# NI 43-101 Technical Report

# Preliminary Economic Assessment (PEA) for the Mont Sorcier Project – Quebec, Canada

**Submitted to: Voyager Metals Inc.**

Effective Date of Report: September 8, 2022

Effective Date of Resource: June 9, 2022

Prepared by Qualified Persons:

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TOTAL SOLUTIONS OFFERING

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# 1. Executive Summary

## 1.1 General

Mont Sorcier is an iron ore and vanadium project located within Roy Township in the Canadian province of Quebec, approximately 20 km east of the town of Chibougamau and 700 km north of the city of Montreal.

Voyager Metals has 100% ownership of the mineral rights on the property, which is also subject to various royalties as described in this document. There is currently no significant development or activity at the property, except for an existing east-west gravel road.

This Preliminary Economic Assessment (PEA) report has been developed to document the change in strategy and re-scoping from the previously published PEA for the Mont Sorcier Project ("Project") dated 9 April 2020. The revised strategy includes a proposed Feasibility Study (FS) to be issued in Q1 2023.

Key Changes from the previously issued PEA are:

- Use of the Mineral Resource Estimate issued July 22, 2022 and using only Indicated Resources;
- Mine the North pit and do not mine the South pit which is saved for future development;
- Increase the amount of land to secure flexibility for both waste and tailings dams;
- Change the flowsheet to include a reverse flotation circuit to manage sulphur content in the concentrate to approximately 0.1%;
- Increase the initial capital costs to CAD$750M, to be more reflective of the likely cost and also allow for changes in scope and changes in rail alignment;
- Updated Financial Returns (NPV/IRR);
- Life of Mine of 21 years is the current preferred business case;
- A change in the construction start date to Q1 2026 allowing for more accurate dates associated with the Federal Impact Assessment ("IA") process.

The above parameters are competing factors that drive selection of the following technical matters:

- Mining rates and optimization of waste dump rock and tailings dam quantities;
- Circuit for reducing sulphur to a level whereby the concentrate can be sold in Europe.

- Changes in rail alignment to allow for likely increased acceptability from local communities;
- Increased land footprint to allow for increased capacity of the tailings dam and dump rock areas;
- Level of technical design to be undertaken in the FS.

## 1.2 Findings

The findings show:

- The North pit has 559 Mt of Indicated and 470.5 Mt of Inferred at depth and to the east. The preferred case for this PEA includes only North Zone Indicated.
- The mine plan is open pit with a 21 year LOM and post-tax NPV of US$1.6B. The project NPV changes by approximately US$320M per 10% change in price.
- Preferred pit model uses 341.5 Mt of Indicated, and preferred pit shell has 20.9 Mt of Inferred that this PEA deems waste. The strip ratio of 0.87 would reduce to 0.72 if the pit shell Inferred material is converted, though this conversion cannot be guaranteed.
- Model allowed for US$20/t for transport to China (long term price), but European markets will likely cost similar. Higher transport costs tend to move in close correlation to Iron Ore Pricing showing a high "pass through" relationship in these costs and prices.
- Blue sky opportunity of a further 20 year LOM at 5 Mtpa or a Phase 2 expansion to the current design will further enhance economics dependent on Inferred drilling campaign for the North Zone and Measured and Indicated for the South Zone. There can be no guarantee that the Inferred Resource will convert to be economic.

The methodology for selecting the optimal pit(s) is a complex trade off against maximizing the NPV, proving adequate LOM with a consistent production profile and managing the impact on on-site costs. The mine plan presented is a starting point; it is envisaged, though currently not possible to confirm, that the Inferred Resource will require changes to the proposed plan. Given this, Infrastructure and Facilities are located outside of known shells for the Inferred Resources.

For the North Pit, there is adequate information to state that:

- Updated internal geological resource model reflects all drilling completed to date and testing to the end April 2022.
- DRA developed the new mineable material using Hexagon MinePlan software.
- The model focussed on Wrec as opposed to $Fe_2O_3$.
- Sulphur content on average mine feed is 0.7%. Davis Tube Testwork (DTT) indicates this will report as approximately 0.45% in the Low Intensity Magnetic Separation (LIMS)

concentrate. It has been proven that with reverse flotation the sulphur content can be reduced below 0.4% with high magnetite recovery.

## 1.3 Recommendations

- Proceed with the Feasibility Study (FS) on the basis of this PEA.
- Contact local contractors, to potentially provide production labour support.
- Develop new mine plan, and prepare geotechnical / hydrogeological studies.
- Study the possibility of an all-electric carbon-neutral mining fleet.
- Develop reverse flotation circuit, incorporate into flowsheet, determine potential and optimize upgrade in iron content of the concentrate. There is no guarantee at this time that this upgrade will be achievable.
- Develop execution schedule and optimize time to first production. Integrate with environmental permits and obtain a Decision Statement from relevant authorities.
- Optimize the Tailings facility.
- Optimize non-deleterious waste rock dumps.
- In the longer term undertake work to increase the Resource and Reserve to the East of the current pit.

# 2. Introduction

The objective of this report is to update the preferred Business plan for Voyager Metals (Voyager) for developing the asset at Mont Sorcier. The report utilizes the updated work assesses the Basis of Design (BOD) for the proposed facility.

This report outlines the method, inputs and results of the assessment. For Mont Sorcier the assessment used Testing from previous studies and was updated for the latest drilling and Testing of the North deposit to validate those assumptions. In addition, the latest geological resource model incorporated the 2021 drilling; the mining model used only the Indicated Resource and developed new mining shells to assess the likely impact to the mine plan, if the project were approved. Updates from hydrogeological and geotechnical assessments for design were incorporated, and relevant risks monetized with a contingency.

For Mont Sorcier an open pit was investigated to assess the impact of preferentially mining the North Zone for the initial business plan.

The relationship between the deposit, processing plant and mining equipment was investigated. At this time full pit optimization tools and scheduling of the pit inventory has not been completed for Mont Sorcier.

The input parameters used in the assessment are a combination of inputs developed using testing, analogous estimates and factors, such as operating / capital costs and metallurgical recoveries, whilst other inputs considered appropriate assumptions for this stage of the work. The proposed work being completed as part of the Feasibility Study will assess assumptions used in this PEA.

The current Resource model was used as the basis of this preliminary economic assessment of the North Zone.

Mine planning is an iterative process and some assumptions used in this assessment will be revised in the detailed mine planning of the FS.

## 2.1 Overview of Terms of Reference

Voyager Metals Inc. ("Voyager" or "VONE" or the "issuer") retained various consultants to participate collaboratively in this independent PEA. Each consultant contributed to the completion of the component PEA sections as follows. Table 2-1 indicates the detailed Items of each QP:

**DRA**: Mining methods, project infrastructure, market studies and contracts, capital and operating costs, and economic analysis.

**InnovExplo**: Property description and location, accessibility, climate and physiography, history, geological setting and mineralization, deposit types, exploration, drilling, sample preparation, data verification, adjacent properties, and mineral resource estimate.

**LDV**: Inputs to the capital estimating process.

**Soutex**: Mineral processing, metallurgical testing, and recovery methods.

**WSP Golder**: Environmental studies, permitting, and social or community impacts.

InnovExplo presented and supported the results of an updated Mineral Resource Estimate (the "2022 MRE") for the Project which was published in July 2022. Relevant sections of the 2022 MRE are repeated herein for this PEA.

This Technical Report is prepared in accordance with Canadian Securities Administrators' National Instrument 43-101 Respecting Standards of Disclosure for Mineral Projects ("NI 43-101") and Form 43-101F1.

Voyager is a junior exploration company listed on the Toronto Stock Exchange ("TSX") under the symbol 'VONE'. Its head office is at 3205-200 Bay Street, Toronto, Ontario, Canada, M5J 2T1. Originally named Vendome Resources Corp., the company changed name to Vanadium One Iron Corp. in 2017 and to Voyager Metals Inc. in 2021.

DRA Americas Inc. is an independent consulting firm with offices in Montreal, Quebec, Canada and Toronto, Ontario, Canada.

InnovExplo is an independent mining and exploration consulting firm based in Val-d'Or, Quebec, Canada.

LDV is an independent consulting firm based in Quebec City, Quebec, Canada.

Soutex is an independent metallurgical consulting firm based in Quebec City, Quebec, Canada.

WSP Golder is an independent consulting firm based in Quebec City, Quebec, Canada.

The 2022 MRE follows the 2014 CIM Definition Standards on Mineral Resources and Mineral Reserves ("CIM Definition Standards") and the 2019 CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines ("CIM Guidelines").

The Mont Sorcier Project is 100% owned by Voyager. It consists of two (2) main domains at an advanced exploration stage with mineral resource estimates: the North and the South Zones.

## 2.2 Report Responsibility, Qualified Persons

This Technical Report was prepared by:

- Simon Boudreau (P.Eng.), Senior Mine Engineer at Innovexplo
    - professional engineer in good standing with the OIQ

- Tim Fletcher (P.Eng.), Senior Project Manager at DRA Americas Inc.
    - professional engineer in good standing with PEO and NAPEG
- Daniel Gagnon (P.Eng.), Senior VP Mining, Geology, and Met-Chem Operations at DRA Americas Inc.
    - professional engineer in good standing with the OIQ
- Mathieu Girard (P.Eng.), Senior Metallurgist at Soutex Inc.
    - professional engineer in good standing with the OIQ
- Marina Iund (P.Geo.), Senior Resources Geologist at InnovExplo
    - professional geologist in good standing with the OGQ, PGO and NAPEG
- Carl Pelletier (P.Geo.), Co-President Founder of InnovExplo
    - professional geologist in good standing with the OGQ, PGO, EGBC and NAPEG

All authors are qualified persons ("QPs") as set out in NI 43-101.

Capital Cost inputs were provided by DRA, and environmental input was provided by WSP Golder, both in collaboration with Voyager and under the review of their management.

**Table 2-1: QPs for this PEA**

| Name | Title, Company | Responsible for Section |
|---|---|---|
| Simon Boudreau, P.Eng. | Senior Mine Engineer at InnovExplo | Portions of 14 |
| Tim Fletcher, P. Eng. | Senior Project Manager, DRA Americas Inc. | 18 and 20, portions of 1, 2, 3, 21, 24, 25, and 26, and report compiling |
| Daniel Gagnon, P. Eng. | Vice President Mining and Geology, DRA Americas Inc. | 16, 19, 22, and portions of 1, 21, 25, and 26 |
| Mathieu Girard, P.Eng. | Senior Metallurgist, Soutex Inc. | 13, 17, and portions of 1, 2, 25 and 26 |
| Marina Iund, P.Geo. | Senior Resources Geologist, InnovExplo | 4 to 12, 23, portions of 1 to 3, 14, and 25 to 27 |
| Carl Pelletier, P.Geo. | Co-President Founder of InnovExplo | Portions of 1, 14, 25 and 26 |

## 2.3 Site Visits

Mr. Pelletier visited the Project from May 17 to May 18, 2022. His Project tour included a general visual inspection of buildings and the local roads. He also reviewed selected drill core intervals, inspected the core storage facility and surveyed selected drill hole collars for independent validation.

WSP Golder have been to site and are currently undertaking baseline studies.

## 2.4 Effective Date

The close-out date of the mineral resource database is June 09, 2022. The MRE was published in July 2022.

The effective date of this Technical Report is September 8, 2022.

## 2.5 Accuracy

A PEA is by its nature preliminary, and there is no guarantee about the final outcome of the project. That said, the accuracy of the assessment is deemed at an appropriate level for making a Business Decision to continue with the FS with the revised scoping contained herein.

Operating costs have been used for processing and mining costs and compared against benchmarks of similar operations in the region.

Testing in general for geological assays is adequate for making PEA recommendations. The testing is ongoing and generally consistent in outcomes. That said, there may still be variance causing unanticipated outcomes from the current recommendations. These though are typical for projects at this stage of development and will be resolved during the FS development.

Pit limits and interim stages at this time are defined by the existing pit shells using Indicated Resources, and are not detailed design.

Reverse flotation to deliver a saleable product suitable for the European market has been added to the circuit. Preliminary testing has been completed that indicates a product with approximately 0.1% Sulphur can be achieved. That said, as this is a PEA there is no guarantee that the testing to be completed as part of the FS will confirm these initial results.

The capital estimates were completed to a Class 5 with the expected accuracy as given by the AACE International (Association for the Advancement of Cost Engineering) in their Cost Estimate Classification System and recommended Practice 18R-97 for Process Industries. The estimate in this PEA used the August 2020 PEA as the initial benchmark and was updated by the work of DRA, LDV, and WSP Golder. Modifiers were applied to allow for significant escalation (20%) of 2021/2 and also for new scope associated with additional equipment of the reverse flotation circuit and potential changes in rail alignment.

The PEA tailings cost was adopted with an allowance for expansion in sustaining capital costs as supported by estimated quantities developed by WSP Golder.

The capital estimates are considered suitable for a PEA and with appropriate contingency included.

## 2.6 Sources of Information

The information described in Section 3 and the documents listed in Section 27 were used to support this Technical Report. Excerpts or summaries of documents authored by other consultants are indicated in the text.

The authors' assessments of the Project were based on published material in addition to data, professional opinions and unpublished material submitted by the issuer. The authors reviewed all relevant data provided by the issuer and/or by its agents.

The authors also consulted other sources of information, mainly the Government of Quebec's online databases for mining title management and assessment work (GESTIM and SIGEOM, respectively), as well as the issuer's filings on SEDAR namely annual information forms, MD&A reports, press releases and previous technical reports.

The authors reviewed and appraised all information used to prepare this Technical Report and believe that such information is valid and appropriate considering the status of the project and the purpose for which this Technical Report is prepared. The authors have researched and documented the conclusions and recommendations herein.

## 2.7 Currency, Units of Measure, and Acronyms

The abbreviations, acronyms and units in this Technical Report are provided in Tables 2-2 and 2-3. All currency amounts are expressed in Canadian dollars ($, C$, CAD) or US dollars (US$, USD). Quantities are generally stated in metric units, as per standard Canadian and international practice, including metric tonnes (tonnes, t) and kilograms (kg) for mass, kilometres (km) or metres (m) for distance, hectares (ha) for area, percentage (%) for base metal grades, and gram per tonne (g/t) for precious metal grades. Wherever applicable, imperial units have been converted to the International System of Units (SI units) for consistency.

**Table 2-2: List of Abbreviations and Acronyms**

| Abbreviation or acronym | Term |
|---|---|
| 3SD | Three Times Standard Deviations |
| 43-101 | National Instrument 43-101 (Regulation 43-101 In Quebec) |
| BWi | Bond Work Index |
| C$, CAD$ | Canadian Dollars |
| CAD:USD | Canadian-American Exchange Rate |
| CAPEX | Capital Expenditure |
| CIM | Canadian Institute of Mining, Metallurgy and Petroleum |
| CIM Definition Standards | CIM Definition Standards for Mineral Resources and Mineral Reserves (2014) |

| Abbreviation or acronym | Term |
|---|---|
| CIM Guidelines | CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines (2019) |
| CoG | Cut-Off Grade |
| COV | Coefficient of Variation |
| CRM | Certified Reference Material |
| DDH | Diamond Drill Hole |
| EA | Environmental Assessment |
| EGBC | Association of Professional Engineers and Geoscientists of British Columbia |
| $F_{80}$ | 80% Passing - Feed |
| FS | Feasibility Study |
| G&A | General and Administration |
| GESTIM | Gestion des Titres Miniers (MERN's Online Claim Management System) |
| ID2 | Inverse Distance Squared |
| IEC | International Electrotechnical Commission |
| ISO | International Organization for Standardization |
| LDC | Lac Dore Complex |
| LOM | Life of Mine |
| MD&A | Management Discussion and Analysis |
| M+I | Measured & Indicated |
| MERN | Ministère de l'Énergie et des Ressources Naturelles du Québec (Quebec's Ministry of Energy and Natural Resources) |
| MRC | Municipalité Régionale de Comté (Regional County Municipality in English) |
| MRE | Mineral Resource Estimate |
| NAD | North American Datum |
| NAD83 | North American Datum of 1983 |
| NAPEG | Northwest Territories and Nunavut Association of Professional Engineers and geoscientists |
| NI 43-101 | National Instrument 43-101 (Regulation 43-101 in Quebec) |
| NN | Nearest Neighbour |
| NP | Neutralization Potential |
| NSR | Net Smelter Return |
| NTS | National Topographic System |
| O/F | Overflow |
| O/S | Oversize |
| OGQ | Ordre des Géologues du Québec |
| OIQ | Ordre des Ingénieurs du Québec |
| OK | Ordinary Kriging |
| OPEX | Operational Expenditure |
| $P_{80}$ | 80% Passing - Product |
| PEA | Preliminary Economic Assessment |
| PEO | Professional Engineers Ontario |
| PFS | Prefeasibility Study |
| PGO | Professional Geoscientists Ontario |
| QA | Quality Assurance |
| QAQC, QA/QC | Quality Assurance/Quality Control |
| QC | Quality Control |
| QP | Qualified Person (as Defined in National Instrument 43-101) |
| RCM | Regional County Municipality (*Municipalité Régionale de Comté* or MRC in French) |
| Regulation 43-101 | National Instrument 43-101 (Name in Quebec) |
| ROM | Run of Mine |
| RWi | Rod Work Index |
| SAG | Semi-Autogenous-Grinding |

| Abbreviation or acronym | Term |
|---|---|
| SCC | Standards Council of Canada |
| SD | Standard Deviation |
| SEDAR | System for Electronic Document Analysis and Retrieval |
| SG | Specific Gravity |
| SIGÉOM | Système d'information Géominière (MERN's Online Spatial Reference Geomining Information System) |
| SMC | SAG Mill Comminution |
| SVT | SAG Variability Test |
| TSF | Tailings Storage Facility |
| TSX | Toronto Stock Exchange |
| U/F | Underflow |
| U/S | Undersize |
| USD, US$ | United States Dollars |
| UTM | Universal Transverse Mercator Coordinate System |
| VTM | Vanadiferous Titanomagnetite |
| VONE | Voyager Metals |
| XRF | X-Ray Fluorescence |

**Table 2-3: List of Symbols and Units**

| Symbol | Unit |
|---|---|
| % | Percent |
| % solids | Percent solids (by weight) |
| C$, CAD$ | Canadian dollar |
| $/t | Dollars per tonne |
| ° | Angular degree |
| °C | Degree Celsius |
| µm | Micron (micrometre) |
| A | Ampere |
| cm | Centimetre |
| cm$^3$ | Cubic centimetre |
| d | Day (24 hours) |
| dmt | Dry Metric Tonne |
| ft | Foot (12 inches) |
| g | Gram |
| G | Billion (Giga) |
| Ga | Billion years |
| g/cm$^3$ | Gram per cubic centimetre |
| g/t | Gram per tonne |
| h | Hour (60 minutes) |
| ha | Hectare |
| k | Thousand (000) |
| kg | Kilogram |
| km | Kilometre |
| kPa | Kilopascal |
| kV | Kilovolt |
| kW | Kilowatt |
| kWh | Kilowatt-hour |
| kWh/t | Kilowatt-hour per tonne |
| L | Litre |
| M | Million |
| m | Metre |

| Symbol | Unit |
|---|---|
| $m^2$ | Square metre |
| $m^3$ | Cubic metre |
| $m^3$/h | Cubic metre per hour |
| Ma | Million years |
| masl | Metres above mean sea level |
| min | Minute (60 seconds) |
| mm | Millimetre |
| $mm^2$ | Square millimetre |
| Mt | Million tonnes |
| Mtpa | Million tonnes per year (annum) |
| mV | Millivolt |
| MW | Megawatt |
| rpm | Rotations per minute |
| s | Second |
| S | Sulphur |
| t | Tonne (1,000 kg) |
| ta | Abrasion breakage |
| ton | Short ton (2,000 lbs) |
| tpa, t/a, tpy, t/y | Tonnes per year |
| tpd | Tonnes per day |
| t/h | Tonnes per hour |
| USD, US$ | American dollar |
| wt% | Weight percent |
| y | Year (365 days) |

**Table 2-4: List of Units and Conversions Factors**

| Imperial Unit | Unit Multiplied by Metric Unit | Metric Unit |
|---|---|---|
| 1 inch | 25.4 | mm |
| 1 foot | 0.3048 | m |
| 1 acre | 0.405 | ha |
| 1 pound | 0.4535 | kg |
| 1 ton (short) | 0.9072 | t |

# 3. Reliance on Other Experts

This PEA has been prepared by DRA using work developed by InnovExplo, LDV, Soutex, and WSP Golder for Voyager Metals. The quality of information, conclusions, opinions and estimates contained herein is consistent with the level of effort and are based on:

- Information available to DRA, InnovExplo, LDV, Soutex, and WSP Golder at the time of report preparation;
- Assumptions, conditions, and qualifications as set forth in this report; and
- Data, reports, and other information supplied by Voyager Metals and other third-party sources.

Any other use of, or reliance on, this report by any third party is at that party's sole risk.

DRA relied upon data and documentation from Voyager Metals and other parties listed above in respect of Mining Methods (Section 16), Project Infrastructure (Section 18), Market Studies (Section 19), Capital and Operating Costs (Section 21), Economic Analysis (Section 22), and Project Schedule (Section 24).

InnovExplo has followed standard professional procedures in preparing their sections of this Technical Report, based upon information believed to be accurate at the time of writing, considering the status of the Project and the purpose for which the report was prepared. The data have been verified where possible. InnovExplo has no reason to believe that the data were not collected in a professional manner.

The InnovExplo authors did not rely on other experts to prepare this Technical Report. InnovExplo prepared their sections at the request of the issuer. Marina Iund (P.Geo.) and Carl Pelletier (P.Geo.) are the QPs responsible for reviewing the technical documentation relevant to their sections of the Technical Report, preparing a mineral resource estimate for the Project, and recommending a work program.

InnovExplo has not verified the legal status of, or legal title to, any claims, nor the legality of any underlying agreements that may exist concerning the properties as described in Section 4 of this report. The QPs have relied on the issuer's information about mining titles, option agreements, royalty agreements, environmental liabilities, and permits. Neither the QPs nor InnovExplo are qualified to express any legal opinion concerning Project titles, current ownership or possible litigation.

