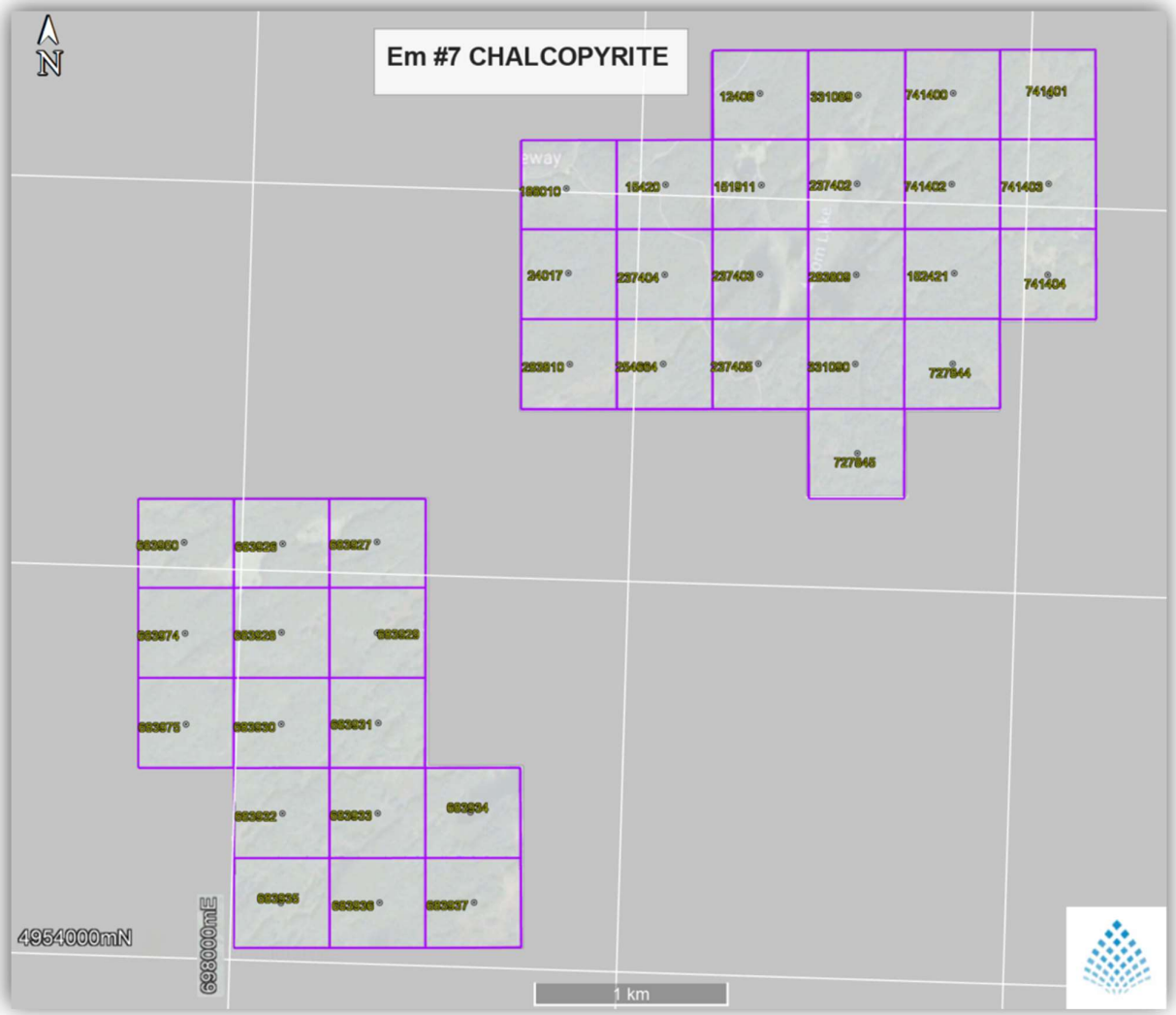

Figure 7.14 Long Wave Infrared Survey: Chalcopyrite Abundance Map

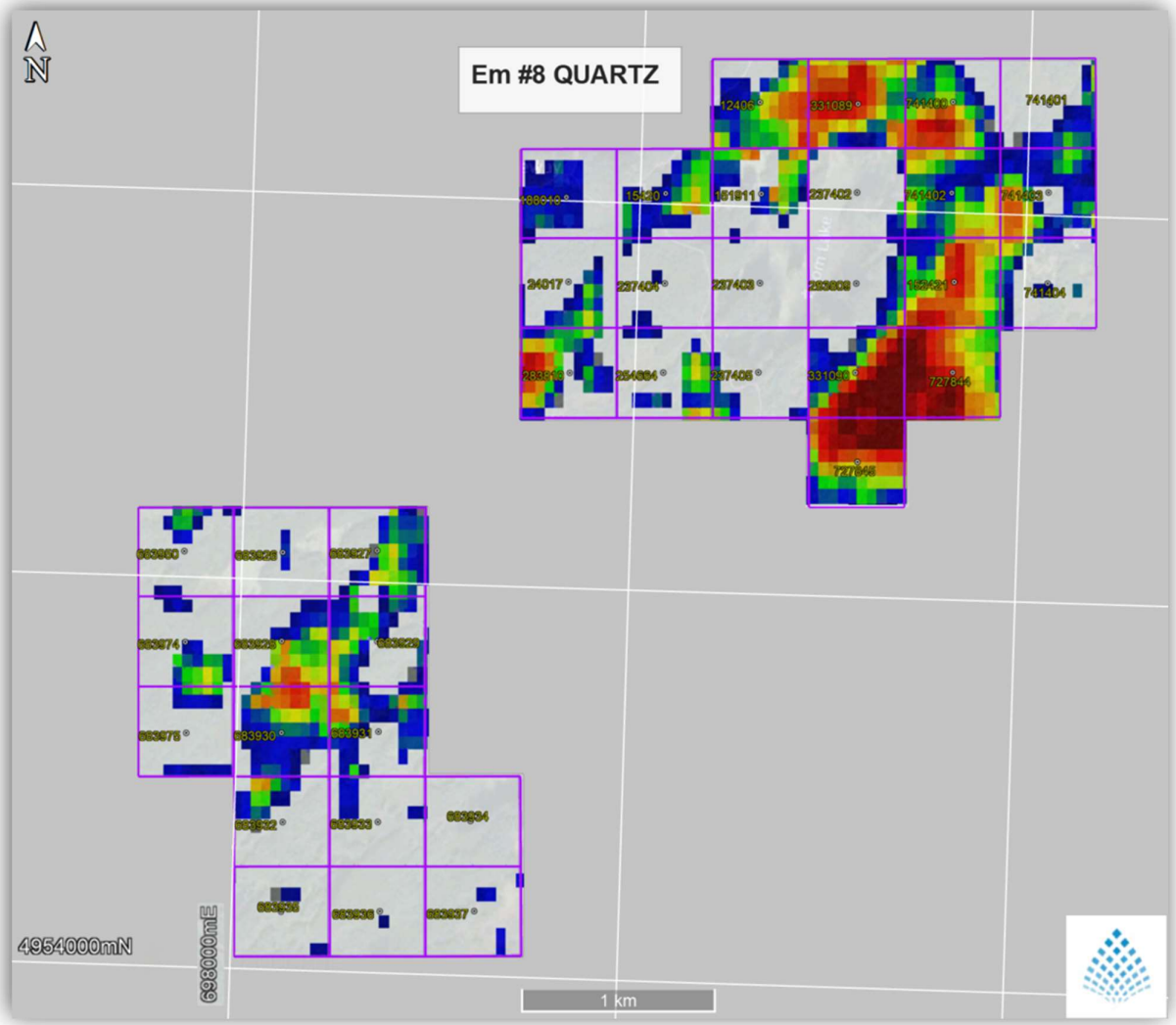

Figure 7.15 Long Wave Infrared Survey: Quartz Abundance Map

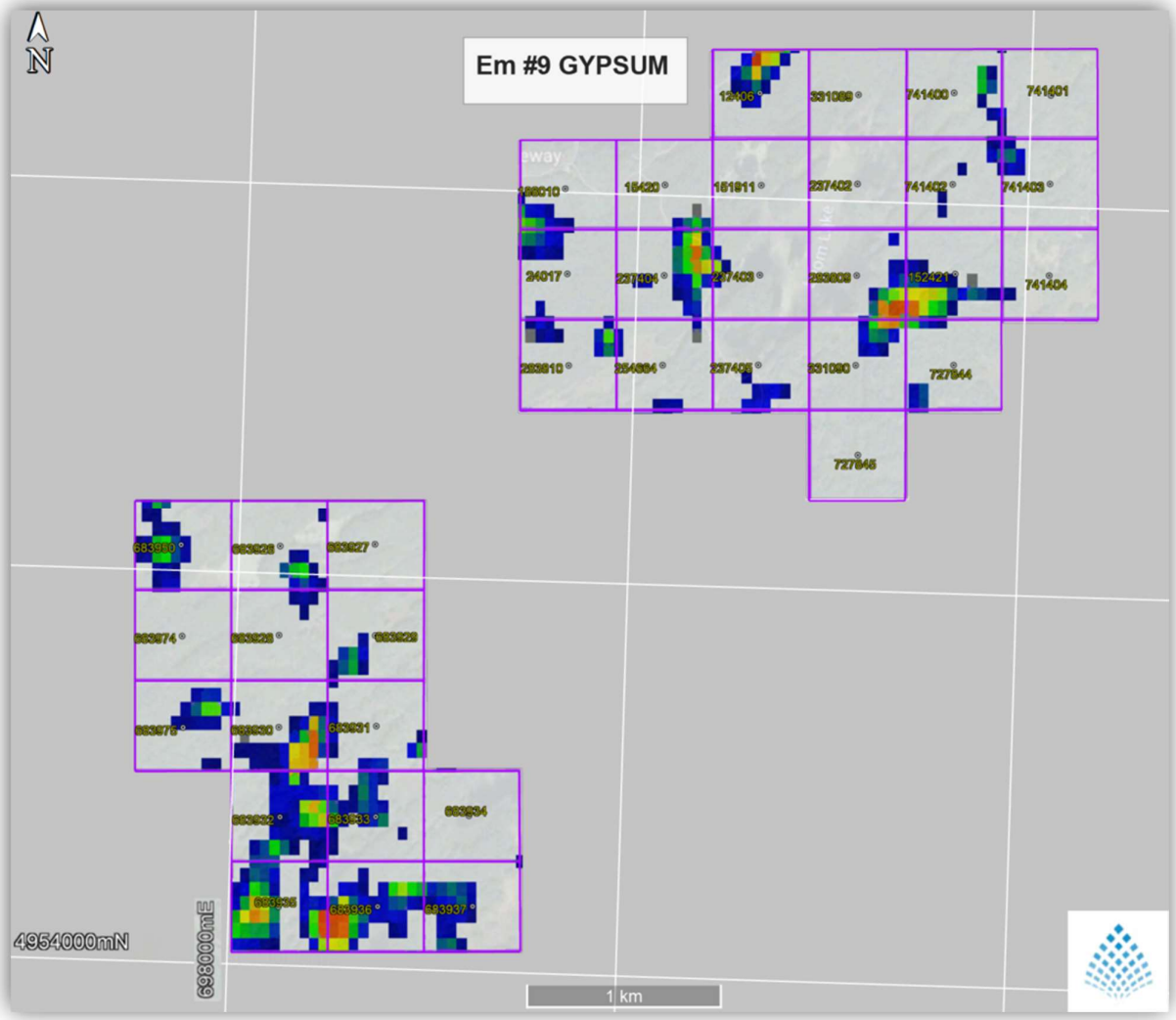

Figure 7.16 Long Wave Infrared Survey: Gypsum (2) Abundance Map

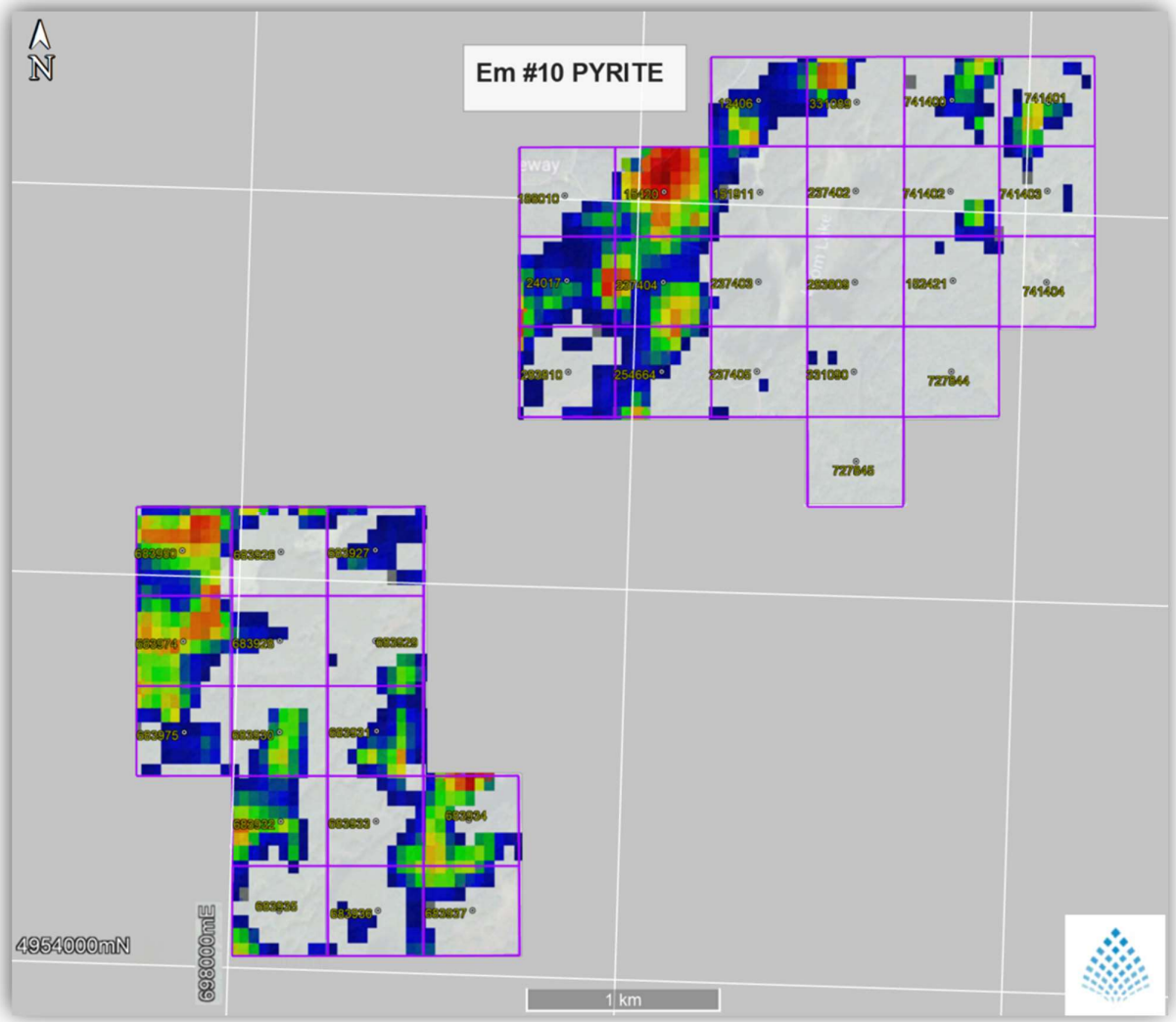

Figure 7.17 Long Wave Infrared Survey: Pyrite (1) Abundance Map

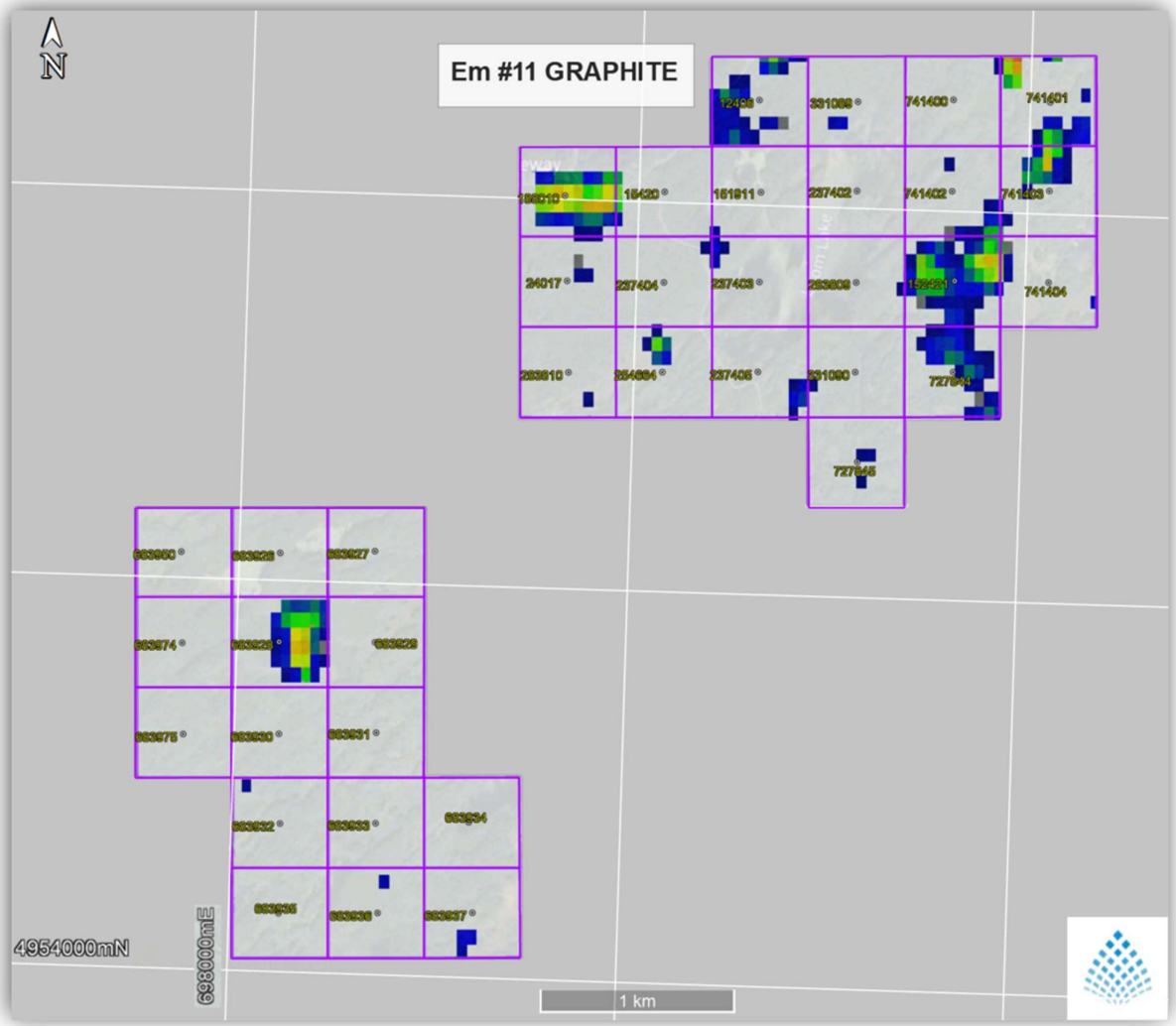

Figure 7.18 Long Wave Infrared Survey: Graphite Abundance Map

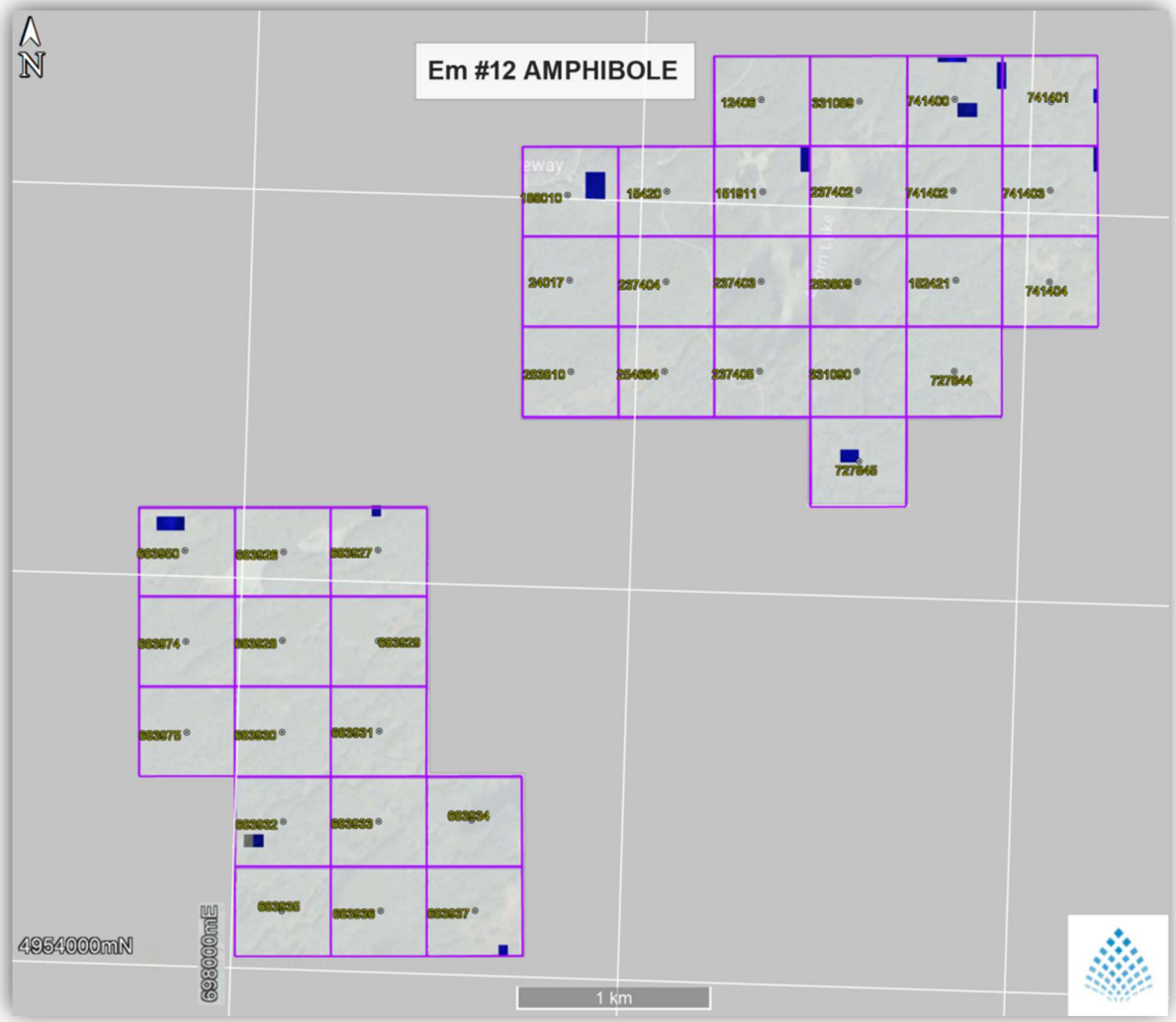

Figure 7.19 Long Wave Infrared Survey: Amphibole Abundance Map

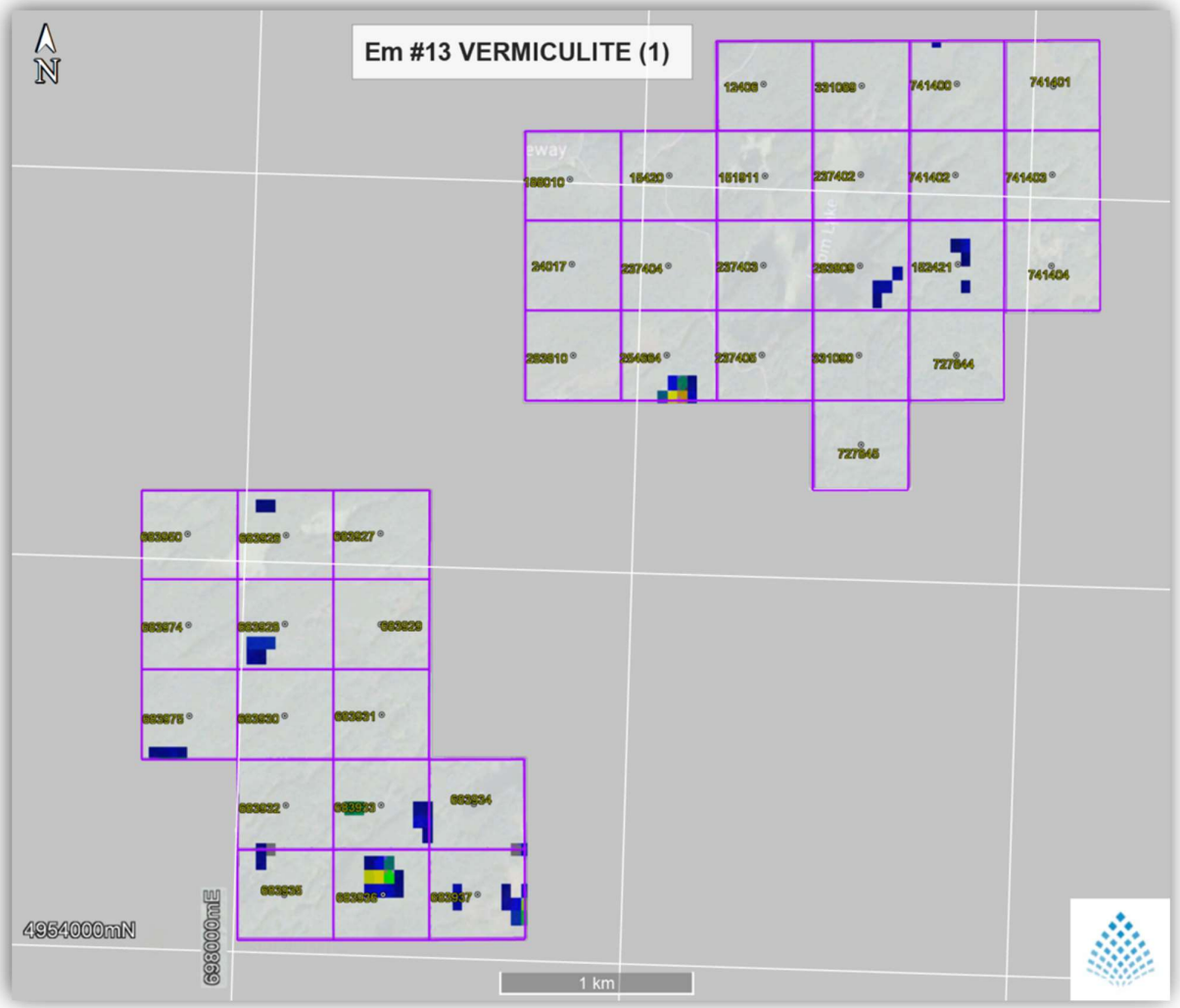

Figure 7.20 Long Wave Infrared Survey: Vermiculite (1) Abundance Map

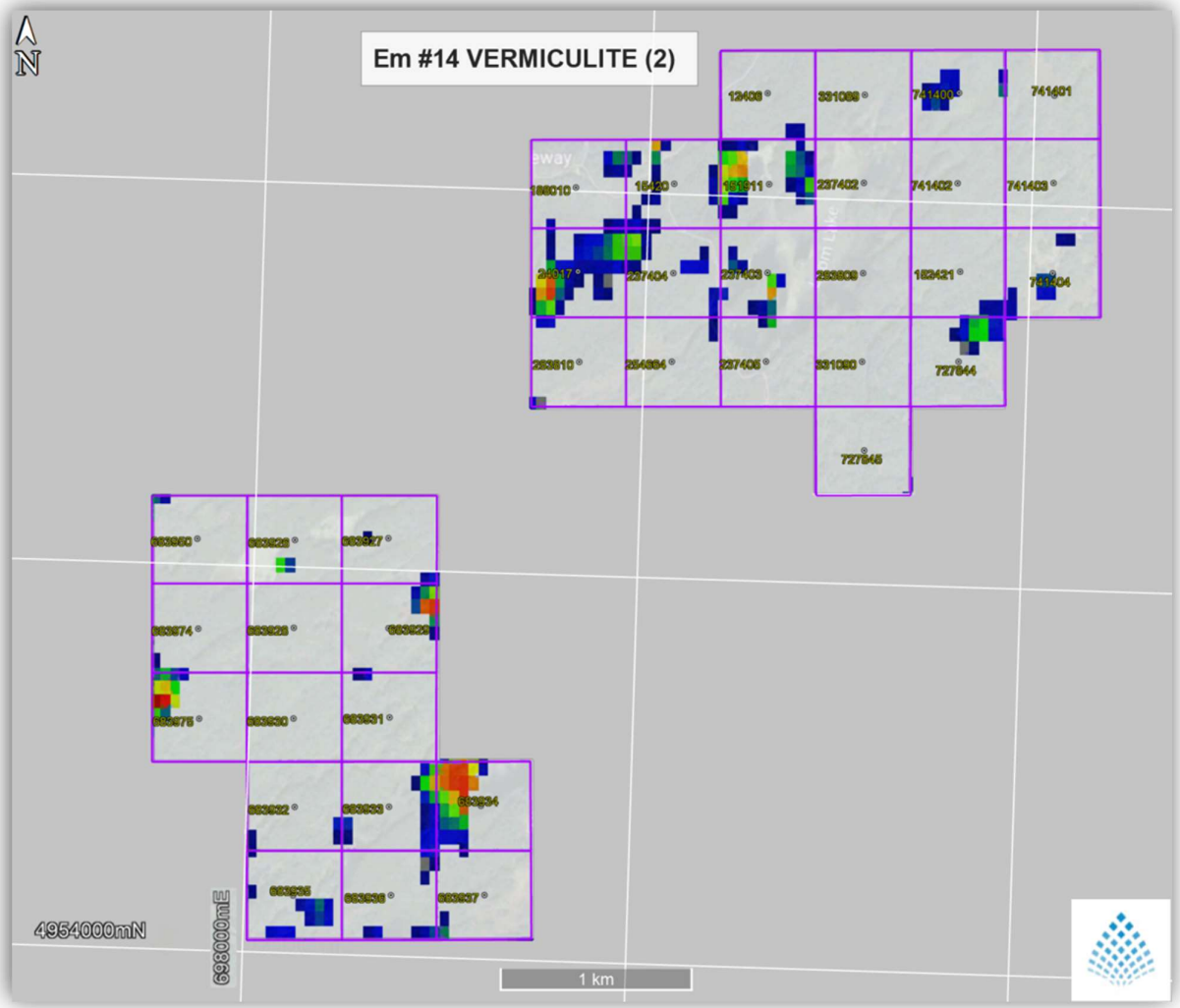

Figure 7.21 Long Wave Infrared Survey: Vermiculite (2) Abundance Map

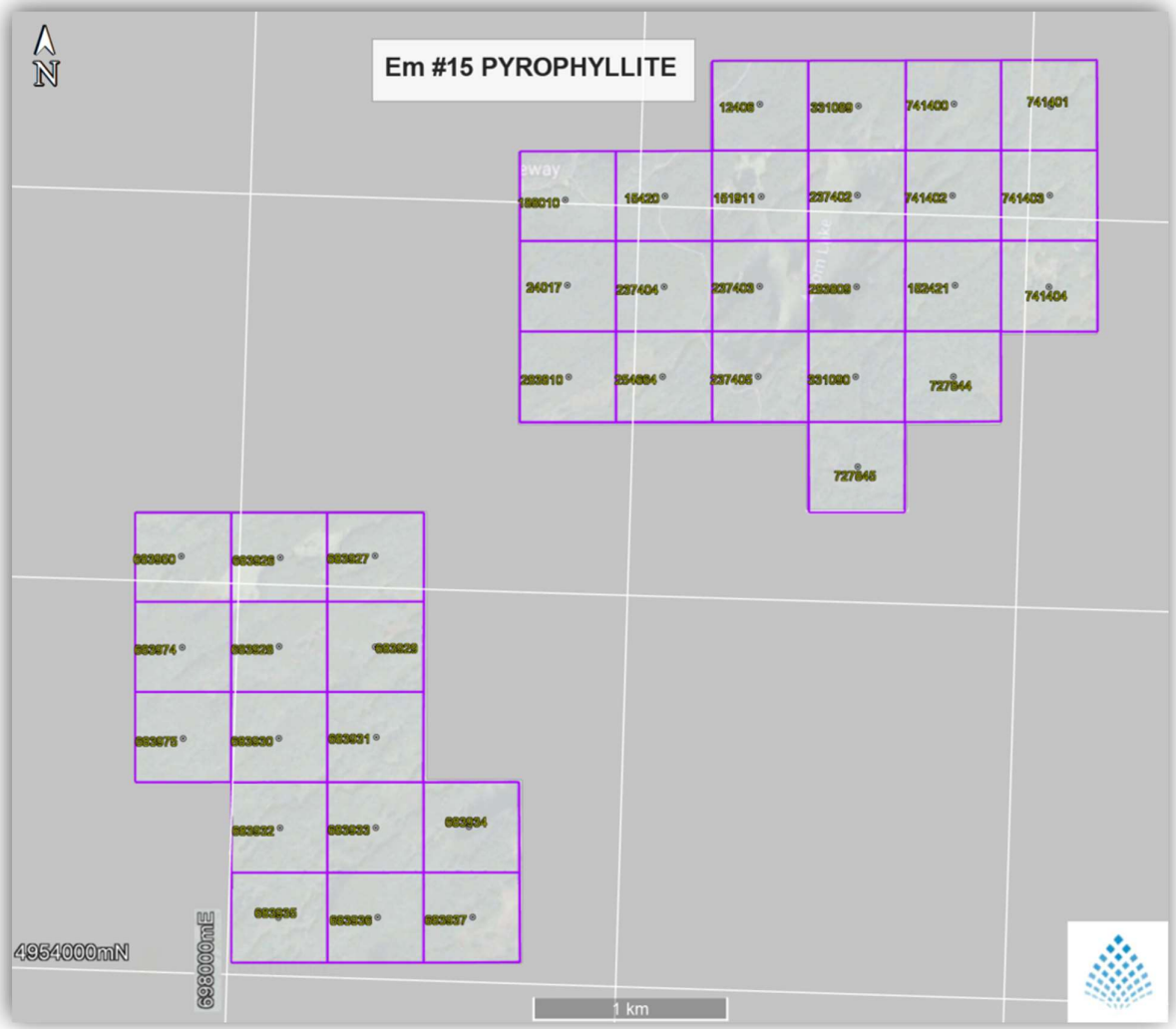

Figure 7.22 Long Wave Infrared Survey: Pyrophyllite Abundance Map

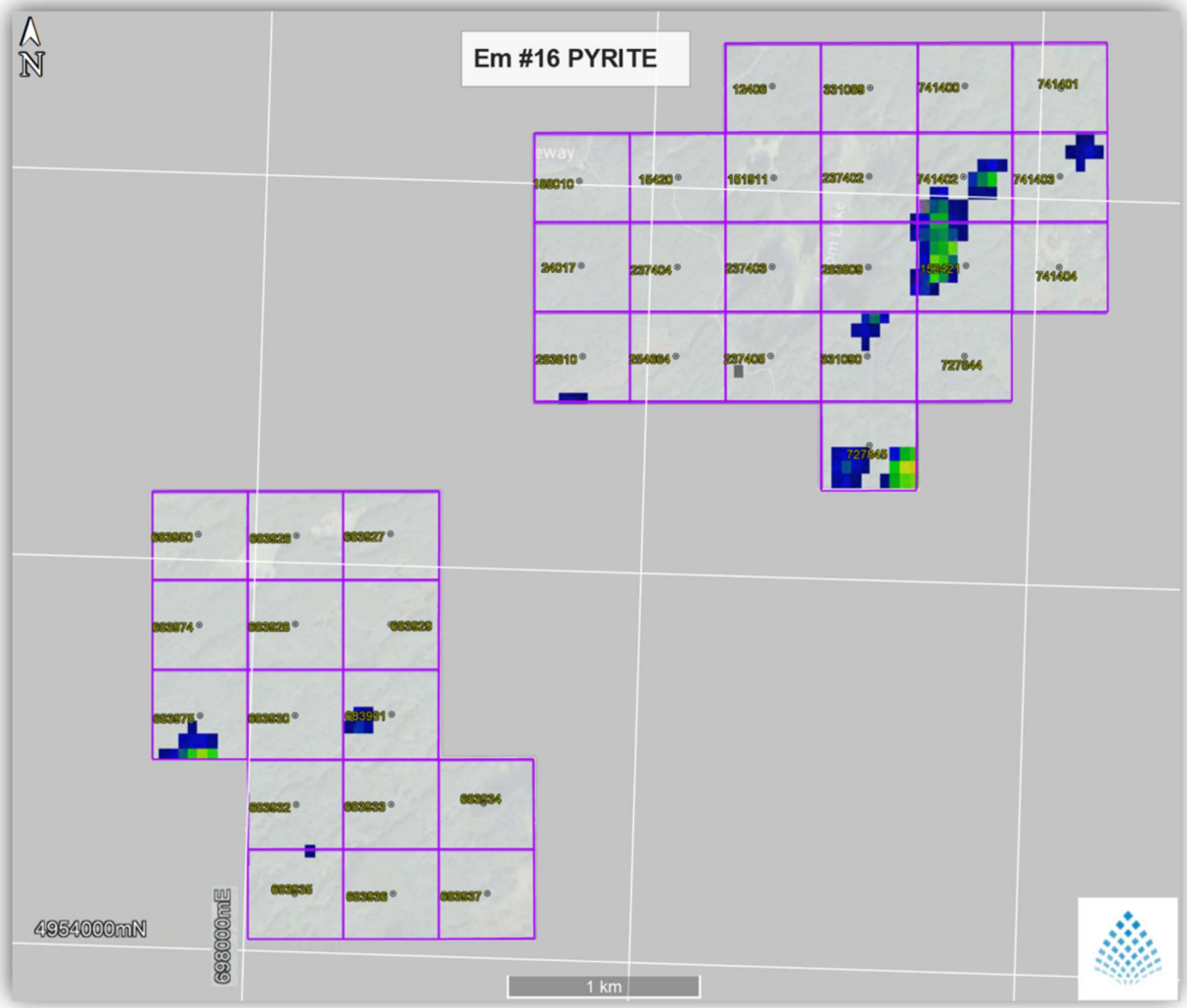

Figure 7.23 Long Wave Infrared Survey: Pyrite (2) Abundance Map

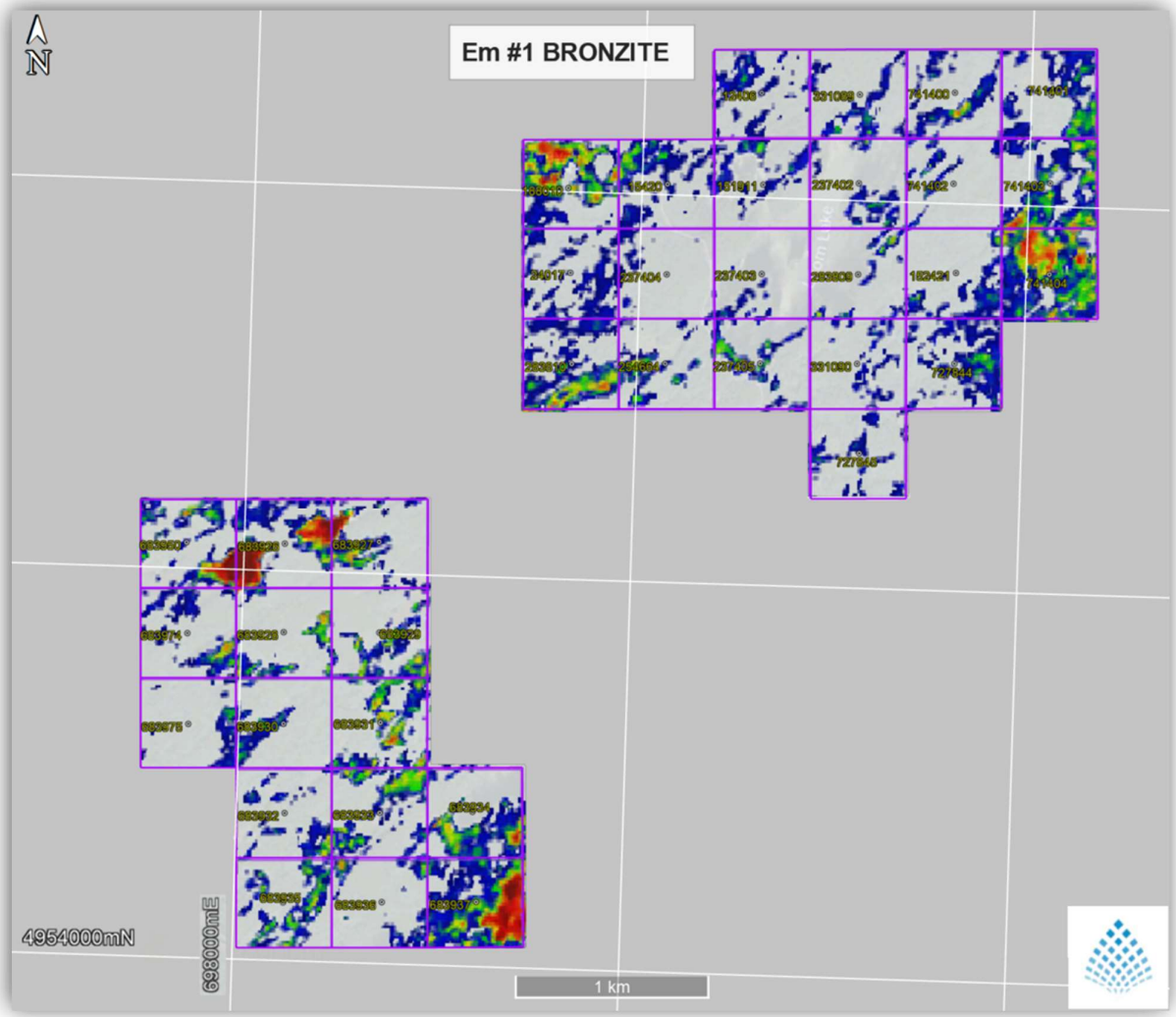

Figure 7.24 Short Wave Infrared Survey: Bronzite Abundance Map

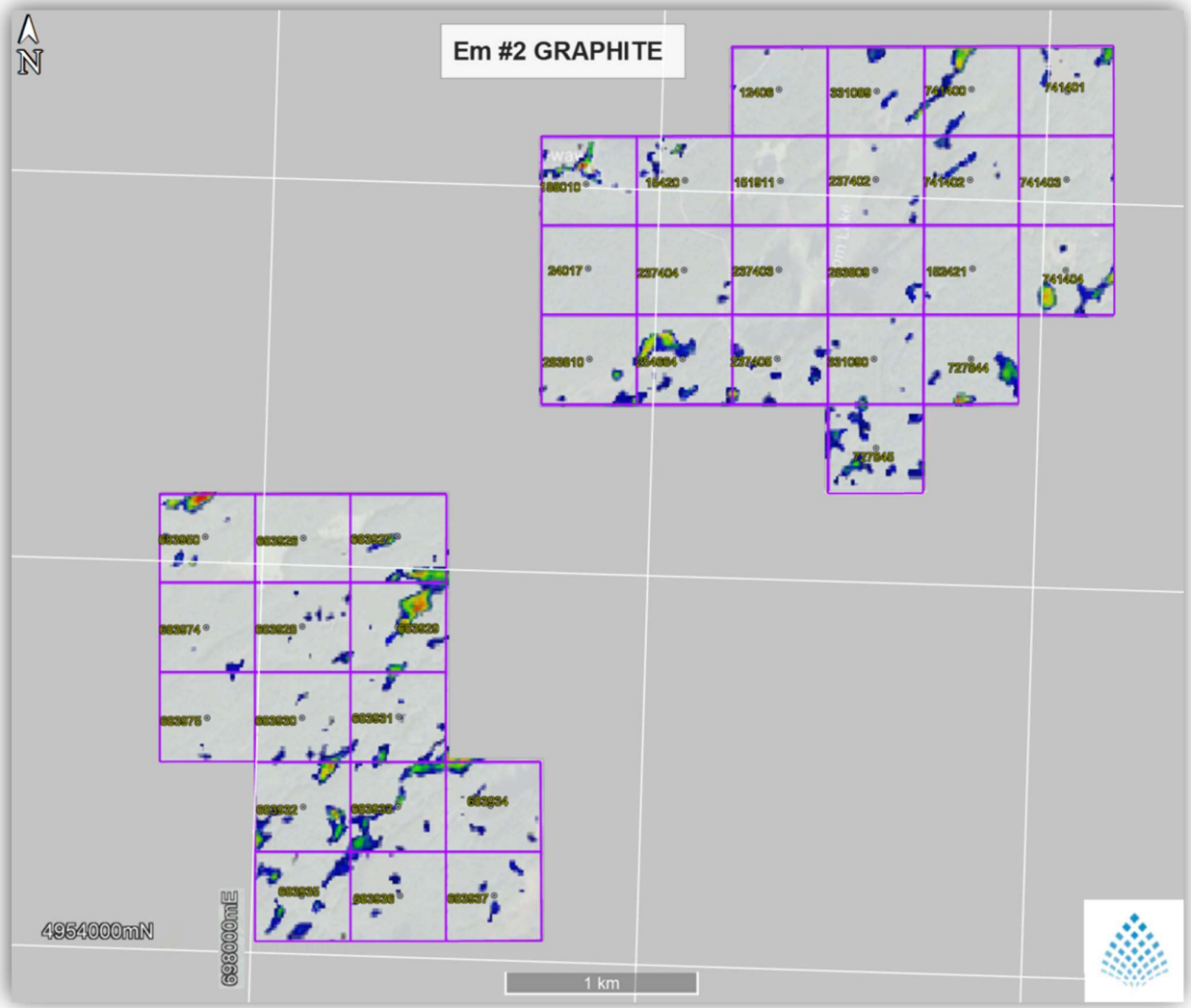

Figure 7.25 Short Wave Infrared Survey: Graphite Abundance Map

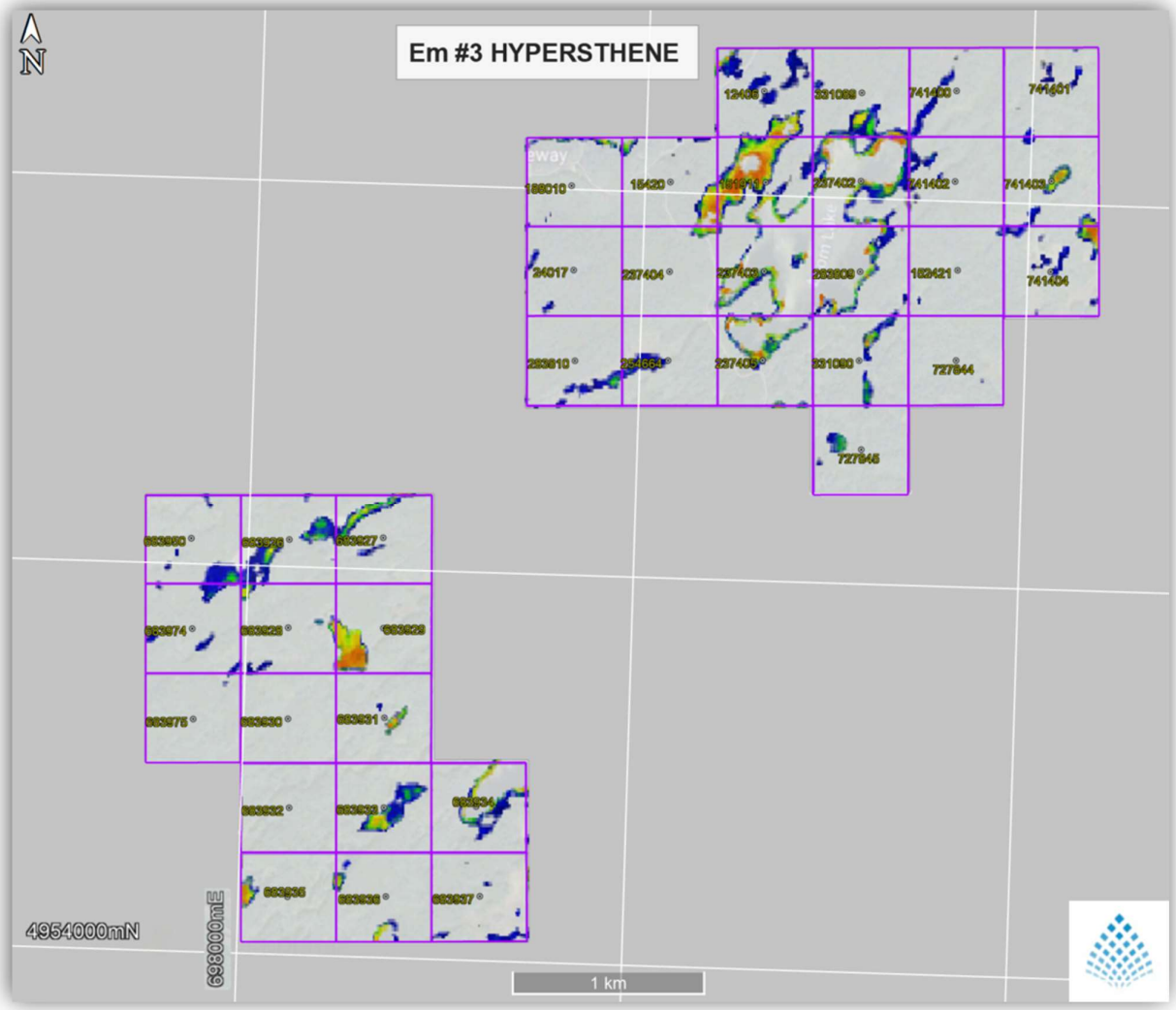

Figure 7.26 Short Wave Infrared Survey: Hypersthene Abundance Map

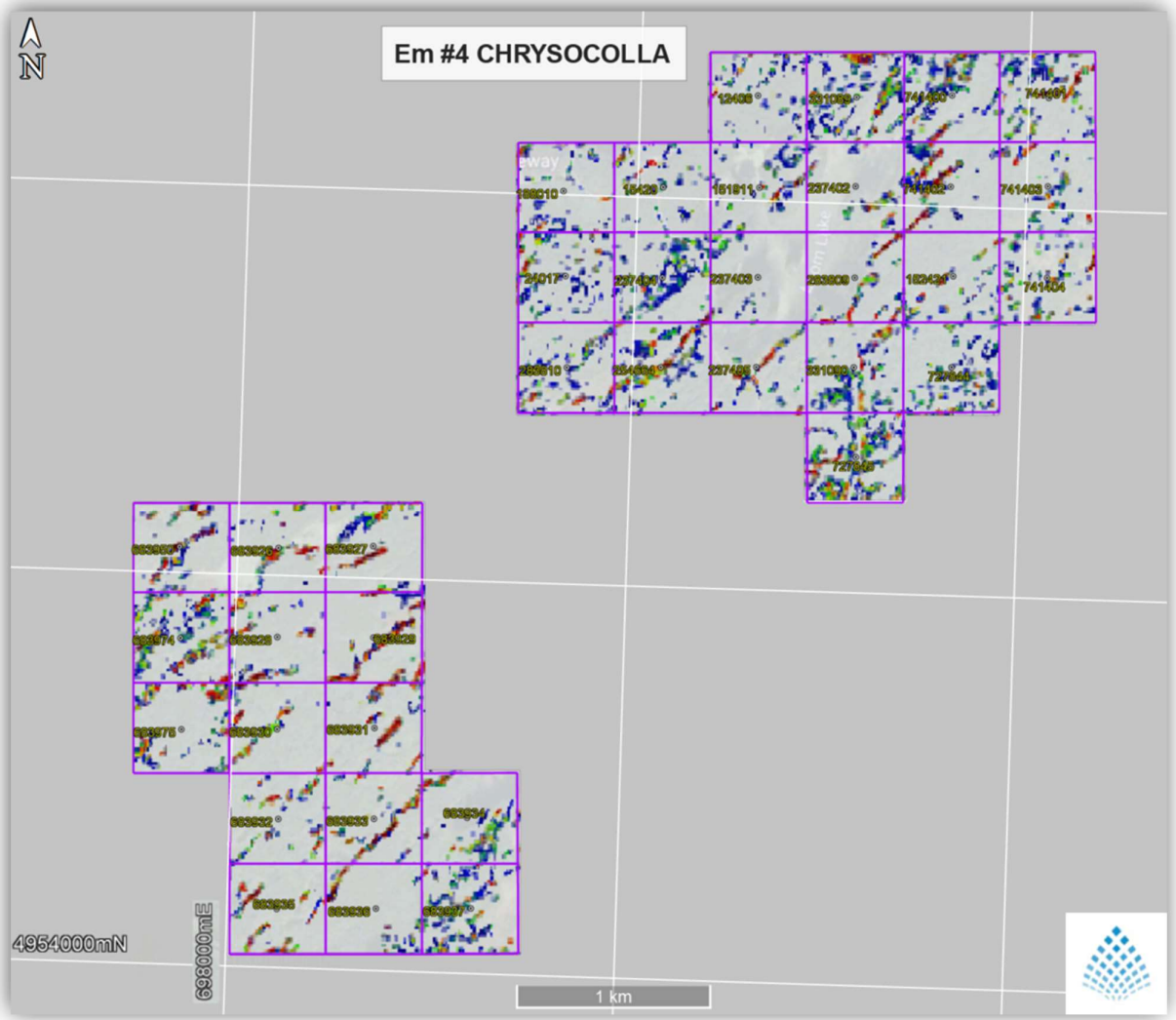

Figure 7.27 Short Wave Infrared Survey: Chrysocolla Abundance Map

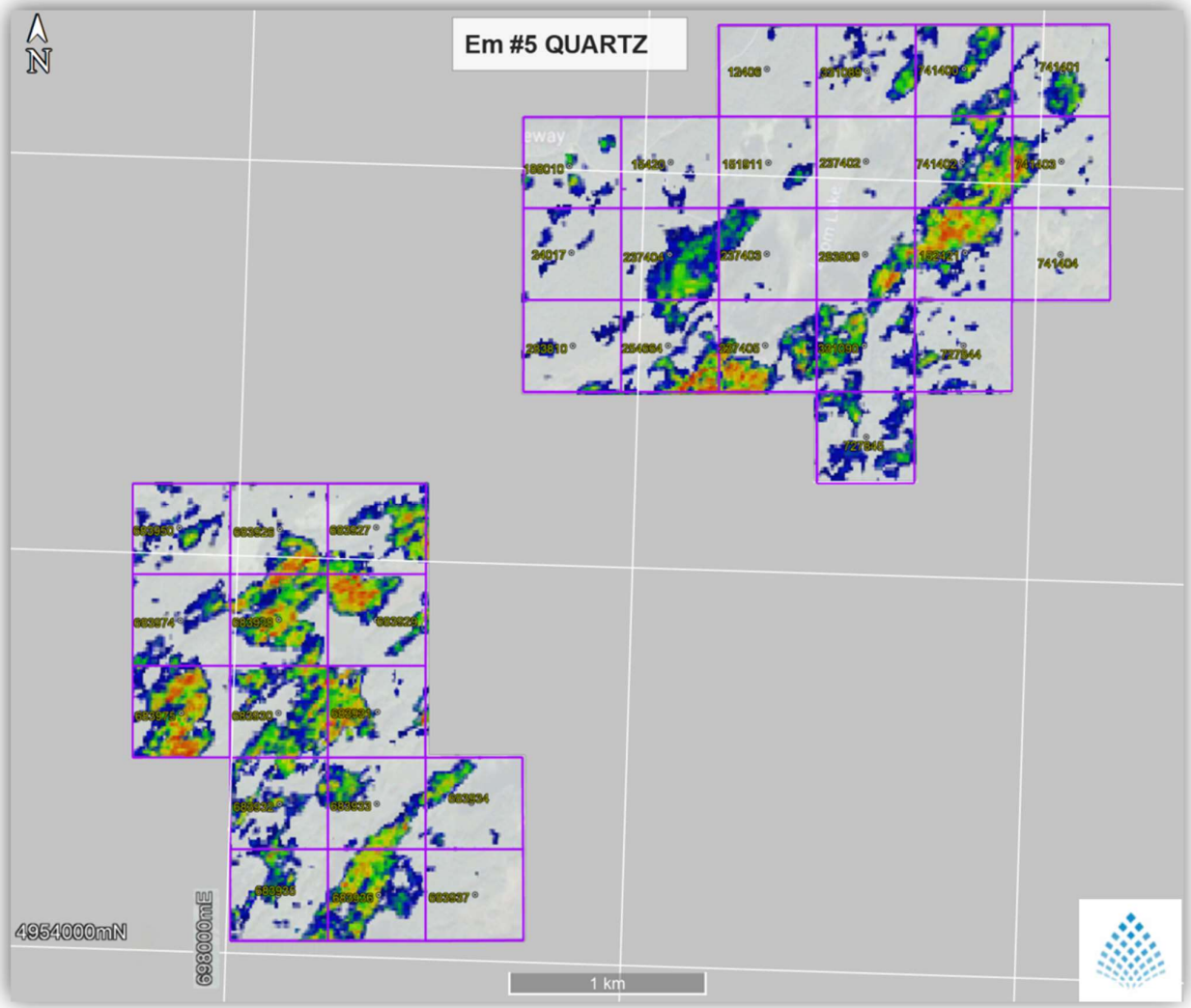

Figure 7.28 Short Wave Infrared Survey: Quartz Abundance Map

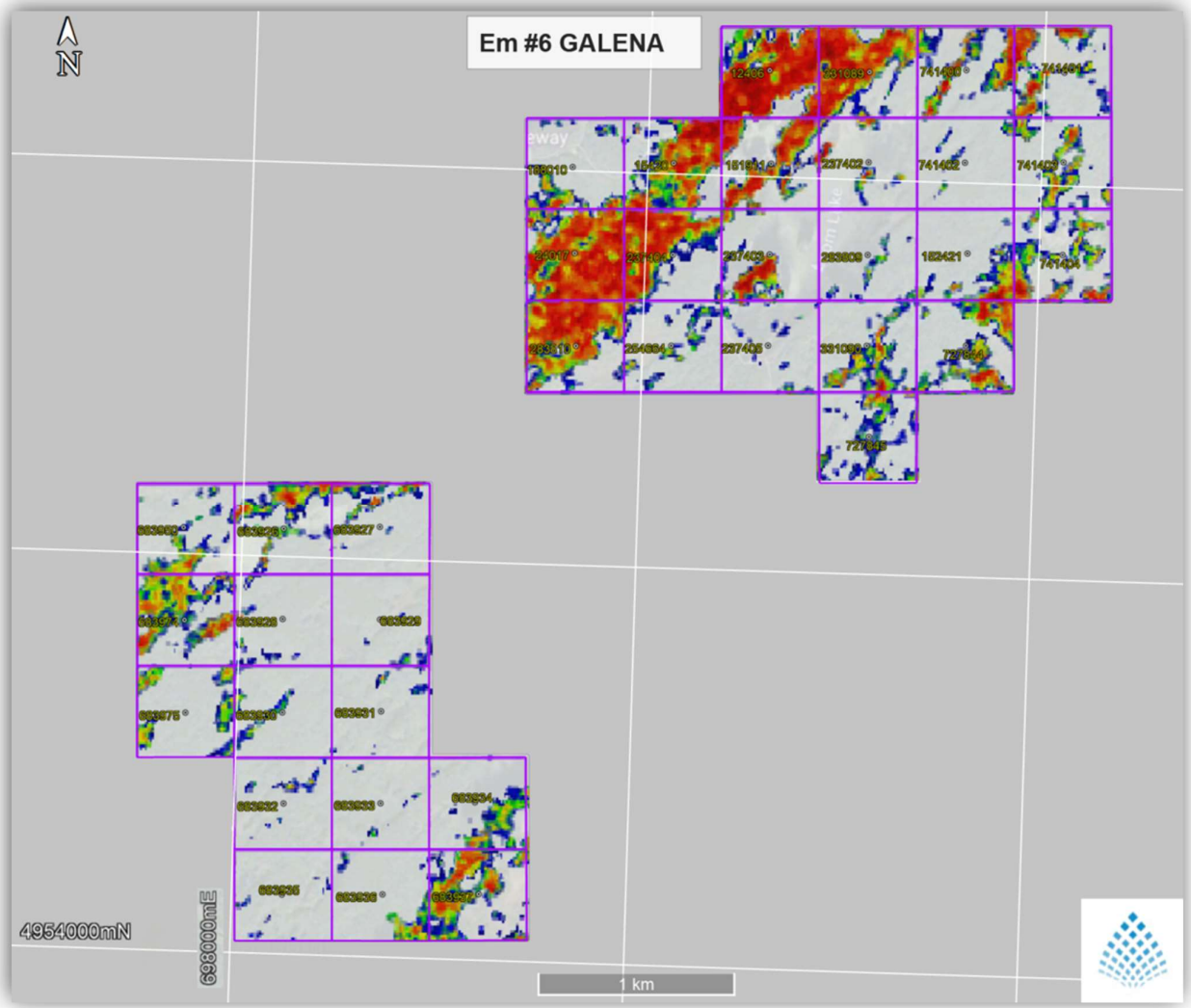