InnovExplo consulted GESTIM and SIGEOM over the course of the mandate. The websites were most recently viewed on July 08, 2022:

- gestim.mines.gouv.qc.ca/MRN_GestimP_Presentation/ODM02101_login.aspx
- sigeom.mines.gouv.qc.ca/signet/classes/I1102_indexAccueil?l=a.

## 3.1 Testwork and Process Design

The Testwork is a core component for making the Decision. SGS in Quebec is an expert laboratory for iron ore development and operations.

New metallurgical testwork has been completed for the reverse flotation. The process and testing was managed by Soutex.

No significant new work was completed on the process design, though an additional flotation circuit was added by Soutex in order to achieve a saleable product for Europe.

## 3.2 Environmental

Work streams associated with the Environmental aspects and timing for permits rely entirely on the interim findings and inputs of WSP Golder.

# 4. Property Description and Location

## 4.1 Location and Area of Property

The Project is located in the province of Quebec, Canada, approximately 20 km east of the town of Chibougamau. It lies in Roy Township, in the Jamésie regional county municipality ("RCM"), which is part of the Nord-du-Québec administrative region. Figure 4-1 shows the location of the Project in the province.

The Project is situated on NTS map sheet 32G/16. The approximate coordinates of its centre are 49°90'69" N, 74°12'46" W (UTM projection: 567277N, 5488459E, NAD83 Zone 18U). It covers an area of approximately 3,196 ha.

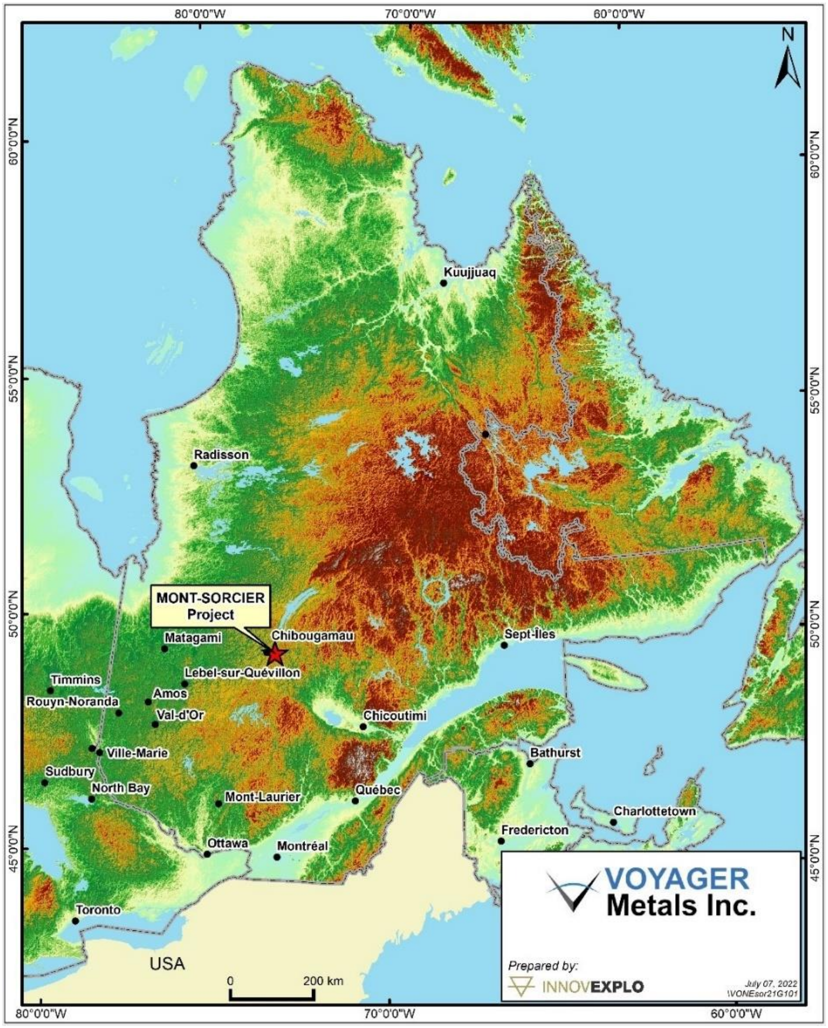


**Figure 4-1: Location of the Mont Sorcier Project**

## 4.2 Mineral Tenure

InnovExplo verified the status of all mining titles in GESTIM.

The Property comprises sixty-one (61) map-designated claims ("CDC") covering an area of 3,196 ha. The Property is subject to claim work requirements (Figure 4 2). As of the effective date of this Technical Report, all the claims are in good standing, with assessment work requirements being kept up to date.

The issuer owns and controls 100% of the mineral rights to the Property. The Property is subject to various royalties as discussed below.

On November 8, 2016, Vanadium One (now Voyager) had an earn-in agreement with Chibougamau Independent Mines Inc. ("Chibougamau Independent"). Under the agreement, Chibougamau Independent received from Voyager $150,000 in cash and 2,750,000 common shares of Voyager. Voyager agreed to undertake a minimum of $1 million in exploration work in the first 24 months following the signature of the agreement. Chibougamau Independent retains a 2% Gross Metal Royalty ("GMR") on all mineral production from the Property. Globex Mining Enterprises Inc. (GMX-TSX), which held a 3% GMR on some claims, reduced its royalty to 1% GMR (on all claims) and was issued a finder's fee of 300,000 common shares of Voyager.

In January 2019, Voyager fulfilled its $1 million financial commitment for exploration expenditures and completed the earn-in.

In April 2020, the transfer of 100% ownership was completed for all 37 claims.

In December 2021, Voyager entered into an agreement with an undisclosed vendor to acquire 24 additional claims adjacent to the Property. Under the agreement, on closing, the vendor would receive from Voyager $250,000, plus 500,000 common shares of Voyager, at which time the claims would be transferred to Voyager. This term was satisfied at closing. Also, per the agreement, Voyager is required to pay an additional $200,000 per year from years 5 to 10, for a total of $1,000,000 in deferred consideration. The vendor would be granted a 3% net smelter royalty ("NSR") applicable only to the claims subject to the agreement, subject to the option of the company to buy back 1% of the NSR for CAD$1,000,000. If no development project has commenced at Mont Sorcier at the end of ten (10) years, the claims will revert to the vendor.

Figure 4-2 presents the mineral title map, and Table 4-1 lists the mineral titles.

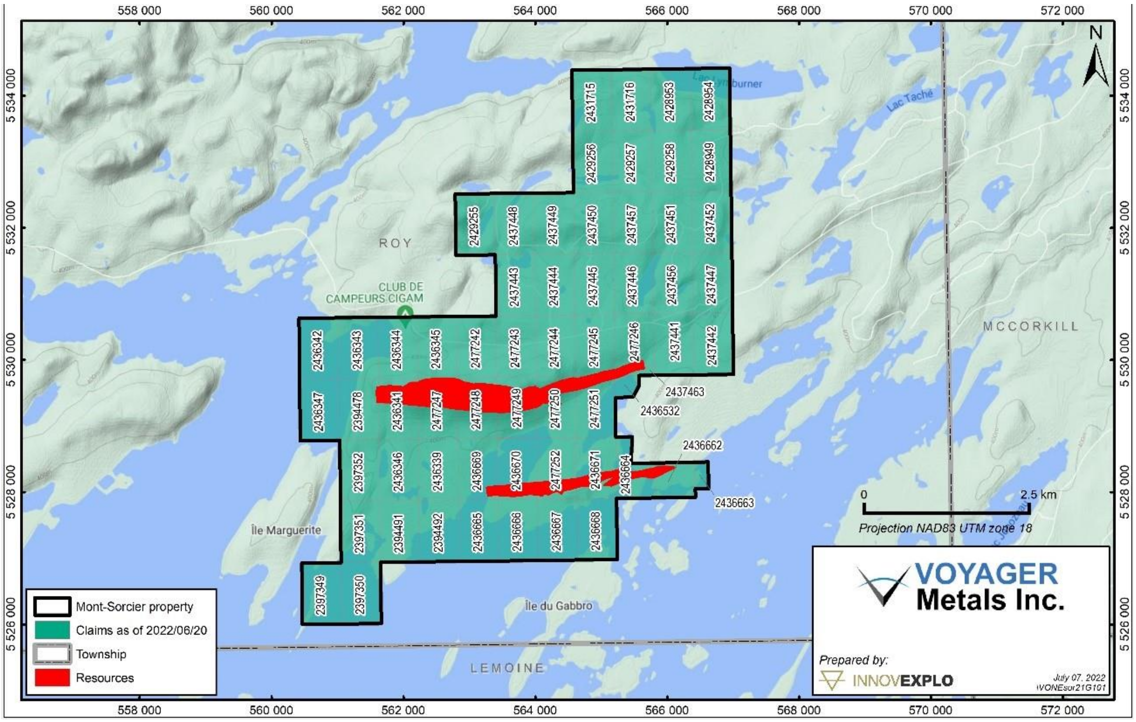


Figure 4-2: Mining Title and Land Use Map for the Mont Sorcier Project

Table 4-1: List of Mining Titles

| No. Title | Area (Ha) | Status | Registration Date | Expiration Date | Required work | Owner |
|---|---|---|---|---|---|---|
| CDC2394478 | 55.44 | Active | 2013-12-11 | 2023-11-10 | 1800 | Voyager Metals Inc. |
| CDC2394491 | 55.46 | Active | 2013-12-11 | 2024-03-27 | 1800 | Voyager Metals Inc. |
| CDC2394492 | 55.46 | Active | 2013-12-11 | 2024-03-27 | 1800 | Voyager Metals Inc. |
| CDC2397349 | 55.47 | Active | 2014-01-13 | 2023-01-12 | 1800 | Voyager Metals Inc. |
| CDC2397350 | 55.47 | Active | 2014-01-13 | 2023-01-12 | 1800 | Voyager Metals Inc. |
| CDC2397351 | 55.46 | Active | 2014-01-13 | 2023-01-12 | 1800 | Voyager Metals Inc. |
| CDC2397352 | 55.45 | Active | 2014-01-13 | 2023-01-12 | 1800 | Voyager Metals Inc. |
| CDC2428949 | 55.40 | Active | 2015-06-11 | 2024-06-10 | 1800 | Voyager Metals Inc. |
| CDC2428953 | 55.39 | Active | 2015-06-11 | 2024-06-10 | 1800 | Voyager Metals Inc. |
| CDC2428954 | 55.39 | Active | 2015-06-11 | 2024-06-10 | 1800 | Voyager Metals Inc. |
| CDC2429255 | 55.41 | Active | 2015-06-16 | 2024-06-15 | 1800 | Voyager Metals Inc. |

| No. Title | Area (Ha) | Status | Registration Date | Expiration Date | Required work | Owner |
|---|---|---|---|---|---|---|
| CDC2429256 | 55.40 | Active | 2015-06-16 | 2024-06-15 | 1800 | Voyager Metals Inc. |
| CDC2429257 | 55.40 | Active | 2015-06-16 | 2024-06-15 | 1800 | Voyager Metals Inc. |
| CDC2429258 | 55.40 | Active | 2015-06-16 | 2024-06-15 | 1800 | Voyager Metals Inc. |
| CDC2431715 | 55.39 | Active | 2015-07-30 | 2024-07-29 | 1800 | Voyager Metals Inc. |
| CDC2431716 | 55.39 | Active | 2015-07-30 | 2024-07-29 | 1800 | Voyager Metals Inc. |
| CDC2436339 | 55.45 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436341 | 55.44 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436342 | 55.43 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436343 | 55.43 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436344 | 55.43 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436345 | 55.43 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436346 | 55.45 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436347 | 55.44 | Active | 2016-02-26 | 2024-05-09 | 1800 | Voyager Metals Inc. |
| CDC2436532 | 11.06 | Active | 2016-03-01 | 2024-10-24 | 750 | Voyager Metals Inc. |
| CDC2436662 | 31.63 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436663 | 8.10 | Active | 2016-03-01 | 2024-10-24 | 750 | Voyager Metals Inc. |
| CDC2436664 | 41.05 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436665 | 55.46 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436666 | 55.46 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436667 | 55.46 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436668 | 55.46 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436669 | 55.45 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436670 | 55.45 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2436671 | 55.45 | Active | 2016-03-01 | 2024-10-24 | 1800 | Voyager Metals Inc. |
| CDC2437441 | 55.43 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437442 | 55.43 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |

| No. Title | Area (Ha) | Status | Registration Date | Expiration Date | Required work | Owner |
|---|---|---|---|---|---|---|
| CDC2437443 | 55.42 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437444 | 55.42 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437445 | 55.42 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437446 | 55.42 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437447 | 55.42 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437448 | 55.41 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437449 | 55.41 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437450 | 55.41 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437451 | 55.41 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437452 | 55.41 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437456 | 55.42 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437457 | 55.41 | Active | 2016-03-16 | 2024-04-09 | 1800 | Voyager Metals Inc. |
| CDC2437463 | 1.74 | Active | 2016-03-16 | 2024-04-09 | 750 | Voyager Metals Inc. |
| CDC2477242 | 55.43 | Active | 2017-02-06 | 2023-01-08 | 1800 | Voyager Metals Inc. |
| CDC2477243 | 55.43 | Active | 2017-02-06 | 2023-01-25 | 1800 | Voyager Metals Inc. |
| CDC2477244 | 55.43 | Active | 2017-02-06 | 2023-01-25 | 1800 | Voyager Metals Inc. |
| CDC2477245 | 55.43 | Active | 2017-02-06 | 2024-11-06 | 1800 | Voyager Metals Inc. |
| CDC2477246 | 53.69 | Active | 2017-02-06 | 2023-01-05 | 1800 | Voyager Metals Inc. |
| CDC2477247 | 55.44 | Active | 2017-02-06 | 2023-01-08 | 1800 | Voyager Metals Inc. |
| CDC2477248 | 55.44 | Active | 2017-02-06 | 2023-01-08 | 1800 | Voyager Metals Inc. |
| CDC2477249 | 55.07 | Active | 2017-02-06 | 2024-12-14 | 1800 | Voyager Metals Inc. |
| CDC2477250 | 55.44 | Active | 2017-02-06 | 2023-04-02 | 1800 | Voyager Metals Inc. |
| CDC2477251 | 55.44 | Active | 2017-02-06 | 2023-02-08 | 1800 | Voyager Metals Inc. |

## 4.3 Permitting and Socio-Environmental Responsibilities

The Project is located in the Nord-du-Québec Region on lands subject to the James Bay and Northern Quebec Agreement ("JBNQA"). The JBNQA governs the environmental and social protection regimes for the James Bay and Nunavik regions.

The JBNQA establishes three categories of lands, numbered I, II and III and defines specific rights for each category. The Mont Sorcier Property lies over Category III lands, which are public lands in the domain of the State. Category III lands include all the lands within the territory covered by the JBNQA that are located south of the 55th parallel and are not included in other land categories. Category III lands are managed by the Eeyou Istchee James Bay Regional Government. The Cree Nation has exclusive trapping rights on these lands, as well as certain non-exclusive hunting and fishing rights. The Cree Nation also benefits from an environmental and social protection regime that includes, among other things, the obligation for proponents to carry out an Environmental and Social Impact Assessment for mining projects and the obligation to consult with First Nations communities. In addition, the issuer must inform and consult with the First Nation communities and trap line permit holders concerning any planned exploration work to minimize interference with traditional trapping, hunting and fishing activities.

InnovExplo is unaware of any environmental liabilities, permitting issues or municipal social issues concerning the Project. All exploration activities conducted on the Project comply with the relevant environmental permitting requirements.

# 5. Accessibility, Climate, Local Resources, Infrastructure and Physiography

## 5.1 Accessibility

The Mont Sorcier Project is located approximately 20 km east of the town of Chibougamau. The project is easily accessible by an all-weather gravel road heading east from Highway QC-167 some 10 km east-northeast of Chibougamau. The gravel road passes through the northern claims. Numerous forestry roads give access to different sectors in the southern and central portions of the property.

Chibougamau is an active mining and forestry centre which straddles Highway QC-167 and has a population of over 7,500 peoples. Chibougamau is serviced by an airport with daily regular scheduled direct flights to Montreal, Québec. A helicopter base and seaplane base are also present at Chibougamau-Chapais.

Chibougamau is deserved by a railroad. A seaport is available at La Baie (Port-Alfred), approximately 300 km southeast, along the railroad.

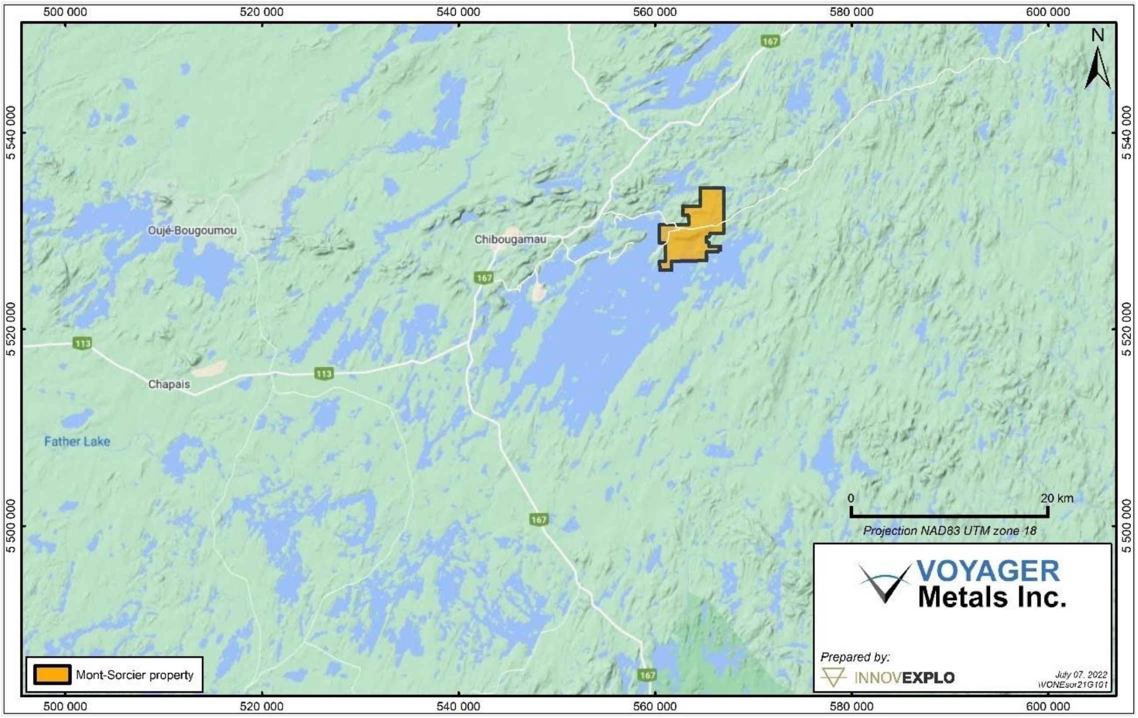


Figure 5-1: Access to Mont Sorcier Project

## 5.2 Climate

Chibougamau has a subarctic climate. Winters are long, cold, and snowy. Summers are warm though short. The temperature varies from an average minimum of -26°C in winter (January and February) to an average maximum of 22°C in the summer (July and August). Overall precipitation is high for a subarctic climate, with an average annual precipitation of 996 mm and 313 cm of snow per season. Snow falls from mid-November to mid-April.

Mining and drilling operations can be conducted year-round. Surface exploration work, such as mapping and channel sampling, can generally only be carried out from mid-April to mid-November. Depending on local ground conditions, drilling may be best conducted during winter when the ground and water surfaces are frozen.

## 5.3 Local Resources

Chibougamau and nearby Chapais (approximately 45 km drive west of Chibougamau) are former copper and gold mining centres with a combined municipal population of about 10,000 residents. The local Cree communities of Mistissini and Ouje-Bougoumo have a population of approximately 3,000 and 1,000 residents, respectively. In addition to regional mining, the local economy is based on forestry, tourism, energy and an integrated service industry.

A skilled labour force, including mining personnel, is available in the Chibougamau area, which is well served by heavy equipment service and maintenance providers.

The Chibougamau region contains abundant water sources sufficient for mining operations.

A 735-kV line linking generator facilities in the James Bay region (north of Chibougamau) to Montreal and Quebec City (to the south) runs through Chibougamau, where a 735-kV substation is located.

## 5.4 Infrastructure

The Property has no infrastructure except for the east-west all-weather gravel road (Lac Chibougamau North Road) maintained by the local logging company (Chantiers Chibougamau Ltd) in the north and several poorly maintained logging roads.

## 5.5 Physiography

The physiography of the area is rolling hills with abundant lakes and rivers. The area is 85% covered by forests and 15% by lakes and rivers. Widespread swampy areas are found within moderately dense to locally dense forests (generally black spruce, with lesser birch, pine, aspen and alder undergrowth).

The overburden generally consists of sand and clay varying in thickness from 1 m to locally more than 30 m. Bedrock exposures are sparse.

The Property has local relief of up to approximately 130 masl. Mont Sorcier rises to roughly 510 masl with local steep topographic features characterized by vertical cliffs up to 30 m high. The level of Lac Chibougamau, just south of the mining claims, is about 380 masl.

**Figure 5-2: Photograph Showing the Physiography of the Mont Sorcier Project**

# 6. History

This section summarizes the historical work conducted on the Property (i.e., claims currently held by the issuer). It is mainly based on the 2020 NI 43 101 report by CSA Global Canada Geosciences Ltd (Bartsch et al. 2020) and the 2016 NI 43 101 report by C.P.Larouche (Larouche, 2016). The issuer's work is described in Sections 9 and 10.

The current claims have had numerous owners since the 1920s. They have only recently been amalgamated into the current property boundary.

On the Property, exploration has been carried out on several targets, including:

- The Baie Magnetite Nord and Baie Magnetite Sud occurrences (iron, titanium and vanadium), herein referred to as the "North Zone" and "South Zone", respectively);
- The Sulphur Converting/Baie de l'Ours occurrence (gold, silver, copper, zinc, iron); and
- The Baie Magnetite Ouest occurrence (gold).