Figure 7.29 Short Wave Infrared Survey: Galena Abundance Map

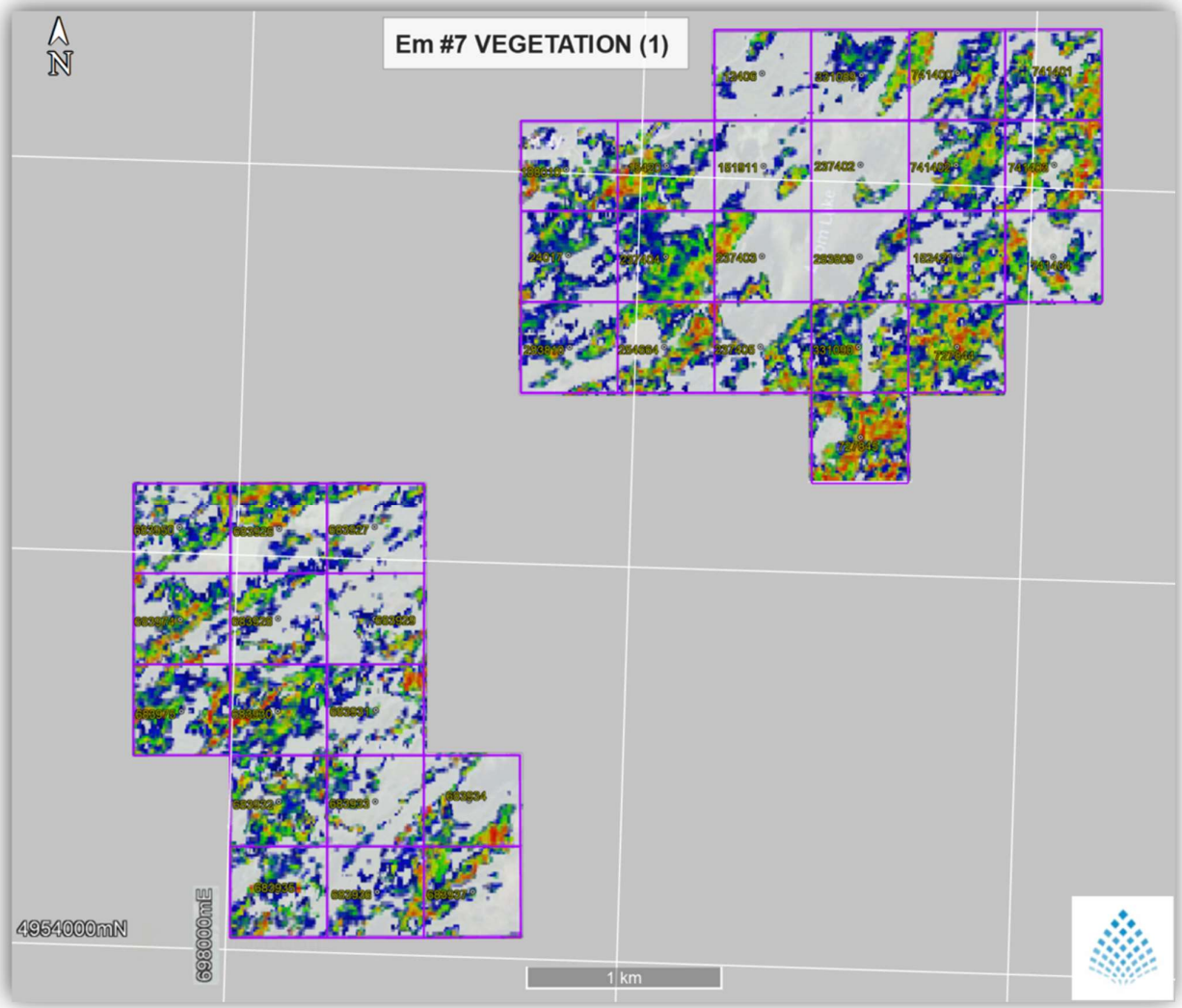

Figure 7.30 Short Wave Infrared Survey: Vegetation (1) Abundance Map

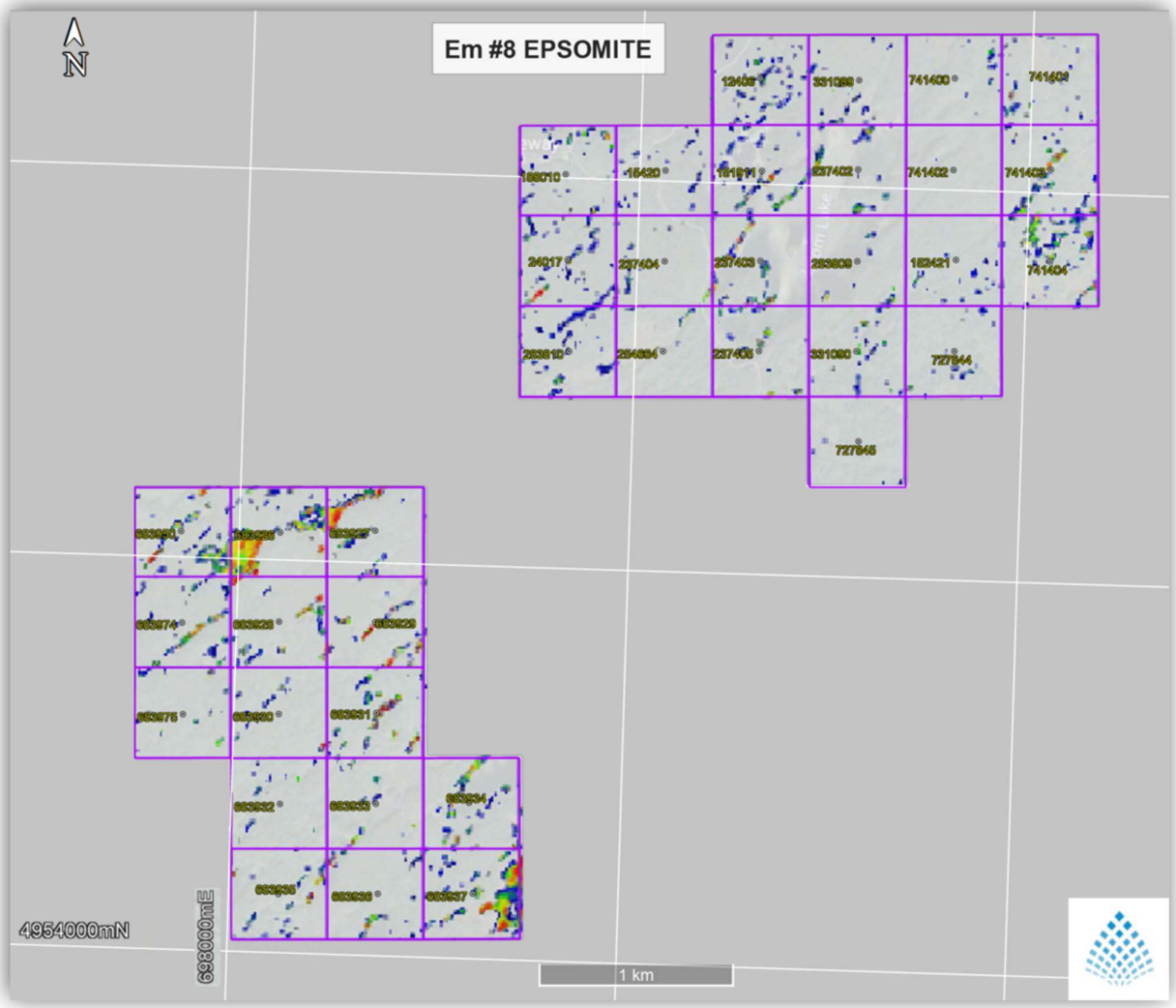

Figure 7.31 Short Wave Infrared Survey: Epsomite Abundance Map

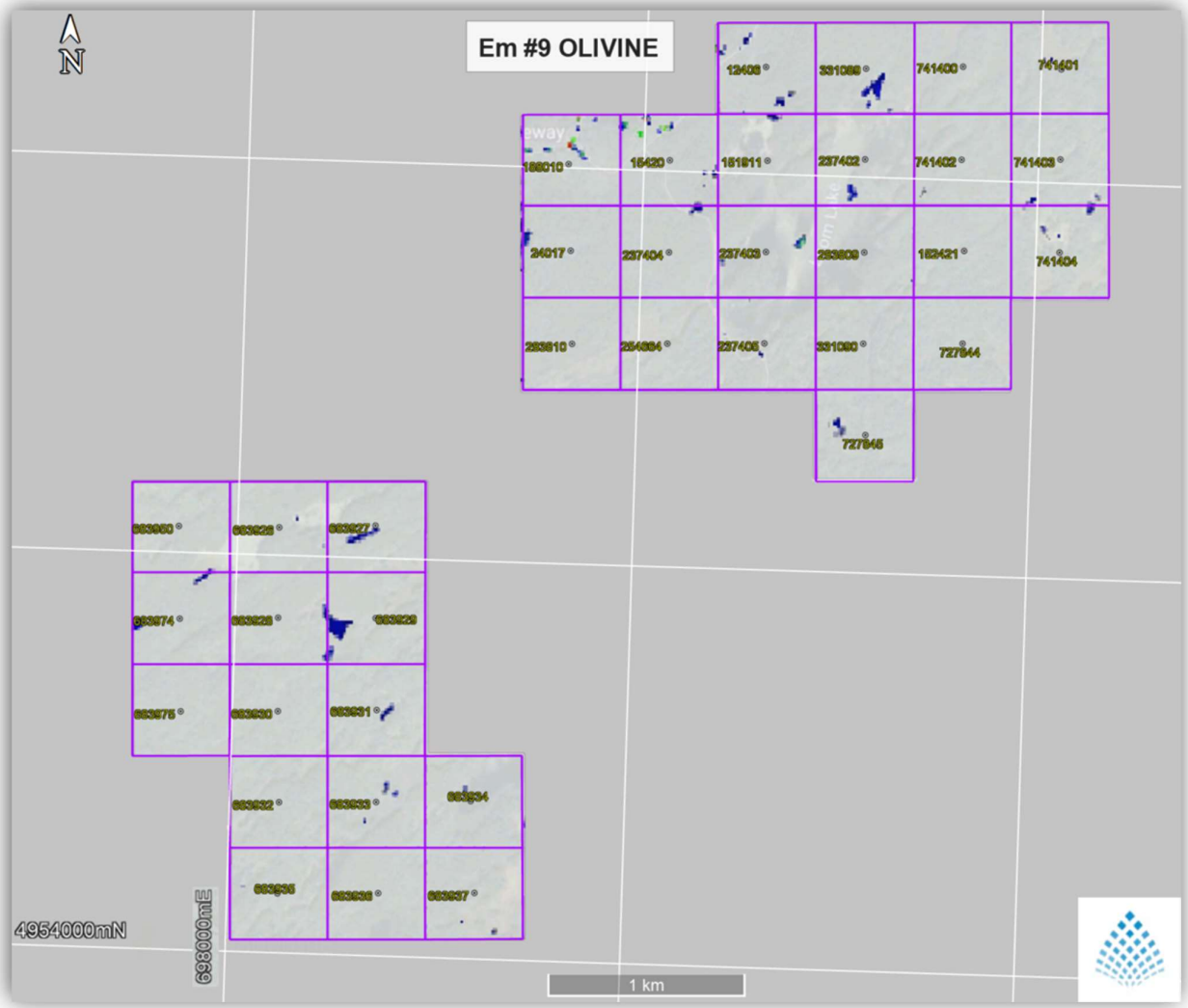

Figure 7.32 Short Wave Infrared Survey: Olivine Abundance Map

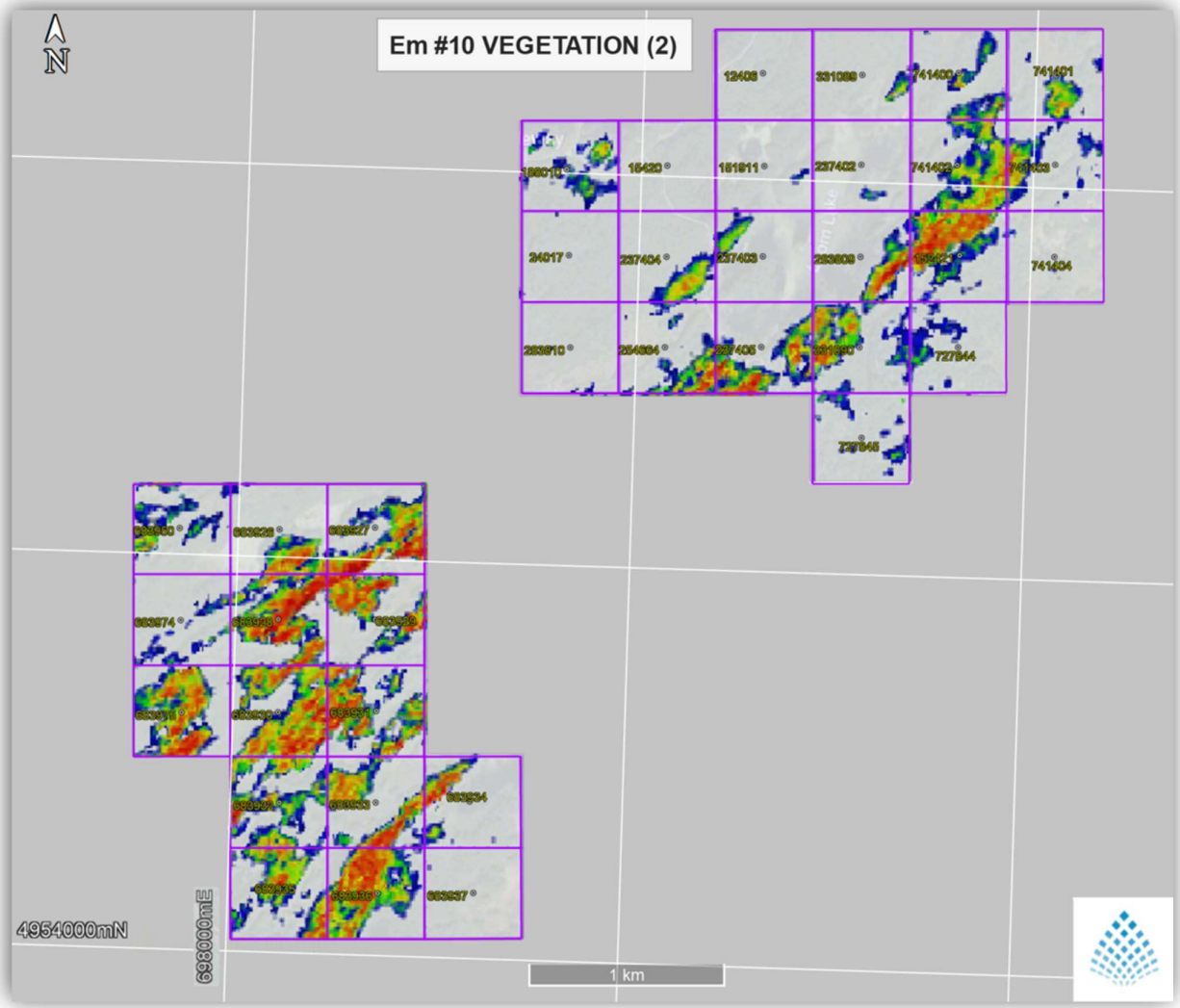

Figure 7.33 Short Wave Infrared Survey: Vegetation (2) Abundance Map

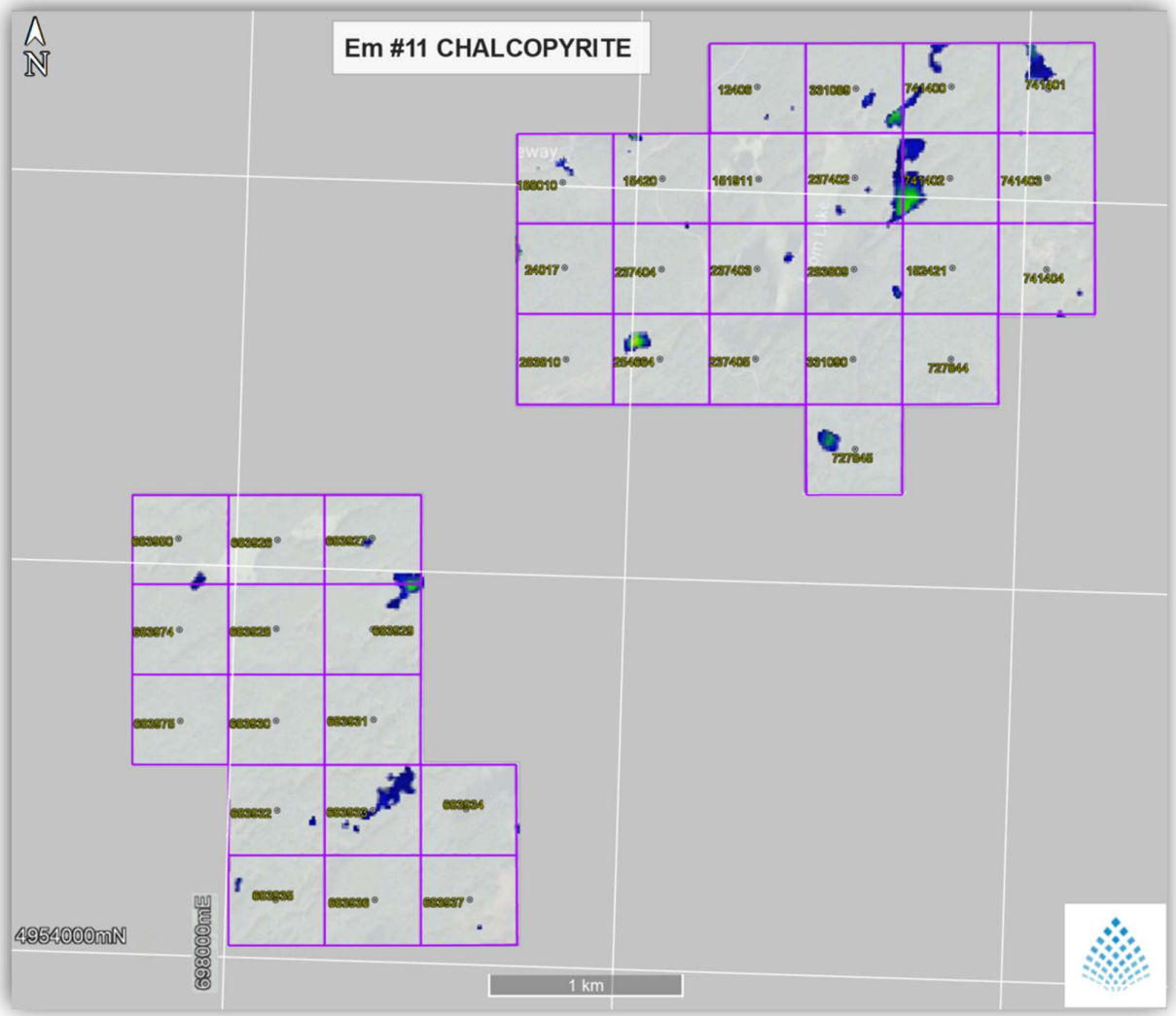

Figure 7.34 Short Wave Infrared Survey: Chalcopyrite Abundance Map

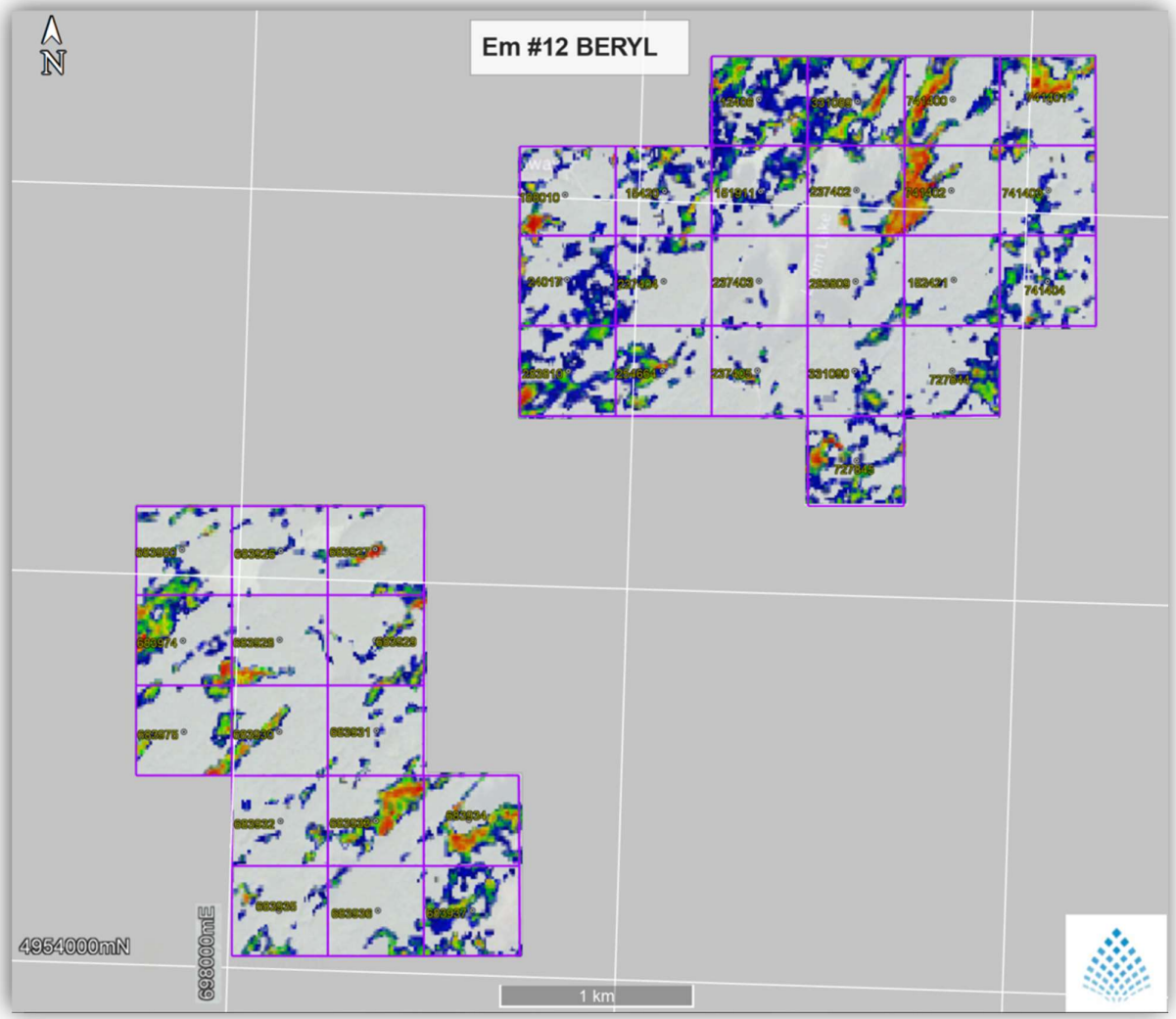

Figure 7.35 Short Wave Infrared Survey Beryl Abundance Map

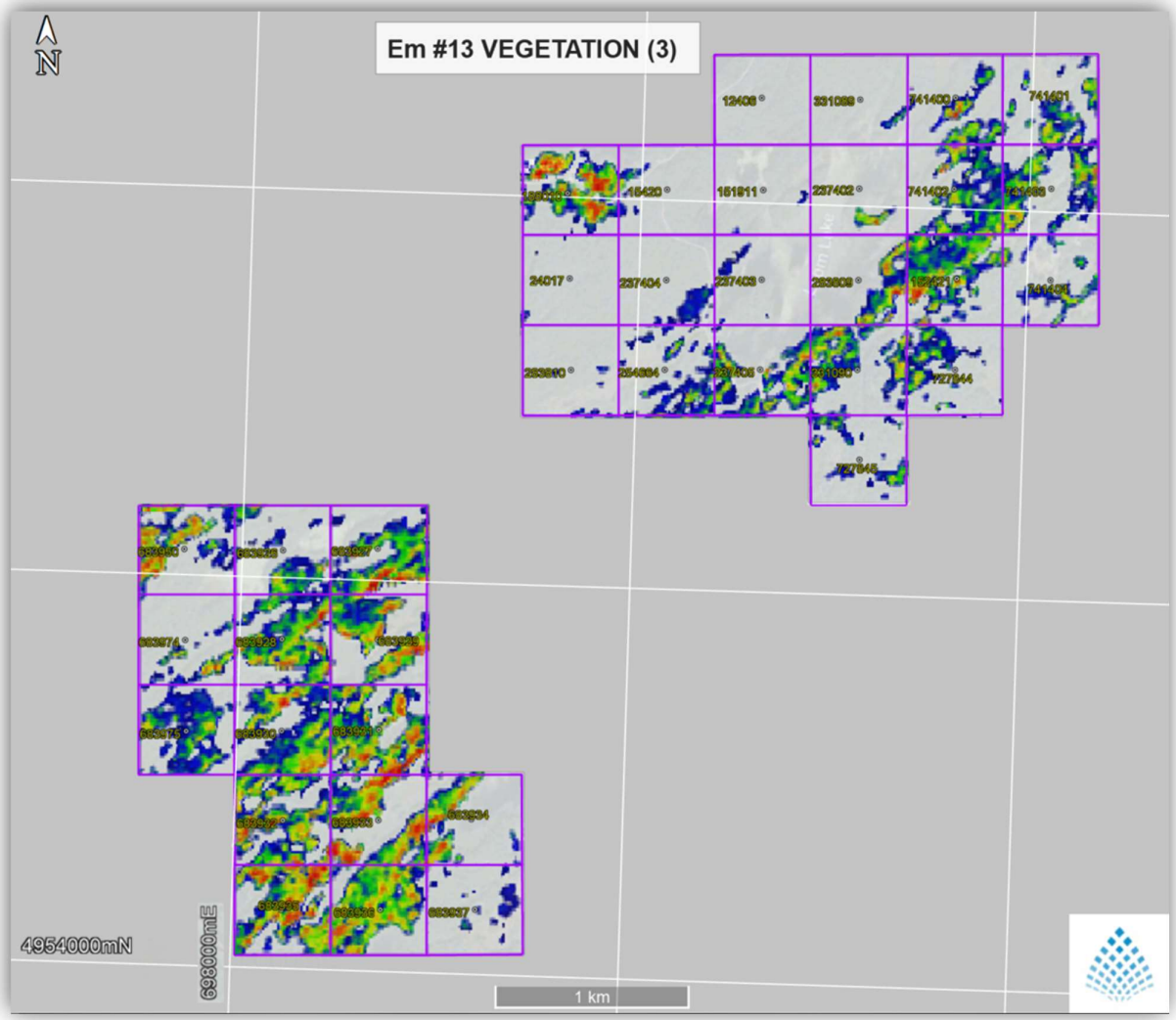

Figure 7.36 Short Wave Infrared Survey: Vegetation (3) Abundance Map

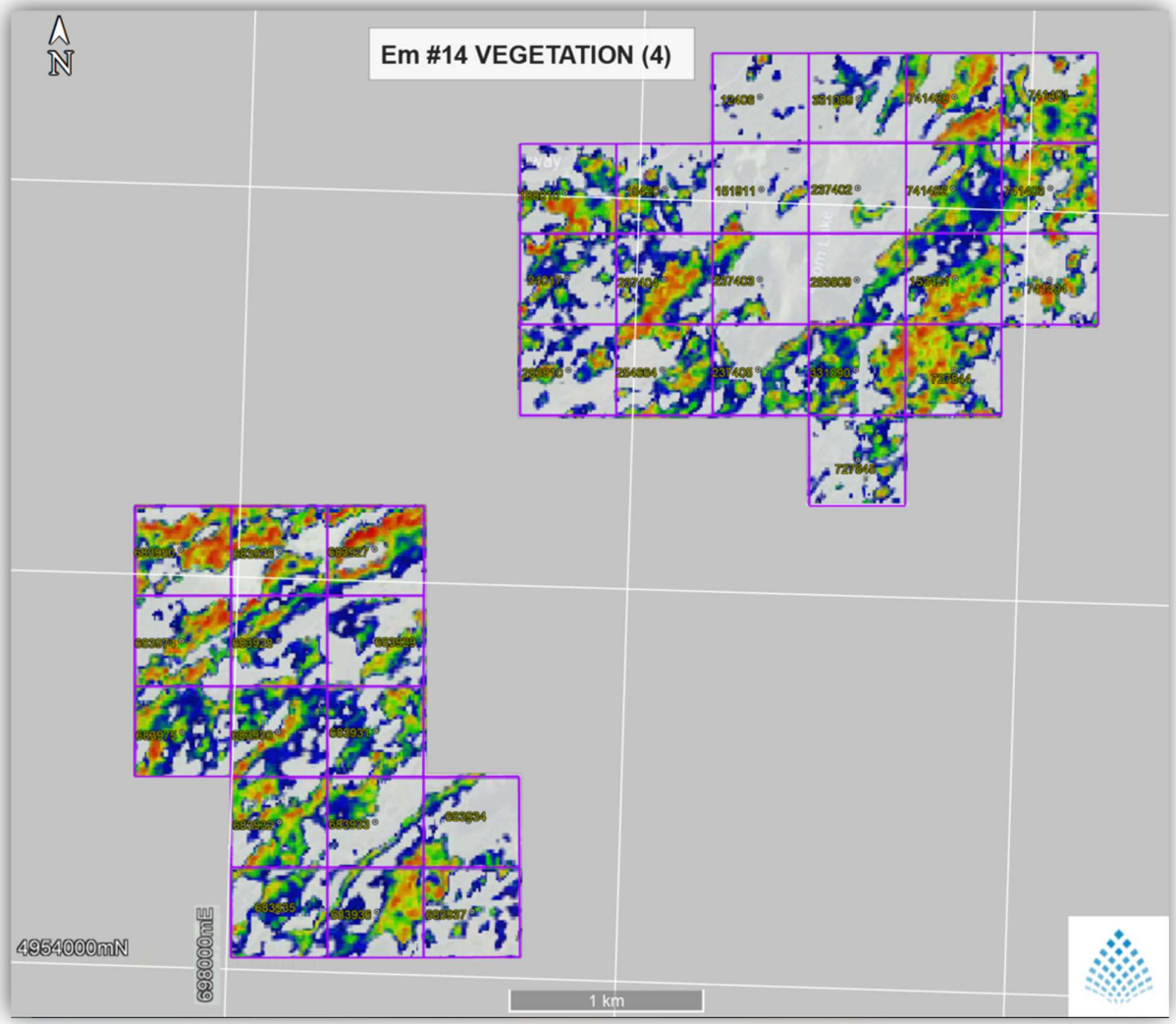

Figure 7.37 Short Wave Infrared Survey: Vegetation (4) Abundance Map

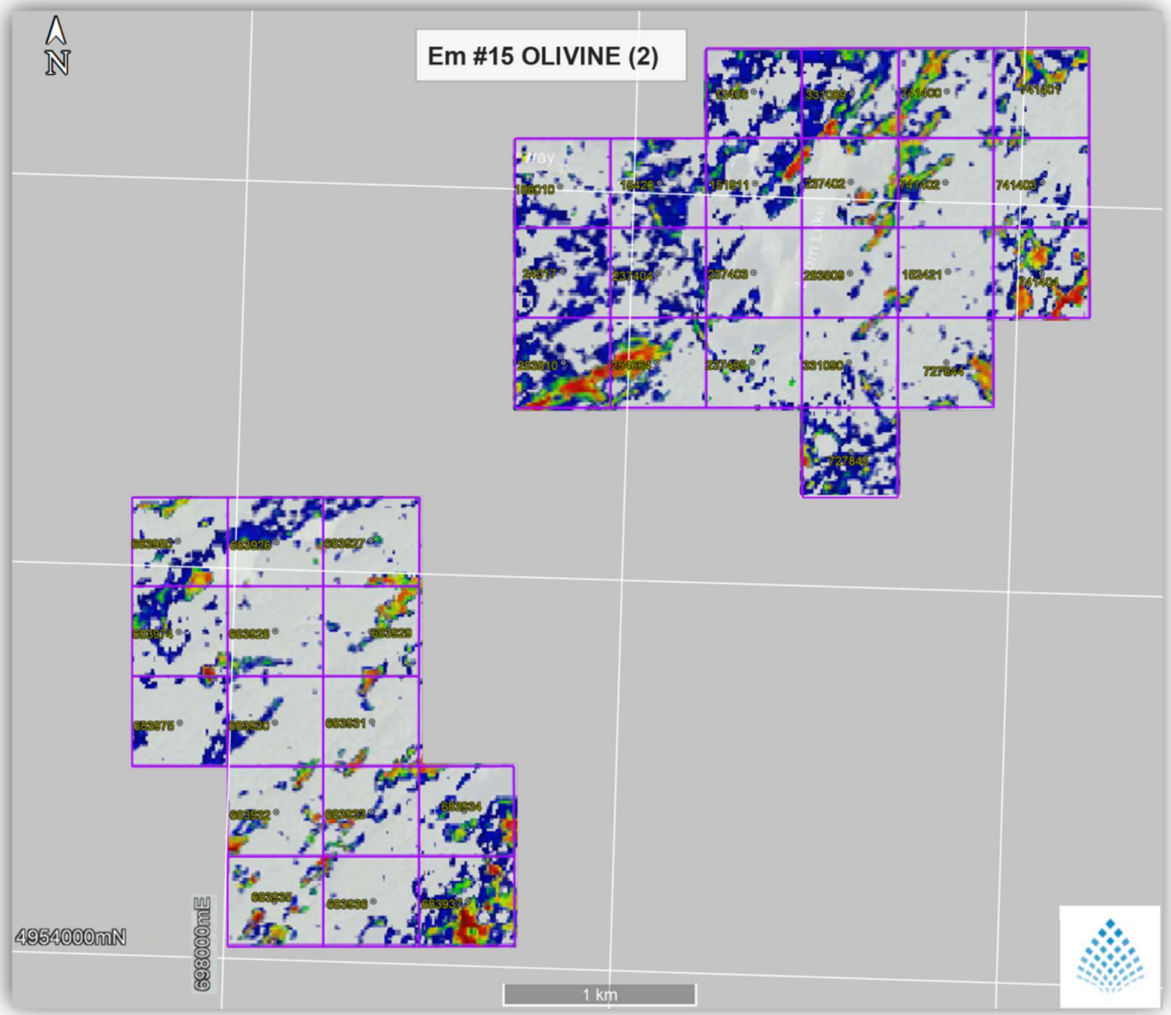

Figure 7.38 Short Wave Infrared Survey: Olivine (2) Abundance Map

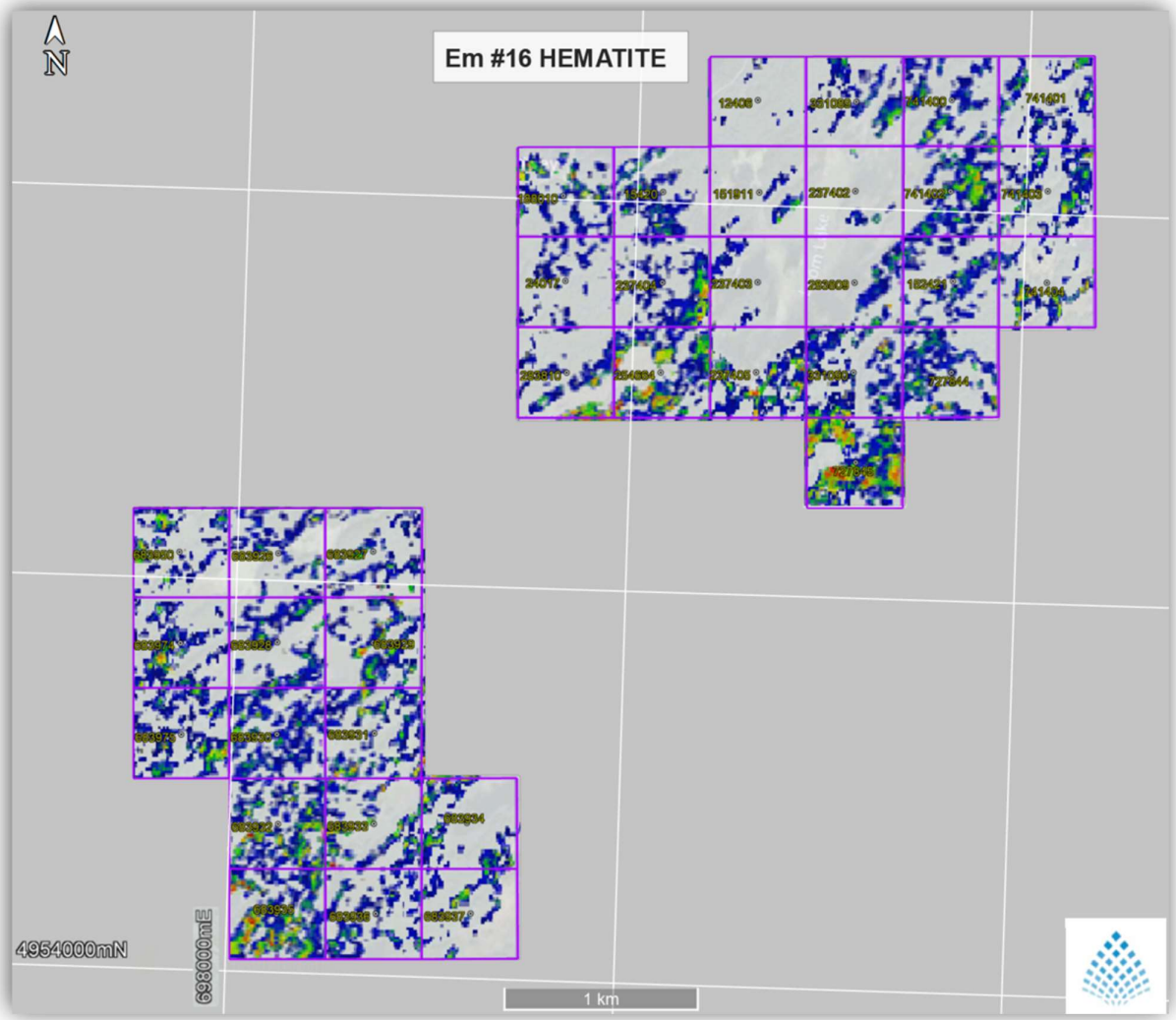

Figure 7.39 Short Wave Infrared Survey: Hematite Abundance Map

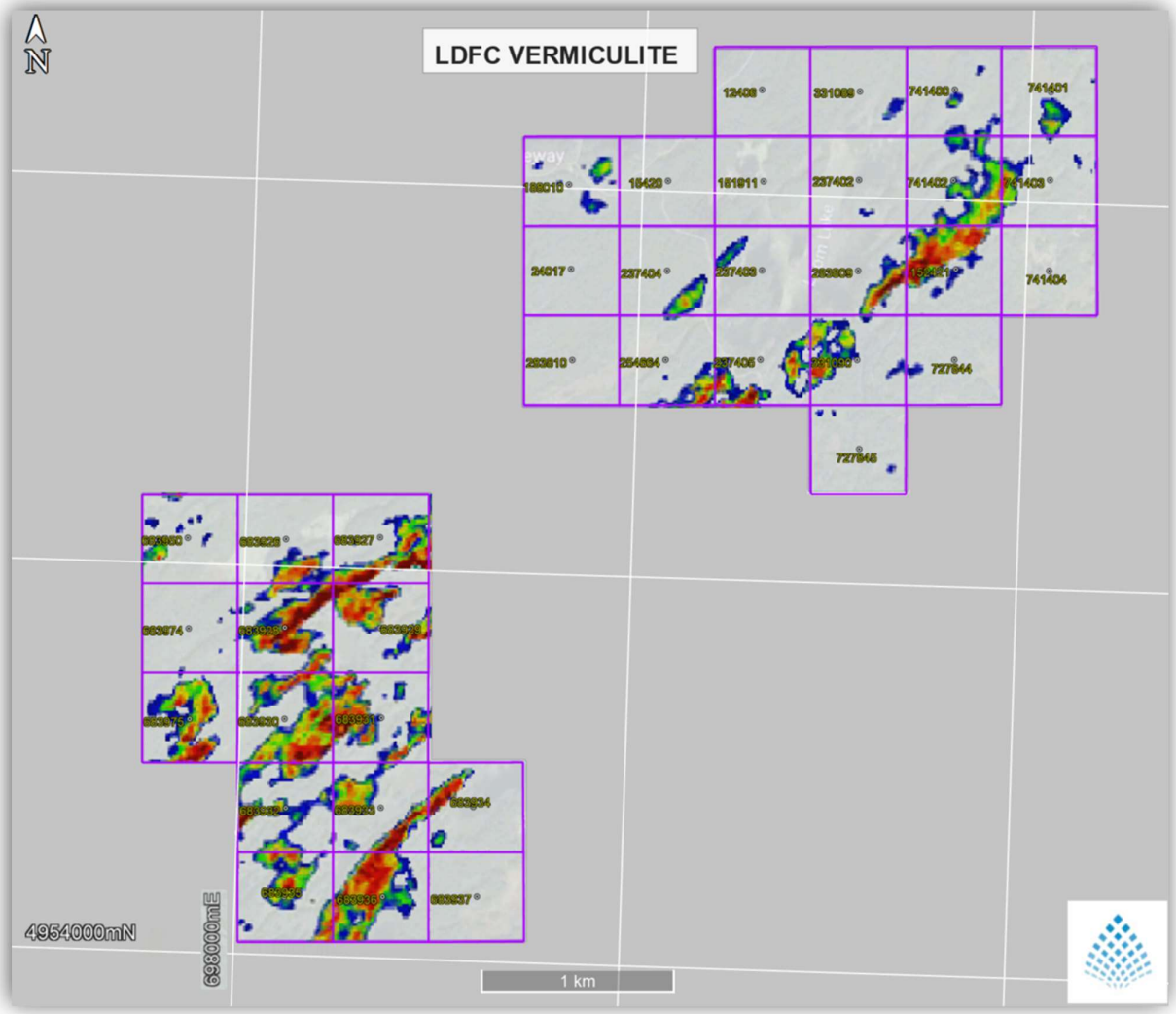

Figure 7.40 SWIR Vermiculite LDFC Predictor Target Map – Trained on 2 Occurrences

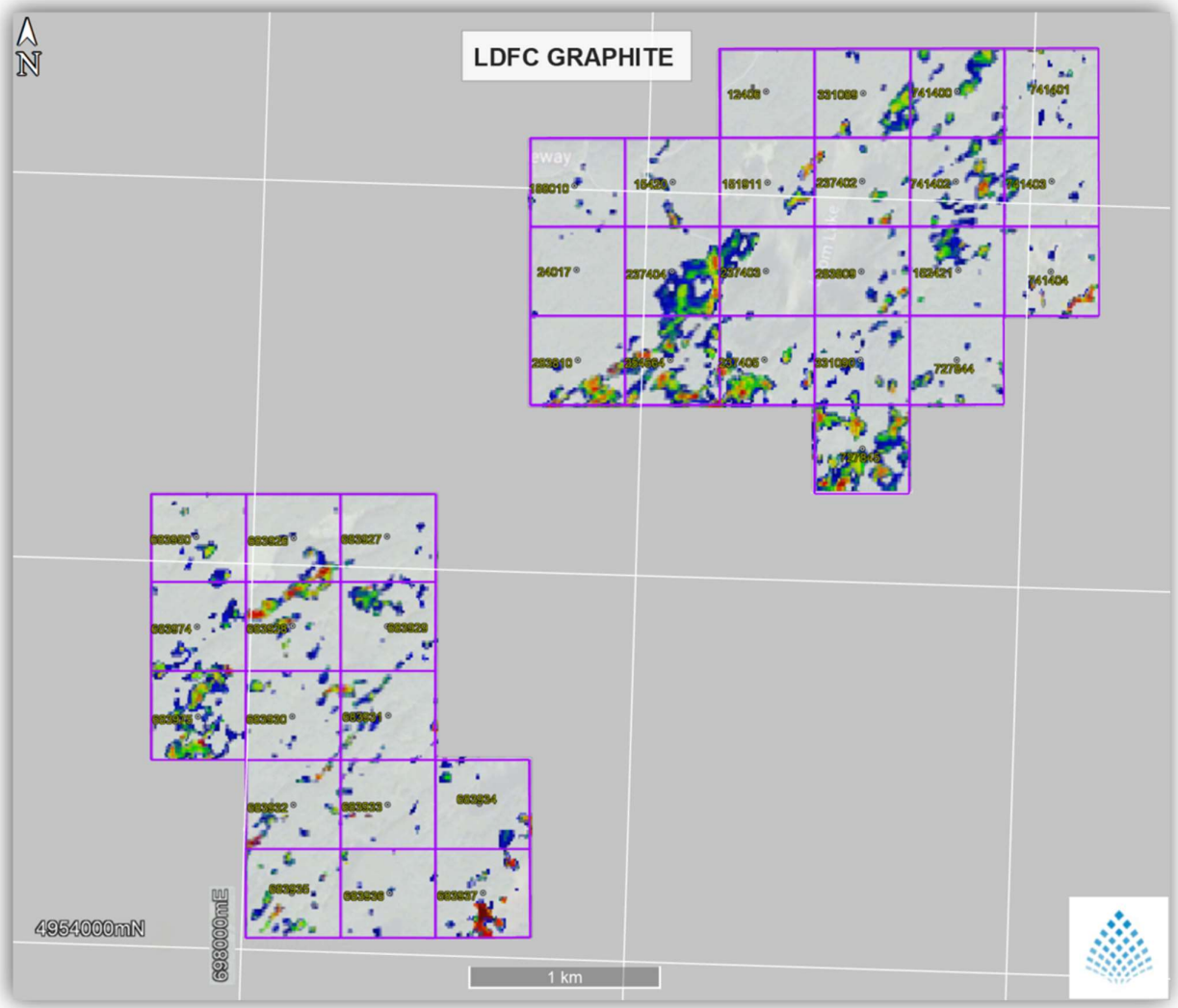

Figure 7.41 SWIR Graphite LDFC Predictor Target Map – Trained on 13 Occurrences

8.0 Spectral Interpretation, Field Exploration & Metallurgical Testing

The relatively coarse spectral and spatial resolution of Aster means that identification of specific minerals is tentative and needs to be viewed in conjunction with other exploration datasets, geological models and geochemical samples. In essence, the imagery requires extensive ground confirmation of this or any interpretation.

The 90m resolution of Aster Funds Ltd anomalies means that identification of specific minerals is done on comparison to industry accepted reference spectra, not field identification. This analysis is an input to a diversified exploration strategy with geoscientific models and geochemical/geophysical inputs. The imagery and analysis herein always require ground verification in project mapping.

8.1 Target Vector Minerals

The LWIR Target Vector Minerals identified for commodities such as gold; copper; nickel; uranium, lithium etc. mineralization may be used in many different ways to define target areas for mineral exploration.

To define specific target areas for different elements/commodities, in a spectral survey area, a number of TVM methods are used:

- **Direct Mineral Vectors** An example is Sphalerite. This is a sulphide ore mineral for zinc and as such can be used as TVM's for zinc by outlining areas of high abundance which become target area(s) for exploration. Similarly, pyrrhotite is a well known pathfinder mineral for nickel that can be used directly to define target areas where spectral surveys show it in high abundance.
- **Metallic Target Vector Minerals** Where more than three metallic oxide/sulphide/carbonate mineral endmembers occur, they can be used as TVM's to outline target areas of metallic concentration by using the TVM overlap method. Seven metallic TVM's are present in the claims area.
- **Conceptual Target Vector Minerals** If geological data suggests an environment for a commodity deposit type is present but has not been found nor mapped, then specific minerals (ore, gangue, pathfinder, alteration etc.) associated with the particular deposit type can be used as Target Vector Minerals, if present in the raw data.

8.1.1 LWIR Direct Mineral Vector

Graphite is generally closely and spatially coincident with the 'mapped' vermiculite zones in the claim blocks and as they were both identified in the LWIR survey as endmembers - Em#11; Em#13 & Em#14. Their abundance distribution in the claim blocks can be used as targets to define trend of the

mineralization. Plotting the LWIR abundance graphite and the graphite from the SWIR QDFC Predictor-Fingerprint mapping, graphite target zones were outlined (Figure 8.1).

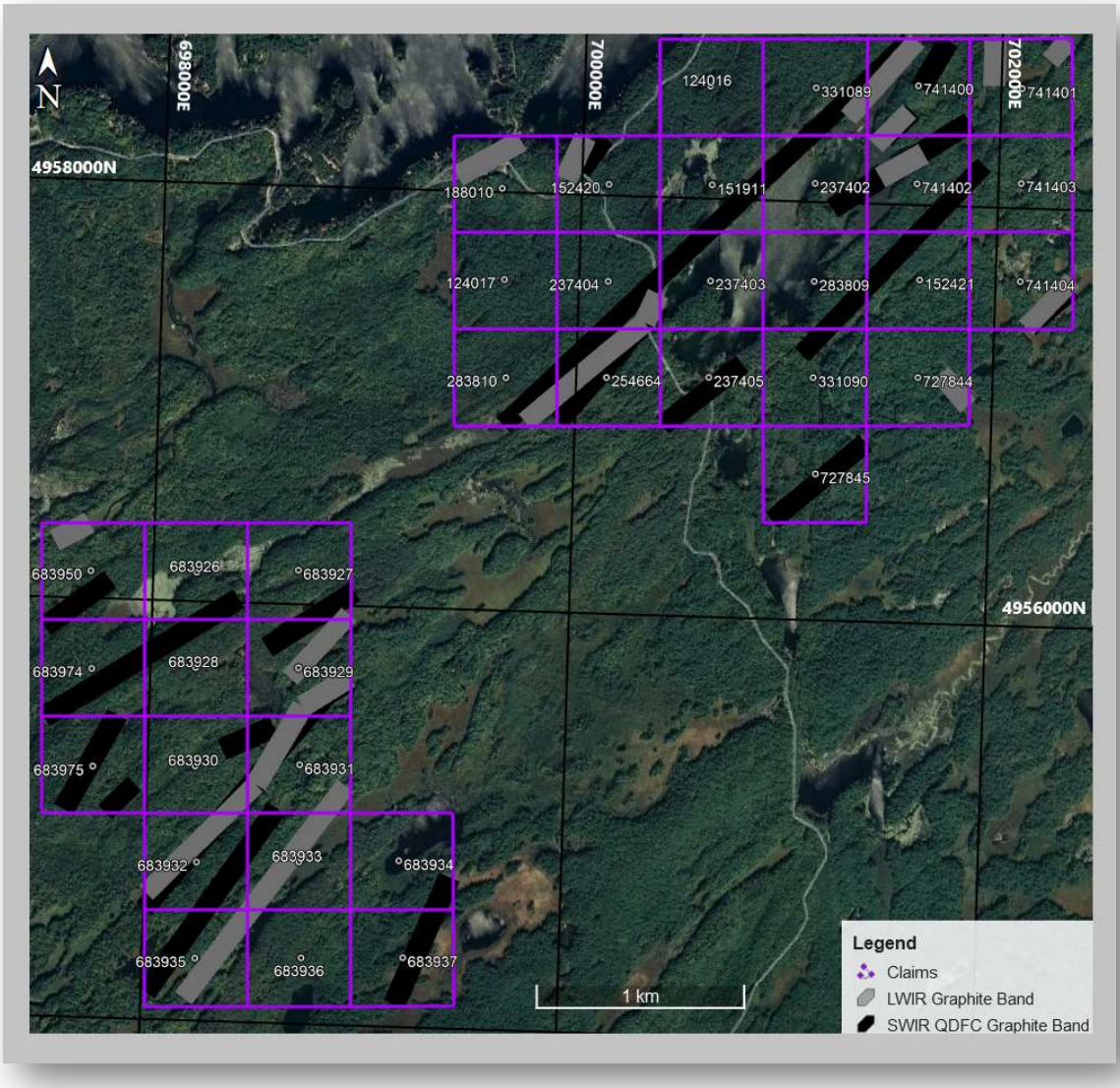

Figure 8.1: Graphite Target Zones

SWIR LDFC vermiculite fingerprint mapping (Figure 7.) outlined a single 1.8-kilometre-long potential vermiculite band on the Loom Lake claim block and six (6) near parallel potential vermiculite bands from 300metres to 1.1 kilometres in length on the Loom Lake West claim block. LWIR vermiculite abundance delineated three (3) one-kilometre-long vermiculite targets on the Loom Lake claim block. Figure 8.2 overleaf shows the distribution of the spectral vermiculite target bands on both claim blocks.

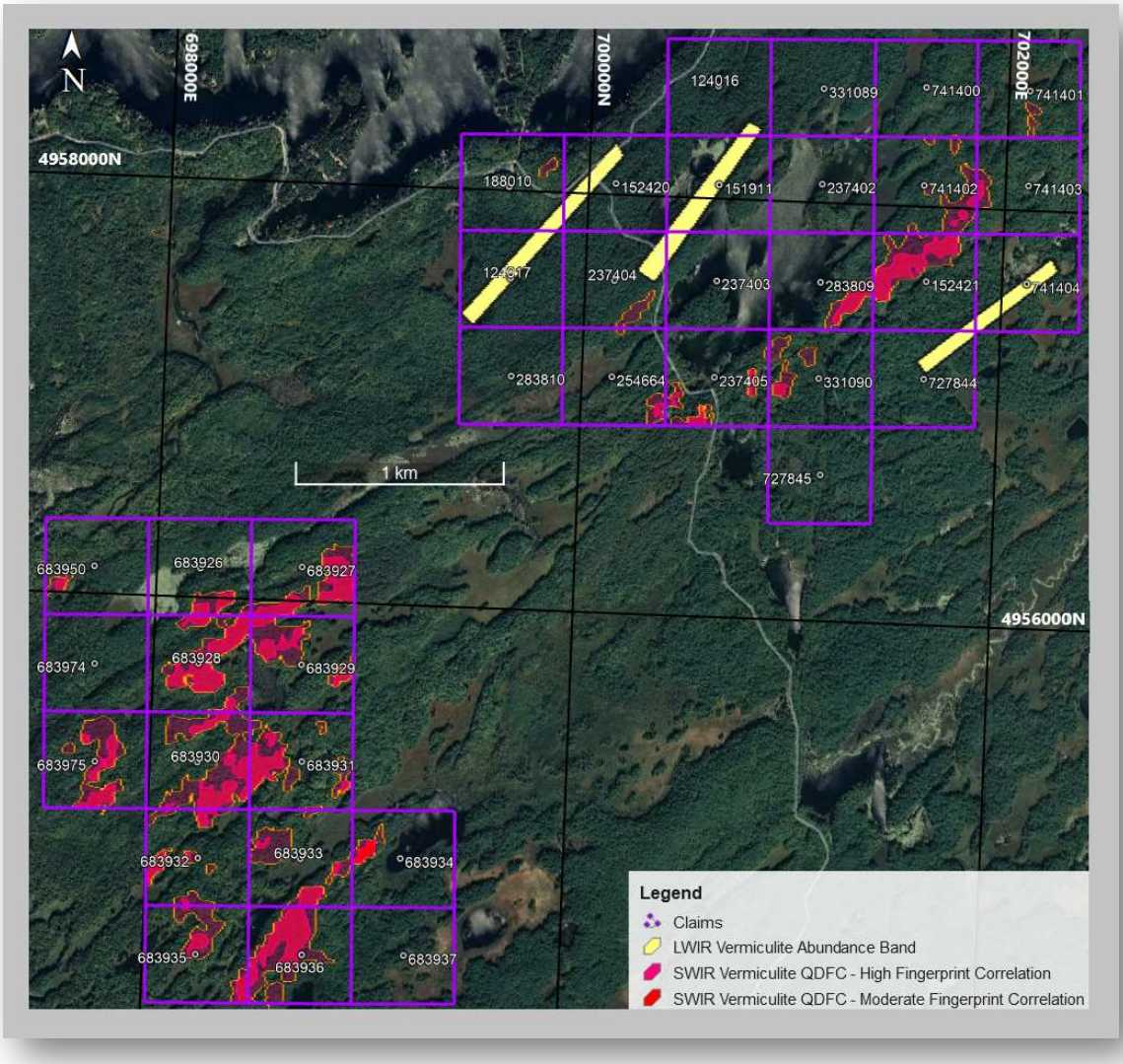

Figure 8.2: Vermiculite Target Bands

8.1.2 LWIR Metallic Target Vector Minerals

The Aster LWIR survey mapped three metallic minerals in the survey area:

- Goethite (iron oxide) with a 95% correlation coefficient
- Pyrite (iron sulphide) with a 97% & 99% correlation co-efficient
- Chalcopyrite (Copper iron sulphide) with a 99% correlation coefficient.