This Section only documents the historical work undertaken on the North and South zones, as summarized in Table 6-1. The work carried out on the other occurrences is not considered relevant to the magnetite mineralization that is of interest to Voyager. Details of the historical work on other occurrences on the Property can be found in the 2016 technical report (Larouche, 2016), available on SEDAR at:

https://www.sedar.com/GetFile.do?lang=EN&docClass=24&issuerNo=00025074&issuerType=03&projectNo=02549636&docId=4008373

**Table 6-1: Summary of Historical Work on Magnetite Occurrences at the Mont Sorcier Property**

| Year | Company | Work | Results |
|---|---|---|---|
| 1929 to 1930 | Dome Mines Ltd | Trenching<br>Drilling | • 8 channel samples (30 m each)<br>• 5 DDH (115 to 330 m)<br>• Description of 300-m-long mineralization interpreted as a sulphide deposit (pyrite, pyrrhotite and magnetite, and subordinate amounts of chalcopyrite and sphalerite) along the contact of an anorthosite batholith (North Zone).<br>• A sample described as representative material assayed 36.66% iron, 33.28% sulphur and 0.93% zinc<br>**GM-01723** |
| 1950 | Cambridge Syndicat Prop | Field exploration and sampling | • 6 samples grading from 27.7 to 69.1% Fe and 0 to 0.86% Ti<br>• GM-01222 |
| 1955-1957 | Roycam Copper Mines Ltd | Geological and geophysical surveys<br>Trenching | • 15 channel samples (3 m each) with average values of 30.67% Fe and 1.32% Ti<br>• 6 DDH totalling 900 m (MS57-01 to 06)<br>• Description of a zone of heavily disseminated and massive blobs of fine- to |

| | | | |
|---|---|---|---|
| | | Drilling | medium-grained magnetite over a width of 155 m, a length of 1,700 m and a depth of 150 m (North Zone)<br>**GM-04600, GM-05190-B, GM-05537, GM05861** |
| 1958-1961 | Sulphur Converting Corporation | Mineralogical, petrographic and 60-element semi-quantitative spectrographic analyses<br>Chemical analyses for iron and sulphur<br>Metallurgical testwork | • 10 samples analyzed; the results improved the understanding of the zone geology and composition<br>• Flotation and magnetic separation tests on a 2-kg sample<br>**GM10836, GM-12621, GM-21163** |
| 1961 to 1975 | Campbell Chibougamau Mines | Magnetic and electromagnetic surveys<br>Geological mapping and trenching<br>Geochemistry<br>Drilling and sampling | • 73 holes drilled for 13,767 m on the North and South zones (FE-01 to 68; FN-46 to 68; FS-41 to 69; MS74-SC-74-1 to 4)<br>• Potential for significant magnetite layers (Fe+Ti+V) confirmed within the Lac Dore Complex<br>• Historical resource estimate (non-compliant with NI 43-101) of 270 Mt grading 28% Fe (1)<br>**GM-17227, GM-17300, GM-19218, GM-21163, GM-25694, GM-28547, GM-28549, GM-30635, GM-30764** |
| 2010 | Apella Resources Inc. | Magnetic survey | • Improved definition of zone extensions |
| 2012 to 2016 | Chibougamau Independent Mines Inc. | Drilling | • 2 DDH (MS-13-17, MS-13-19)<br>• Both holes intercepted mineralization |

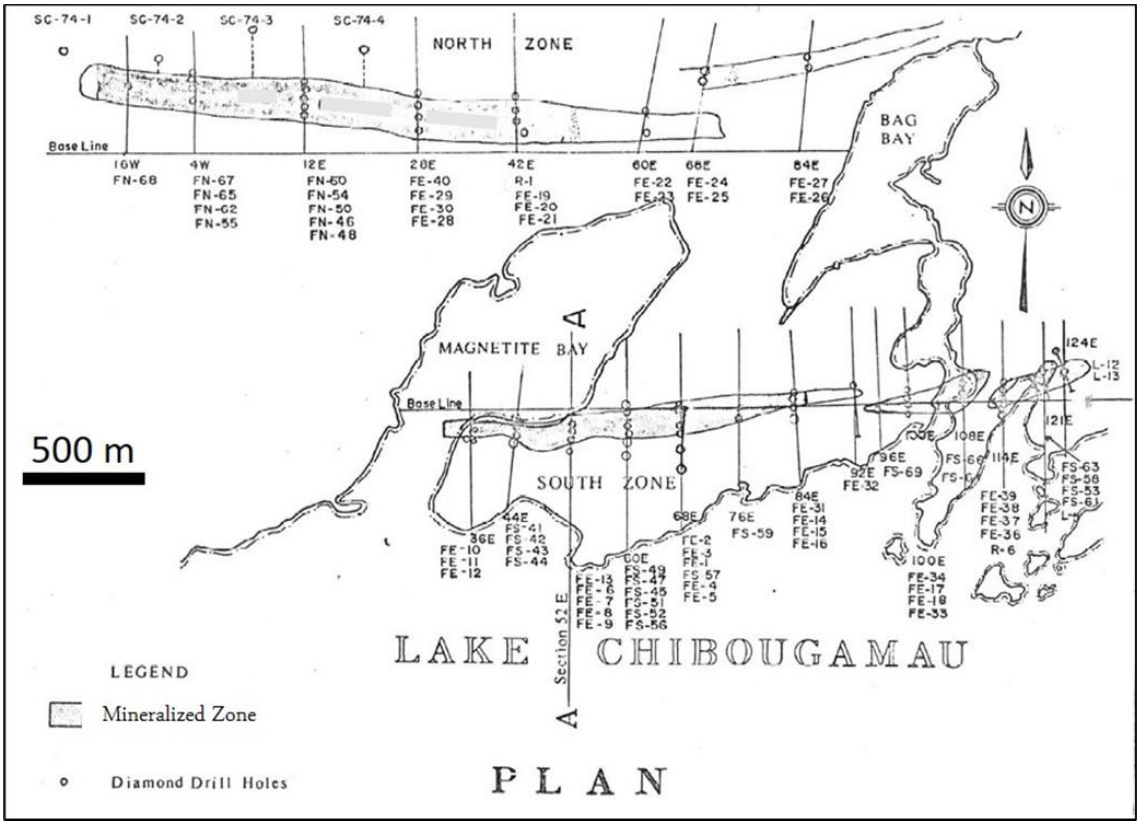
Note: This list is not comprehensive.

1. These "resources" are historical and should not be relied upon. It is unlikely they conform to current NI 43-101 criteria, CIM Definition Standards, or CIM Guidelines, and they have not been verified to determine their relevance or reliability. They are included in this section for illustrative purposes only and should not be disclosed out of context.

## 6.1 Campbell Chibougamau Mines Limited - Exploration (1961 to 1975)

The bulk of historical work was carried out by Campbell Chibougamau Mines Ltd ("Campbell") in 1961, from 1965 to 1969 and from 1974 to 1975. The exploration programs investigated the potential of the magnetite layers on the Property for iron resources. Work included a ground magnetic survey, geological mapping, electromagnetic surveys, geochemistry, trenching, surface diamond drilling, and sampling and assaying.

Between 1963 and 1966, Campbell drilled 69 holes totalling 12,773 m on the North Zone and South Zone. The holes were generally vertical and drilled on north-south sections (Figure 6-1). Historical data are available as PDF documents, showing detailed drill logs and assay data for each drill hole.



From Campbell Chibougamau Mines Ltd, 1974

**Figure 6-1: Map of Campbell's Historical Drillhole Locations**

The work performed by Campbell confirmed the potential of significant magnetite layers (Fe+Ti+V) within the Lac Dore Complex, a differentiated mafic-ultramafic intrusion. The North Zone has been drill-tested over a length of 1.8 km and the South Zone over 1.9 km. The average true width of the North Zone intercepts reached up to 137 m, and up to 61 m in the South Zone. Both structures remained open at depth.

In the 1970s, Campbell re-evaluated the project and created composite samples from the 1963–1966 drill cores. These composite samples were milled to 95% passing -325 mesh (44 µm). Magnetic separates were created using Davis Tube testing, and the concentrates were assayed for Fe, $TiO_2$ and $V_2O_5$.

In 1974, Campbell prepared an "ore reserve" estimate for the magnetite layers within the project area. Using a cut-off grade of 17.0% Fe (or 24.3% $Fe_2O_3$), the estimate totalled 274.4 Mt grading 29% Fe (172 Mt at 30% Fe for the North Zone, 103 Mt at 27.4% Fe for the South Zone). The estimate was completed using polygonal methods and excluding polygons (or blocks) with 1.75% $TiO_2$ in the concentrate.

***These "reserves" are historical and should not be relied upon. It is unlikely they conform to current NI 43 101 criteria, CIM Definition Standards, or CIM Guidelines, and they have not been verified to determine their relevance or reliability. They are included in this section for illustrative purposes only and should not be disclosed out of context.***

## 6.2 Campbell Chibougamau Mines Ltd. – Metallurgy (1963 to 1975)

Campbell carried out several phases of historical metallurgical testwork during this period, including mineralogy, magnetite concentration tests, autogenous grinding tests, pelletizing tests and blast furnace smelting tests.

Magnetite concentration tests (Davis Tube) were performed on fine grinds of 95% passing 325 mesh (44 µm) and 98% passing 325 mesh. These results showed that an acceptable concentrate grade of 66% Fe was produced at 95% passing 325 mesh, but this could be improved to 68.5% to 69% Fe by regrinding to 98% passing 325 mesh.

The Davis Tube testwork was followed by the magnetic separation of two bulk samples (35 t each) to emulate Davis Tube testwork on a larger scale. Separation included magnetic cobbing (rejection of waste) on samples ground to minus 10 mesh (2 mm), then regrinding the cobbed concentrate to 95% passing 325 mesh and upgrading using two-stage magnetic separation. One concentrate sample was further reground to 98% passing 325 mesh and subjected to an additional magnetic separation stage. The results are summarized in Table 6-2.

**Table 6-2: Campbell Bulk Samples Metallurgical Testwork Results (Grinding Size v. Concentrate Grade)**

| Grind (% -325 mesh) | Concentrate grade (% Fe) | Iron recovery to concentrate (%) |
|---|---|---|
| 94.1 | 66.5 | 83.0 |
| 95.5 | 66.7 | 84.3 |
| 98.0 | 68.5 | 82.4 |
| 98.8 | 68.5 | 81.3 |
| 94.8 | 66.7 | 89.5 |

## 6.3 Apella Resources Inc. – Geophysics (2010)

In 2010, Apella Resources Inc. (a company that had an option on the Property) contracted AeroQuest International Ltd ("Aeroquest") to conduct an airborne magnetic survey using a helicopter-borne tri-axial gradiometer. The survey was flown at a nominal instrument terrain clearance of 30 m and a line spacing of 100 m, with 50 m infill lines over the core of the zones (Figure 6-2). Products included total magnetic intensity and measured vertical gradient.

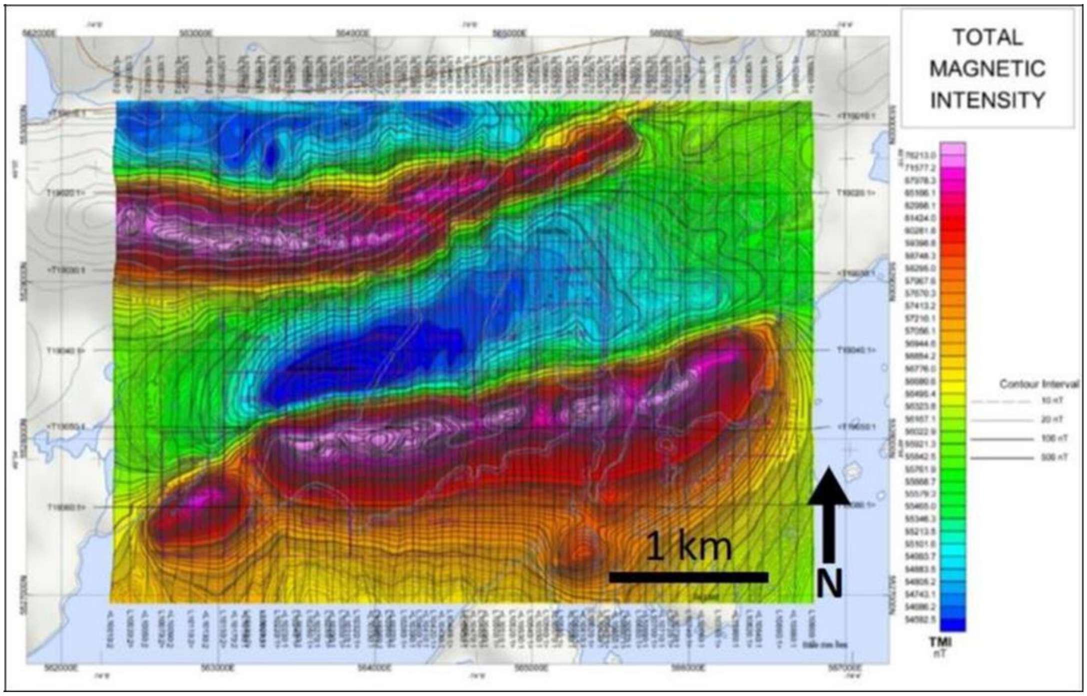


**Figure 6-2: Map of the 2010 Magnetic Survey**

## 6.4 Chibougamau Independent Mines Inc. – Drilling (2013)

In 2013, Chibougamau Independent Mines Inc. drilled two (2) holes: MS-13-17 (on the North Zone) and MS-13-19 (on the South Zone). Voyager is in possession of this drill core and has verified and surveyed the collar locations.

# 7. Geological Setting and Mineralization

The information in this Section was partly based on the 2020 NI 43 101 report by CSA (Bartsch et al., 2020) and on a scientific article by L. Mathieu (Mathieu, 2019).

## 7.1 Regional Geology

The Project is located at the northeast end of the Abitibi Sub-Province, also known as the Abitibi greenstone belt, the world's largest contiguous area of Archean volcanic and sedimentary rocks and host to a significant number of mineral deposits. It covers a vast area of approximately 500 km x 350 km in the southeastern portion of the Archean Superior craton (Monecke et al., 2017). The Precambrian rocks in the area are commonly covered by an overburden of Quaternary glacial deposits of variable thickness.

The Abitibi greenstone belt is primarily composed of east-trending submarine volcanic packages, which largely formed between 2795 Ma and 2695 Ma (Ayer et al., 2002; Leclerc et al., 2012). The volcanic packages of the belt are folded and faulted and typically have a steep dip, younging away from major intervening domes of intrusive rocks (Monecke et al., 2017). Major, crustal-scale, east-trending fault zones are prominent in the Abitibi greenstone belt (Figure 7-1).

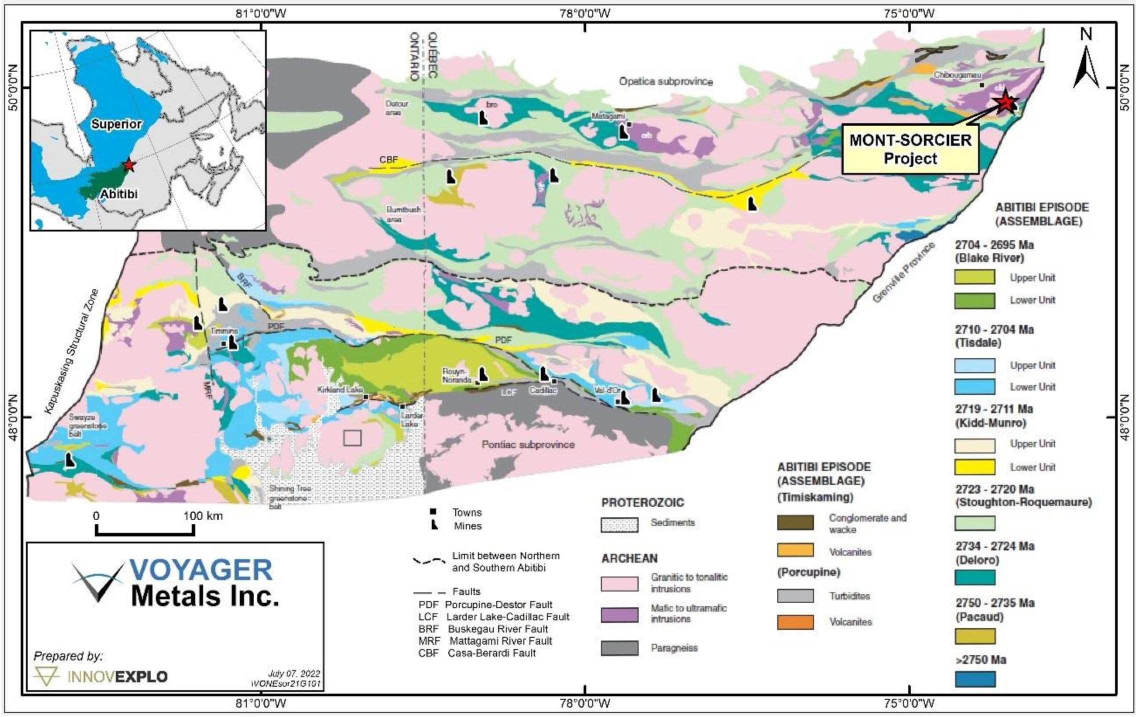


**Figure 7-1: Geologic Map of the Superior Province**

## 7.2 Chibougamau Area Geology

The Chibougamau area contains some of the oldest volcanic rocks of the Abitibi Subprovince, i.e., the ~2799–2791 Ma Chrissie Formation (Leclerc et al., 2017). These rocks are overlain by two volcanic cycles (Roy Group), with each cycle comprising a thick accumulation of mafic to intermediate lava flows topped by felsic eruptive centers. The Roy Group is overlain by the ~2700 Ma basin-restricted sedimentary rocks of the Opémisca Group (Polat et al, 2018; Leclerc et al, 2017). The first volcanic cycle (cycle 1) corresponds to the Obatogamau and Waconichi formations. The undated Obatogamau Formation is mostly composed of basaltic to andesite lava flows intercalated with evolved volcanic centers. The ~2730–2726 Ma Waconichi Formation (Leclerc et al., 2017) is composed of intermediate to felsic volcanic rocks with tholeiitic to calc-alkaline affinities. The Waconichi Formation contains several exhalative units (chert and iron formations) and sulphide accumulations related to volcanogenic massive sulphide ("VMS") systems (e.g., the Lemoine mine) (Mercier-Langevin et al., 2014). The second cycle (cycle 2) corresponds to the tonalite and diorite of the Chibougamau pluton.

## 7.3 Lac Dore Complex (LDC)

A large layered mafic complex, the Lac Doré Complex ("LDC"), has been emplaced into the rocks of the first volcanic cycle. The LDC can be divided in three parts (Figure 7-3):

- North-east ("NE"): containing the Mont Sorcier Project
- South ("S"), containing the Lac Doré Project (VanadiumCorp Resources Inc.)
- North-west ("NW"): containing the Armitage Project (Blackrock Metals Inc.)

The NW and SE parts of the LDC are in contact with the Waconichi Formation, whereas its SW parts is in discordant contact with the Opémisca Group. The NE part is in contact with the David Member, an accumulation of andesitic basalt lava flows that form the upper part of the Obatogamau Formation (Leclerc et al., 2017). U-Pb dating of zircon provided ages of 2727.0 ±1.3 Ma and 2728.3 +1.2/ 1.1 Ma for rocks located in the upper part of the LDC (Mortensen, 1993). The LDC thus formed during volcanic cycle 1, and it is locally brecciated and intruded by cycle 2 tonalite and diorite of the Chibougamau pluton.

The LDC is a stratiform intrusive complex composed primarily of (meta-) anorthosite with lesser amounts of gabbro, anorthositic gabbro, pyroxenite, dunite and harzburgite. The anorthosite represents 70–90% by volume of the lithologies present within the LDC. A younger granitic phase of the LDC is emplaced in the centre of the LDC and obscures the mafic lithologies in this area.

The LDC stratigraphy comprises four zones (Allard, 1976):

- The lowermost anorthositic zone is composed of anorthosite and gabbro in variable proportions (including gabbroic anorthosite and anorthositic gabbro). A maximum thickness of 3,000 m has been estimated by Allard (1976).
- The layered zone is composed of bands of ferro-pyroxenite, magnetite-bearing gabbro, magnetitite (rock consisting of at least 90% magnetite) (containing titanium and vanadium) and anorthosite. The maximum thickness has been estimated at 900 m (Allard, 1976). The rocks of the layered zone pass gradually into the underlying anorthosites and gabbros of the anorthositic zone.
- The granophyre zone (at the top) is composed of soda-rich leuco-tonalite.
- The border zone, found in contact with the volcanic rocks of the Roy Group (Waconichi Formation), forms the margin of the complex. This border zone is discontinuous and composed of gabbro and anorthosite locally containing a considerable percentage of quartz.

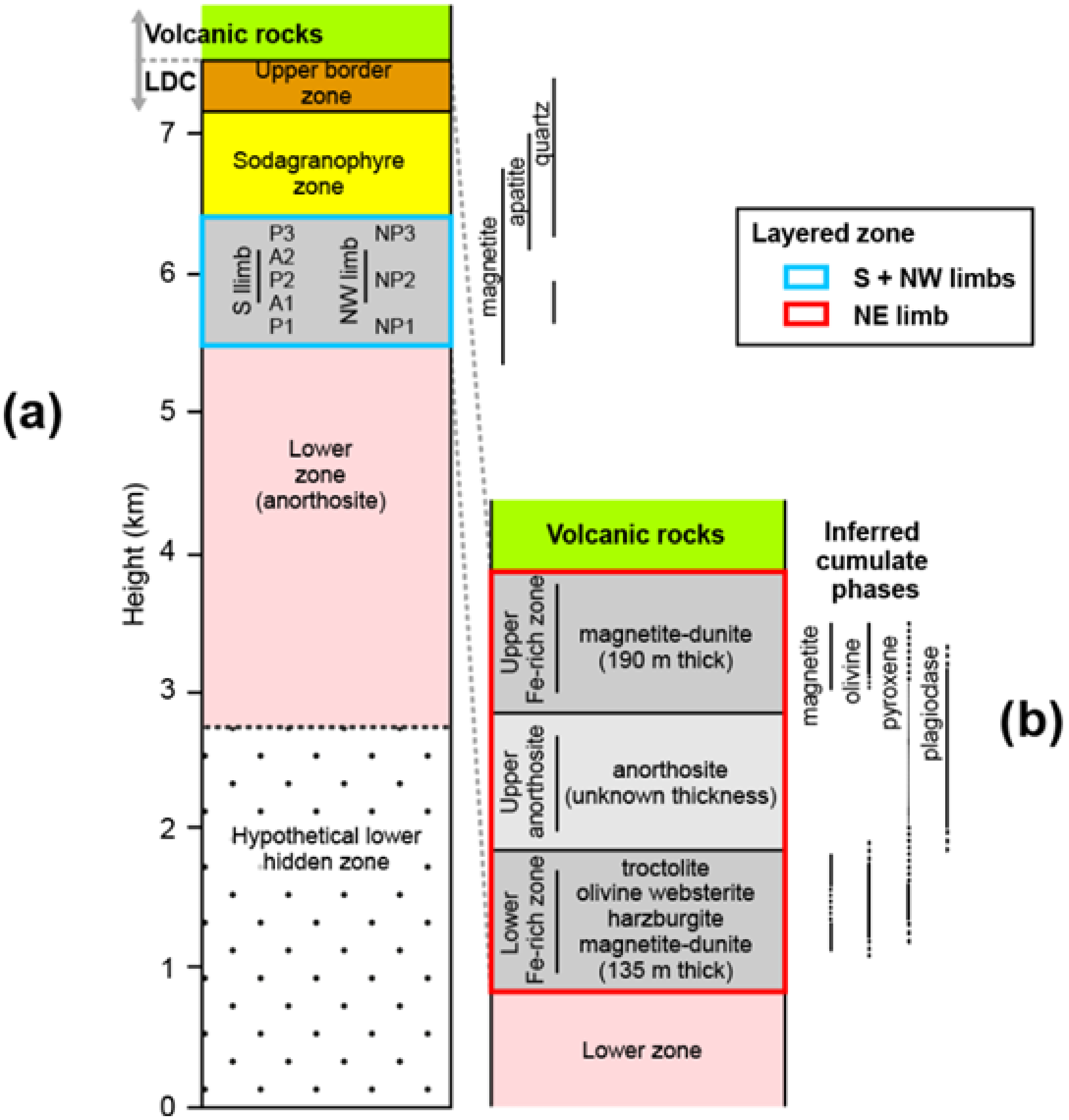
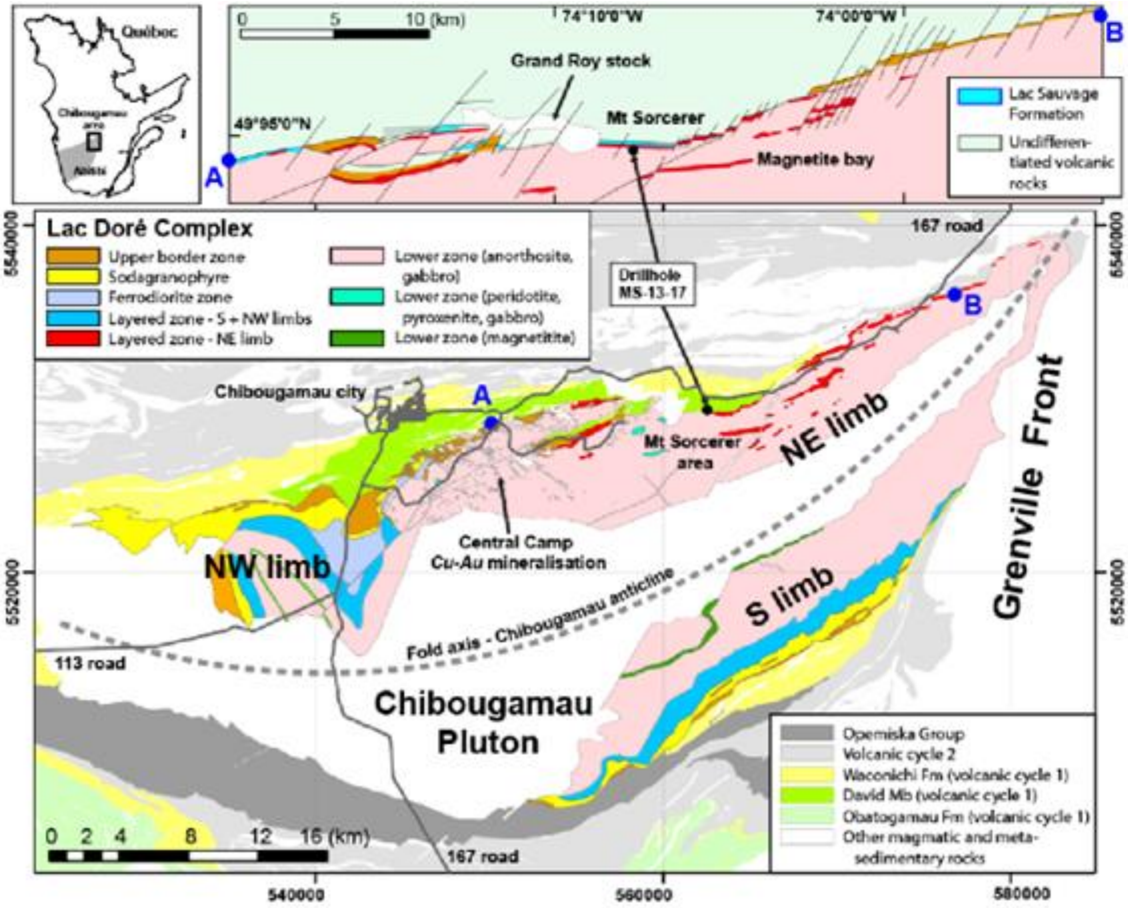


**Figure 7-2: Stratigraphic Column of Lac Doré Complex (LDC) Showing Units Observed in (a) NW and S limbs of LDC (from Allard, 1976) and (b) in its NE limb (from Lapollo, 1988)**

In the S limb, the layered zone is divided into the P1, P2, and P3 members dominated by magnetite, chlorite,and amphibole, and the A1 and A2 members dominated by albite, epidote, actinolite, and chlorite (Figure 7-2, a). In the layered zone of the S limb, V, Cr and Ni decrease upward, but Ti increases upward (Allard, 1976; Arguin et al., 2018; Taner et al., 1998; Arguin et al., 2017). In the NW limb, the anorthosite members are missing and the magnetite-, chlorite-, amphibole-, albite-, and epidote-bearing units are divided into the NP1, NP2, and NP3 members (Baskin, 1975). In the NE limb, the possible equivalent of the layered zone (Allard,

1976) is discontinuous and consists of one anorthosite unit and two Fe-rich units dominated by serpentine, magnetite and chlorite (Lapollo, 1988) (Figure 7-2, b).



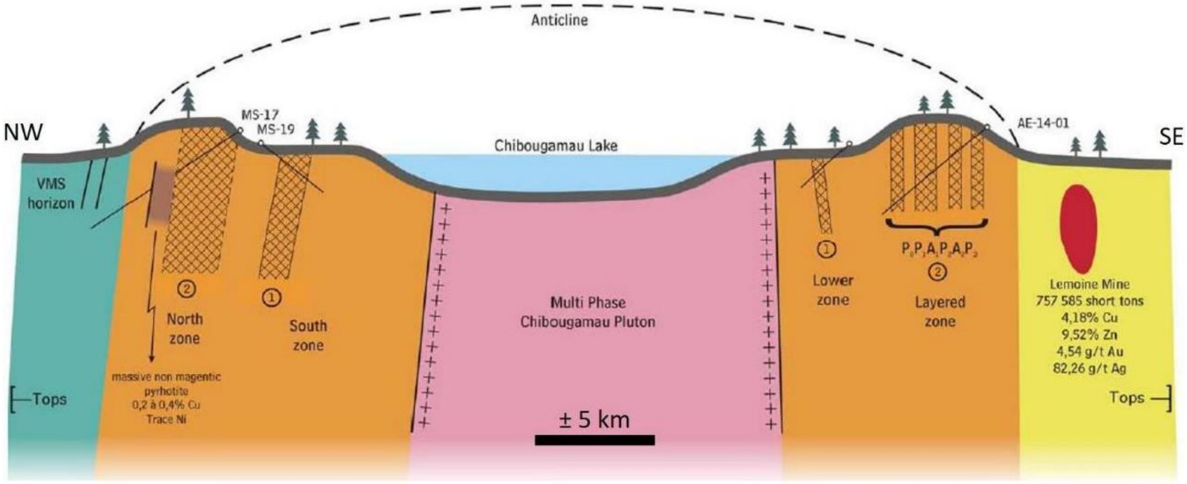
From Mathieu, 2019

**Figure 7-3: Regional Geology of the Chibougamau Area and the LDC**

### 7.3.1 Regional Tectonics and Structure

All rock units in the area were affected by multiple deformation events and are folded into a succession of east-west trending anticlines and synclines. Lithological units tend to have steep to subvertical dips. The LDC was folded into a broad east-west trending anticline (Figure 7-3) during the compressive accretion of the Abitibi-Wawa Terrane between 2.698 Ga and 2.690 Ga (Daigneault and Allard, 1990). The LDC has also been affected by deformation (and low-grade metamorphism) owing to the much younger Grenville Orogeny (c. 1.1 Ga), along the eastern edge of the Superior Province.

Faults and shear zones in the region strike between northeast and east, although northwest-striking faults are also reported. Large-scale synclines and anticlines are generally bound by regional synvolcanic/sedimentary and syntectonic east-west faults. Late northeast to north-northeast faults dissect the region and are either associated with or reactivated by the Grenvillian event (Daigneault and Allard, 1990).



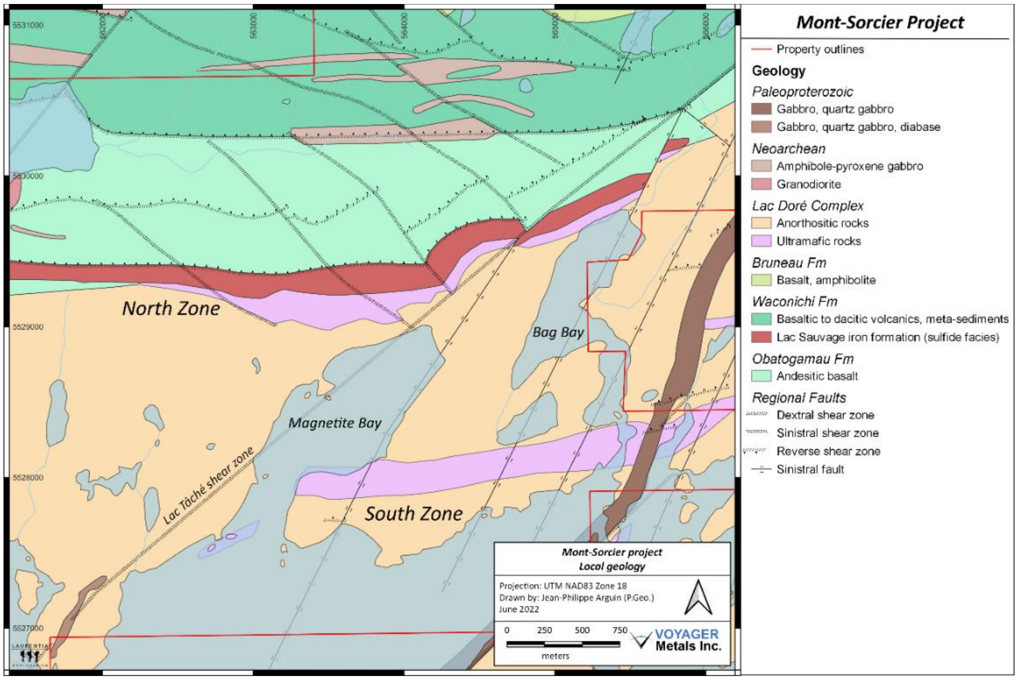
Source: Voyager, 2018

**Figure 7-4: Schematic Northwest-Southeast Cross Section through LDC**

## 7.4 Local Geological Setting (Project Area)

The Project area straddles the contact between the mafic magmatic rocks of the LDC to the south and sediments and mafic volcanics of the Roy Group to the north (Figure 7-3; Figure 7-5). Within the Property, the volcanic stratigraphy of the Roy Group comprises predominantly basaltic to andesitic rocks of the Obatogamau Formation, and basalt, andesitic basalt, mafic to felsic volcaniclastic rock, dacite, rhyolite, BIF, chert, and argillite of the Waconichi Formation. The LDC was emplaced into this volcano-sedimentary package, and both are crosscut by mafic to ultramafic sills and younger plutonic intrusions ranging from tonalite to carbonatite. The BIFs of the Waconichi Formation are particularly notable in the Project area, as the LDC can be seen in contact with them, and in places, assimilated in the LDC. A small felsic plug, probably related to the younger Lac Chibougamau batholith, is present at the western boundary of the Property.

The Project area is largely underlain by anorthosites of the LDC, which grade into the iron-rich ultramafic units through a crude stratigraphy comprising (from base to top): anorthosite, gabbro, magnetite-gabbro, magnetite-pyroxenite, magnetite-peridotite, magnetite-dunite and centimetre-scale magnetitite layers. The presence of magnetite is strongly associated with ultramafic units. Magnetite is locally observed within anorthosites; however, it occurs only as minor disseminations or veinlets.



From Voyager, 2022

**Figure 7-5: Geological Map of the Mont Sorcier Property**

## 7.5 Mineralization on the Property

### 7.5.1 North and South Zones

Two significant mineralized zones are found on the Property, the North Zone and the South Zone.

The North Zone is identifiable in the field and through airborne magnetics over a strike length of approximately 4 km. It appears to be between 100 m and 300 m thick, forming a roughly tabular subvertical body that strikes east-west and extends to depths of at least 500 m based on drilling. The North Zone has been drilled over approximately 4.0 km of its strike length. Possible extensions of the North Zone could be found to the east, as well as down-dip.

The South Zone, identifiable over approximately 3 km, strikes east-northeast to west-southwest. It has been mapped in detail and drilled over its entire strike length. It is thought to form a tight synclinal structure, with a shallow plunge to the west-southwest. It is 100–200 m thick and extends to a depth of at least ~300 m in the western part of the zone, shallowing towards the east. Although the total depth of mineralization has not been fully tested, it is not expected to continue to depths significantly deeper than currently defined. The South Zone has been cut by several small northeast-trending faults, a larger northeast-trending fault with a dextral displacement of ~150 m, and a north-northeast trending dyke ~150 m thick.

The North Zone and South Zone had been interpreted by Dorr (1966) as representing the same stratigraphic unit that has been folded into kilometre-scale parasitic folds by the upright folding that affects the region, with the North Zone representing the north-dipping limb of an anticlinal fold structure, and the South Zone representing the hinge zone of a syncline (Figure 7-6).

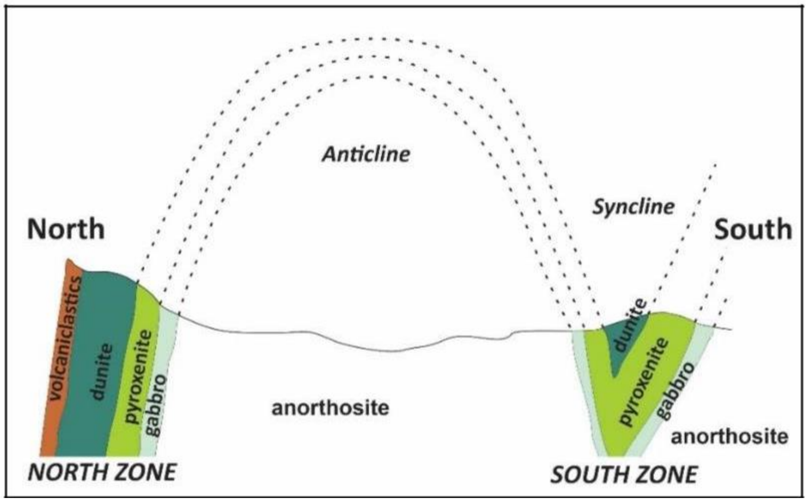


**Figure 7-6: Structural Relationship between the North Zone and South Zone (after Dorr, 1966)**

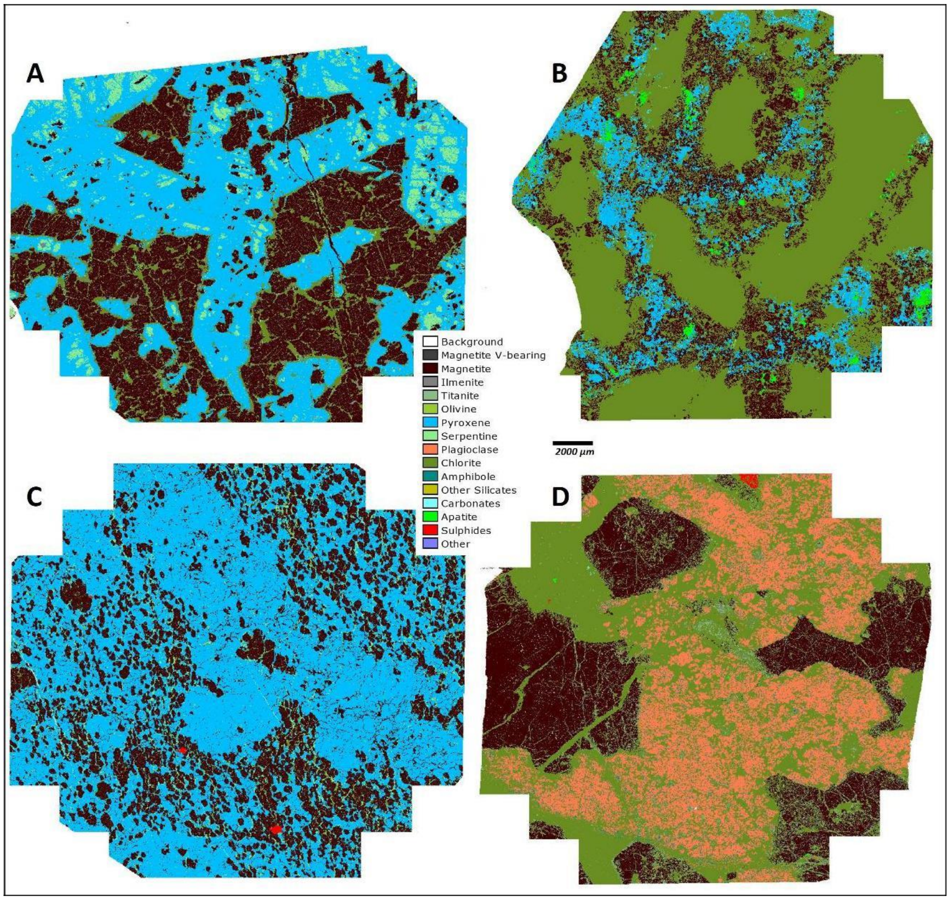
The North and South zones are interpreted to have formed from the crystallization of vanadiferous titanomagnetite ("VTM") that was triggered when mafic magmas of the LDC assimilated a carbonate-facies iron formation (the Lac Sauvage iron formation) (Mathieu, 2019; see Section 8). In both zones, magnetite is disseminated within ultramafic rocks (dunite, peridotite pyroxenite), and the ultramafic VTM-bearing lithologies are surrounded by mafic units (gabbro and anorthosite).

### 7.5.2 Mineralogy

In early 2018, Voyager commissioned ActLabs to undertake mineralogical studies on selected samples using QEMSCAN to determine the liberation characteristics of the magnetite and associated minerals. In late 2018, Voyager commissioned SGS Laboratories to carry out additional QEMSCAN mineralogical characterization of selected magnetite-bearing samples to investigate any alteration, characterize the mode of occurrence of magnetite, and gain insight into the formation of the magnetite-rich ultramafic rocks (Glossop and Prout, 2019).

Several of the samples analyzed by SGS show fresh, igneous textures with limited alteration of pyroxene and olivine (Figure 7-7). In pristine samples, magnetite often displays an interstitial texture, filling spaces between subhedral to euhedral pyroxene (Figure 7-7A) and olivine crystals (Figure 7-7B). Elsewhere, magnetite occurs as minute grains within pyroxene (Figure 7-

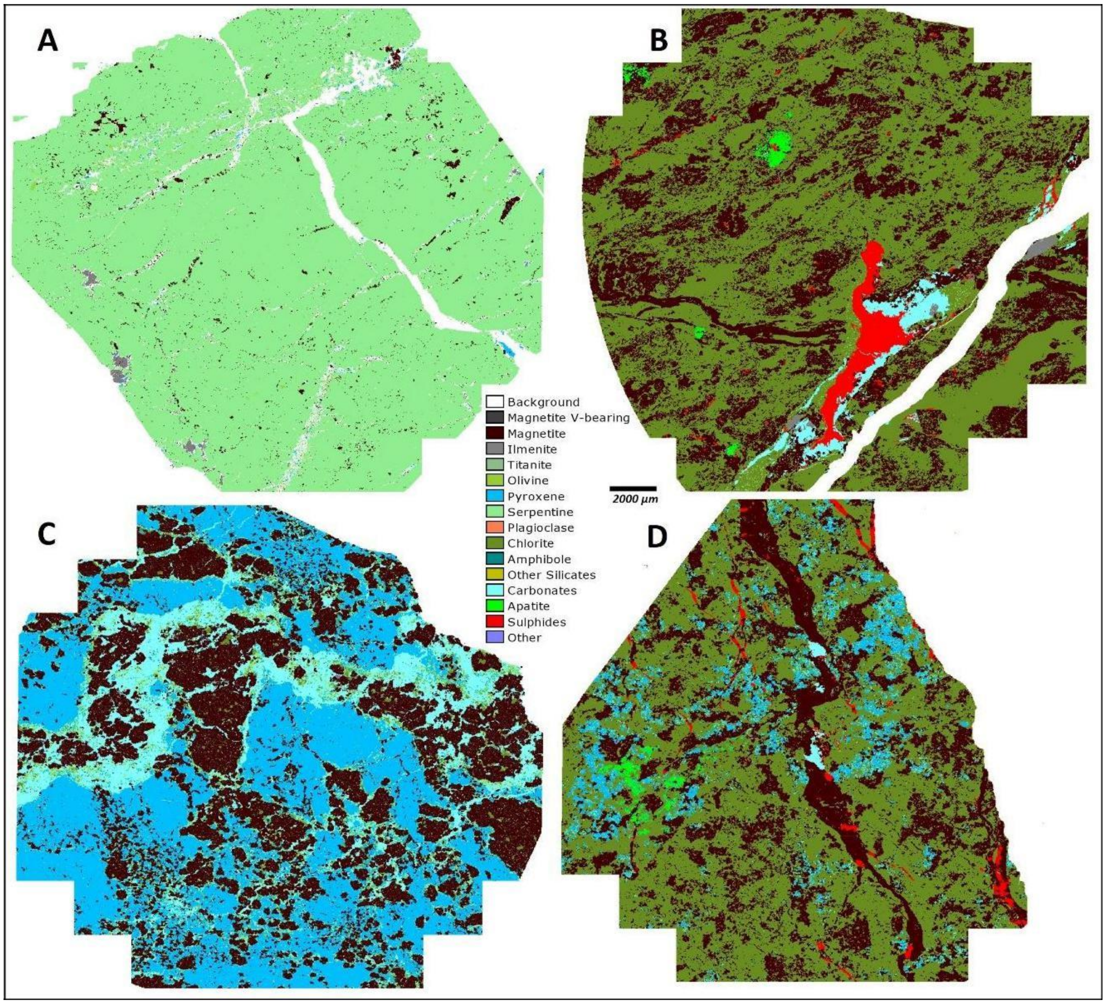
7C) and olivine grains (Figure 7-7D). Large subhedral pyroxene crystals contain few magnetite inclusions (Figure 7-7C), and some samples display younger magnetite veins in addition to the disseminated igneous magnetite (Figure 7-7D).