The “metallic’s “- sulphides and oxides indicate that mineralization processes were active in the survey area. Their abundance maps can be directly used to assist in defining areas for exploration. Where more than three metallic oxide/sulphide/carbonate mineral endmembers occur they can be used as TVM’s to outline target areas of metallic concentration by using the TVM overlap method.

Utilizing the TVM overlap methodology a metallic TVM overlap map was produced for the Loom Lake and Loom Lake West Claims (Figures 8.3 below) where pyrite is more abundant on the Loom Lake claim block.

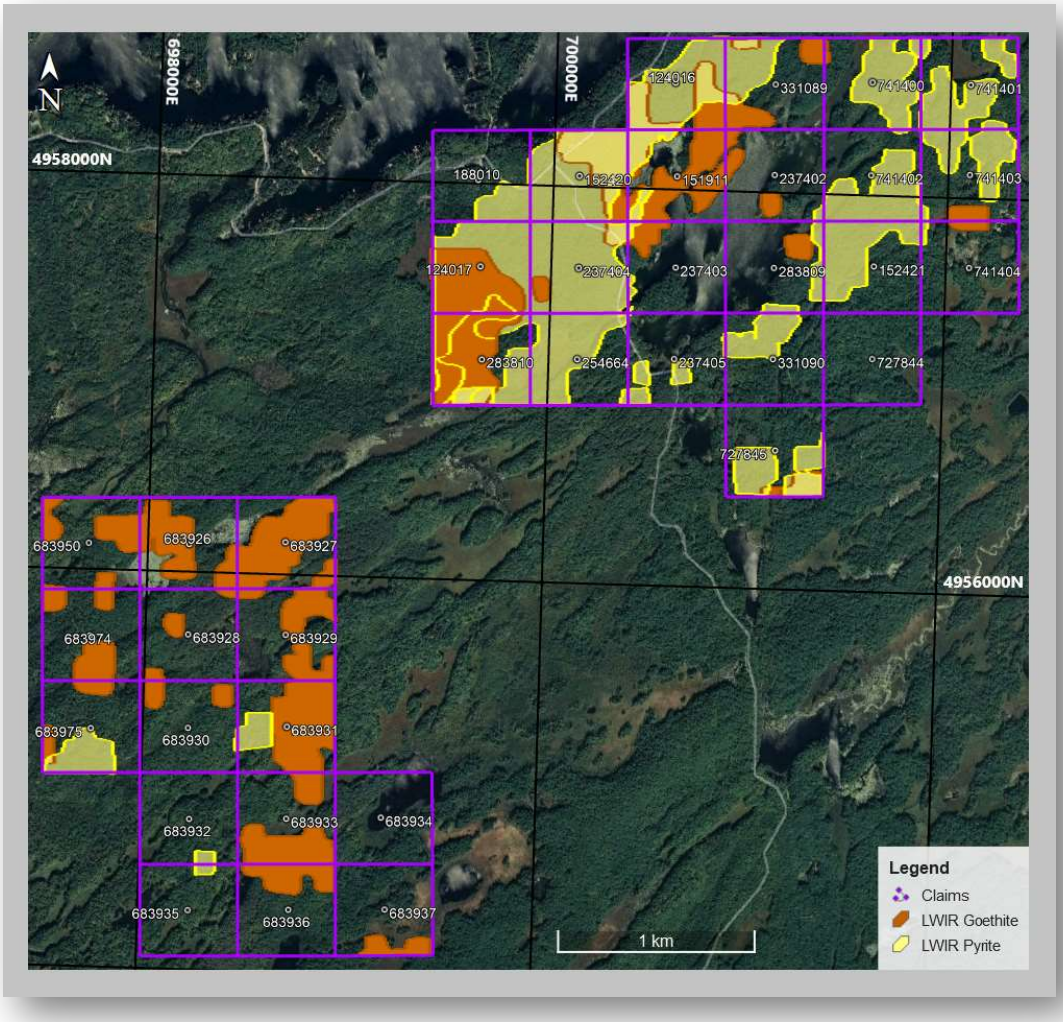

Figure 8.3: Metallic (Pyrite & Goethite) Map

Chalcopyrite is absent from the claims area.

8.2 Field Exploration

Mr. Fred Archibald P. Geo spent a total of six (6) days in the field on the Loom Lake claim block in Galway township plus 3 days for direct delivery of the rock samples to the various laboratories:

1. October 3rd 2021: 4 continuous chip samples over 100m
2. December 12th-14th 2021: 88 Kg sampling for metallurgical testing
3. April 25th- 26th 2022: 13 rock chip samples
4. October 6th 2022: Collection of 54kg rock sample

Details of sampling including photos and daily logs are to be found in Appendix V.

On October 3rd 2021 four (4) continuous rock chip samples of less than a kilo weight each, were collected over a 100-metre length of outcropping graphitic rock on claim #237404. The samples were delivered to Actlabs in Ancaster, Ontario on October 4th 2021 and assayed for carbon (C-Graph) by IR and gold by FA-AA methods with results reported in ppb (Figure 8.4 and appendix IV).

Between December 12th and 14th 2021 a single large sample weighing 88 kilograms was collected from the October 2021 sampling site on claim #237404 (Figure 8.4) by using a hammer and chisel/pick to obtain a continuous stream of representative rock chip/channel samples over the 100 metres of outcrop. The sample was delivered to SGS Lakefield, an ISO compliant. Laboratory, for metallurgical testing on January 5th 2022 (Figure 8.4 and Appendix II).

Between April 25th and 26th 2022, thirteen (13) individual rock chip samples of less than a kilo weight each were collected from rock outcrops on claim #237404 (8 samples) and claim #254664(5 samples) on the Loom Lake claim block. The rock chip samples were delivered to Actlabs for carbon analyses (IR method) for carbon content (Figure 8.4 and Appendix IV).

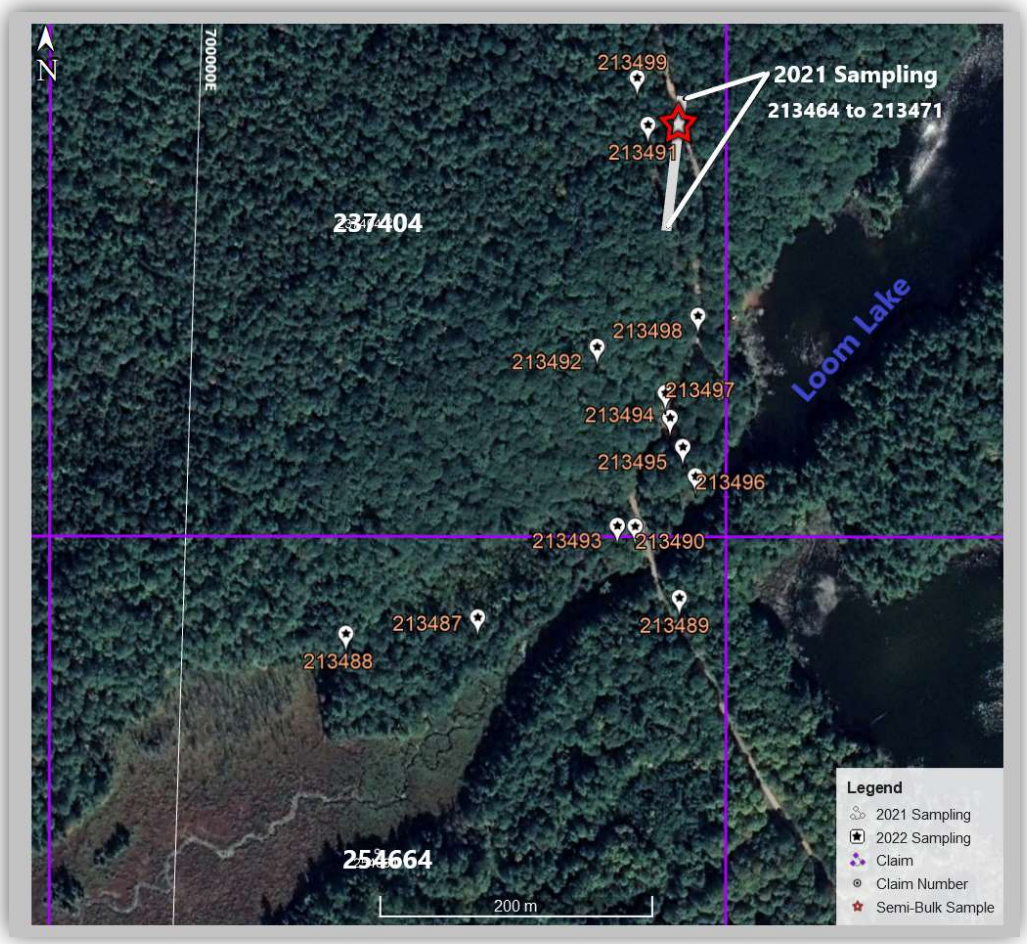

Figure 8.4: 2021 and 2022 Rock Sampling

A further large rock sample of 54 kilograms was collected by rock chipping and diamond saw rock cutting on October 6th 2022 from the same location as the 88 kg sample collected in December 2021 over a 50m area and delivered to SGS Lakefield on October 7th 2022 (Figure 8.4).

Tabulation of the rock chip sampling data from claims #254664 and #237404 in Galway Township is presented in Table 5 overleaf and laboratory assay result sheets are to be found in Appendix IV.

DATE	CLAIM NUMBER	SAMPLE NUMBER	SAMPLING LENGTH	UTM CO-ORDINATES EASTINGS	UTM CO-ORDINATES NORTHINGS	CARBON %C(g)	GOLD ppb
2021 - October	237404	213464	25m	700353	4957674		6
2021 - October	237404	213465	25m	700327	4957657		5
2021 - October	237404	213466	25m	700339	4957638		<5
2021 - October	237404	213467	25m	700346	4957608		5
2021 - October	237404	213468	25m	700353	4957674	4.34	
2021 - October	237404	213469	25m	700327	4957657	4.78	
2021 - October	237404	213470	25m	700339	4957638	2.89	
2021 - October	237404	213471	25m	700346	4957608	2.99	
2022 - April	237404	213487	1 - 2m	700217	4957290	9.26	
2022 - April	254664	213488	1 - 2m	700121	4957275	0.16	
2022 - April	254664	213489	1 - 2m	700364	4957309	0.53	
2022 - April	254664	213490	1 - 2m	700330	4957360	1.25	
2022 - April	237404	213491	1 - 2m	700330	4957653	0.97	
2022 - April	237404	213492	1 - 2m	700298	4957490	2.37	
2022 - April	254664	213493	1 - 2m	700317	4957360	0.05	
2022 - April	237404	213494	1 - 2m	700353	4957440	1.28	
2022 - April	237404	213495	1 - 2m	700363	4957419	2.91	
2022 - April	237404	213496	1 - 2m	700373	4957398	1.89	
2022 - April	237404	213497	1 - 2m	700349	4957458	1.68	
2022 - April	237404	213499	1 - 2m	700371	4957515	1.82	
2022 - April	237404	213499	1 - 2m	700321	4957687	1.63	

Table 5: Rock Sampling Data – Location & Assay Results

Plotted carbon results of the 2021 and 2022 chip samples are shown below in Figure 8.5.

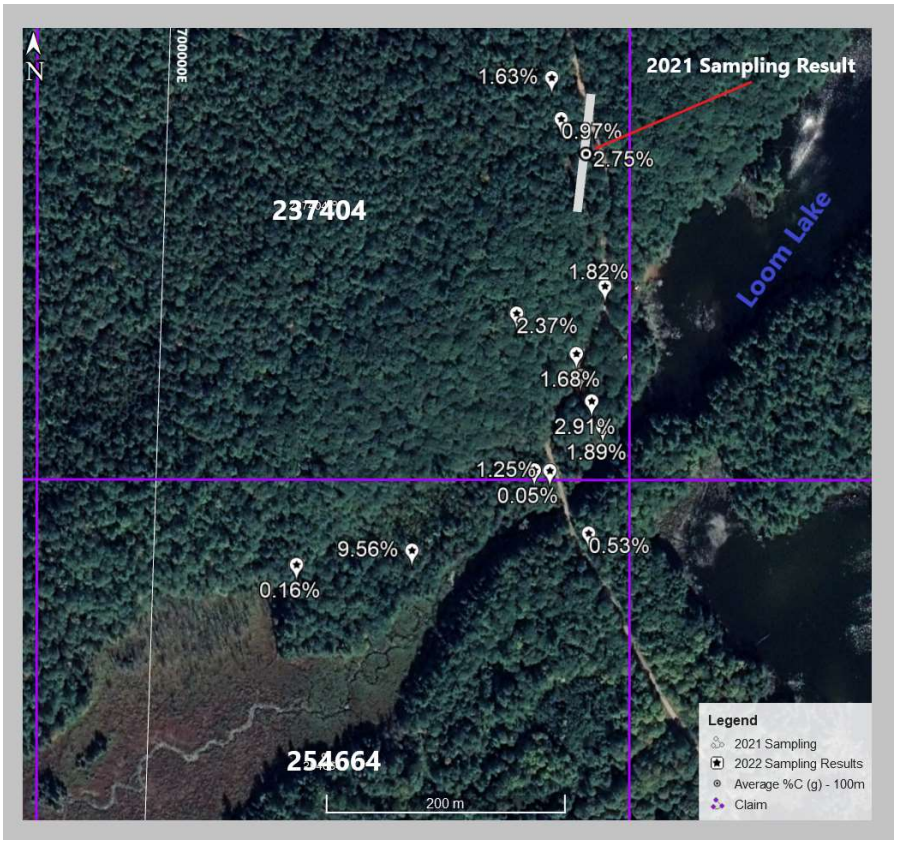

Figure 8.5: Rock Chip Sample Assay Results

8.3 Metallurgical Testing (2022 & 2023)

Rock material totalling 88 kilograms from claim #237404 (Figure 8.4) was collected in December 2021 and delivered to SGS Lakefield on January 5th 2022 by Fred Archibald P.Geo. In Summer-Fall 2022 Earth Resources obtained interest in the project from Empire Minerals Corporation Inc. who agreed to fund the testing at SGS Lakefield. A draft report was produced by SGS on February 21st 2023 (Appendix II).

The primary objectives of the tests were to determine:

- Chemical characterization of the sample
- Suitable flotation conditions
- Graphite recovery
- Concentrate grade
- Flake size distribution
- Total carbon grade for different size fractions

In summary, most of the carbon in the sample was associated with graphite. The final flotation concentrates yielded grades of over 97% C(t) at high open circuit total carbon recoveries of 87.4%.

A size fraction analysis of the two final concentrates identified the test with four polishing stages as slightly superior with a combined concentrate grade of 98.6% C(t) compared to 97.7% C(t) for test with only three polishing stages.

The flake size distributions of the sample classify the product as relatively fine with 85-90% of the concentrate mass reporting to the -100 mesh size fractions. However, only 8.8% to 14.8% of the total mass report to the very small flake sizes of minus 325 mesh.

The scoping level flotation testing report is to be found in Appendix II.

Upon completion of the SGS testing on the 88kg sample processing of the second sample delivered to SGS on October 7th 2022 commenced to produce a -100-mesh graphite flotation concentrate. In early January 2023 a 3.3 kg of -100 mesh graphite concentrate grading at least 95% C(t) was produced to determine applicability for use in high tech applications.

Samples of the graphite concentrate was shipped to Urbix Inc. of Arizona,the USA in January 2023.

In January 2023 Urbix Inc. of Arizona tested two 0.5 kilo concentrate samples from3.3 kg graphite concentrate produced by SGS Lakefield for:

- Bulk density
- Tap density
- Particle size distribution
- Fixed carbon percentage.

and the results are reported in Appendix III.

9.0 Conclusions

Proprietary algorithms were applied to collect and categorize the spectral reflectance and emissivity emanating from the rocks over the Loom Lake and Loom Lake West Claims. Spectral LWIR frequencies so collected were correlated against a reference database of rocks, minerals, and other substances from Johns Hopkins University and sixteen minerals were identified including graphite and vermiculite.

Aster Funds Ltd identified three (3) LWIR Target Vector Minerals (TVM) for metallics. Processing and plotting of the LWIR TVM overlap data on the Loom Lake and Loom Lake West Claims outlined areas of weak to moderate pyrite and goethite abundance (Figure 8.3).

Both graphite and vermiculite SWIR LDFC Predictor-Fingerprint target maps were produced and a number of elongate areas or bands with a high correlation to the graphite and/or vermiculite occurrence trainers were outlined as exploration targets (Figure 9.1).

The highest C(g) rock sample occurs on one of the graphite spectral target bands

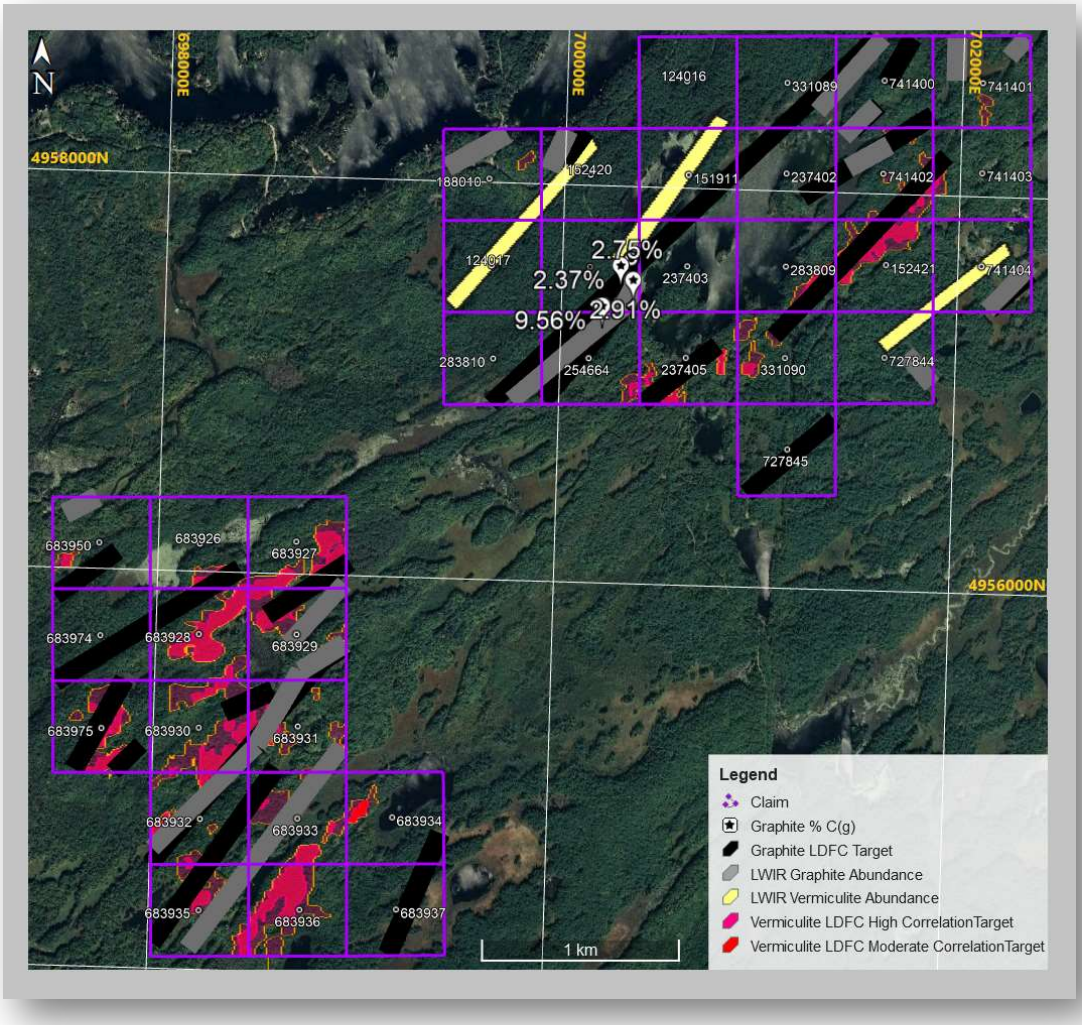

Figure 9.1: Graphite and Vermiculite Spectral Targets

In summary, the interpreted Aster LWIR mineral abundances and LDFC fingerprint mapping outlined exploration target areas for followup prospecting and exploration. The Loom Lake West claim block has the greater number of spectral vermiculite target areas/bands though the longest spectral vermiculite band length at 1.8 kiolometres occurs on th Loom Lake claim block.

Spectral graphite targets are equally distributed on both claim blocks.

Metallurgical testing of the graphite from the Loom Lake claim block claims confirms that production of a graphite concentrate grading up to 97.4% fixed carbon is possible.

All spectral data and interpretations should be integrated with other exploration datasets such as geochemistry, geophysics (gravity, magnetics, radiometric) as well lithological and structural interpretations for better results.

The various mineral abundances presented in this report need to be correlated with geological information and fieldwork to improve the interpretation and generate other reliable exploration targets.

10.0 Recommendations

Field follow-up work and further metallurgical testing is recommended as follows:

1. Detailed prospecting of both the graphite and vermiculite spectral target areas/bands
2. Selected sampling and assaying of rock in the target areas
3. Soil sampling (shovel/hand auger) along lines perpendicular to the spectral vermiculite bands on both claim blocks
4. Trenching across selected targets based on results from 1 to 3 above.
5. Optical mineralogy on graphite concentrates to characterize the types and association of gangue minerals and to determine if interlayering occurs.
6. Determination of potential graphite impurities
7. Research to develop methodology to develop a 99% fixed carbon (Urbix specs) minus 100 mesh concentrate

11.0 Cited References

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https://weatherspark.com

12.0 Certificate of Qualification

1, John Mark Ryder, B.Sc. (Hons), P.Geo., do hereby certify that:

1. I am a consulting exploration geologist and President of Ryder & Associates of 118 Fletcher Street, Bradford, Ontario L3Z 2Y9
2. I graduated with an Honours Bachelor of Science degree (Geology) in 1973 from University College Dublin (UCD), Republic of Ireland.
3. I am a Licensed Professional Geologist, being a member of the Association of Professional Geoscientists of Ontario (Permit # 2105)
4. I have worked as a geologist for the past 49 years since graduation from University College Dublin.
5. I am responsible for the preparation of the Assessment Report on the Loom Lake and Loom Lake West Claims, Galway Township, County of Peterborough, Southeastern Ontario, Canada.
6. I am not aware of any material fact or material change in the subject matter of this Assessment Report, nor am I aware of any data that could make this Assessment Report misleading.

Signed:

J. M. Ryder, B.Sc. (Hons.) P. Geo APGO# 2105,

Bradford, March 18th 2023

APPENDIX I

HISTORY

GALWAY TOWNSHIP

20000017249	2017-2019	Peterburton Mineral Corp	Peterborough-Haliburton County Vermiculite Deposit	Bulk Sampling, Industrial Mineral Testing and Marketing, Reserve/Resource Calculations
20000014846	2016	Earth Resources Ltd	Loom Lake Graphite Occurrence, Solerno Creek Graphite Zone	Bedrock Trenching, Geological Survey / Mapping, Overburden Stripping
20000014223	2015	John C Archibald	Loom Lake Graphite Occurrence	Assaying and Analyses, Bedrock Trenching, Channel Sampling, Geological Survey / Mapping
20000009172	2013-2014	Earth Resources Ltd, John Charles Archibald	Cavendish Township Graphite Occurrence, Galway Township	Assaying and Analyses, Geological Survey / Mapping, Overburden Stripping, Prospecting By Licence Holder
20000009031	2012-2013	1447136 Ontario Inc, Earth Resources Ltd		Assaying and Analyses, Diamond Drilling, Environmental Studies, Geological Survey / Mapping
20000009220	2012-2013	Earth Resources Ltd, John Charles Archibald, John Charles Archibaldearth Resources Ll	Galway Township Graphite Occurrence	Diamond Drilling, Electromagnetic, Induced Polarization, Metallurgical Testing and Bulk Sampling, Overburden Stripping
20000001943	2006	Earth Resources Ltd		Assaying and Analyses, Radiometric
20000003382	2006-2008	Earth Resources Ltd		Assaying and Analyses, Bedrock Trenching, Beneficiation Studies, Boring Other Than Core Drilling, Environmental Studies, Geological Survey / Mapping, Metallurgical Testing and Bulk Sampling, Overburden Stripping
31D16SW2013	2004	F T Archibald		Geological Survey / Mapping, Industrial Mineral Testing and Marketing, Mechanical, Overburden Stripping
31D09NW2023	2003	Blue Marble Mining Corp		Geological Survey / Mapping, Industrial Mineral Testing and Marketing, Magnetic / Magnetometer Survey, Prospecting By Licence Holder
31D09NW2027	2003	David Webster		Assaying and Analyses, Diamond Drilling, Geological Survey / Mapping, Industrial Mineral Testing and Marketing, Mechanical, Overburden Studies
31D09NW2028	2003-2004	David Webster		Assaying and Analyses, Geological Survey / Mapping, Mechanical, Microscopic Studies, Overburden Stripping
31D09NW2029	2003	1447136 Ontario Inc		Geological Survey / Mapping, Industrial Mineral Testing and Marketing, Mechanical
31D10NE2003	2001	Jeff N Chesher, John Charles Archibald		Industrial Mineral Testing and Marketing, Mechanical
31D16SW2006	2001	John Charles Archibald		Assaying and Analyses, Diamond Drilling, Geochemical, Mechanical, Overburden Stripping
31D16SW2008	2001	Jeff N Chesher, John Charles Archibald		Assaying and Analyses, Diamond Drilling, Industrial Mineral Testing and Marketing, Mechanical
31D16SW2005	2000-2001	Blue Marble Mining Corp		Geochemical, Manual Labour, Mechanical, Overburden Stripping, Regional or Reconnaissance Ground Exploration
31D09NW2010	1999-2000	John Charles Archibald		Geochemical, Geological Survey / Mapping
31D09NW2011	1999-2000	John Charles Archibald		Geochemical, Geological Survey / Mapping
31F07SW0001	1992	R V Stewart		Geochemical, Geological Survey / Mapping, Microscopic Studies, Prospecting By Licence Holder, Regional or Reconnaissance Ground Exploration
31D09NW0001	1956	Newkirk Mining Corp Ltd		Diamond Drilling
31D09NW0002	1956	Newkirk Mining Corp Ltd		Diamond Drilling

APPENDIX II

SGS METALLURGICAL REPORT

An Investigation into

THE SCOPING LEVEL EVALUATION OF ONE SAMPLE FROM AN ONTARIO GRAPHITE PROSPECT

prepared for

EMPIRE MINERALS CORPORATION INC

Project 19015-01 – Final Report

March 15, 2023

NOTES

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SGS Canada Inc. | P.O. Box 4300, 185 Concession Street, Lakefield, Ontario, Canada K0L 2H0
Tel: (705) 652-2000 Fax: (705) 652-6365 www.met.sgs.com www.ca.sgs.com

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Executive Summary

A scoping level metallurgical program was completed on one sample from a graphite target in Ontario. The primary objectives of the program were to determine the metallurgical response of the sample and to characterize the graphite concentrate in terms of flake size distribution and total carbon grades of different size fractions.

A representative head sample was extracted during sample preparation and pertinent results are presented in Table I. Most of the carbon in the two samples was associated with graphite. The samples also contained small quantities of organic carbon and carbonate carbon. The significant sulphur concentration and the lack of carbonates suggest that the tailings may be acid generating.

Table I: Head Analysis

Assays (%)				
C(t)	C(g)	CO_3	TOC	S
3.87	3.66	0.13	0.18	6.32

Two primary cleaner flotation tests were carried out on the sample. The exploratory cleaner test included flash and rougher flotation followed by a polishing grind and cleaner flotation. Since the combined concentrate grades of the two tests were low at 46.5% C(t) and 62.5% C(t), secondary cleaner tests were carried out with three and four stages of polishing and cleaning. The final flotation concentrates yielded grades of over 97% C(t) at high open-circuit total carbon recoveries of 87.4%.

A size fraction analysis of the two final concentrates identified the test with four polishing stages as slightly superior with a combined concentrate grade of 98.6% C(t) compared to 97.7% C(t) for test with only three polishing stages.

The flake size distributions of the sample classify the product as relatively fine with 85-90% of the concentrate mass reporting to the -100 mesh size fractions. However, only 8.8% to 14.8% of the total mass report to the very small flake sizes of minus 325 mesh.

A second sample that was provided by the client in October 2022 was used to generate a total of 3.3 kg of graphite flotation concentrate grading 96.7% C(t).

Introduction

A scoping level metallurgical program was completed on one sample from a graphite target located in Ontario. The scope of work included sample preparation, chemical characterization, and flotation. Further, 3.3 kg of a flotation graphite concentrate was generated for downstream testing.

The samples for development work and bulk flotation testing were received in January 2022 and October 2022, respectively. Results of the test program were forwarded to Mr. Fred Archibald representing Empire Minerals Corporation Inc. as they became available.

Oliver Peters, M.Sc., P.Eng, MBA
Consulting Metallurgist, Mineral Processing

Dan Imeson, M.Sc.
Manager, Mineral Processing

Experimental work by: Blendi Culi
Report preparation by: Oliver Peters, Cheryl Mina
Reviewed by: Cheryl Mina, TBD, Dan Imeson

Testwork Summary

1. Background and Objectives

Two samples from a graphite prospect in Ontario were subjected to flotation tests in 2022. The primary objectives of the tests on the first sample were to develop a preliminary understanding of the metallurgical response of the mineralization and to characterize the graphite concentrate in terms of flake size distribution and total carbon grades of different size fractions.