A. Interstitial magnetite associated with subhedral to euhedral pyroxene.
B. Large, magnetite-free chlorite pseudomorphs (after pyroxene) surrounded by an interstitial mix of extremely fine-grained magnetite and pyroxene.
C. Fine-grained magnetite grains within pyroxene.
D. Interstitial magnetite between subhedral grains of plagioclase feldspar that has been partially altered to chlorite.

**Figure 7-7: SGS QEMSCAN Images of Magnetite Bearing Samples (Glossop and Prout 2019)**

The more deformed or altered samples (Figure 7-8) show complete serpentinization of olivine (Figure 7-8A), as well as evidence for deformation in the form of small, intrafolial folds of magnetite (Figure 7-8B). In rare cases where olivine is still preserved, it is found as relict grains within an alteration matrix of carbonate and chlorite (Figure 7-8C). In some cases, secondary remobilized veins of magnetite crosscut altered samples and primary magnetite (Figure 7-8D).



A. Serpentine (after olivine) with fine-grained secondary magnetite.
B. Deformed magnetite bands within a chlorite sample. Note the small-scale folded magnetite bands.
C. Magnetite-bearing pyroxenite with a zone of carbonate (with chlorite), and other similar zones of carbonate surrounding magnetite crystals. Note that some fine-grained relict olivine is present within the carbonate-chlorite matrix.
D. Sample of chlorite (with minor unaltered pyroxene), as well as a vein a magnetite.

**Figure 7-8: SGS QEMSCAN Images of Altered and Deformed Samples (Glossop and Prout 2019)**

# 8. Deposit Types

## 8.1 VTM Deposits

Magnetite mineralization at the Mont Sorcier Project shows several similarities to other vanadiferous titanomagnetite ("VTM") deposits or ilmenite deposits associated with layered mafic intrusive complexes, such as the Bushveld Complex (South Africa) or the Skaergard Intrusion (Greenland).

VTM deposits are typically found in the upper, more fractionated portions of layered complexes. In the Upper Zone of the Bushveld Complex, the formation of VTM-enriched layers has been attributed to magma mixing events, resulting from either a breakdown of densely stratified liquid layers (i.e., overturn) or an influx of new magma (Harne and Von Gruenewaldt, 1995). The separation of dense, iron-rich magma owing to large-scale silicate liquid immiscibility has also been suggested. It may explain the occurrence of apatite-oxide layers in the upper portions of some layered mafic complexes (Van Tongeren and Mathez, 2012).

VTM and ilmenite deposits have been subdivided into ilmenite-dominant deposits (generally in massif-type anorthosite host rocks) and magnetite-dominant deposits (generally in layered intrusions within gabbroic host rocks; Gross, 1996).

Crystallization of magnetite is initiated when the evolving magma becomes sufficiently iron-enriched to form oxide minerals. The subsequent settling of magnetite crystals results in a localized lowering of the magma density from ~2.7 g/cm$^3$ to ~2.5 g/cm$^3$. This creates an inverted density stratification, resulting in the overturning of the magma and magma mixing, thereby precipitating additional magnetite. The repetition of this process leads to the formation of several stratified layers of magnetite, often with sharp bases and gradational upper contacts. Because vanadium is compatible in the crystal structure of magnetite, it fractionates into magnetite, thereby depleting the remaining magma of vanadium. This results in the lowermost magnetite-bearing units in layered complexes typically having the highest $V_2O_5$ values, with the vanadium content of the magnetite gradually decreasing upwards through the stratigraphy. Lower layers can have $V_2O_5$ contents of up to 3%, dropping to less than 0.3% in the upper layers. Conversely, titanium is incompatible and becomes more concentrated in the residual magma. The lower VTM layers have lower titanium contents (typically 7 to 12% $TiO_2$) than the upper layers (up to 20% $TiO_2$), where ilmenite and even rutile may be observed (Gross, 1996).

## 8.2 Lac Doré Complex Deposits

The parental magma of the Lac Doré Complex ("LDC") is generally viewed as tholeiitic (Allard, 1976; Baskin, 1975; Caty, 1970) and, according to trace element modelling, may have coexisted with a calc-alkaline magma (Bédard, 2009). The main cumulus phases are plagioclase, pyroxene, magnetite, ilmenite, and apatite (Baskin, 1975; Caty, 1970). The fO2 of the magma promoted the early crystallization of silicates (Allard, 1967). The delayed crystallization of large amounts of titanomagnetite implied an increase in fO2 that, according to observations made on other intrusions, could result from fractional crystallization, magma replenishment, and/or contamination (Zhang et al., 2012; Mungall et al., 2016). In the NW and S limbs, assimilation of Waconichi rocks would have modified the fO2 and promoted the crystallization of titanomagnetite in the layered zone (Daigneault and Allard, 1990). An alternative hypothesis is that the well-developed rhythmic layering of the layered zone of the NW and S limbs resulted from multiple injections of magma (Caty, 1970). A recent study focused on the S limb of the LDC also minimizes the importance of contamination. This study concluded that the crystallization and distribution of titanomagnetite were controlled by successive injections and mixing of magmas, crystal settling and sorting, and expulsion of interstitial melt during compaction (Arguin et al., 2018).

Although this conceptual model appears to explain the formation of the VTM-enriched units elsewhere on the LDC, the VTM mineralization at Mont Sorcier is unusual in several respects:

- It is associated with olivine-bearing ultramafic units with remarkably primitive compositions (Fo82–90: Mathieu, 2019)
- The VTM is anomalously low in titanium, with $TiO_2$ grades generally below 2%.

Following the model proposed by Allard and Lapallo (Allard, 1976; Lapollo, 1988), in combination with detailed studies of the chemistry of the VTM and host rocks at the Mont Sorcier Property, these unusual features have led Mathieu (2019) to propose that the formation of VTM mineralization at Mont Sorcier was triggered by assimilation of a carbonate-facies iron formation (the Lac Sauvage iron formation within the Waconichi Formation of the Roy Group). The assimilation of these iron-enriched, magnesium-bearing, and silicon-poor rocks would have desilicified and added iron-magnesium to an already iron-enriched, evolved basaltic magma and favoured the formation of magnesium-olivine (Mathieu, 2019). In addition, the assimilation of carbonate by magma is known to favour the crystallization of clinopyroxene over plagioclase and to induce $CO_2$ degassing. Oxidizing $CO_2$-bearing fluids may have favoured the crystallization of magnetite. Furthermore, the volatiles may also have promoted fast cooling rates, preventing prolonged magma differentiation, local vanadium-enrichment and magnetite settling (Mathieu, 2019).

The overall result is the formation of a broad layered zone of magnetite mineralization in which vanadium has a relatively homogeneous spatial distribution, in contrast to the rhythmic succession of centimetre- to metre-thick magnetitite and silicate-rich rocks that characterize the VTM deposits elsewhere within the LDC and within other layered complexes, but which are not observed at Mont Sorcier (Mathieu, 2019).

## 8.3 North Zone

Following the 2021 drilling campaign, the west and central part of the North Zone has been divided into two main zones (Arguin, 2022): Lower ("LZ") and Upper ("UZ"). The stratigraphic limit between the LZ and the UZ was established by the substantial chemical break between two distinct mineralogical domains (units 3 and 4). Both the LZ and the UZ are composed of distinct magnetite-bearing ultramafic units (or mineralogical domains). The LZ consists of units 1, 2 and 3, whereas the UZ is composed of units 4 and 5 (Figure 8-1). Table 8-1 summarizes the textural and mineralogical characteristics of all five units.

The east part of the North zone is quite different from the west and central part as the sub-division into five units is not observed. It is essentially composed of ferro-pyroxenite, which is bordered by a "minor envelope" that consists of an inner horizon of talc-peridotite (meta-dunite) and an outer horizon of gabbroic rocks. No massive sulfides were reported in the east part of the North zone (Arguin, 2022).

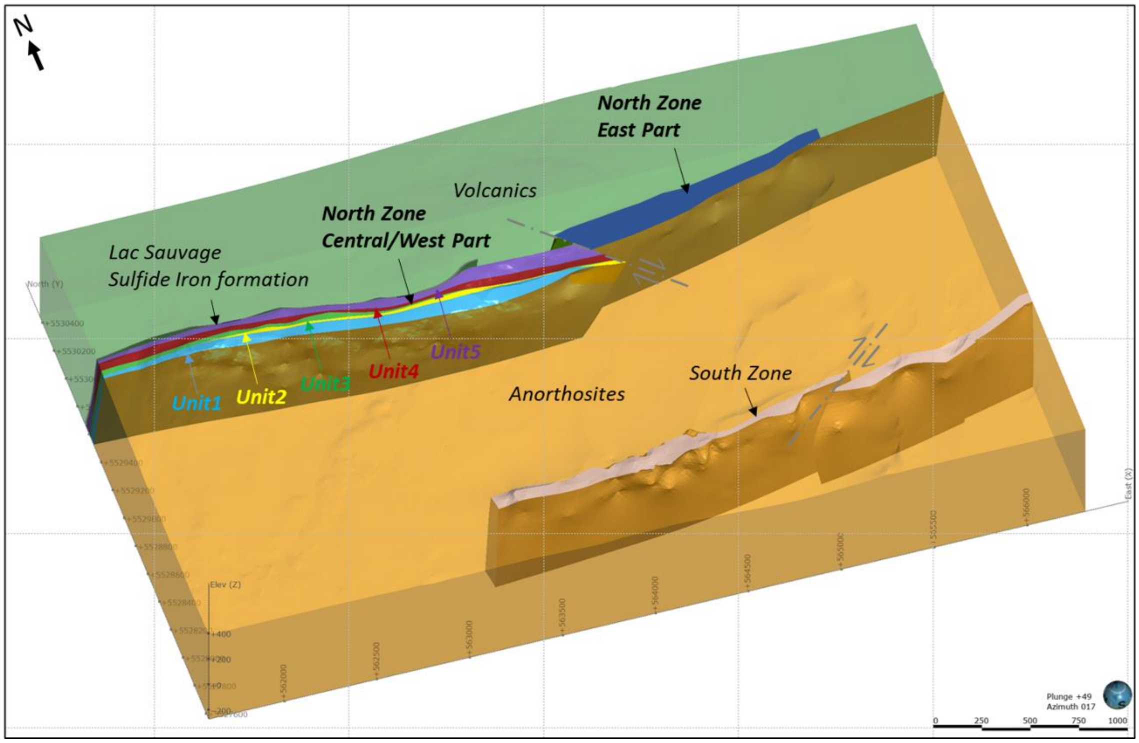


**Figure 8-1: Geological Model of the Mont Sorcier Project Showing the Distribution of Magnetite-Bearing Ultramafic Units in the North Zone**

Table 8-1: Summary of the Magnetite-Bearing Ultramafic Units of the North Zone

| Zone | Unit | Textures | Magnetite grain size | Magnetite habitus | Silicates |
|---|---|---|---|---|---|
| Upper Zone | Unit 5 | Brecciated (to massive) | Fine to medium | Disseminated or interstitial to breccia fragments | Chlorite (± talc) |
| | Unit 4 | Foliated or sheared | Medium | Disseminated, stretched along the foliation | Talc, chlorite |
| Lower Zone | Unit 3 | Massive, granular to intergranular | Medium to coarse | Disseminated, subhedral to euhedral crystals | Chlorite, Al-Ca silicates (± talc) |
| | Unit 2 | Porphyritic | Fine | Finely disseminated | Serpentine, chlorite (± amphibole) |
| | Unit 1 | Massive | Fine to medium | Disseminated, clustered | Serpentine (± chlorite, ± chrysotile) |

## Unit 1

Unit 1 is located at the base of the LZ, generally in contact with anorthosite. The silicate matrix consists of a greenish-grey to bottle-green mixture of very fine grains. The grain size makes the matrix minerals difficult to identify with the naked eye. Serpentine is most likely the dominant phase and appears to be accompanied by various amounts of chlorite and accessory talc.

The magnetite is mostly in the form of fine to medium grains, disseminated (Figure 8-2A) or sometimes clustered. Magnetite veins (or fracture fillings) are common but not dominant (Figure 8-2B). They are secondary in origin and result from an excess of iron during the serpentinization of olivine and orthopyroxene.

From Arguin, 2022.

A. Hole MSN-21-21: Disseminated grains of magnetite in a dark green matrix made of serpentine.

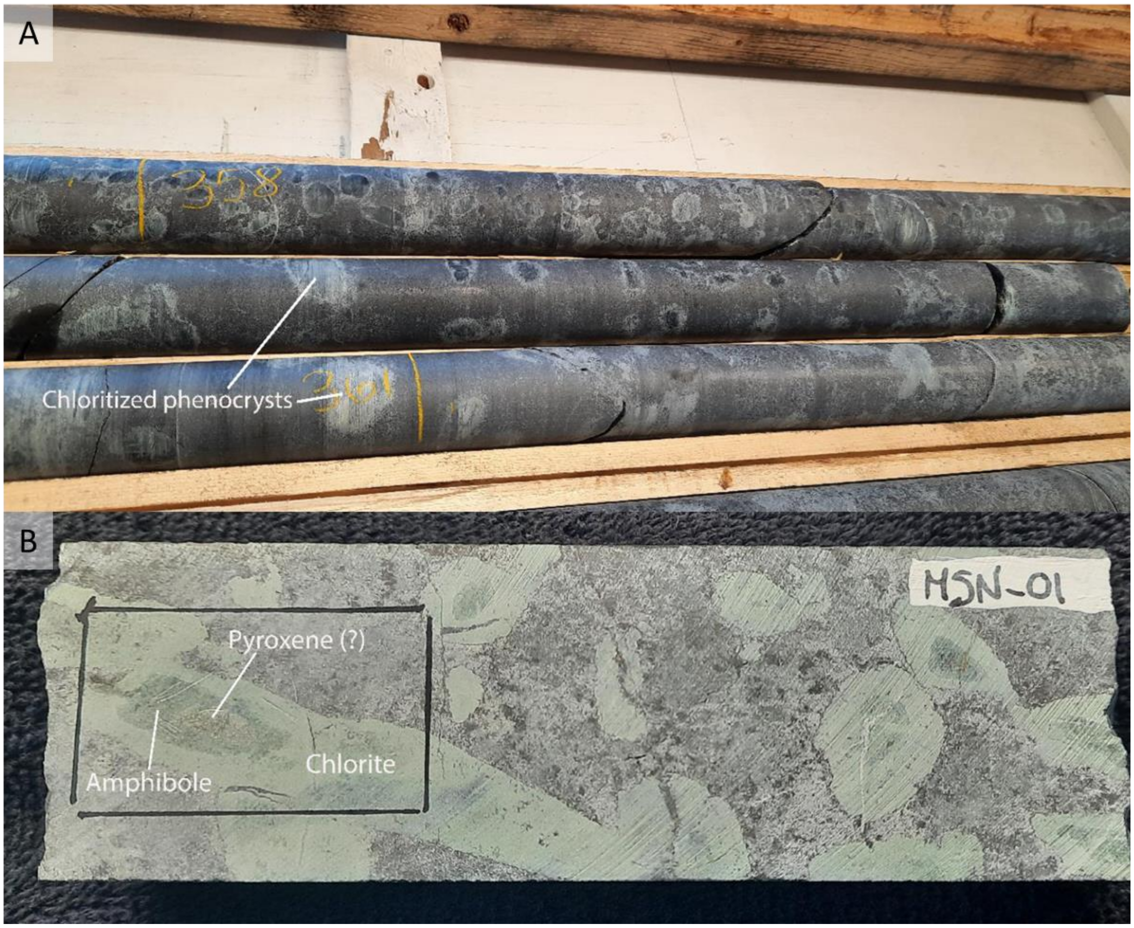
B. Hole MSN-21-32: Disseminated grains of magnetite in a dark green matrix, as well as some magnetite veins.

**Figure 8-2: Example of Core from Unit 1**

### Unit 2

The Unit 2 represents the smallest volume of the North Zone units (~7%). It is characterized by 10-40 vol.% of centimetric, subrounded to euhedral-prismatic phenocrysts. The crystals are pseudomorphosed, either completely replaced by chlorite or displaying mineral zoning composed of (from rim to core) chlorite, green amphibole and possibly altered pyroxene (Figure 8-3).

The magnetite grains are finely disseminated throughout the matrix, of which the silicate minerals are mainly serpentine and chlorite.



From Arguin, 2022.

A. Hole MSN-21-32: Subrounded, chloritized phenocrysts in a fine-grained matrix made of magnetite and ferro-magnesian silicates.

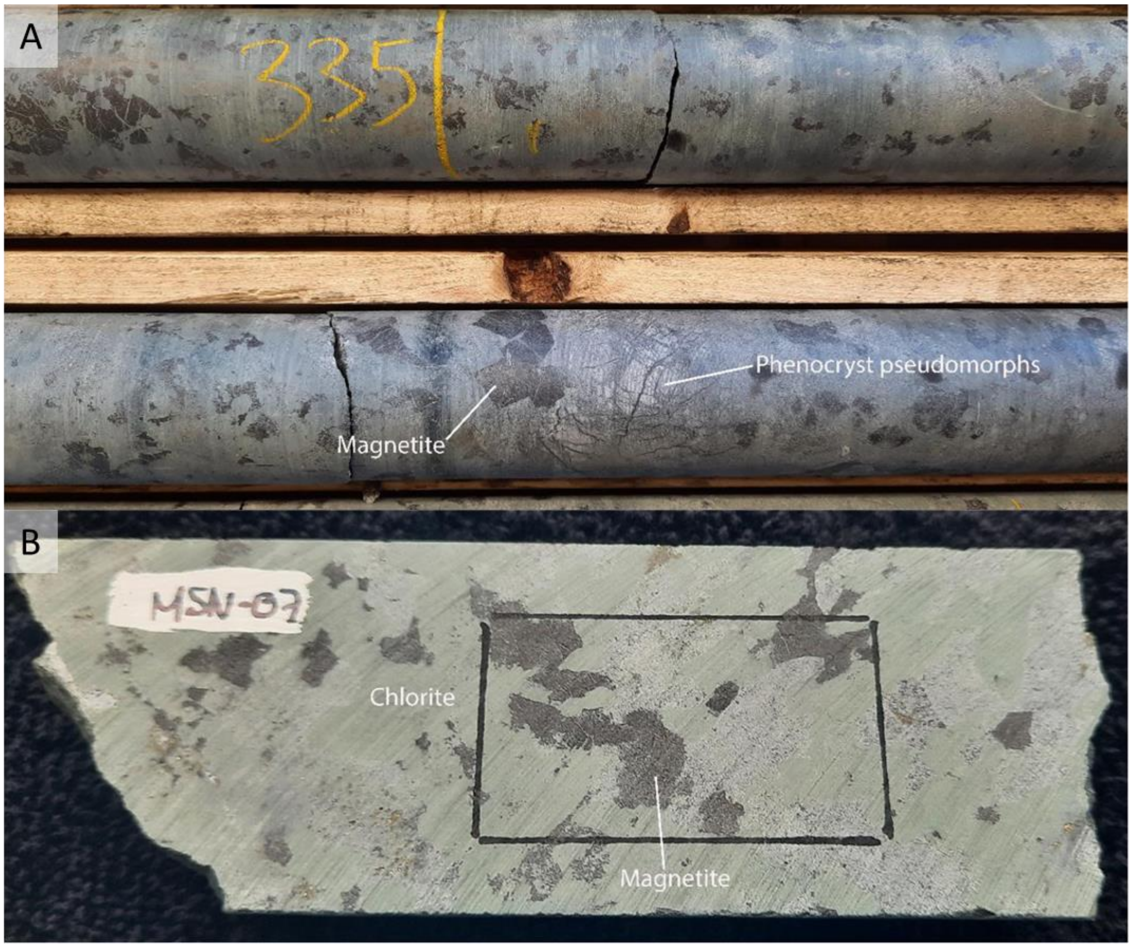
B. Hole MSN-21-28: Phenocrysts with mineral zoning composed (from rim to core) of chlorite, green amphibole and possibly altered pyroxene. The phenocrysts are hosted in a fine-grained matrix composed of magnetite and ferro-magnesian silicates.

**Figure 8-3: Example of Core from Unit 2**

### Unit 3

Unit 3 is generally located at the top of the LZ. The rock is medium to coarse grained and shows hypidiomorphic granular to intergranular textures. It contains up to 60-70 vol.% of chlorite pseudomorphs, possibly after pyroxene, as well as magnetite and white-colored silicates. Phenocryst pseudomorphs were found as accessory phases in Unit 3. These are white to pale grey in color and shows a well-developed network of fractures filled with magnetite (Figure 8-4).

The magnetite content of Unit 3 is generally lower than that of other North Zone units. Magnetite is fractured, either interstitial to chlorite (anhedral) or in the form of subhedral to euhedral (cubic) crystals. The grains are usually 0.3-1.0 cm in size but can reach up to a few centimetres. Magnetite is commonly accompanied by accessory disseminated ilmenite.



From Arguin, 2022.

A. Hole MSN-21-16: Anhedral to euhedral cubic magnetite crystals. White-colored phenocrysts with abundant fractures filled with magnetite.