The second sample was provided to produce 3 kg of a flotation concentrate grading a minimum of 95% C(t).

2. Sample Receipt and Preparation

The first shipment containing a single sample was received at the SGS Lakefield site on January 5, 2022 and was given the SGS sample receipt number 0010-JAN22. The sample weight was approximately 88 kg.

A second sample was delivered to SGS Lakefield on October 7, 2022 and was given the SGS sample receipt number 0083-OCT22. The total mass of the sample was 54 kg and was provided to generate 3 kg of a flotation concentrate grading at least 95% C(t).

Both samples were stage-crushed to -6 mesh to avoid the generation of an excessive amount of fines. The crushed samples were homogenized and then split into 2 kg test charges. A representative head sample was extracted from the first sample for chemical characterization.

3. Chemical Analysis Results

The head sample that was extracted during sample preparation was submitted for chemical analysis. The results of the carbon speciation and sulphur analysis are presented in Table 1.

Most of the carbon in the sample was associated with graphite. The sample also contained small quantities of organic carbon. The carbon associated with carbonate carbon was below 0.03% C.

The sample contained 6.32% S. While the sulphur grade will likely not have an impact on the metallurgical performance of the sample, the likelihood of acid generating tailings increases with higher sulphur content, especially in the absence of acid neutralizing carbonates.

Table 1: Results of Carbon Speciation and Sulphur Analysis

Assays (%)				
C(t)	C(g)	CO_3	TOC	S
3.87	3.66	0.13	0.18	6.32

The sample was submitted for both an ICP-OES scan and a whole rock analysis. The results are presented in Table 2 and Table 3 and show no elevated concentrations of typical deleterious elements. The most abundant minerals in the sample were silicates accounting over 60% of the mass. Note that the results of the whole rock analysis are reported as the most common mineral compositions of the various elements. X-ray Diffraction (XRD), optical mineralogy, or QEMSCAN™ analysis is required to determine the actual mineral composition.

Table 2: Head Assay Results of ICP-OES Scan

Assays (g/t)						
Ag	As	Ba	Be	Bi	Cd	Co
< 2	< 30	845	0.97	< 20	< 2	20
Cu	Li	Mo	Ni	Pb	Sb	Se
75	< 30	19	111	< 20	< 20	< 30
Sn	Sr	Tl	U	Y	Zn	
< 20	81	< 30	< 20	4.1	130	

Table 3: Head Assay Results of Whole Rock Analysis

Assays (%)						
SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O
62.7	9.67	8.17	1.63	0.58	1.25	2.58
TiO_2	P_2O_5	MnO	Cr_2O_3	V_2O_5	LOI	Sum
0.45	0.15	0.03	0.01	0.05	10.4	97.7

4. Batch Cleaner Flotation

Two primary cleaner flotation tests were carried out on the January 2022 sample. The reagents that were used included fuel oil #2 (diesel) as the collector and methyl isobutyl carbinol (MIBC) as the frother.

The basic flowsheet that was employed in the two tests is presented in Figure 1. The primary grind time was 4 minutes based on a visual inspection of the flash flotation tailings. The polishing grind times were varied between 30 minutes in test F1A and 45 minutes in test F1B.

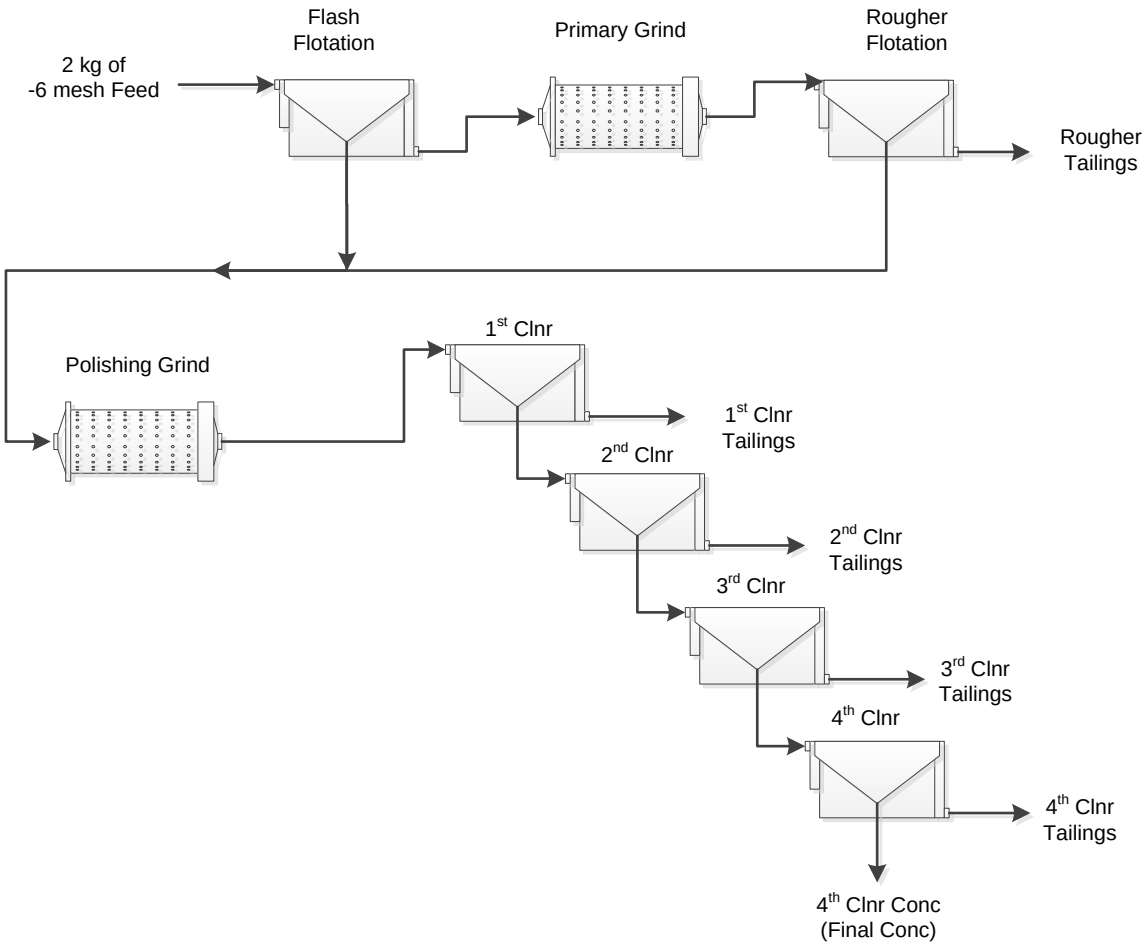


Figure 1: Test Flowsheet – F1A and F1B

The mass balance results of the two primary cleaner tests are summarized in Table 4 and complete test results are provided in Appendix A. Open-circuit carbon recoveries ranged between 66% in test F1A and 95.2% in test F1B.

The combined concentrate grades varied between 46.5% C(t) in test F1A with the shorter polishing time and 62.5% C(t) in test F1B with the longer polishing time.

The grade of the 3rd cleaner concentrate was quite low due to poor liberation of graphite and gangue minerals in the coarser size fractions. Additional regrind and cleaner flotation stages will be required for this material to produce a saleable concentrate grade with a minimum grade of 94% C(t). While certain applications accept lower grade concentrates, a graphite content of 94% C(t) is generally considered a minimum grade target.

Table 4: Mass Balance Summary – F1A and F1B

Test	Product	Weight %	Assays, % C(t, g)	% Distribution C(t)
F1A 30 min Polishing Time	3rd Clnr Conc	5.0	46.5	66.0
	2nd Clnr Conc	7.6	42.1	89.9
	1st Clnr Conc	10.1	33.8	96.3
	Rougher Conc	46.5	7.45	97.7
	Rougher Tails	53.5	0.15	2.3
	Head (calc.)	100.0	3.55	100.0
	Head (direct)	0.0	3.66	0.0
F1B 45 min Polishing Time	3rd Clnr Conc	5.9	62.5	95.2
	2nd Clnr Conc	6.2	59.4	95.6
	1st Clnr Conc	7.7	48.2	96.6
	Rougher Conc	49.3	7.64	98.0
	Rougher Tails	50.7	0.15	2.0
	Head (calc.)	100.0	3.84	100.0
	Head (direct)	0.0	3.66	0.0

Based on the results of the primary cleaner tests, secondary cleaner test conditions were established with three and four stages of polishing. Test F3 employed three stages of polishing followed by cleaner flotation after each polishing stage. Test F4 added a fourth polishing stage. The combined polishing time of 105 minutes was identical in both tests since the 3rd polishing step of 30 minutes in test F3 was split into two 15 minute polishing steps in test F4.

A summary of the mass balances of the two tests is presented in Table 5 and complete test details are provided in Appendix A. The combined concentrate grades of the two tests were almost identical at 97.3% to 97.7% C(t) and represented a large improvement over the primary cleaner tests. Also, the open-circuit total carbon recovery of 87.4% in both tests was very high considering the number of cleaning stages.

Table 5: Mass Balance Summary of Secondary Cleaner Tests F3 and F4

Test	Product	Weight %	Assays, % C(t, g)	% Distribution C(t)
F3 3 polishing Stages 45/30/30 min	9th Clnr Conc	3.5	97.7	87.4
	8th Clnr Conc	3.6	97.4	89.8
	7th Clnr Conc	3.7	96.5	91.4
	6th Clnr Conc	4.0	91.1	93.0
	5th Clnr Conc	4.1	88.8	93.8
	4th Clnr Conc	4.7	79.3	94.4
	3rd Clnr Conc	10.9	34.2	94.8
	2nd Clnr Conc	11.2	33.2	95.1
	1st Clnr Conc	12.9	29.4	96.4
	Rougher Conc	43.7	8.75	97.3
	Rougher Tails	56.3	0.19	2.7
	Head (calc.)	100.0	3.93	100.0
	Head (direct)		3.66	
F4 4 polishing Stages 45/30/15/15 min	12th Clnr Conc	3.5	97.3	87.4
	11th Clnr Conc	3.5	97.3	87.5
	10th Clnr Conc	3.5	97.2	87.9
	9th Clnr Conc	3.5	96.8	88.2
	8th Clnr Conc	3.5	96.8	88.2
	7th Clnr Conc	3.5	96.7	88.4
	6th Clnr Conc	3.6	95.6	89.1
	5th Clnr Conc	3.7	94.8	89.5
	4th Clnr Conc	4.0	88.0	90.1
	3rd Clnr Conc	7.5	46.8	91.0
	2nd Clnr Conc	8.6	42.6	94.2
	1st Clnr Conc	9.6	38.1	94.7
	Rougher Conc	40.3	9.23	95.8
	Rougher Tails	59.7	0.27	4.2
	Head (calc.)	100.0	3.88	100.0
	Head (direct)		3.66	

In order to evaluate the quality of cleaner concentrates with regards to flake size distribution and total carbon grade of the various size fractions, the two final cleaner concentrates were submitted for a size fraction analysis. The mass distribution and total carbon grades of the various size fractions are depicted in Figure 2 and Figure 3, respectively.

The combined mass recovery into +100 mesh size fractions was 13.5% for test F3 with three polishing stages and decreased to 10.8% in test F4 with four polishing stages. Test F3 produced lower mass recoveries into all size fractions coarser than 200 mesh.

In terms of concentrate grades, the test F4 outperformed test F3 in all size fractions by as much as 1.3%. All size fractions graded at least 96.9% C(t) and the maximum grade of 99.0% C(t) was achieved for the +150 mesh product in test F4.

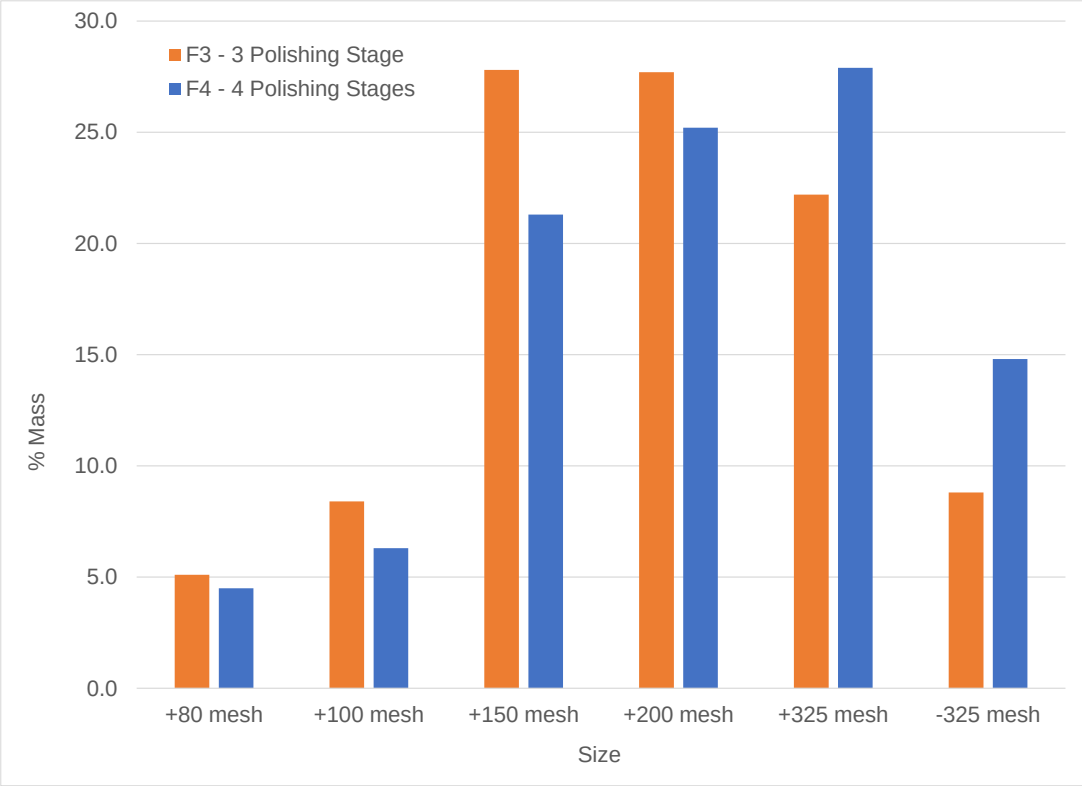


Figure 2: Mass Recovery into Concentrate Size Fractions (F1 and F2)

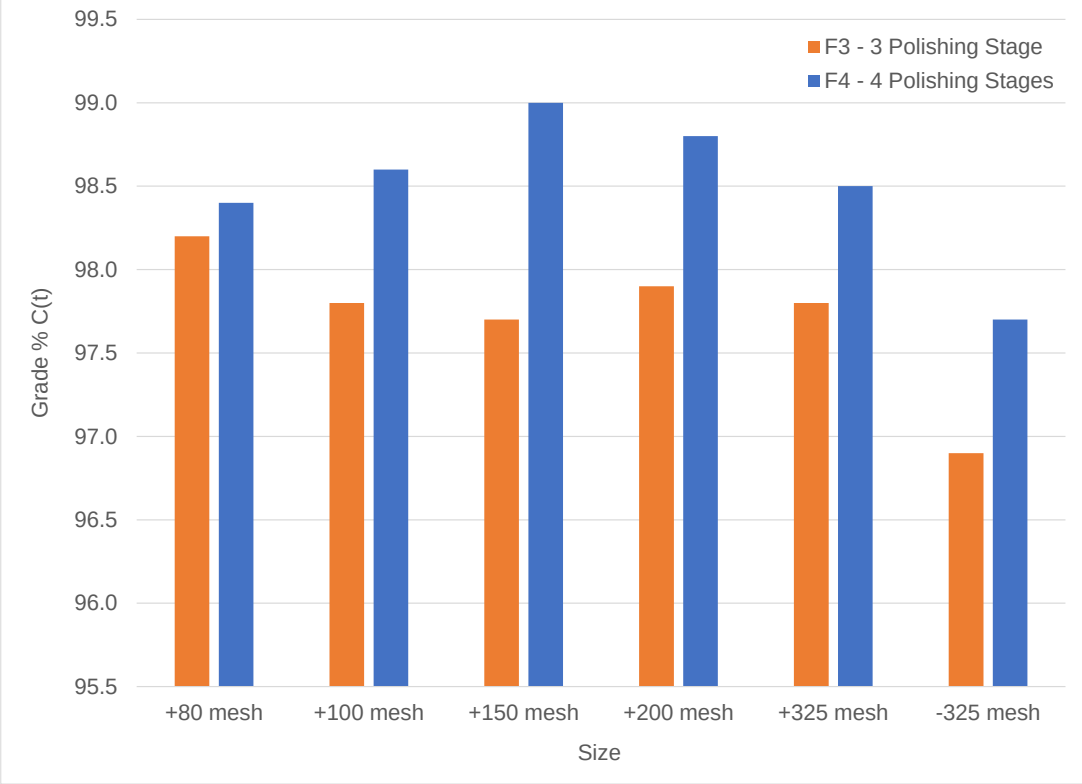


Figure 3: Total Carbon Grades of Concentrate Size Fractions (F1 and F2)

5. Bulk Flotation

A 12 kg bulk flotation test (F5) was carried out on the sample that was received at the SGS site in October 2022. The objective of the test was to produce 3 kg of a graphite flotation concentrate grading at least 95% C(t). A summary of the mass balance is provided in Table 6 and complete test details are included in Appendix B.

The test initially replicated the conditions of test F3. However, since a larger sample could not be processed in the lab polishing mill, a small pilot plant stirred media mill (SMM) was employed. Since scale-up from laboratory to pilot scale equipment must be established for each deposit, more conservative grinding conditions were chosen for the pilot plant SMM. As a result, two additional grinding and cleaning stages were required to produce a concentrate with the required grade of at least 95% C(t).

Table 6: Mass Balance of Bulk Flotation Test F5

Product	Weight %	Assays, % C(t, g)	% Distribution C(t)
16th Clnr Conc	24.4	96.5	87.5
15th Clnr Conc	24.5	96.3	87.6
14th Clnr Conc	24.6	96.0	87.8
13th Clnr Conc	25.0	94.9	88.0
12th Clnr Conc	25.1	94.7	88.3
11th Clnr Conc	25.3	94.3	88.6
10th Clnr Conc	25.8	93.2	89.3
9th Clnr Conc	26.0	92.8	89.5
8th Clnr Conc	26.3	92.1	89.9
7th Clnr Conc	27.1	90.0	90.5
6th Clnr Conc	27.3	89.6	90.8
5th Clnr Conc	27.7	88.8	91.1
4th Clnr Conc	28.8	85.5	91.5
3rd Clnr Conc	29.2	84.6	91.7
2nd Clnr Conc	31.8	78.3	92.4
1st Clnr Conc	33.3	75.6	93.5
Rougher Conc	44.9	58.2	96.9
Head (calc.)	*100.0*	*26.9*	*100.0*

Since the bulk flotation test produced only 2.8 kg of graphite concentrate, another lab-scale flotation test was carried out to produce the balance of the required concentrate mass. Test F6 was carried out on a 2 kg test charge and produced an additional 510 g of concentrate grading 97.5% C(t). A summary of the mass balance for test F6 is presented in Table 7.

The final concentrates of tests F5 and F6 were combined and picked up by the client on January 20, 2023.

Table 7: Mass Balance Summary of Test F6

Product	Weight %	Assays, % C(t, g)	% Distribution C(t)
10th Clnr Conc	26.2	97.5	77.7
9th Clnr Conc	26.7	96.7	78.8
8th Clnr Conc	26.7	96.7	78.8
7th Clnr Conc	27.3	95.1	79.3
6th Clnr Conc	28.0	93.9	80.0
5th Clnr Conc	29.3	91.0	81.3
4th Clnr Conc	33.5	81.0	82.6
3rd Clnr Conc	34.7	79.8	84.4
2nd Clnr Conc	36.9	76.2	85.7
1st Clnr Conc	39.7	74.2	89.7
Rougher Conc	49.1	64.0	95.9
Head (calc.)	*100.0*	*32.8*	*100.0*

Conclusions and Recommendations

Cleaner flotation tests were carried out one sample from Empire Minerals' graphite prospect. The sample was subjected to primary cleaner tests. The combined low concentrate grades of 46.5% C(t) and 62.5% C(t) indicated that multiple regrind, and cleaner flotation stages may be required to achieve acceptable concentrate grades.

The two secondary cleaner flotation tests F3 and F4 employed three and four stages of polishing and cleaner flotation, respectively. As expected, four stages of polishing and cleaning produced the best overall concentrate grade of 98.6% C(t) based on the size fraction analysis.

These high grades were achieved with polishing only, which suggests that the impurities are attached to the surface of the flakes rather intercalated.

The flake size distributions of the sample classify the product as relatively fine with 85-90% of the concentrate mass reporting to the -100 mesh size fractions. However, only 8.8% to 14.8% of the total mass reported to the very small flake sizes of minus 325 mesh.

It should also be noted that flake size distribution and concentrate grade are only two properties of the graphite concentrate, and a range of other variables will determine its suitability for specific applications.

The following recommendations are made for future testing:

- Flotation testing should be carried out on a Master composite that represents a larger area of the mineralization. This will ensure that the observed metallurgical response is somewhat representative of the potential average mill feed;
- Optical mineralogy on graphite concentrates to characterize the types and association of gangue minerals and to determine if interlayering occurs;
- A series of rougher kinetics tests to develop a correlation between grind size and graphite losses to the tailings;
- Evaluate alternative grinding technologies in the cleaning circuit. Due to the limited number of tests available in this program the primary cleaning circuit employed polishing grinding with ceramic media only. In a more comprehensive program, polishing grinding, stirred media milling, and attrition scrubbing should be evaluated in the primary and secondary cleaning circuits;
- Basic environmental testing consisting of a net acid generation (NAG) and modified acid-base accounting (ABA) test to assess the acid generating potential of the sample. Based on the sulphide and carbonate head grades, acid generating tailings are suspected, but this requires confirmation through testing.

Appendix A – Cleaner Flotation Test Data

Test No: F1A **Project No: 19015-01** **Operator: BÇ** **Date: 08-Feb-22**

Purpose: Primary cleaning evaluation

Procedure: As outlined below

Feed: 2kg of Jan 2022 Comp Rougher Tails P_{80} = 212 microns

Grind: 4 minutes @ ~65%% solids in rod mill #5 3rd Clnr Conc P_{80} = 150 microns

Polishing Mill #1 30 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Stage	Reagents, g/t		Time, Minutes			pH
	Diesel	MIBC	Grind	Cond.	Froth	
Flash 1	10	10		1.0	2.0	3.8
Flash 2	10	10		1.0	1.0	
Grind			4			
Rougher 1	0	0		1.0	1.0	4.3
Rougher 2	10	10		1.0	1.0	
Rougher 3	10	10		1.0	1.0	
Split flash and rougher concentrate into two equal aliquots - Polish one aliquot in F1A and one aliquot in F1B						
Polishing #1			30			
1st Clnr 1	10	10		1.0	1.0	4.2
1st Clnr 2	10	10		1.0	1.0	
2nd Clnr 1	10	10		1.0	1.0	
2nd Clnr 2	10	10		1.0	0.5	
3rd Clnr 1	40	40		1.0	1.0	
3rd Clnr 2	40	40		1.0	0.5	
Total	160	160	34	11.0	11	

Stage	Rougher	Cleaners
Flotation Cell	2L	2L
Speed rpm	1500	1500

Test No: F1A **Project No: 19015-01** **Operator: BÇ** **Date: 08-Feb-22**

Metallurgical Balance

Product	Weight		Assays, %	% Distribution
	g	%	C(t)	C(t)
3rd Clnr Conc	47.9	5.0	46.5	66.0
3rd Clnr Tails	24.1	2.5	33.4	23.9
2nd Clnr Tails	24.2	2.5	8.93	6.4
1st Clnr Tails	346.3	36.4	0.14	1.4
Rougher Tails	509.0	53.5	0.15	2.3
Head (calc.)	*951.5*	*100.0*	*3.55*	*100.0*
Head (direct)			3.66	
C(g)				

Product	Weight		Assays, %	% Distribution
	g	%	C(t, g)	C(t)
3rd Clnr Conc	47.9	5.0	46.5	66.0
2nd Clnr Conc	72.0	7.6	42.1	89.9
1st Clnr Conc	96.2	10.1	33.8	96.3
Rougher Conc	442.5	46.5	7.45	97.7
Head (calc.)	*951.5*	*100.0*	*3.55*	*100.0*
Head (direct)			3.66	

Size Analysis of 3rd Clnr Conc - P_{80} = 139 microns

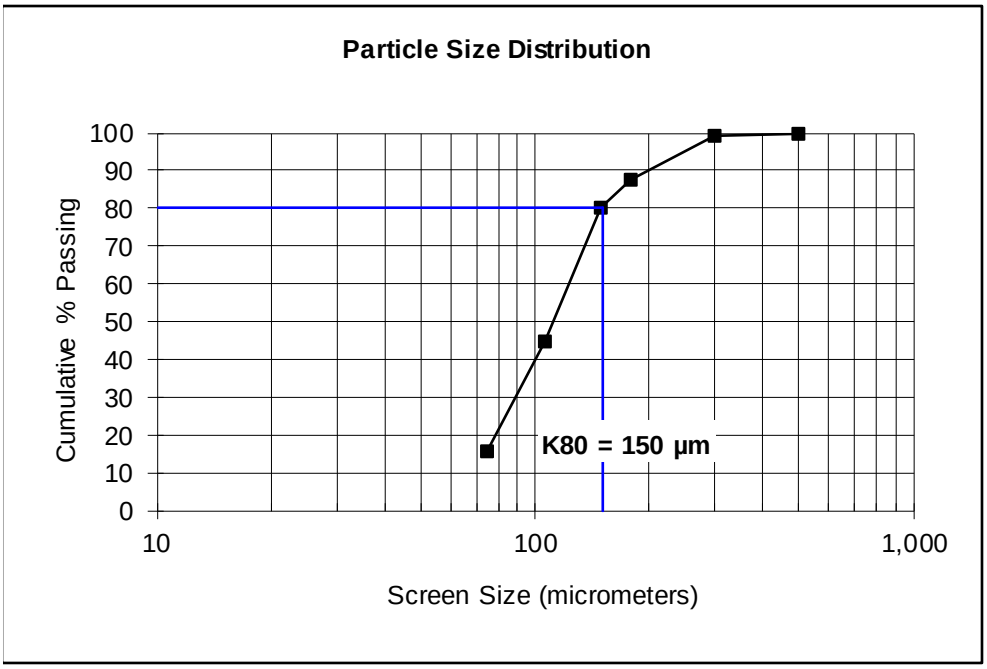
Size Fraction	Weight		Assay	% Distribution
	g	%	% C(t)	C(t)
+48 mesh	0.5	1.0	30.0	0.7
+80 mesh	5.4	11.3	31.6	8.0
+100 mesh	3.7	7.8	36.6	6.4
+150 mesh	16.8	35.0	40.9	32.2
+200 meh	14.0	29.2	48.9	32.2
-200 mesh	7.5	15.7	57.8	20.4
Total Concentrate	47.9	100.0	44.4	100.0
Estimated - insufficient mass			46.5	

SGS Minerals Services
Size Distribution Analysis

Project No.
19015-01

Sample: **3rd Cl Conc** Test No.: **F1 A**

Size		Weight	% Retained		% Passing
Mesh	µm	grams	Individual	Cumulative	Cumulative
32	500	0.0	0.0	0.0	100.0
48	300	0.4	1.0	1.0	99.0
80	180	4.6	11.3	12.3	87.7
100	150	3.2	7.8	20.1	79.9
150	106	14.3	35.0	55.1	44.9
200	75	11.9	29.2	84.3	15.7
Pan	-75	6.4	15.7	100.0	0.0
Total	**-**	**40.8**	100.0	**-**	**-**
K80	**150**				

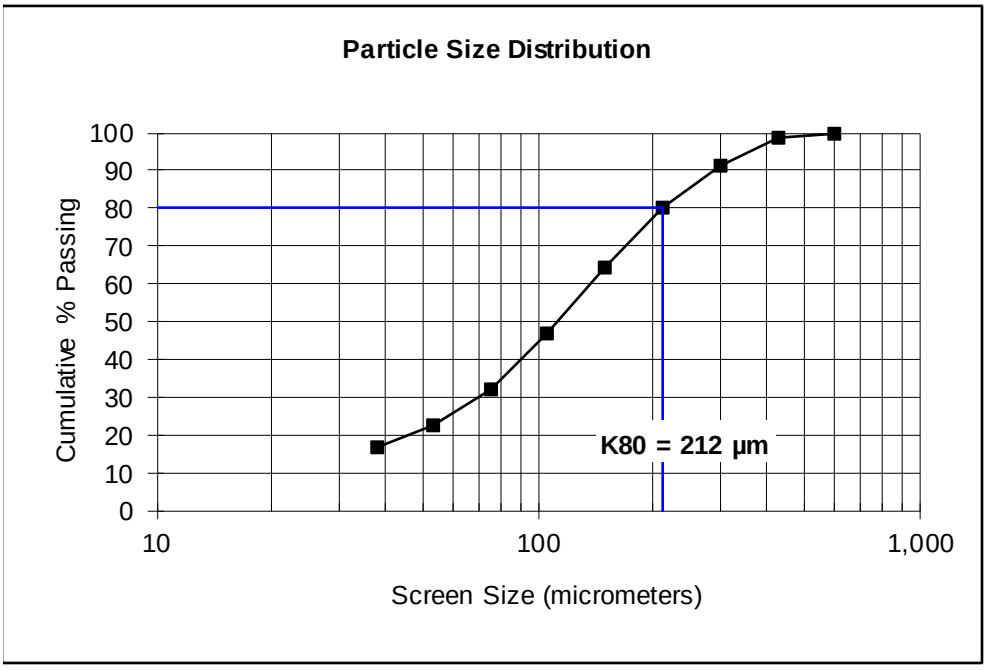


SGS Minerals Services
Size Distribution Analysis

Project No.
19015-01

Sample: **Ro Tail** Test No.: **F1**

Size		Weight	% Retained		% Passing
Mesh	µm	grams	Individual	Cumulative	Cumulative
28	600	0.0	0.0	0.0	100.0
35	425	1.9	1.5	1.5	98.5
48	300	9.4	7.3	8.8	91.2
65	212	14.2	11.1	19.9	80.1
100	150	20.2	15.8	35.6	64.4
150	106	22.5	17.6	53.2	46.8
200	75	19.2	15.0	68.2	31.8
270	53	11.9	9.3	77.5	22.5
400	38	7.7	6.0	83.5	16.5
Pan	-38	21.2	16.5	100.0	0.0
Total	**-**	**128.2**	100.0	**-**	**-**
K80	**212**				



Test No: F1B **Project No: 19015-01** **Operator: BÇ** **Date: 08-Feb-22**

Purpose: Primary cleaning evaluation

Procedure: As outlined below

Feed: 2kg of Jan 2022 Comp Rougher Tails P_{80} = 212 microns

Grind: 4 minutes @ ~65%% solids in rod mill #5 3rd Clnr Conc P_{80} = 139 microns

Polishing Mill #1 45 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Stage	Reagents, g/t		Time, Minutes			pH
	Diesel	MIBC	Grind	Cond.	Froth	
Flash 1	10	10		1.0	2.0	4.0
Flash 2	10	10		1.0	1.0	
Grind			4			
Rougher 1	0	0		1.0	1.0	4.3
Rougher 2	10	10		1.0	1.0	
Rougher 3	10	10		1.0	1.0	
nto two equal aliquots - Polish one aliquot in F1A and one aliquot in F1B						
Polishing #1			45			
1st Clnr 1	10	10		0.0	1.0	4.7
1st Clnr 2	20	20		1.0	1.0	
2nd Clnr 1	0	0		0.0	1.0	
2nd Clnr 2	20	20		1.0	0.5	
3rd Clnr 1	0	0		0.0	1.0	
3rd Clnr 2	20	20		1.0	0.5	
Total	110	110	49	8.0	11	

Stage	Rougher	Cleaners
Flotation Cell	2L	2L
Speed rpm	1500	1500

Test No: F1B **Project No: 19015-01** **Operator: BÇ** **Date: 08-Feb-22**

Metallurgical Balance

Product	Weight		Assays, %	% Distribution
	g	%	C(t)	C(t)
3rd Clnr Conc	58.8	5.9	62.5	95.2
3rd Clnr Tails	3.3	0.3	4.50	0.4
2nd Clnr Tails	15.2	1.5	2.58	1.0
1st Clnr Tails	417.7	41.6	0.13	1.4
Rougher Tails	508.9	50.7	0.15	2.0
Head (calc.)	*1003.9*	*100.0*	*3.84*	*100.0*
Head (direct)			3.66	

C(g)

Product	Weight		Assays, %	% Distribution
	g	%	C(t, g)	C(t)
3rd Clnr Conc	58.8	5.9	62.5	95.2
2nd Clnr Conc	62.1	6.2	59.4	95.6
1st Clnr Conc	77.3	7.7	48.2	96.6
Rougher Conc	495.0	49.3	7.64	98.0
Head (calc.)	*1003.9*	*100.0*	*3.84*	*100.0*
Head (direct)			3.66	

Size Analysis of 3rd Clnr Conc - P_{80} = 139 microns

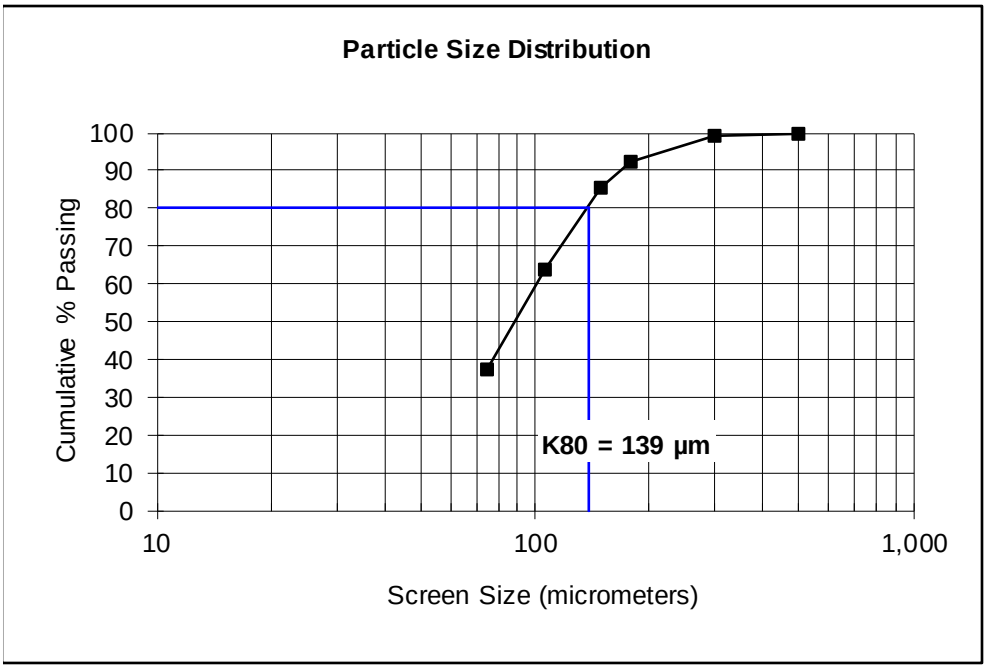
Size Fraction	Weight		Assay	% Distribution
	g	%	% C(t)	C(t)
+48 mesh	0.4	0.6	35.6	0.3
+80 mesh	4.1	6.9	56.3	6.2
+100 mesh	4.2	7.1	63.8	7.2
+150 mesh	12.7	21.6	61.5	21.1
+200 meh	15.5	26.3	76.6	32.0
-200 mesh	22.0	37.4	56.0	33.2
Total Concentrate	58.8	99.9	63.1	100.0
			62.5	

SGS Minerals Services
Size Distribution Analysis

Project No.
19015-01

Sample: **3rd Cl Conc** Test No.: **F1 B**

Size		Weight	% Retained		% Passing
Mesh	µm	grams	Individual	Cumulative	Cumulative
32	500	0.0	0.0	0.0	100.0
48	300	0.3	0.6	0.6	99.4
80	180	3.5	6.9	7.5	92.5
100	150	3.6	7.1	14.7	85.3
150	106	10.9	21.6	36.2	63.8
200	75	13.3	26.3	62.6	37.4
Pan	-75	18.9	37.4	100.0	0.0
Total	**-**	**50.5**	100.0	**-**	**-**
K80	**139**				



Test No: F3 **Project No: 19015-01** **Operator: BÇ** **Date: 06-May-22**

Purpose: Full cleaner flotation test

Procedure: As outlined below

Feed: 2kg of Jan 2022 Comp Rougher Tails P_{80} ~ 212 microns

Grind: 4 minutes @ ~65%% solids in rod mill #5 3rd Clnr Conc P_{80} = 140 microns

Polishing Mill #1 45 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Polishing Mill #2 30 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Polishing Mill #3 15 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Stage	Reagents, g/t		Time, Minutes			pH
	Diesel	MIBC	Grind	Cond.	Froth	
Flash 1	10	10		1.0	2.0	2.9
Flash 2	10	10		1.0	1.0	
Grind			4			
Rougher 1	0	0		1.0	1.0	3.4
Rougher 2	10	10		1.0	1.0	
Rougher 3	10	10		1.0	1.0	
Polishing #1			45			
1st Clnr 1	10	10		0.0	1.0	4.2
1st Clnr 2	10	10		1.0	1.0	
2nd Clnr 1	0	0		0.0	1.0	
2nd Clnr 2	10	10		1.0	0.5	
3rd Clnr 1	40	40		0.0	1.0	
3rd Clnr 2	40	40		1.0	0.5	
Polishing #2			30			
4th Clnr 1	0	0		0.0	1.0	6.3
4th Clnr 2	10	10		1.0	1.0	
5th Clnr 1	0	0		0.0	1.0	
5th Clnr 2	10	10		1.0	1.0	
6th Clnr 1	0	0		0.0	1.0	
6th Clnr 2	10	10		1.0	1.0	
Polishing #3			15			
7th Clnr 1	0	0		0.0	1.0	7.1
7th Clnr 2	10	10		1.0	1.0	
8th Clnr 1	0	0		0.0	1.0	
8th Clnr 2	10	10		1.0	1.0	
9th Clnr 1	0	0		0.0	1.0	
9th Clnr 2	10	10		1.0	1.0	
Total	210	210	94	14	23	

Stage	Rougher	Cleaners
Flotation Cell	2L	1L
Speed rpm	1,800	1,500

Test No: F3 **Project No: 19015-01** **Operator: BÇ** **Date: 06-May-22**

Metallurgical Balance

Product	Weight		Assays, %	% Distribution
	g	%	C(t)	C(t)
9th Clnr Conc	68.5	3.5	97.7	87.4
9th Clnr Tails	2.1	0.1	87.5	2.4
8th Clnr Tails	1.9	0.1	64.8	1.6
7th Clnr Tails	5.7	0.3	21.5	1.6
6th Clnr Tails	2.7	0.1	21.6	0.8
5th Clnr Tails	10.2	0.5	4.46	0.6
4th Clnr Tails	120.8	6.2	0.24	0.4
3rd Clnr Tails	7.4	0.4	3.72	0.4
2nd Clnr Tails	31.7	1.6	3.14	1.3
1st Clnr Tails	600.4	30.8	0.11	0.9
Rougher Tails	1099.0	56.3	0.19	2.7
Head (calc.)	*1950.4*	*100.0*	*3.93*	*100.0*
Head (direct)			3.66	
C(g)				

Product	Weight		Assays, %	% Distribution
	g	%	C(t, g)	C(t)
9th Clnr Conc	68.5	3.5	97.7	87.4
8th Clnr Conc	70.6	3.6	97.4	89.8
7th Clnr Conc	72.5	3.7	96.5	91.4
6th Clnr Conc	78.2	4.0	91.1	93.0
5th Clnr Conc	80.9	4.1	88.8	93.8
4th Clnr Conc	91.1	4.7	79.3	94.4
3rd Clnr Conc	211.9	10.9	34.2	94.8
2nd Clnr Conc	219.3	11.2	33.2	95.1
1st Clnr Conc	251.0	12.9	29.4	96.4
Rougher Conc	851.4	43.7	8.75	97.3
Head (calc.)	*1950.4*	*100.0*	*3.93*	*100.0*
Head (direct)			3.66	

Size Analysis of 9th Clnr Conc - P_{80} = 140 microns

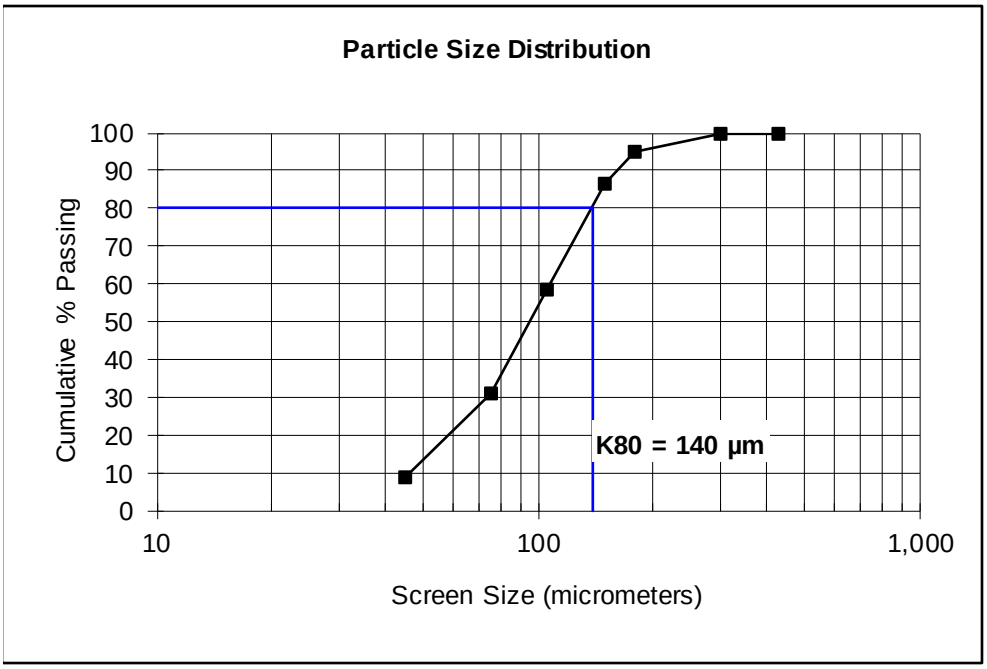
Size Fraction	Weight		Assay	% Distribution
	g	%	% C(t)	C(t)
+80 mesh	3.5	5.1	98.2	5.1
+100 mesh	5.8	8.4	97.8	8.4
+150 mesh	19.0	27.8	97.7	27.8
+200 mesh	19.0	27.7	97.9	27.7
+325 mesh	15.2	22.2	97.8	22.2
-325 mesh	6.0	8.8	96.9	8.7
Total Concentrate	68.5	100.0	97.7	100.0
			97.7	

SGS Minerals Services
Size Distribution Analysis

Project No.
19015-01

Sample: **9th Cl Conc** Test No.: **F3**

Size		Weight	% Retained		% Passing
Mesh	µm	grams	Individual	Cumulative	Cumulative
35	425	0.0	0.0	0.0	100.0
48	300	0.1	0.2	0.2	99.8
80	180	2.7	4.9	5.1	94.9
100	150	4.6	8.4	13.6	86.4
150	106	15.2	27.8	41.4	58.6
200	75	15.1	27.7	69.0	31.0
325	45	12.1	22.2	91.2	8.8
Pan	-45	4.8	8.8	100.0	0.0
Total	**-**	**54.6**	100.0	**-**	**-**
K80	**140**				



Test No: F4 **Project No: 19015-01** **Operator: BÇ** **Date: 15-Aug-22**

Purpose: Repeat of test F3 with one additional polishing and cleaning stage to determine maximum grade

Procedure: As outlined below

Feed: 2kg of Jan 2022 Comp Rougher Tails P_{80} ~ 212 microns

Grind: 4 minutes @ ~65%% solids in rod mill #5 3rd Clnr Conc P_{80} = 130 microns

Polishing Mill #1 45 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Polishing Mill #2 30 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Polishing Mill #3 15 minutes @ ~30% solids inpolishing mill with 1/2" ceramic rods

Stage	Reagents, g/t		Time, Minutes			pH
	Diesel	MIBC	Grind	Cond.	Froth	
Flash 1	10	10		1.0	2.0	
Flash 2	10	10		1.0	1.0	
Grind			4			
Rougher 1	0	0		1.0	1.0	
Rougher 2	10	10		1.0	1.0	
Rougher 3	10	10		1.0	1.0	
Polishing #1			45			
1st Clnr 1	10	10		0.0	1.0	
1st Clnr 2	10	10		1.0	1.0	
2nd Clnr 1	0	0		0.0	1.0	
2nd Clnr 2	10	10		1.0	0.5	
3rd Clnr 1	40	40		0.0	1.0	
3rd Clnr 2	40	40		1.0	0.5	
Polishing #2			30			
4th Clnr 1	0	0		0.0	1.0	
4th Clnr 2	10	10		1.0	1.0	
5th Clnr 1	0	0		0.0	1.0	
5th Clnr 2	10	10		1.0	1.0	
6th Clnr 1	0	0		0.0	1.0	
6th Clnr 2	10	10		1.0	1.0	
Polishing #3			15			
7th Clnr 1	0	0		0.0	1.0	
7th Clnr 2	10	10		1.0	1.0	
8th Clnr 1	0	0		0.0	1.0	
8th Clnr 2	10	10		1.0	1.0	
9th Clnr 1	0	0		0.0	1.0	
9th Clnr 2	10	10		1.0	1.0	
Polishing #4			15			
10th Clnr 1	0	0		0.0	1.0	
10th Clnr 2	10	10		1.0	1.0	
11th Clnr 1	0	0		0.0	1.0	
11th Clnr 2	10	10		1.0	1.0	
12th Clnr 1	0	0		0.0	1.0	
12th Clnr 2	10	10		1.0	1.0	
Total	240	240	109	17	29	

Stage	Rougher	Cleaners
Flotation Cell	2L	1L
Speed rpm	1,800	1,500

Test No: F4 **Project No: 19015-01** **Operator: BÇ** **Date: 15-Aug-22**

Metallurgical Balance

Product	Weight		Assays, %	% Distribution
	g	%	C(t)	C(t)
12th Clnr Conc	67.8	3.5	97.3	87.4
12th Clnr Tails	0.1	0.0	90.0	0.1
11th Clnr Tails	0.4	0.0	80.0	0.4
10th Clnr Tails	0.2	0.0	5.00	0.0
9th Clnr Tails	0.3	0.0	70.0	0.3
8th Clnr Tails	0.2	0.0	60.0	0.2
7th Clnr Tails	1.4	0.1	40.5	0.8
6th Clnr Tails	0.9	0.0	31.3	0.4
5th Clnr Tails	6	0.3	7.06	0.6
4th Clnr Tails	69.4	3.6	0.99	0.9
3rd Clnr Tails	20	1.0	12.00	3.2
2nd Clnr Tails	20.9	1.1	2.09	0.6
1st Clnr Tails	596	30.6	0.14	1.1
Rougher Tails	1163.2	59.7	0.27	4.2
Head (calc.)	*1946.8*	*100.0*	*3.88*	*100.0*
Head (direct)			3.66	
C(g)	Estimated due to insufficient sample mass			

Product	Weight		Assays, %	% Distribution
	g	%	C(t, g)	C(t)
12th Clnr Conc	67.8	3.5	97.3	87.4
11th Clnr Conc	67.9	3.5	97.3	87.5
10th Clnr Conc	68.3	3.5	97.2	87.9
9th Clnr Conc	68.8	3.5	96.8	88.2
8th Clnr Conc	68.8	3.5	96.8	88.2
7th Clnr Conc	69.0	3.5	96.7	88.4
6th Clnr Conc	70.4	3.6	95.6	89.1
5th Clnr Conc	71.3	3.7	94.8	89.5
4th Clnr Conc	77.3	4.0	88.0	90.1
3rd Clnr Conc	146.7	7.5	46.8	91.0
2nd Clnr Conc	166.7	8.6	42.6	94.2
1st Clnr Conc	187.6	9.6	38.1	94.7
Rougher Conc	783.6	40.3	9.23	95.8
Head (calc.)	*1946.8*	*100.0*	*3.88*	*100.0*
Head (direct)			3.66	

Size Analysis of 12th Clnr Conc - P_{80} = 130 microns

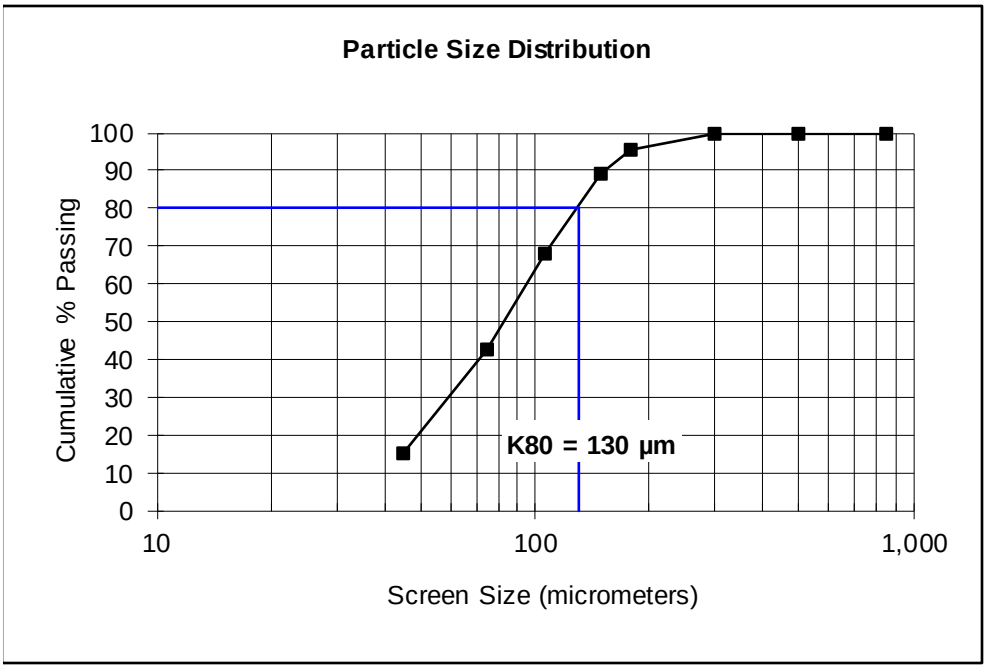
Size Fraction	Weight		Assay	% Distribution
	g	%	% C(t)	C(t)
+80 mesh	3.1	4.5	98.4	4.5
+100 mesh	4.3	6.3	98.6	6.3
+150 mesh	14.4	21.3	99.0	21.4
+200 mesh	17.1	25.2	98.8	25.3
+325 mesh	18.9	27.9	98.5	27.9
-325 mesh	10.0	14.8	97.7	14.7
Total Concentrate	67.8	100.0	98.6	100.0
			97.3	

SGS Minerals Services
Size Distribution Analysis

Project No.
19015-01

Sample: **12th Cl Conc** Test No.: **F4**

Size		Weight	% Retained		% Passing
Mesh	µm	grams	Individual	Cumulative	Cumulative
20	850	0.0	0.0	0.0	100.0
32	500	0.0	0.0	0.0	100.0
48	300	0.0	0.0	0.0	100.0
80	180	2.3	4.5	4.5	95.5
100	150	3.2	6.3	10.7	89.3
150	106	10.9	21.3	32.0	68.0
200	75	12.9	25.2	57.2	42.8
325	45	14.3	27.9	85.2	14.8
Pan	-45	7.6	14.8	100.0	0.0
Total	**-**	**51.2**	100.0	**-**	**-**
K80	**130**				



Appendix B – Bulk Flotation Test Data

Test No: F5 **Project No: 19015-01** **Operator: BÇ** **Date: 14-Dec-22**

Purpose: Bulk flotation test

Procedure: As outlined below

Feed: 7 kg of Oct 2022 Comp Rougher Tails P_{80} ~ 212 microns

Grind: 7 minutes @ ~65%% solids in 10 kg rod mill

SMM #1 15 minutes @ ~10% solids in pilot SMM (30 Hz, 30 kg of media)

SMM #2 15 minutes @ ~10% solids in pilot SMM (30 Hz, 30 kg of media)

SMM #3 15 minutes @ ~10% solids in pilot SMM (30 Hz, 30 kg of media)

Stage	Reagents, g/t		Time, Minutes			pH
	Diesel	MIBC	Grind	Cond.	Froth	
Flash 1	10	10		1.0	3.0	
Flash 2	10	10		1.0	2.0	
Grind			7			
Rougher 1	0	0		1.0	2.0	
Rougher 2	10	10		1.0	2.0	
Rougher 3	10	10		1.0	2.0	
SMM #1			15			
1st Clnr 1	10	10		0.0	2.0	
1st Clnr 2	10	10		1.0	2.0	
2nd Clnr 1	0	0		0.0	2.0	
2nd Clnr 2	10	10		1.0	2.0	
SMM #2			15			
3rd Clnr Conc 1	0	0		0.0	2.0	
3rd Clnr Conc 2	10	10		1.0	2.0	
4th Clnr Conc 1	0	0		0.0	2.0	
4th Clnr Conc 2	10	10		1.0	2.0	
5th Clnr Conc 1	0	0		0.0	2.0	
5th Clnr Conc 2	10	10		1.0	2.0	
SMM #3			15			
5th Clnr Conc 1	0	0		0.0	2.0	
5th Clnr Conc 2	10	10		1.0	2.0	
6th Clnr Conc 1	0	0		0.0	2.0	
6th Clnr Conc 2	10	10		1.0	2.0	
7th Clnr Conc 1	0	0		0.0	2.0	
7th Clnr Conc 2	10	10		1.0	2.0	
Total	130	130	52	13	43	

Stage	Rougher	Cleaners
Flotation Cell	28L	28L or 8 L
Speed rpm	1,800	1,800

Test No: F5 **Project No: 19015-01** **Operator: BÇ** **Date: 14-Dec-22**

Metallurgical Balance

Product	Weight		Assays, %	% Distribution
	g	%	C(t)	C(t)
16th Clnr Conc	2860.5	24.4	96.5	87.5
16th Clnr Tails	9.2	0.1	48.7	0.1
15th Clnr Tails	15.3	0.1	29.7	0.1
14th Clnr Tails	42.7	0.4	18.1	0.2
13th Clnr Tails	13.8	0.1	58.2	0.3
12th Clnr Tails	23.8	0.2	46.7	0.4
11th Clnr Tails	57.2	0.5	34.7	0.6
10th Clnr Tails	19.6	0.2	43.1	0.3
9th Clnr Tails	37.9	0.3	34.6	0.4
8th Clnr Tails	90.6	0.8	18.2	0.5
7th Clnr Tails	25.1	0.2	39.8	0.3
6th Clnr Tails	41.8	0.4	25.6	0.3
5th Clnr Tails	138.4	1.2	7.81	0.3
4th Clnr Tails	45.2	0.4	16.2	0.2
3rd Clnr Tails	299.1	2.6	7.22	0.7
2nd Clnr Tails	179.6	1.5	19.7	1.1
1st Clnr Tails	1354.7	11.6	7.83	3.4
Rougher Tails	6451.9	55.1	1.53	3.1
Head (calc.)	*11706.4*	*100.0*	*26.9*	*100.0*

Product	Weight		Assays, %	% Distribution
	g	%	C(t, g)	C(t)
16th Clnr Conc	2,861	24.4	96.5	87.5
15th Clnr Conc	2,870	24.5	96.3	87.6
14th Clnr Conc	2,885	24.6	96.0	87.8
13th Clnr Conc	2,928	25.0	94.9	88.0
12th Clnr Conc	2,942	25.1	94.7	88.3
11th Clnr Conc	2,965	25.3	94.3	88.6
10th Clnr Conc	3,023	25.8	93.2	89.3
9th Clnr Conc	3,042	26.0	92.8	89.5
8th Clnr Conc	3,080	26.3	92.1	89.9
7th Clnr Conc	3,171	27.1	90.0	90.5
6th Clnr Conc	3,196	27.3	89.6	90.8
5th Clnr Conc	3,238	27.7	88.8	91.1
4th Clnr Conc	3,376	28.8	85.5	91.5
3rd Clnr Conc	3,421	29.2	84.6	91.7
2nd Clnr Conc	3,720	31.8	78.3	92.4
1st Clnr Conc	3,900	33.3	75.6	93.5
Rougher Conc	5,255	44.9	58.2	96.9
Head (calc.)	*11,706*	*100.0*	*26.9*	*100.0*

APPENDIX III

URBIX TEST DATA

SAMPLE 1

URBIX

Certificate of Analysis

Urbix, Inc.
3110 N Greenfield Rd, Suite 127
Mesa, AZ, 85215

ID: 013023-100-N049-S1 DATE: 2/2/2023

Lot #: 013023

Method: ASTM C561-16 method used in proximate analysis of Ash of graphite (including ASTM C561-15 for measurement of moisture content of graphite and modified to incorporate volatile content measurements; assay of LOI Carbon is developed based on suggestions detailed in technical report WG/92/30, British Geological Survey, by C. J. Mitchell incorporated into C561-16 and as per proximate analysis methodologies followed by ASTM in Macro Thermogravimetric Analysis techniques).

Step	Temp 1 [°C]	Temp 2 [°C]	Gas	Gas Flow [L/min]	Time [min]	Auto stop [1/min]	Manual Stop	Result
1	20	130	N2	3	30			
2	130	130	N2	3	960	0.2 mG/60	On (Cover on)	Moisture [%] / Start [A]
3	130	450	N2	3	60			
4	450	450	N2	3	180	0.2 mG/10	On (Cover off)	Volatile [%] / Start [B]
5	450	750	O2	3	60			
6	750	750	O2	3	60			
7	750	1000	O2	3	60			
8	1000	1000	O2	3	900	0.2 mG/60		LOI Carbon [%] / Start [C]

Analysis result ASTM C561-16(M):

	Moisture [%]	Volatiles [%]	Ash [%]	LOI C [%]	Fixed Carbon [%]
measured value	0.15	0.35	2.10	97.90	97.40
measurement variation*	0.04	0.04	0.09	0.09	0.17

**See next page for more information*

Equipment: PrepASH 340.
Type: 229 S/N: 3400318.
Temperature Calibration Date: 1/24/2022
Balance Calibration Date: 1/31/2023
Gas flow Calibration Date: 1/31/2023
Data collection software Version: A1-1-2-05.
prepASH Balance info: S/N: 5001615; Software Version: E01-0090 P17.

Operator: Alex Gibson

LOI C % = 100% - ASH%

Fixed Carbon = 100% - Moisture% - Volatiles% - ASH%

Urbix, Inc.
3110 N Greenfield Rd, Suite 127
Mesa, AZ, 85215

Measure Systems Analysis

Ash Determination

A Gage R&R study with 8 graphite samples was conducted. 3 appraisers used Precisa prepASH 340 Series to measure Ash % in graphite samples following AIAG recommendations outlined in MSA 4th Edition, Chapter IV, Section A. ASTM measurement protocol C561-15 was used for Ash Determination.