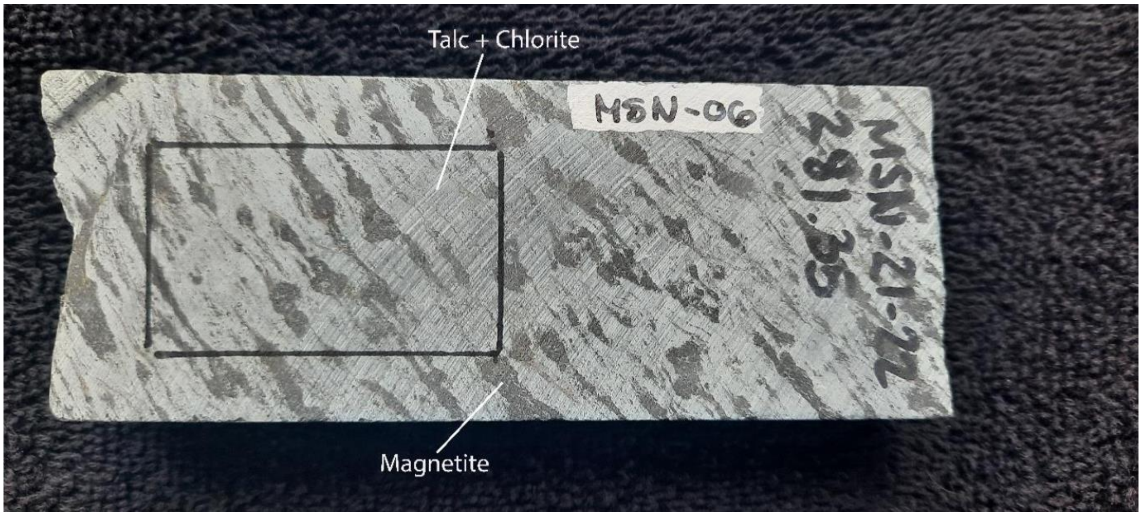
B. Hole MSN-21-19: Chlorite pseudomorphs and white-coloured silicates with interstitial magnetite.

**Figure 8-4: Example of Core from Unit 3**

## Unit 4

Unit 4 is located at the base of the UZ. The rock is usually characterized by a well-developed foliation with shear band-like features. The foliation is marked by parallel arrangement of magnetite grains hosted in a fine-grained matrix of platy talc and chlorite (Figure 8-5). More massive textures are also present sporadically in Unit 4.

Magnetite is generally medium-grained and stretched along the foliation planes. It is commonly accompanied by pyrrhotite, which is likely formed at the expense of magnetite as evidenced by replacement textures.



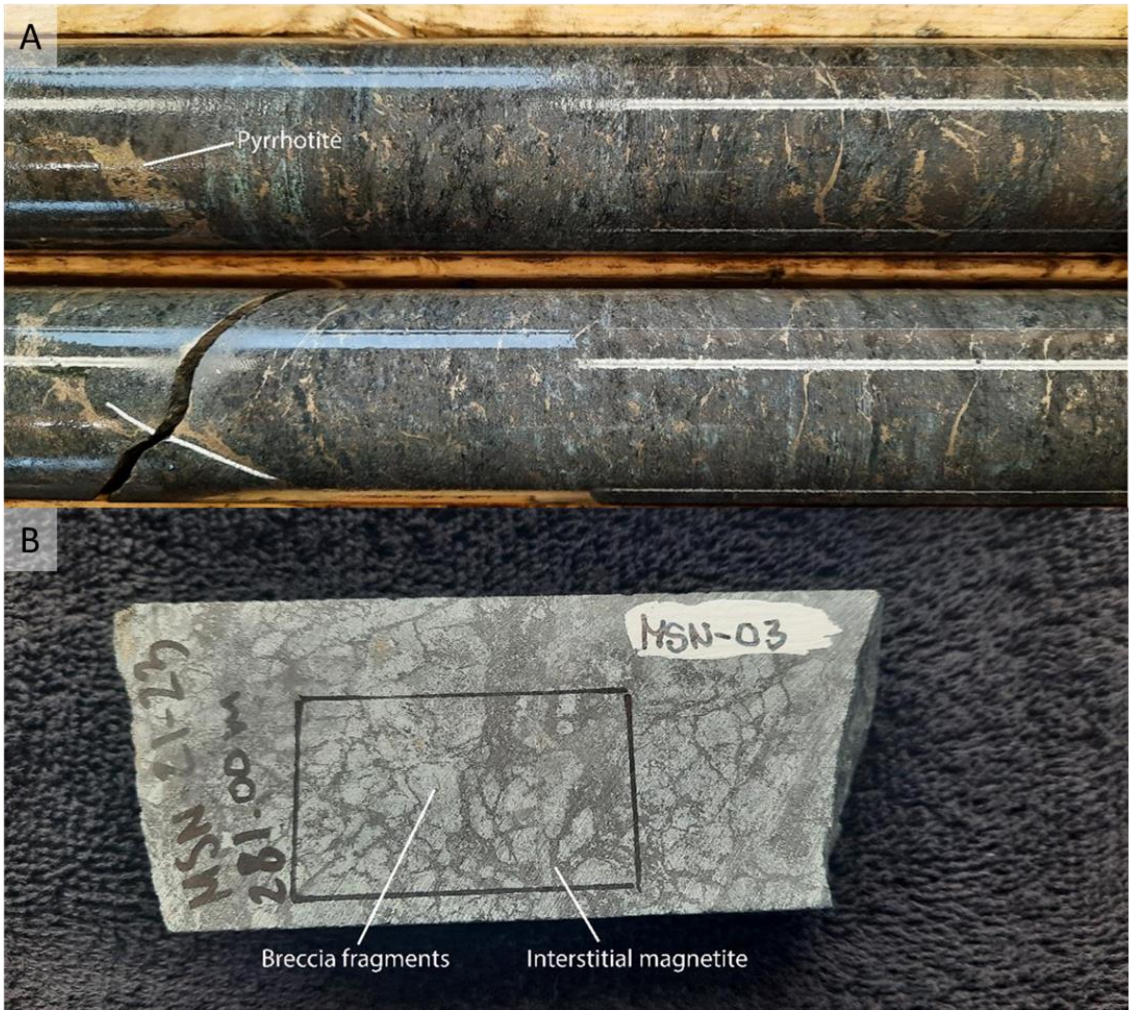
From Arguin, 2022.
Hole MSN-21-22: Well-developed foliation marked by parallel arrangement of stretched magnetite in a fine-grained matrix composed of talc and chlorite.

**Figure 8-5: Example of Core from Unit 4**

### Unit 5

Unit 5 is located at the top of the NZW, in contact with massive to semi-massive pyrrhotite or sulphide-rich basaltic rocks. The rock is brecciated (or rarely massive) and is typically characterized by chlorite-rich, sub-angular to angular fragments of various sizes (up to a few centimetres) enclosed in a chaotic network of interstitial magnetite (Figure 8-6A).

The magnetite content of Unit 5 is relatively high. Magnetite is in the form of interstitial fillings between breccia fragments and finely disseminated grains. It is commonly associated with substantial amounts of pyrrhotite as veinlets or magnetite replacements (Figure 8-6B). Trace amounts of chalcopyrite often accompany pyrrhotite.



From Arguin, 2022.

A. Hole MSN-21-32: abundant pyrrhotite including veinlets and replacement textures.

B. Hole MSN-21-23: Chlorite-rich fragments enclosed in a chaotic network of interstitial magnetite.

**Figure 8-6: Example of Core from Unit 5**

# 9. Exploration

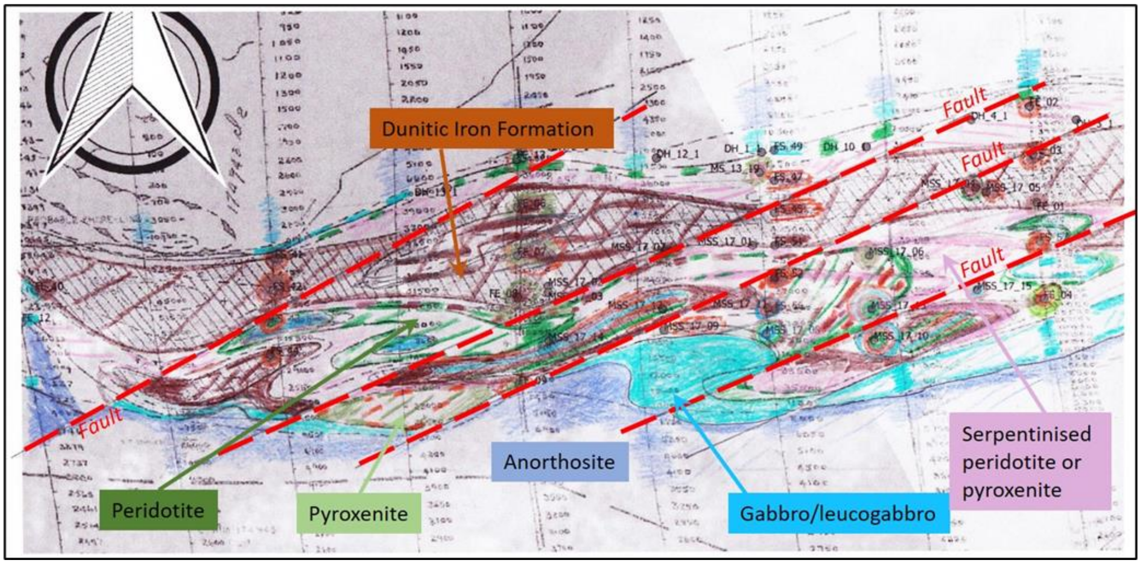
## 9.1 Stripping, Mapping and Sampling

In June 2018, stripping was performed on the South Zone (Figure 9-1). The stripped area, named MSS-TR-01, is located east of historical section 52E, a site of historical trenching and diamond drilling (historical holes FE-6, FE-7, FE-8 and FE 9, FE-13).

**Figure 9-1: Washing of a Stripped Area on the South Zone**

In August 2018, Voyager commissioned Dr. A. Ben Ayad to carry out detailed lithological and structural mapping of the stripped area. This mapping focused on identifying major structures within the deposit and mapping the distribution of mafic and ultramafic units. An example is shown in Figure 9-2.

In 2021, MSS-TR-01 was sampled and mapped. A compilation map of the work is presented in Figure 9-3.



Modified from original by L. Longridge, 2019. Original from Dr. A. Ben Ayad, 2018

**Figure 9-2: Hand-Drawn Geological Map of a Portion of the South Zone**

In 2021, stripping was performed on three areas of the North Zone: MSN-TR-01, 02 and 03. The exposed bedrock was sampled in 2021 and mapped in 2022. Compilation maps are presented in Figure 9-3 and Figure 9-4.

Figure 10-1 shows the location of the stripped areas on the Property.

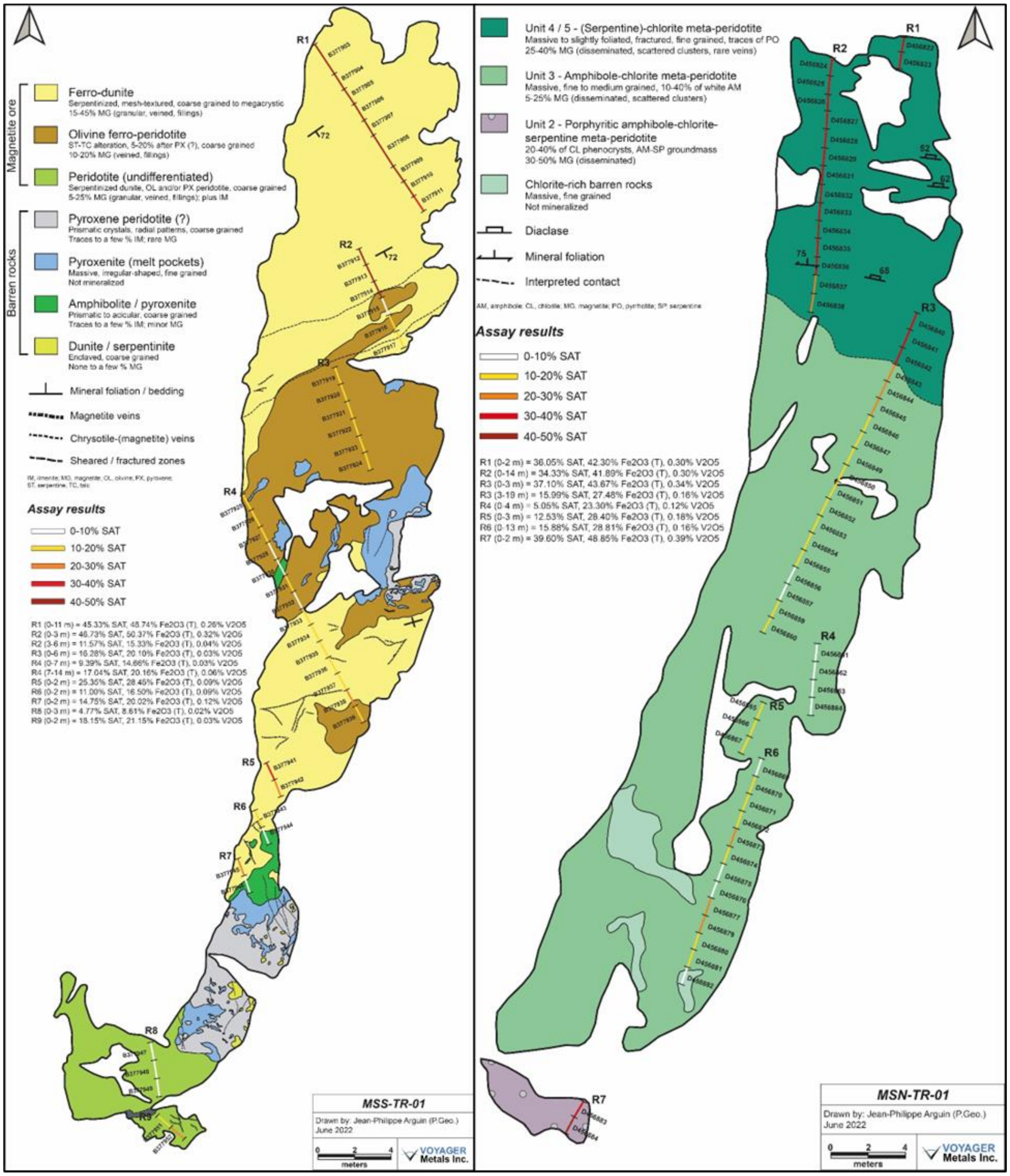


**Figure 9-3: Compilation Maps of Strippings MSS-TR-01 and MSN-TR-01 Showing Geology and Sample Locations**

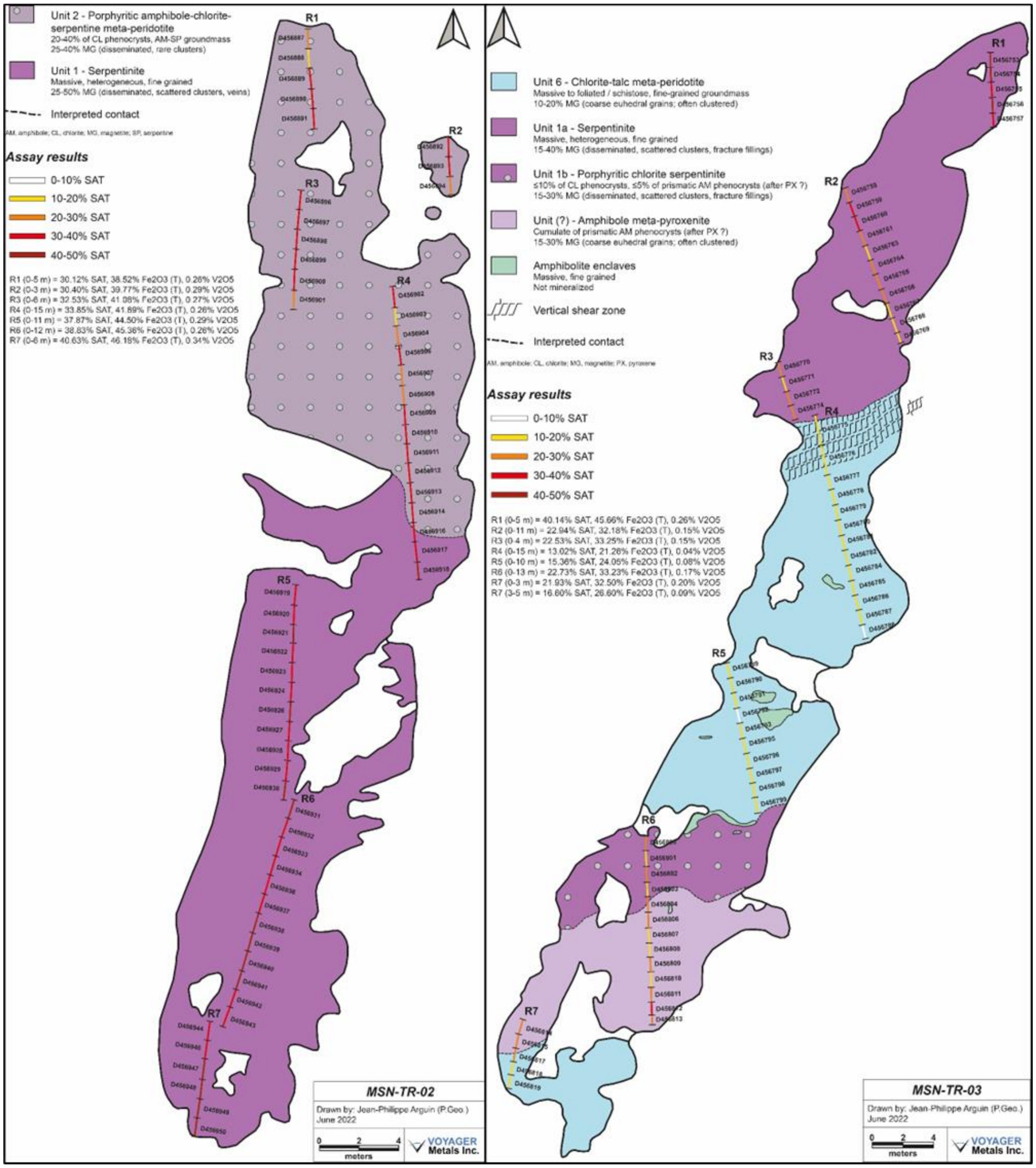


**Figure 9-4: Compilation Maps of Strippings MSN-TR-02 and MSN-TR-03 Showing Geology and Sample Locations**

## 9.2 Reprocessing of Airborne Geophysics

In 2018, Voyager commissioned Laurentia Exploration of Jonquière (Quebec) to reprocess the aeromagnetic data from 2010 to produce derivative products, including First Vertical Derivative ("1VD") (Figure 9-5) and Tilt.

Combined with field mapping, these products were used to create the geological model wireframes. The strong magnetic response of the magnetite-bearing ultramafic rocks proved highly useful in delineating the mineralized zones on the Project.

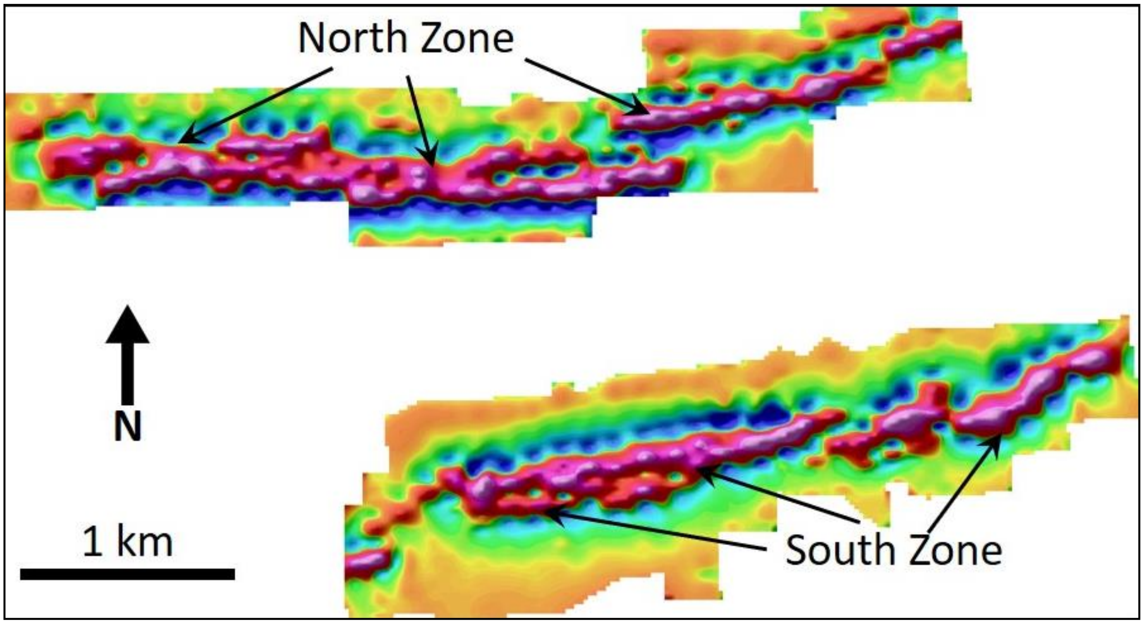


**Figure 9-5: 1VD Created in 2018 by Laurentia Exploration using 2010 AeroQuest Airborne Magnetic Data**

# 10. Drilling

This Section describes the issuer's surface diamond drilling programs from 2017 to April 6, 2022, the close-out date of the resource database. Previous drilling programs are summarized in Section 6.

In 2017, Claude Larouche, geologist based in Thunder Bay, Ontario and with 20 years of experience working in Chibougamau started the drilling program. Between 2017 and 2018, Dr. Ali Ben Ayad, supervised the drilling program temporarily until Laurentia Exploration, an exploration consulting firm based in Jonquière, Quebec, took over the execution of the program. From 2018 to 2021, the drilling programs were supervised by Laurentia Exploration.

The information in this Section was provided by the issuer's geology team or obtained by InnovExplo's geologists during the site visit or subsequent discussions. Grade results are uncapped, and stated intervals are downhole lengths, not true widths.

## 10.1 Drilling Methodology

Chibougamau Diamond Drilling Ltd carried out the drilling campaigns from 2017 to 2021.

Collar locations were determined using a handheld GPS. The core size was NQ. Down-hole orientation surveys were performed using a north-seeking Champ Gyro. The Champ Gyro was run down and then up the entire borehole length, with the up-run being a repeat for quality assurance. Azimuth and dip accuracies were 0.75° and 0.15°, respectively. The use of a gyro-based instrument is appropriate for rocks with significant proportions of magnetite. No historical holes were surveyed for downhole deviations. However, as all the holes were drilled vertically, only minimal deviation was anticipated.

The drill helpers laid out the core in core boxes at the drill rig and marked off each 3-m drill run using a labelled wooden block.

The drill core was delivered to the issuer's core facility in Chibougamau at the end of each shift.

## 10.2 Collar Surveys

Casings were left in place with an identification tag. Collars were surveyed by an independent surveyor (Paul Roy, Q.L.S., C.L.S). A Leica GS15 GNSS RTK receiver was set up as a base station at control point MS-1 (5,527,937.63mN, 564,210.33mE) whose coordinates were determined in June 2018 using Precise Point Positioning from Natural Resource Canada (30 June 2018 report, Document 7662). A measurement check was performed on existing permanent control point MS-2 (5,527,922.09mN, 564,091.77mE). Drill hole collars for all 2013 to 2020 drill holes, as well as most historical drill holes were measured by a Leica GS18 multi-frequency GNSS, providing centimetre-level accuracy. At the time of writing this report, the 2020 and 2021 drill holes had not yet been professionally surveyed; however, the collars had been check-surveyed in the field by the issuer's project geologist using a handheld GPS.

## 10.3 Logging Procedures

Voyager used its Chibougamau facility for core handling, core logging and storage.

Company contractors (technicians) opened the boxes at the core shack. The core was checked for measurement and placement errors and then metered appropriately. The issuer's project geologist or a technician used a magnetic probe to measure the magnetic susceptibility and conductivity every 50 cm down the drill hole. A geologist recorded the most important information, including rock type, mineralization, alteration, structures, and textures of interest, with a special focus on structures (bedding, foliation, shearing, faults) and geologic relationships (contacts).

After marking sample intervals on the core, the boxes were transferred to the core cutting room, where a technician sawed the core samples into two halves. The typical sample lengths were 4.0 m in the North Zone and 2.0 m in South Zone. Once all sample intervals had been sawed, the core technician placed one-half of the core in a labelled sample bag. The sampler stapled the sample tags to the core box underneath the half-core and re-traced the sample interval marks, and re-wrote the sample numbers on the remaining half with a grease pencil. Bagged samples were loaded into rice bags labelled with the contained sample intervals and contact information (laboratory and company). Since 2018, QA/QC samples (5% standards, blanks, and duplicates) are included with each shipment sent to the lab. The shipment information was entered into the shipment database, and the boxes were transferred to the long-term core storage facility in Chibougamau.

## 10.4 Drill Programs

Between 2017 and 2021, the issuer completed four (4) drilling programs in the Mont Sorcier project totalling 87 holes for 26,421 m. The details are presented in Table 10-1. Figure 10-1 shows the location of the holes drilled between 2017 and 2021 and the historical holes.

**Table 10-1: Summary of Voyager's 2017 to 2021 Exploration Drilling Program in the Mont Sorcier Project**

| Period | Zone | Work Completed | Number of Holes | Metres |
|---|---|---|---|---|
| 2017 | South Zone | MSS-17-01 to MSS-17-15 | 15 | 2,859 |
| 2018 | South Zone | MSS-18-16 to MSS-18-28 | 13 | 2,597 |
|  | North Zone | MSN-18-01 to MSN-18-04 | 4 | 1,933 |
| 2020 | North Zone | MSN-20-05 to MSN-20-14 | 10 | 3,414 |
| 2021 | North Zone | MSN-21-15 to MSN-21-56 and MSN-21-H-01 to MSN-21-H-01 | 45 | 15,618 |
| **Total** |  |  | **87** | **26,421** |

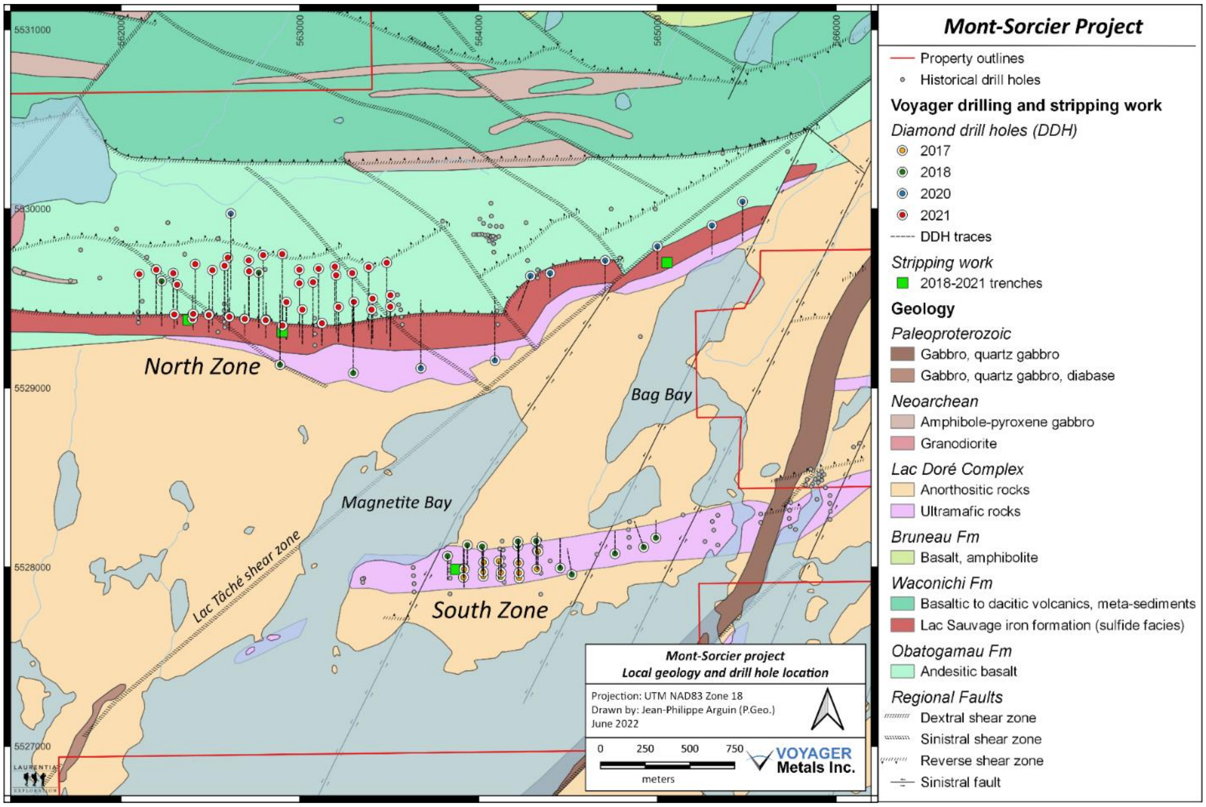


Figure 10-1: Location Map of Drill Holes and Trenches on the Mont Sorcier Project

## 10.4.1 2017 Drill Program

During the summer of 2017, fifteen (15) holes were drilled on the South Zone for 2,859 m. Voyager drilled the holes on five (5) sections at 100 m spacing, equivalent to about 600 m of continuous drilling, on strike.

The program aimed to confirm and upgrade (to current standards) a portion of the historical Fe-V-Ti resources established in the early 1960s and 1970s. Thirteen (13) of the holes were for rock core assays (head grade) and Davis Tube Magnetic Concentrate ("DTMC") analysis. The other two (2) holes, MSS-17-06 and MSS-17-07, were used for metallurgical testing.

All holes intersected continuous mineralization. The average grades of these intersections were comparable to Campbell's historical iron and vanadium grades in 1974.

Highlights are presented in Table 10-2. Note that some drill holes may start or end in the iron formation due to the formation's width and vertical dip.

**Table 10-2: 2017 Drilling Highlights from the Mont Sorcier Project**

| Area | Hole ID | From | To | Length | Rock (Head grade) | | | Davis Tube (Concentrate) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $Fe_2O_3$ _T (%) | $V_2O_5$ (%) | Fe MAG (%) | $Fe_2O_3$_T (%) | $V_2O_5$ (%) |
| South Zone | MSS-17-08 | 45.9 | 258.0 | 212.1 | 39.0 | 0.31 | 24.5 | 90.1 | 0.60 |
| | MSS-17-09 | 29.5 | 269.6 | 240.1 | 41.4 | 0.31 | 26.0 | 92.2 | 0.60 |
| | MSS-17-10 | 124.2 | 254.5 | 130.3 | 35.2 | 0.27 | 23.5 | 91.2 | 0.59 |
| | MSS-17-11 | 11.0 | 174.0 | 163.0 | 39.1 | 0.33 | 24.7 | 89.1 | 0.65 |
| | MSS-17-12 | 2.4 | 148.8 | 146.4 | 43.2 | 0.34 | 27.5 | 88.8 | 0.65 |
| | MSS-17-13 | 3.2 | 204.0 | 200.8 | 37.0 | 0.29 | 22.9 | 93.2 | 0.60 |

## 10.4.2 2018 Drill Program

Voyager drilled 17 holes between September and December 2018, adding thirteen (13) holes in the South Zone and four (4) holes in the North Zone, for a total of 4,530 m. At the South Zone, drilling targeted the eastern extension on line spacings of 100 m and 200 m. At the North Zone, drilling was performed along strike and on a line spacing of roughly 500 m.

Drilling intersected significant continuous mineralization throughout each hole. Highlights are presented in Table 10-3. Note that some drill holes may start or end in the iron formation due to the formation's width and vertical dip.

**Table 10-3: 2018 Drilling Highlights from the Mont Sorcier Project**

| Area | Hole ID | From | To | Length | Rock (Head grade) | | | Davis Tube (Concentrate) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $Fe_2O_3$ _T (%) | $V_2O_5$ (%) | Fe MAG (%) | $Fe_2O_3$_T (%) | $V_2O_5$ (%) |
| North Zone | MSN-18-03 | 167 | 283 | 116 | 39.9 | 0.26 | 22.3 | 86.12 | 0.57 |
| | MSN-18-04 | 215 | 380 | 165 | 39.4 | 0.22 | 21.2 | 84.3 | 0.48 |
| South Zone | MSS-18-19 | 41.8 | 222 | 180.2 | 38.9 | 0.27 | 24.8 | 91.1 | 0.55 |
| | MSS-18-20 | 48.6 | 192 | 143.4 | 43.9 | 0.38 | 28.4 | 92.1 | 0.69 |
| | MSS-18-21 | 56.6 | 201 | 144.4 | 34.7 | 0.24 | 22.3 | 87.9 | 0.53 |
| | MSS-18-22 | 80 | 210 | 130.0 | 37.7 | 0.30 | 23.7 | 92.1 | 0.65 |

### 10.4.3 2020 Drill Program

The 2020 drill program consisted of ten (10) holes totalling 3,414 m, with line spacings of 200 m to 300 m. The goal was to define the eastern extension of the North Zone.

The results confirmed the East extension of the North Zone over 2.0 km. Highlights are presented in Table 10-4. Note that some drill holes may start or end in the iron formation due to the formation's width and vertical dip.

**Table 10-4: 2020 Drilling Highlights from the Mont Sorcier Project**

| Area | Hole ID | From | To | Length | Rock (Head grade) | | |
|---|---|---|---|---|---|---|---|
| | | | | | $Fe_2O_3$ _T (%) | $V_2O_5$ (%) | Fe MAG (%) |
| North Zone | MSN-20-07 | 24.6 | 189.0 | 164.5 | 36.2 | 0.32 | 21.7 |
| | MSN-20-08 | 53.0 | 263.3 | 210.3 | 38.3 | 0.39 | 23.1 |
| | MSN-20-11 | 242.9 | 498.0 | 255.1 | 37.8 | 0.28 | 24.4 |
| | MSN-20-12 | 206.5 | 534.0 | 327.5 | 36.5 | 0.35 | 23.4 |
| | MSN-20-14 | 459.2 | 600.0 | 140.8 | 37.3 | 0.25 | 21.3 |

### 10.4.4 2021 Drill Program

In 2021, forty-five (45) holes were drilled on the North Zone for 15,618 m. The goal was to upgrade a portion of the inferred mineral resources to the indicated category.

The 2021 holes intersected mineralized material as generally predicted by the 2020 resource outline. Intersection lengths averaged 190 m, and grades averaged 38% $Fe_2O_3$_T, 20.6% magnetic Fe and 0.22% $V_2O_5$. These results confirmed grade and thickness expectations for the mineralized zone. Highlights are presented in Table 10-5. Note that some drill holes may start or end in the iron formation due to the formation's width and vertical dip.

### Table 10-5: 2021 Drilling Highlights from the Mont Sorcier Project

| Area | Hole ID | From | To | Length | Rock (Head grade) | | |
|---|---|---|---|---|---|---|---|
| | | | | | $Fe_2O_3$ _T (%) | $V_2O_5$ (%) | Fe MAG (%) |
| North Zone | MSN-21-30 | 189.7 | 367.1 | 177.5 | 39.5 | 0.23 | 21.4 |
| | MSN-21-35 | 6.0 | 156.7 | 150.7 | 42.3 | 0.28 | 24.8 |
| | MSN-21-36 | 4.4 | 119.7 | 115.3 | 41.5 | 0.24 | 23.3 |
| | MSN-21-38 | 4.8 | 132.8 | 128.0 | 47.0 | 0.19 | 22.2 |
| | MSN-21-39 | 5.8 | 186.9 | 181.1 | 40.3 | 0.27 | 24.0 |
| | MSN-21-44 | 3.6 | 121.6 | 118.0 | 41.0 | 0.25 | 21.7 |
| | MSN-21-45 | 60.6 | 239.3 | 178.7 | 42.7 | 0.25 | 25.6 |
| | MSN-21-46 | 91.5 | 258.4 | 166.9 | 41.5 | 0.28 | 25.0 |
| | MSN-21-48 | 119.8 | 279.9 | 160.1 | 40.4 | 0.28 | 22.5 |
| | MSN-21-49 | 141.0 | 298.1 | 157.1 | 42.6 | 0.25 | 24.2 |

# 11. Sample Preparation, Analyses, and Security

The following paragraphs describe the sample preparation, analyses, and security procedures during the drilling programs carried out between 2017 and 2021 on the Project by the issuer, as well as the drilling program carried out in 2013 by Chibougamau Independent Mines Ltd. Sample preparation and security procedures utilized by historical operators are undocumented.

## 11.1 Core Handling, Sampling and Security

The drill core is boxed, covered and sealed at the drill rigs, and transported by the drilling company employees to the core logging facility at Chibougamau, where the issuer's personnel take over the core handling.

The core is logged and sampled by (or under the supervision of) geologists, all of whom are members in good standing with the OGQ. A geologist marks the samples by placing a unique identification tag at the end of each core sample interval. Sample contacts respect lithological boundaries, major structures, and magnetite mineralization. A technician saws each marked sample in half. One half of the core is placed in a plastic bag along with a detached portion of the unique bar-coded sample tag. The other half is returned to the core box with the remaining tag portion stapled in place. The core boxes are stored in outdoor core racks for future reference. Individually bagged samples are placed in security-sealed rice bags along with the sample list for delivery to the assay laboratory. Starting in 2018, QA/QC samples (5% standards, blanks, and duplicates) have been included with each shipment sent to the lab.

The issuer ensured the security of the samples before sending them to the analytical laboratory by limiting access to the samples to authorized persons only. Samples remained under the supervision of Voyager personnel at the core facility until transferred to a commercial trucking company for ground delivery to the analytical laboratory.

## 11.2 Laboratory Accreditation and Certification

The International Organization for Standardization ("ISO") and the International Electrotechnical Commission ("IEC") form the specialized system for worldwide standardization. ISO/IEC 17025 – *General Requirements for the Competence of Testing and Calibration Laboratories* sets out the criteria for laboratories wishing to demonstrate that they are technically competent, operating an effective quality system, and able to generate technically valid calibration and test results. The standard forms the basis for the accreditation of laboratory competence by accreditation bodies.

Samples from the 2013 to 2021 drill programs were sent to four (4) laboratories for preparation and analysis: Activation Laboratories Ltd. ("Actlabs") in Ancaster, Ontario; ALS Ltd. ("ALS") in Val-d'Or, Quebec; Laboratoire Expert Inc. ("Expert") in Rouyn-Noranda, Quebec; and SGS

Canada Inc. ("SGS") in Lakefield, Ontario. Actlabs, ALS and SGS received ISO/IEC 17025 accreditation through the Standards Council of Canada ("SCC"). Actlabs, ALS, Expert and SGS are commercial laboratories independent of the issuer and have no interest in the Project.

## 11.3 Laboratory Preparation and Assays

The laboratories used to analyze Voyager's drilling samples are shown in Table 11-1.

**Table 11-1: Laboratories Used for Assaying between 2013 and 2021**

| Laboratory | Hole ID |
|---|---|
| Actlabs | MS-13-17, MS-13-19, MSS-17-01 to MSS-17-05, MSS-17-08 to MSS-17-15 |
| ALS | MSN-20-05 to MSN-20-14 |
| Expert | MS-13-17 |
| SGS | MSN-18-01 to MSN-18-04, MSS-18-16 to MSS-18-28, MSN-21-15 to MSN-21-56 |

### 11.3.1 Head Grade Analysis

At each laboratory, samples were weighed, dried at 105°C, and crushed to 75% passing 2 mm. A 250 g split was taken using a riffle splitter and milled in a non-magnetic chromium-steel ring and bowl mill to 80% passing 75 µm.

Samples were assayed using similar methodologies at all laboratories. Head samples were fused into disks using a borate flux (borate fusion) and analyzed using XRF spectrometry. A 30–50 g subsample of the head sample was used to create magnetic separates using a Davis Tube magnetic separator, at a magnetic intensity of 1000 Gauss. The head sample was weighed, and the magnetic fraction produced was dried and weighed, to determine the percentage of magnetics within the sample. The magnetic fraction was also analyzed using XRF on a borate fusion disk.

Sample analytical procedures utilized by Campbell Chibougamau Mines Ltd are largely undocumented. However, historical reports indicate that magnetic separation was also carried out using Davis Tube tests on samples milled to >95% or >98% passing 44 µm.

### 11.3.2 Davis Tube Test

Since 2017, samples have been subject to Davis Tube test ("DTT"). DTT was used as part of the assaying procedure for each sample and to estimate the iron grades of the magnetite concentrates as part of the MRE. DTT also gives useful insights into the metallurgical parameters of the Mont Sorcier Project.

Davis Tube magnetic separators (Figure 11-1) create a magnetic field that can extract magnetic particles from pulverized samples, allowing the percentage of magnetic and non-magnetic material in a sample to be determined. A 30–50 g aliquot of a pulp sample (grind size of -75 µm) is gradually added to a cylindrical glass tube oscillating at 60 strokes per minute. The magnetic field captures magnetic particles as the sample progresses down the inclined tube. Wash water flushes the non-magnetic fraction out of the tube until only the magnetic fraction remains. The magnetic and non-magnetic fractions are dried and weighed to determine the percentage of magnetics in each sample fractions are dried and weighed to determine the percentage of magnetics in each sample.

From https://geneq.com/materials-testing/en/product/sepor/davis-tube-tester-11534

**Figure 11-1: A Davis Tube Magnetic Separator**

For DTT, it was assumed that all magnetic iron is present in magnetite, and all vanadium is present as a solid solution in magnetite. Mineralogical testwork has shown no evidence for other magnetic iron-bearing minerals (e.g., pyrrhotite) and has also confirmed that vanadium is in magnetite. Since many samples from across the entire zones have been tested, the samples reflect the various mineralization styles in the zones.

## 11.4 Quality Assurance and Quality Control

The quality assurance and quality control (“QA/QC”) program for drill core had included the insertion of blanks and standards in the sample stream of core samples since 2018. About 15% of the samples were control samples in the sampling and assaying process. One (1) standard and one (1) blank sample of barren rock were added to each group of 20 samples as an analytical check for the laboratory batches.

Geologists were responsible for the QA/QC program and database compilation. Upon receiving the analytical results, the geologists extracted the results for blanks and standards to compare against the expected values. If QA/QC acceptability was achieved for the analytical batch, the data were entered into the project’s database; if not, the laboratory was contacted to review and address the issue, including retesting the batch if required.

The discussion below details the results of the blanks, standards and pulp duplicates used in the issuer’s QA/QC program.

### 11.4.1 Certified Reference Materials (Standards)

Accuracy is monitored by inserting CRMs at a ratio of one (1) for every 20 samples (1:20). Two standards, high-grade (“HG”) and low-grade (“LG”), were created by Voyager using archived 2017 reject material. Actlabs prepared the standard materials, and two samples of each standard were assayed at three commercial referee laboratories: ALS, COREM and AGAT Laboratories Ltée (“AGAT”). Although the small number of standards assayed by these three independent laboratories may not have captured the inherent variability of the samples, the results from the standard analyses show no obvious evidence for bias. Ideally, creating a standard material should involve more samples and laboratories to calculate a statistically valid mean and standard deviation for the sample material. This is recommended for future programs.

A QC failure is defined as when the assay result for a standard falls outside three standard deviations (“3SD”). Gross outliers are excluded from the standard deviation calculation.

Of the 284 CRM samples, two (2) returned results outside 3SD for $Fe_2O_3$_T, three (3) for $TiO_2$ and three (3) for $V_2O_5$ (Table 11-2). Of those fails, three (3) were gross outliers. Samples 01675 and D455064 failed for $Fe_2O_3$_T and $V_2O_5$ and likely represent an inversion between the two standards. The third, sample 00475, failed only for $TiO_2$ and is assumed to be an isolated typographic error as other analyzed elements had passed the QC.

The overall success rate was 99%. Outliers did not generally show persistent analytical bias (either below or above the 3SD limit). They were close to the 3SD threshold and appeared to be isolated errors, as other standards and blanks processed from the same batches had passed. Consequently, no batch re-runs were performed. Figure 11-2, Figure 11-3, Figure 11-4 and Figure 11-5 show examples of control charts for the standard CDN-GS-P7H assayed by Techni-

Lab. A similar control chart was prepared for each CRM to visualize the analytical concentration value over time.