Ash Determination: Gage R&R Using 5.15 Standard Deviations (99%)			
Source	Study Variation		% Study Variation
Total Gage R&R	0.20		0.20%
Repeatability	0.19		0.20%
Reproducibility	0.05		0.05%

Probable Error = 0.05

Date	Details
May 20th, 2022	Gage R&R Study Completion
Jun. 27th, 2022	Gage R&R Analysis Completion & Report Generated

Supervised by Kendall Gasvoda
Prepared by Kendall Gasvoda

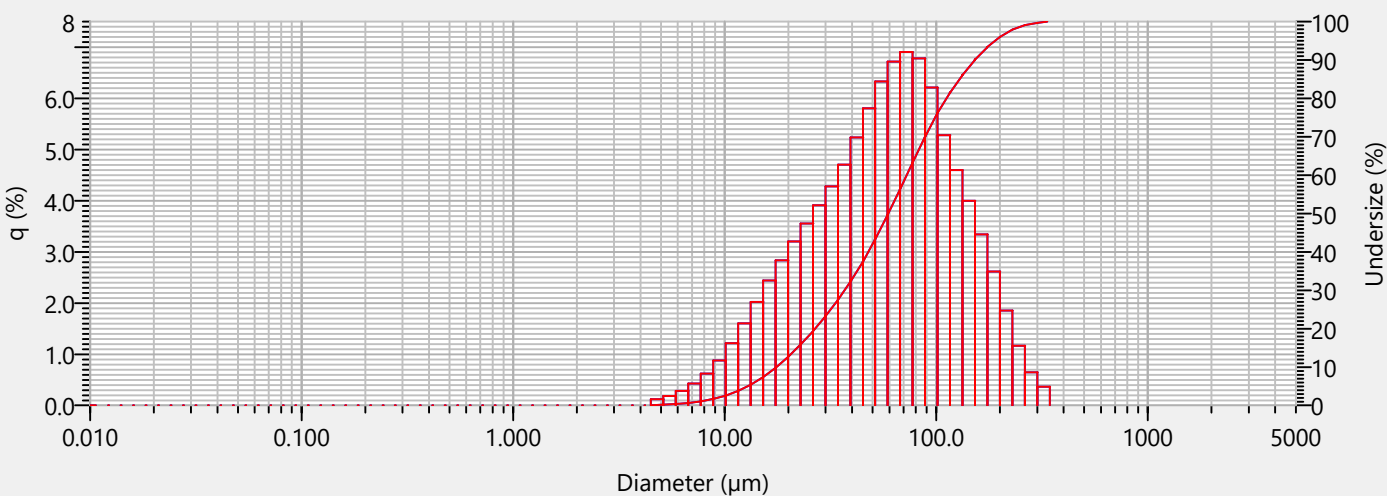
Urbix, Inc.
3110 N Greenfield Rd, Suite 127
Mesa, AZ, 85215

HORIBA

Laser Scattering Particle Size Distribution Analyzer LA-960

Sample Name	:	013023-100-N049-S1
ID#	:	202302011552702
Transmittance (R)	:	94.6 (%)
Transmittance (B)	:	96.1 (%)
Circulation speed	:	7
Agitation speed	:	4
Ultrasound	:	00:09 (2)
Iteration mode	:	Auto
Distribution base	:	Volume
Refractive index (R)	:	Graphite_Ethanol
		[Graphite(1.920 - 0.100i),ethanol(1.360)]
Material	:	Graphite
Source/Lot Number	:	013023
Analyst	:	Davon Grant

Median size	:	59.46767 (µm)
Mean size	:	73.87592 (µm)
Mode size	:	72.3069 (µm)
St. Dev.	:	56.3431 (µm)
Span	:	2.2643
Diameter on cumulative %	:	(1)3.000 (%)- 10.6954 (µm)
	:	(2)10.00 (%)- 17.5927 (µm)
	:	(3)20.00 (%)- 26.7319 (µm)
	:	(4)30.00 (%)- 36.8134 (µm)
	:	(5)50.00 (%)- 59.4677 (µm)
	:	(6)70.00 (%)- 88.6469 (µm)
	:	(7)80.00 (%)- 111.9561 (µm)
	:	(8)90.00 (%)- 152.2481 (µm)
	:	(9)99.00 (%)- 262.3535 (µm)
	:	(10)99.99 (%)- 342.8987 (µm)



No.	Diameter (µm)	q (%)	Undersize (%)	No.	Diameter (µm)	q (%)	Undersize (%)	No.	Diameter (µm)	q (%)	Undersize (%)	No.	Diameter (µm)	q (%)	Undersize (%)
1	0.011	0.000	0.000	25	0.296	0.000	0.000	49	7.697	0.423	0.994	73	200.000	2.612	95.991
2	0.013	0.000	0.000	26	0.339	0.000	0.000	50	8.816	0.618	1.612	74	229.075	1.851	97.842
3	0.015	0.000	0.000	27	0.389	0.000	0.000	51	10.097	0.875	2.487	75	262.376	1.159	99.001
4	0.017	0.000	0.000	28	0.445	0.000	0.000	52	11.565	1.209	3.696	76	300.518	0.642	99.643
5	0.020	0.000	0.000	29	0.510	0.000	0.000	53	13.246	1.597	5.293	77	344.206	0.357	100.000
6	0.023	0.000	0.000	30	0.584	0.000	0.000	54	15.172	2.016	7.309	78	394.244	0.000	100.000
7	0.026	0.000	0.000	31	0.669	0.000	0.000	55	17.377	2.434	9.743	79	451.556	0.000	100.000
8	0.030	0.000	0.000	32	0.766	0.000	0.000	56	19.904	2.831	12.574	80	517.200	0.000	100.000
9	0.034	0.000	0.000	33	0.877	0.000	0.000	57	22.797	3.199	15.773	81	592.387	0.000	100.000
10	0.039	0.000	0.000	34	1.005	0.000	0.000	58	26.111	3.551	19.324	82	678.504	0.000	100.000
11	0.044	0.000	0.000	35	1.151	0.000	0.000	59	29.907	3.904	23.229	83	777.141	0.000	100.000
12	0.051	0.000	0.000	36	1.318	0.000	0.000	60	34.255	4.276	27.504	84	890.116	0.000	100.000
13	0.058	0.000	0.000	37	1.510	0.000	0.000	61	39.234	4.702	32.206	85	1019.515	0.000	100.000
14	0.067	0.000	0.000	38	1.729	0.000	0.000	62	44.938	5.235	37.442	86	1167.725	0.000	100.000
15	0.076	0.000	0.000	39	1.981	0.000	0.000	63	51.471	5.800	43.241	87	1337.481	0.000	100.000
16	0.087	0.000	0.000	40	2.269	0.000	0.000	64	58.953	6.329	49.570	88	1531.914	0.000	100.000
17	0.100	0.000	0.000	41	2.599	0.000	0.000	65	67.523	6.717	56.287	89	1754.613	0.000	100.000
18	0.115	0.000	0.000	42	2.976	0.000	0.000	66	77.340	6.903	63.191	90	2009.687	0.000	100.000
19	0.131	0.000	0.000	43	3.409	0.000	0.000	67	88.583	6.776	69.967	91	2301.841	0.000	100.000
20	0.150	0.000	0.000	44	3.905	0.000	0.000	68	101.460	6.207	76.174	92	2636.467	0.000	100.000
21	0.172	0.000	0.000	45	4.472	0.000	0.000	69	116.210	5.276	81.449	93	3019.738	0.000	100.000
22	0.197	0.000	0.000	46	5.122	0.113	0.113	70	133.103	4.595	86.045	94	3458.727	0.000	100.000
23	0.226	0.000	0.000	47	5.867	0.180	0.292	71	152.453	3.995	90.040	95	3961.533	0.000	100.000
24	0.259	0.000	0.000	48	6.720	0.280	0.572	72	174.616	3.340	93.379	96	4537.433	0.000	100.000

POWDER TESTER(PT-X) Overall Evaluation

Date : 2023 / 02 / 02 07 : 41
Environment : Temperature 70.9℉ Humidity 38.4%
Company : User :
File Name : 013023-100-N049-S2
Sample Name : 013023-100-N049-S2 Lot No. : 013023
Particle Size(μm) : D10 = D50 = D60 = D90 = D95 =

FLOWABILITY							
Angle of Repose			deg.	SD =	Index =		
Aerated Bulk Density		0.4224	g/cm³	SD =			
Packed Bulk Density		0.8379	g/cm³	SD =		Working Bulk Density =	0.6285
Compressibility		49.6	%	SD =	Index =	0.0	
Angle of Spatula	Before Impacting		deg.	SD =			
	After Impacting		deg.	SD =			
	Average		deg.	SD =	Index =		
Cohesion			%	SD =	Index =	Arithmetic Equation =	
Uniformity				SD =	Index =		

Flowability Index	
Degree of Flowability	
Necessity of Bridge-Breaking Measures	

FLOODABILITY					
Angle of Fall		deg.	SD =	Index =	
Angle of Difference		deg.	SD =	Index =	
Dispersibility		%	SD =	Index =	
Flowability					

Floodability Index	
Degree of Floodability	
Measures for Flushing Prevention	

Note

SAMPLE 2

Urbix, Inc.
3110 N Greenfield Rd, Suite 127
Mesa, AZ, 85215

Certificate of Analysis

ID: 013023-100-N049-S2 DATE: 2/2/2023
Lot #: 013023

Method: ASTM C561-16 method used in proximate analysis of Ash of graphite (including ASTM C561-15 for measurement of moisture content of graphite and modified to incorporate volatile content measurements; assay of LOI Carbon is developed based on suggestions detailed in technical report WG/92/30, British Geological Survey, by C. J. Mitchell incorporated into C561-16 and as per proximate analysis methodologies followed by ASTM in Macro Thermogravimetric Analysis techniques).

Step	Temp 1 [°C]	Temp 2 [°C]	Gas	Gas Flow [L/min]	Time [min]	Auto stop [1/min]	Manual Stop	Result
1	20	130	N2	3	30			
2	130	130	N2	3	960	0.2 mG/60	On (Cover on)	Moisture [%] / Start [A]
3	130	450	N2	3	60			
4	450	450	N2	3	180	0.2 mG/10	On (Cover off)	Volatile [%] / Start [B]
5	450	750	O2	3	60			
6	750	750	O2	3	60			
7	750	1000	O2	3	60			
8	1000	1000	O2	3	900	0.2 mG/60		LOI Carbon [%] / Start [C]

Analysis result ASTM C561-16(M):

	Moisture [%]	Volatiles [%]	Ash [%]	LOI C [%]	Fixed Carbon [%]
measured value	0.22	0.42	3.65	96.35	95.71
measurement variation*	0.04	0.04	0.16	0.16	0.24

**See next page for more information*

Equipment: PrepASH 340.
Type: 229 S/N: 3400318.
Temperature Calibration Date: 1/24/2022
Balance Calibration Date: 1/31/2023
Gas flow Calibration Date: 1/31/2023
Data collection software Version: A1-1-2-05.
prepASH Balance info: S/N: 5001615; Software Version: E01-0090 P17.

Operator: Alex Gibson

LOI C % = 100% - ASH%

Fixed Carbon = 100% - Moisture% - Volatiles% - ASH%

Urbix, Inc.
3110 N Greenfield Rd, Suite 127
Mesa, AZ, 85215

Measure Systems Analysis

Ash Determination

A Gage R&R study with 8 graphite samples was conducted. 3 appraisers used Precisa prepASH 340 Series to measure Ash % in graphite samples following AIAG recommendations outlined in MSA 4th Edition, Chapter IV, Section A. ASTM measurement protocol C561-15 was used for Ash Determination.

Ash Determination: Gage R&R Using 5.15 Standard Deviations (99%)			
Source	Study Variation		% Study Variation
Total Gage R&R	0.20		0.20%
Repeatability	0.19		0.20%
Reproducibility	0.05		0.05%

Probable Error = 0.05

Date	Details
May 20th, 2022	Gage R&R Study Completion
Jun. 27th, 2022	Gage R&R Analysis Completion & Report Generated

Supervised by Kendall Gasvoda
Prepared by Kendall Gasvoda

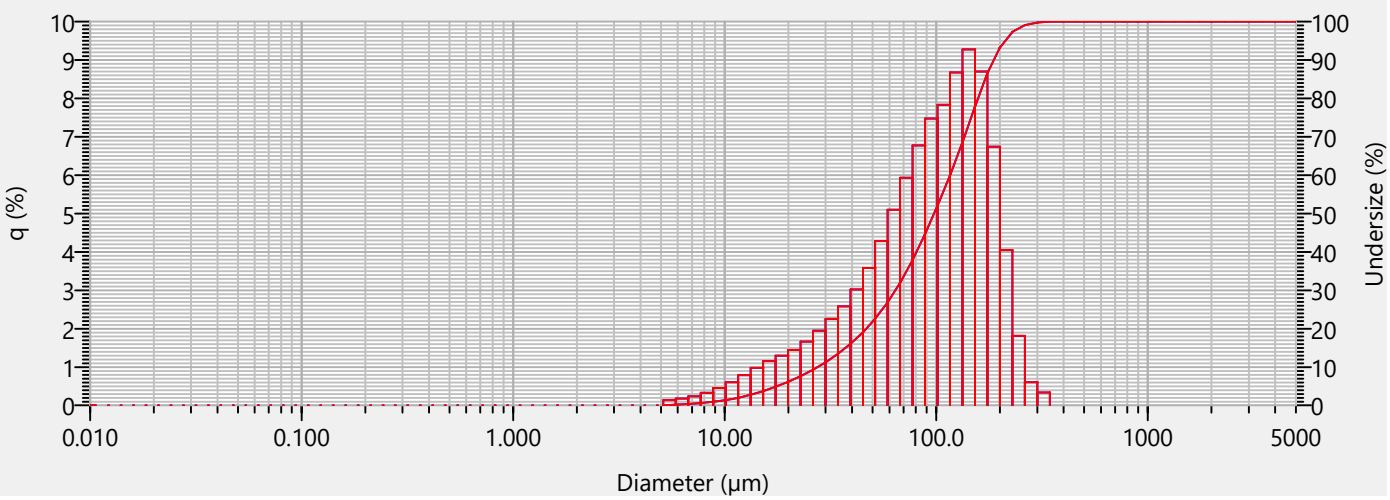
Urbix, Inc.
3110 N Greenfield Rd, Suite 127
Mesa, AZ, 85215

HORIBA

Laser Scattering Particle Size Distribution Analyzer LA-960

Sample Name	: 013023-100-N049-S2
ID#	: 202302011734042
Transmittance (R)	: 94.0 (%)
Transmittance (B)	: 96.2 (%)
Circulation speed	: 8
Agitation speed	: 4
Ultrasound	: Off
Iteration mode	: Auto
Distribution base	: Volume
Refractive index (R)	: Graphite_Ethanol
	[Graphite(1.920 - 0.100i),ethanol(1.360)]
Material	: Graphite
Source/Lot Number	: 013023
Analyst	: COLTON HOSTENSKE

Median size	: 97.76054 (µm)
Mean size	: 104.30051 (µm)
Mode size	: 142.4836 (µm)
St. Dev.	: 60.7471 (µm)
Span	: 1.6338
Diameter on cumulative %	: (1)3.000 (%)- 13.8709 (µm)
	: (2)10.00 (%)- 27.6593 (µm)
	: (3)20.00 (%)- 46.7644 (µm)
	: (4)30.00 (%)- 64.2100 (µm)
	: (5)50.00 (%)- 97.7605 (µm)
	: (6)70.00 (%)- 135.9945 (µm)
	: (7)80.00 (%)- 157.7727 (µm)
	: (8)90.00 (%)- 187.3766 (µm)
	: (9)99.00 (%)- 260.9231 (µm)
	: (10)99.99 (%)- 342.7959 (µm)



No.	Diameter (µm)	q (%)	Undersize (%)	No.	Diameter (µm)	q (%)	Undersize (%)	No.	Diameter (µm)	q (%)	Undersize (%)	No.	Diameter (µm)	q (%)	Undersize (%)
1	0.011	0.000	0.000	25	0.296	0.000	0.000	49	7.697	0.233	0.534	73	200.000	6.735	93.235
2	0.013	0.000	0.000	26	0.339	0.000	0.000	50	8.816	0.322	0.855	74	229.075	4.037	97.272
3	0.015	0.000	0.000	27	0.389	0.000	0.000	51	10.097	0.443	1.299	75	262.376	1.802	99.074
4	0.017	0.000	0.000	28	0.445	0.000	0.000	52	11.565	0.593	1.892	76	300.518	0.595	99.669
5	0.020	0.000	0.000	29	0.510	0.000	0.000	53	13.246	0.778	2.670	77	344.206	0.331	100.000
6	0.023	0.000	0.000	30	0.584	0.000	0.000	54	15.172	0.972	3.642	78	394.244	0.000	100.000
7	0.026	0.000	0.000	31	0.669	0.000	0.000	55	17.377	1.145	4.787	79	451.556	0.000	100.000
8	0.030	0.000	0.000	32	0.766	0.000	0.000	56	19.904	1.289	6.076	80	517.200	0.000	100.000
9	0.034	0.000	0.000	33	0.877	0.000	0.000	57	22.797	1.442	7.518	81	592.387	0.000	100.000
10	0.039	0.000	0.000	34	1.005	0.000	0.000	58	26.111	1.658	9.176	82	678.504	0.000	100.000
11	0.044	0.000	0.000	35	1.151	0.000	0.000	59	29.907	1.943	11.118	83	777.141	0.000	100.000
12	0.051	0.000	0.000	36	1.318	0.000	0.000	60	34.255	2.247	13.366	84	890.116	0.000	100.000
13	0.058	0.000	0.000	37	1.510	0.000	0.000	61	39.234	2.572	15.938	85	1019.515	0.000	100.000
14	0.067	0.000	0.000	38	1.729	0.000	0.000	62	44.938	3.013	18.951	86	1167.725	0.000	100.000
15	0.076	0.000	0.000	39	1.981	0.000	0.000	63	51.471	3.575	22.526	87	1337.481	0.000	100.000
16	0.087	0.000	0.000	40	2.269	0.000	0.000	64	58.953	4.271	26.797	88	1531.914	0.000	100.000
17	0.100	0.000	0.000	41	2.599	0.000	0.000	65	67.523	5.090	31.887	89	1754.613	0.000	100.000
18	0.115	0.000	0.000	42	2.976	0.000	0.000	66	77.340	5.926	37.812	90	2009.687	0.000	100.000
19	0.131	0.000	0.000	43	3.409	0.000	0.000	67	88.583	6.766	44.578	91	2301.841	0.000	100.000
20	0.150	0.000	0.000	44	3.905	0.000	0.000	68	101.460	7.465	52.043	92	2636.467	0.000	100.000
21	0.172	0.000	0.000	45	4.472	0.000	0.000	69	116.210	7.823	59.866	93	3019.738	0.000	100.000
22	0.197	0.000	0.000	46	5.122	0.000	0.000	70	133.103	8.666	68.533	94	3458.727	0.000	100.000
23	0.226	0.000	0.000	47	5.867	0.130	0.130	71	152.453	9.269	77.802	95	3961.533	0.000	100.000
24	0.259	0.000	0.000	48	6.720	0.172	0.301	72	174.616	8.698	86.500	96	4537.433	0.000	100.000

POWDER TESTER(PT-X) Overall Evaluation

Date : 2023 / 01 / 31 18 : 40
Environment : Temperature 77.0℉ Humidity 41.2%
Company : User :
File Name : 013023-100-N049-S1
Sample Name : 013023-100-N049-S1 Lot No. : 013023
Particle Size(μm) : D10 = D50 = D60 = D90 = D95 =

FLOWABILITY						
Angle of Repose			deg.	SD =	Index =	
Aerated Bulk Density		0.3609	g/cm³	SD =		
Packed Bulk Density		0.7877	g/cm³	SD =	Working Bulk Density =	0.5922
Compressibility		54.2	%	SD =	Index =	0.0
Angle of Spatula	Before Impacting		deg.	SD =		
	After Impacting		deg.	SD =		
	Average		deg.	SD =	Index =	
Cohesion			%	SD =	Index =	Arithmetic Equation =
Uniformity				SD =	Index =	

Flowability Index	
Degree of Flowability	
Necessity of Bridge-Breaking Measures	

FLOODABILITY				
Angle of Fall		deg.	SD =	Index =
Angle of Difference		deg.	SD =	Index =
Dispersibility		%	SD =	Index =
Flowability				

Floodability Index	
Degree of Floodability	
Measures for Flushing Prevention	

Note

APPENDIX IV

2021-2022 Rock Samples - Laboratory Results

Quality Analysis ... Actlabs *Innovative Technologies*

Report No.: A22-05595
Report Date: 04-May-22
Date Submitted: 27-Apr-22
Your Reference:

F.T. Archibald
668 Millway Ave
Concord Ontario L4K 3V2
Canada

ATTN: Fred Archibald

CERTIFICATE OF ANALYSIS

13 Rock samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
4F-C-Graphitic	Infrared	2022-05-02 22:14:45

REPORT **A22-05595**

Notes:

SCC Accredited LAB
LAB Accredits CCN
LabID: 266

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

ACTIVATION LABORATORIES LTD.
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5
TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Preliminary Report
Activation Laboratories

Report Number: A21-18611
Report Date: 8/10/2021

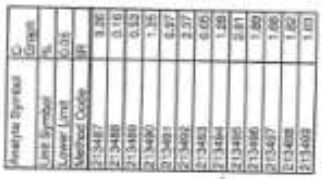
Analyte Symbol	Au	C-Graph
Unit Symbol	ppb	%
Detection Limit	5	0.05
Analysis Method	FA-AA	IR
213464	6	
213465	5	
213466	< 5	
213467	5	
213468		4.34
213469		4.78
213470		2.89
213471		2.99

Report: A22-05595

Activation Laboratories Ltd.

Results

Analyte Symbol	C-Graph
Unit Symbol	%
Lower Limit	0.05
Method Code	IR
213487	9.26
213488	0.16
213489	0.53
213490	1.25
213491	0.97
213492	2.37
213493	0.05
213494	1.28
213495	2.01
213496	1.89
213497	1.68
213498	1.82
213499	1.63



APPENDIX V

FIELD WORK 2021-2022

DAILY LOG -2021

Daily Logs- Sampling (Chip & Channel Sampling Program). Loom Lake Graphite Project

October 3,2021

6:00AM-8:30AM travel Thornhill to Loom Lake

8:30AM-5:00PM- stripping and chip sampling (4 gold samples) at Loom Lake west side, stripping outcrop and sampling

5:00PM-8:00PM travel Loom Lake to Thornhill

October 4, 2021

7:00AM-1:30PM- delivery of samples to Activation Labs (41 Bittern St, Ancaster) Thornhill to Ancaster to Thornhill

December 12 & 13, 2021

88kg. bulk sample channel sample and chip samples across 100 meters outcrop west side Loom Lake (2" width X 2" depth)

7:00AM-9:30AM- travel Thornhill to Loom Lake day 1

9:30AM-5:30PM day 1 sampling

8:00AM to 4:30 PM day 2 sampling. Samples 213464 to 213467 inclusive

8:00AM-12:30PM travel Loom Lake to Thornhill

DAILY LOG -2022

January 5, 2022

Delivery of bulk sample to SGS Lakefield Labs. 7:00AM to 4:00PM. Thornhill to Lakefield to Thornhill

April 25-26, 2022

Property visit for sampling 13 chip samples and stripping outcrop (sample # 213487-213499)

Delivery of samples to Activation Labs in Ancaster , Ontario

April 25- 7:00AM-5:30PM sampling west side of Loom Lake

April 26- Loom Lake to Ancaster to Thornhill. 8:00AM to 5:00PM

October 6, 2022

54 kilo Bulk sample at west side of Loom Lake (Thornhill-Loom Lake – Thornhill)

7:00AM-7:30PM (7.5 hours on Loom Lake site)- bulk sample over 50 meter width (chip and saw cutting + cleaning outcrop)

October 7, 2022

Thornhill - SGS Lakefield - Thornhill

Delivery of 2 pails sample to Lakefield Labs

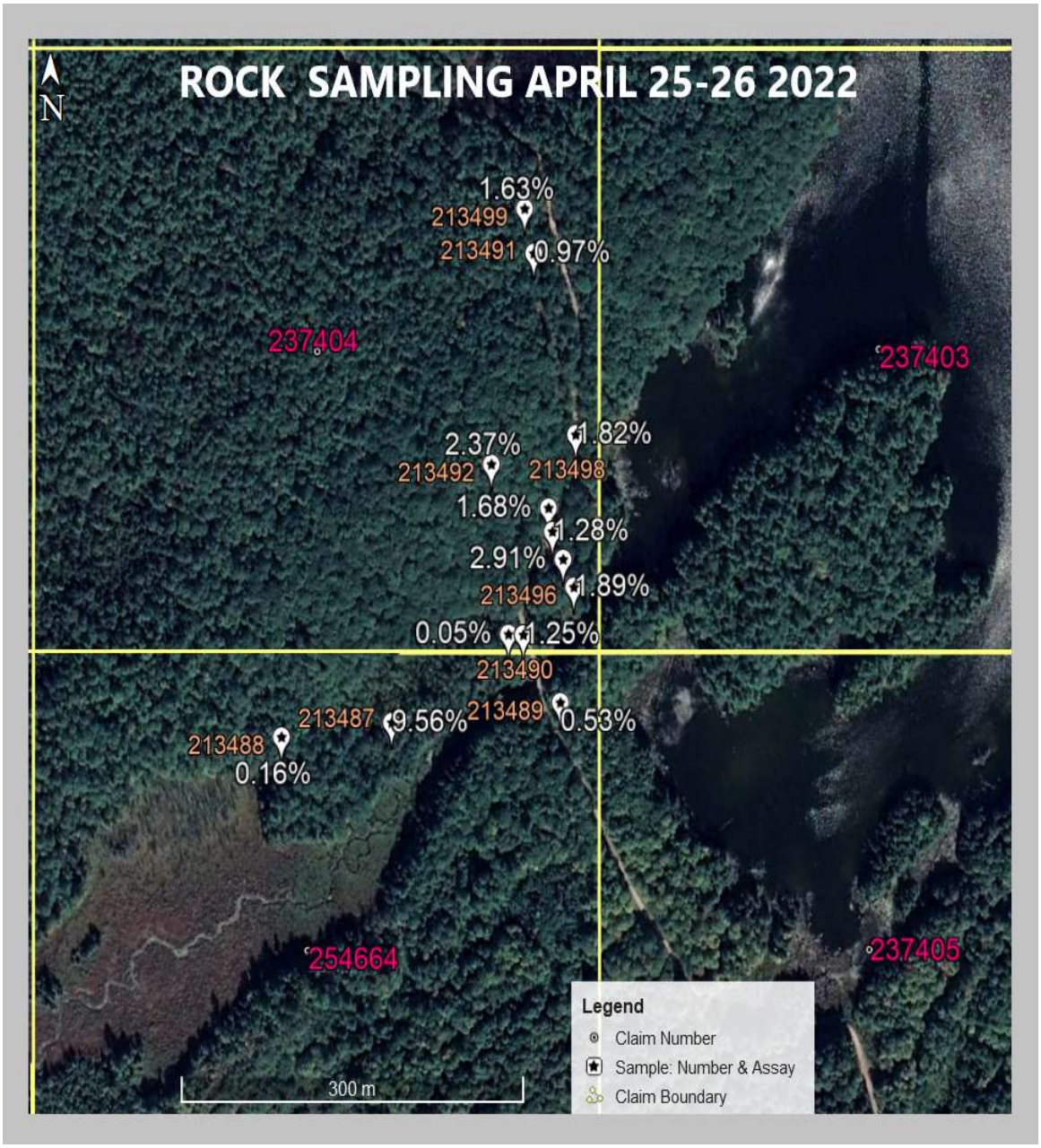
7:00AM-6:00PM

Fred Archibald, P.Geo APGO #1052

ROCK SAMPLE LOCATION MAPS

2021 SAMPLING

2022 SAMPLING



SAMPLED OUTCROPS - DESCRIPTION

2021

213464-rusty – light grey amphibolitic metasediment at marble contact with slight banding (graphite seams) of graphite flakes, sulphide rich
213465-rusty – light grey amphibolitic metasediment at marble contact with slight banding (graphite seams) of graphite flakes, sulphide rich
213466-rusty – light grey amphibolitic metasediment at marble contact with slight banding (graphite seams) of graphite flakes, sulphide rich
213467-rusty – light grey amphibolitic metasediment at marble contact with slight banding (graphite seams) of graphite flakes, sulphide rich

2022

213487- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213488- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213489- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213490- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213491- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213492- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213493- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213494- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213495- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213496- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213497- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213498- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm
213499- rusty sulphide rich coarse graphite amphibolitic metasediment at marble contact, banding of graphitr seams, some graphite seam to 3 cm

Table for 88KG and 54Kg samples

	SAMPLE	SAMPLE	SAMPLING	START		FINISH	
DATE	TYPE	NUMBER	LENGTH	EASTINGS	NORTHINGS	EASTINGS	NORTHINGS
2021 - December	Chip/Channel	88kg	100m	700353	4957674	700346	4957608
ALL SAMPLES IN GALWAY TOWNSHIP				NTS SHEET 1:50,000 031DO9			
2022 - October	Chip/Saw	213466	50m	700353	4957674	700327	4957657

PHOTOS OF SAMPLED OUTCROPS