The overall results exhibit a slight negative bias in terms of accuracy, with an average of -2.0% and a precision of around 1.8% for standards.

Both parameters meet standard industry criteria.

**Table 11-2: Results of Standards Used between 2013 to 2018**

| CRM | Metal | No. Of Assays | CRM value (%) | Average (%) | Accuracy (%) | Precision (%) | Outliers | Gross Outliers | Percent passing QC |
|---|---|---|---|---|---|---|---|---|---|
| HG | $Fe_2o_3$_T | 139 | 44.5 | 43.24 | -2.7 | 1.6 | 0 | 2 | 98 |
| HG | $TiO_2$ | 139 | 0.89 | 0.84 | -6.0 | 2.5 | 2 | 1 | 98 |
| HG | $V_2O_5$ | 139 | 0.44 | 0.42 | -4.8 | 2.5 | 1 | 2 | 98 |
| LG | $Fe_2o_3$_T | 145 | 32.4 | 32.2 | -0.6 | 0.7 | 0 | 0 | 100 |
| LG | $TiO_2$ | 145 | 1.10 | 1.11 | 1.3 | 1.1 | 0 | 0 | 100 |
| LG | $V_2O_5$ | 145 | 0.19 | 0.19 | 0.7 | 2.6 | 0 | 0 | 100 |

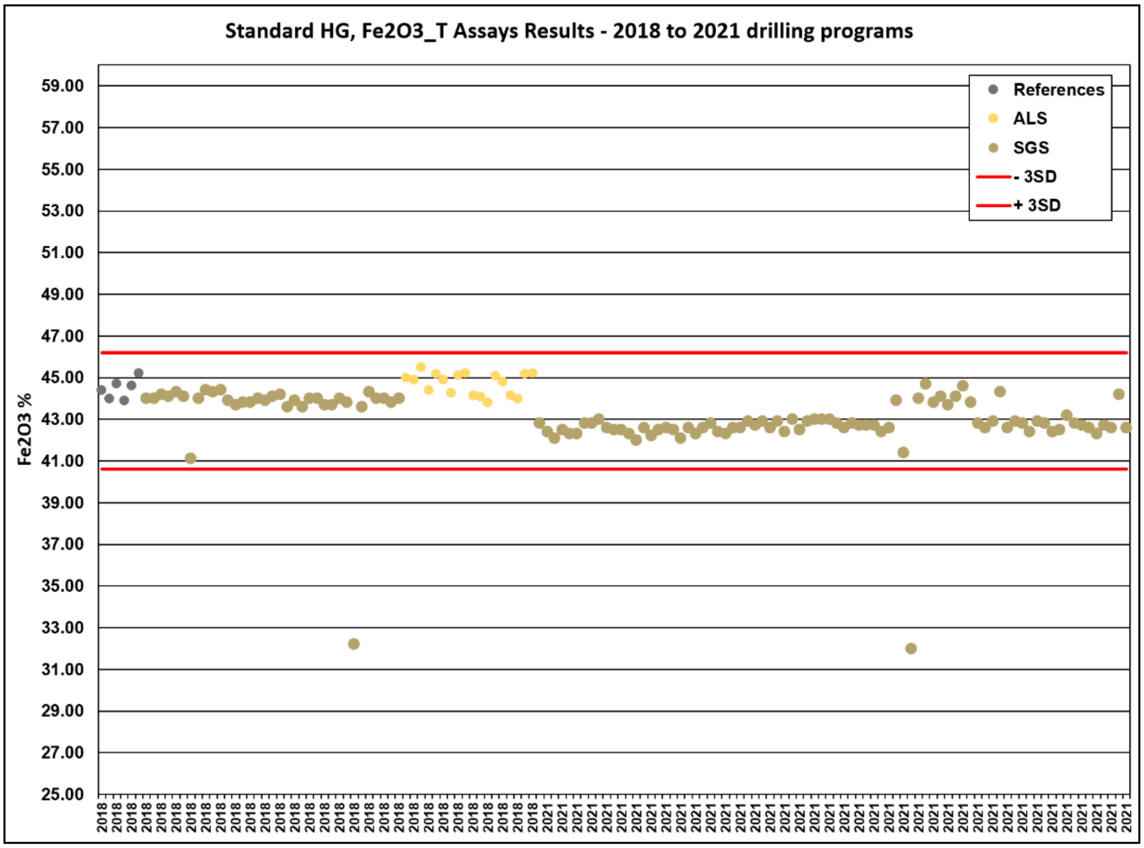


**Figure 11-2: Control Chart of Standard HG analyzed for $Fe_2O_3$_T**

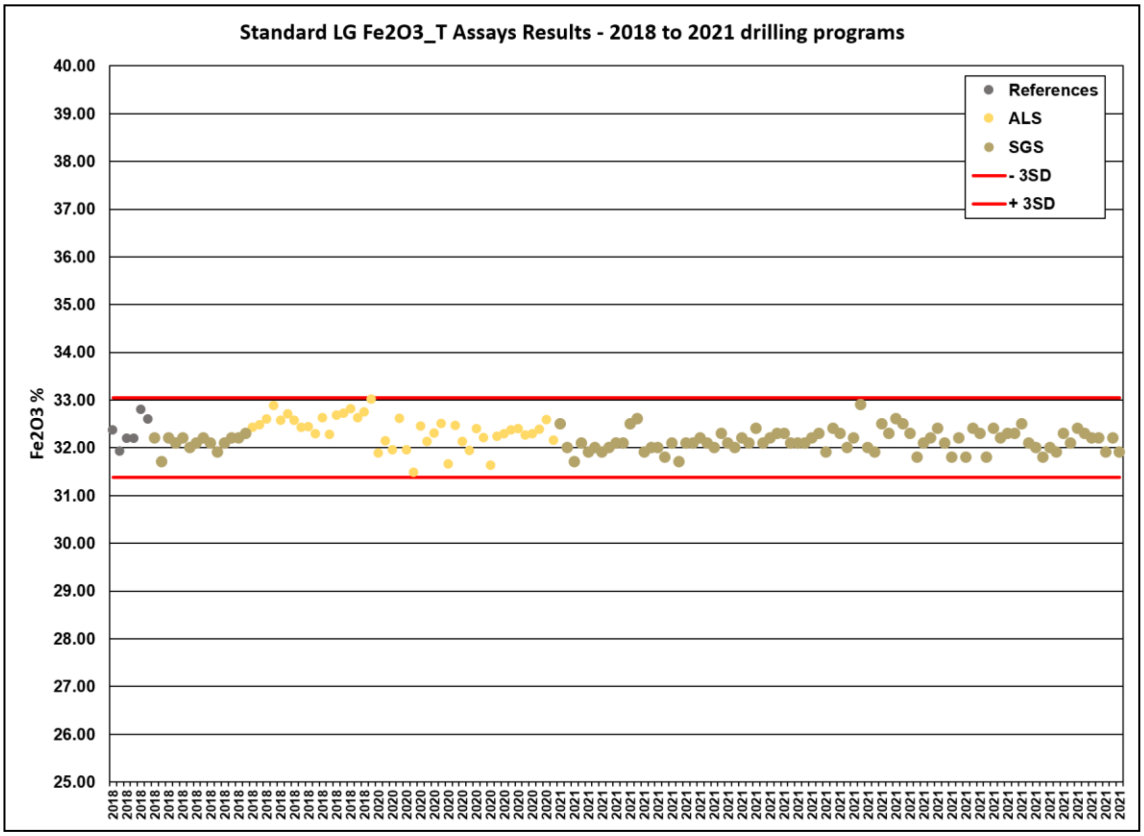


Figure 11-3: Control Chart of Standard LG Analyzed for $Fe_2O_3$_T

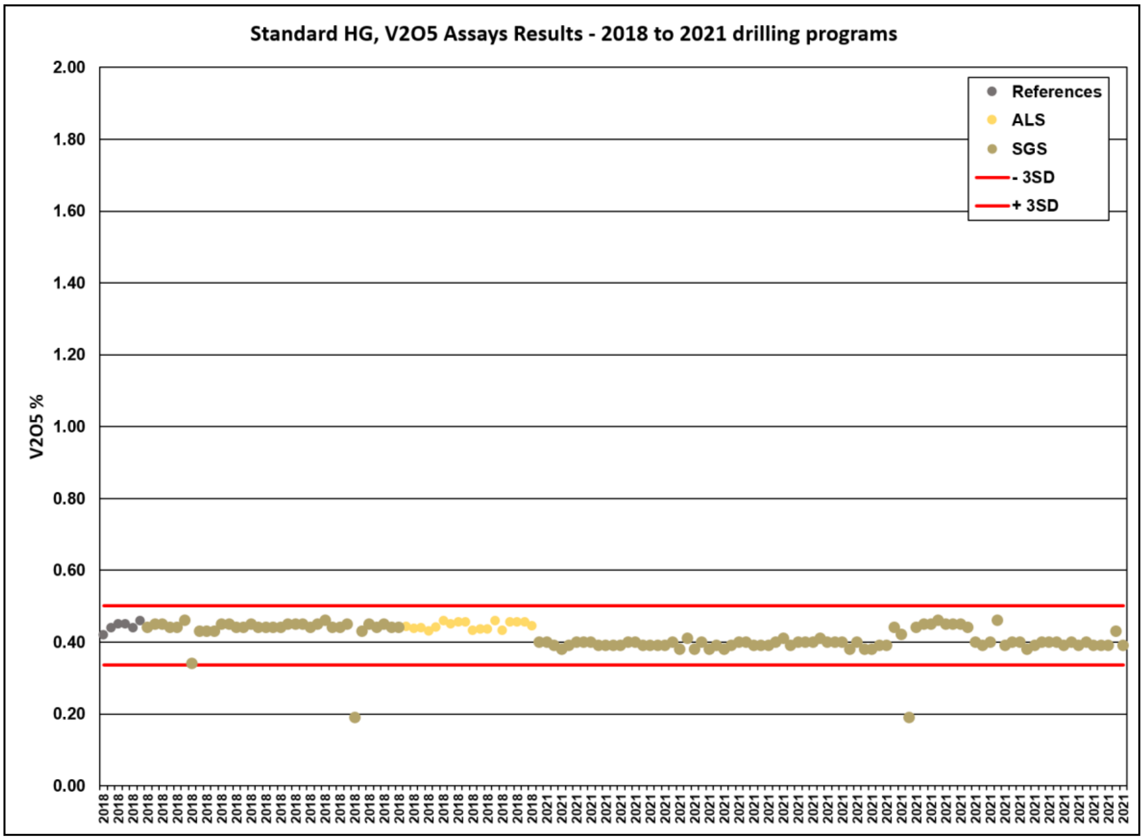


**Figure 11-4: Control Chart of Standard HG Analyzed for $V_2O_5$**

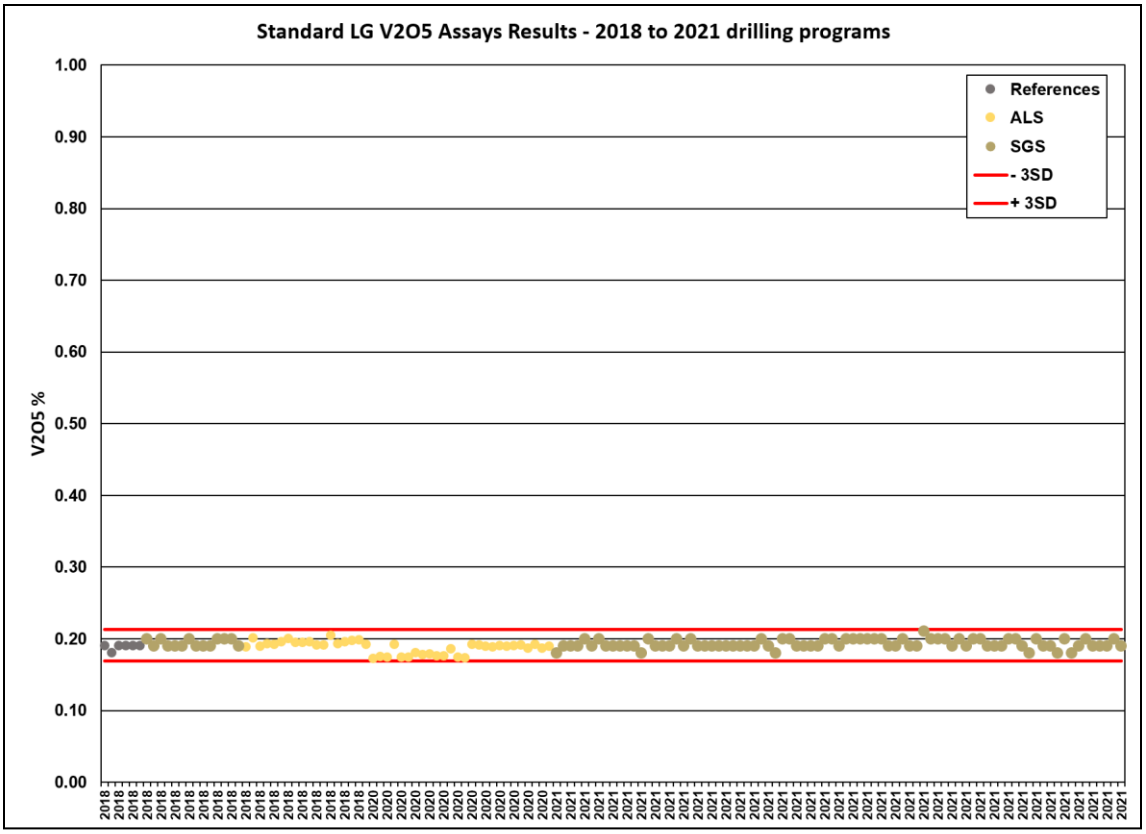


**Figure 11-5: Control Chart of Standard LG Analyzed for $V_2O_5$**

## 11.4.2 Blank Samples

Contamination is monitored by the routine insertion of a barren sample (blank), which goes through the same sample preparation and analytical procedures as the core samples.

A total of 294 blanks were inserted in the sample batches from 2018 to 2021. The blank material consisted of quartz rocks collected near Chapais, Québec.

The assayed blank samples showed no significant contamination for $Fe_2O_3$ (Figure 11-6) and $V_2O_5$ (Figure 11-7). The single outlier is clearly a mislabelled mineralized core sample.

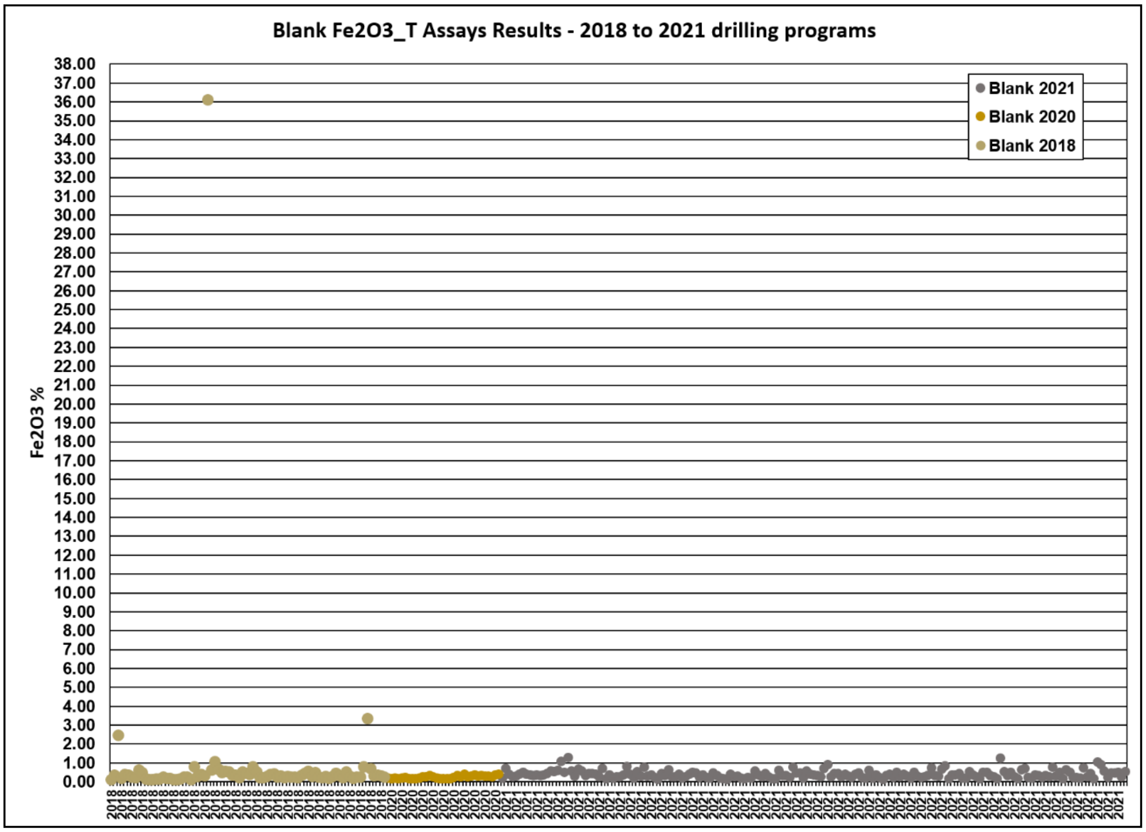


Figure 11-6: Time Series Plot of Blank Samples Assayed for $Fe_2O_3$_T from 2018 to 2021

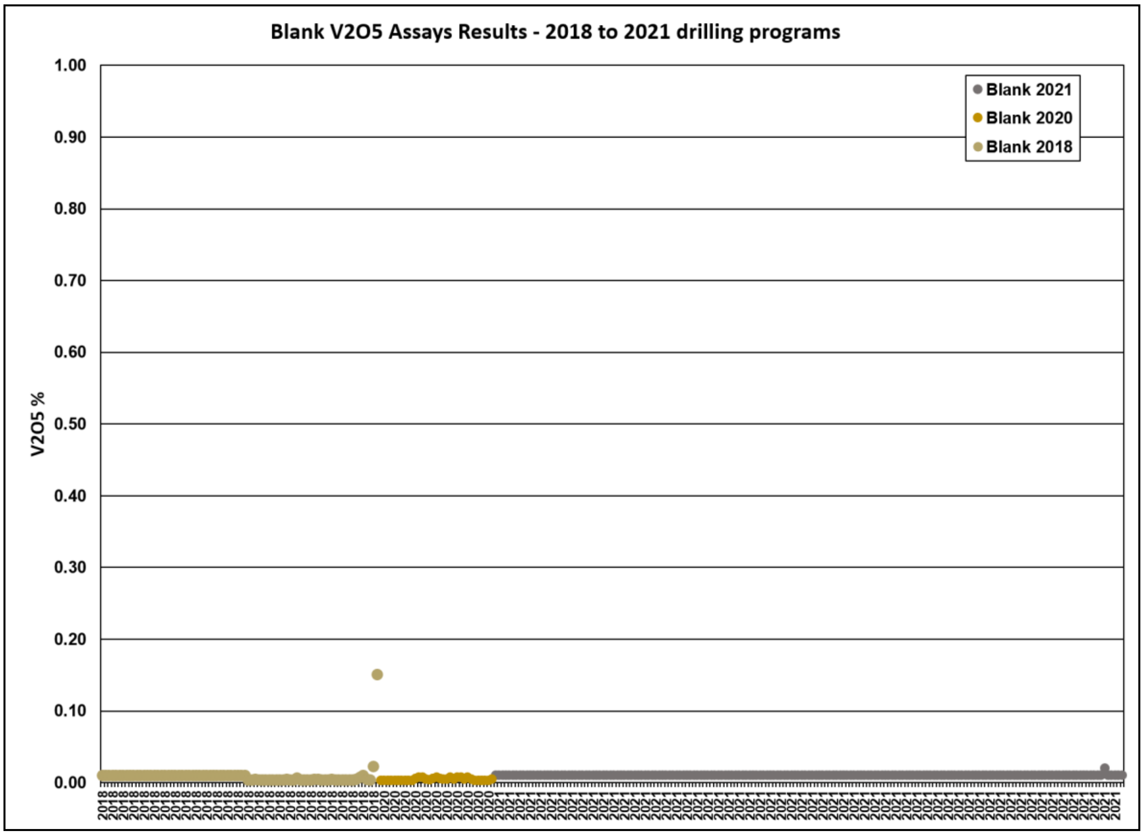


**Figure 11-7: Time Series Plot of Blank Samples Assayed for $V_2O_5$ from 2018 to 2021**

### 11.4.3 Duplicates

In 2017, 48 duplicates (quarter-core split and pulp) were sent to SGS for verification.

In 2018, 44 samples were duplicated using quarter-core (about 3 duplicates per drill hole) and pulp (about 1 duplicate per drill hole) for verification at Actlabs. In addition, the quarter-core were also used for metallurgical testing at COREM, Quebec City, Quebec, which provided additional duplicates.

Between 2020 and 2021, the company changed the duplicate program strategy to focus on Davis Tube test results. In 2017 and 2018, DTT were assayed on the concentrate only and, therefore, could not be used as duplicates. In 2020 and 2021, DTT was done on composite samples of about 20 m length (about 4 or 5 original assayed 4 m long samples) and assays were conducted on head grade, magnetite concentrates and rejects of these composites. Therefore, since 2020, DTT results were used as duplicates by comparing the calculated grades of composites from original 4-m long samples to the DTT head grade of the matching composites.

During 2020, 158 DTT were performed by SGS. In addition, 34 duplicates were also performed on samples from holes drilled in 2017 and 2018 and assayed at SGS or COREM.

In 2021, 478 DTT were performed by SGS at their Quebec City laboratory. In addition, 1 of 10 DTT sample was resampled and sent to SGS, Lakefield laboratory for duplication of head, concentrate and reject DTT. At the time of the report, the analyses were still in progress and 455 had been received.

Comparison of original assays with duplicate assays analyzed between 2017 and 2020 are shown in Figure 11-8 ($Fe_2O_3$) and Figure 11-9 ($V_2O_5$) scatter plots.

The results available for 2021 comparing the DTT composite head grade to the calculated composite grades is illustrated in Figure 11-10 and Figure 11-11.

Overall, the comparison shows a good correlation between original and duplicate results.

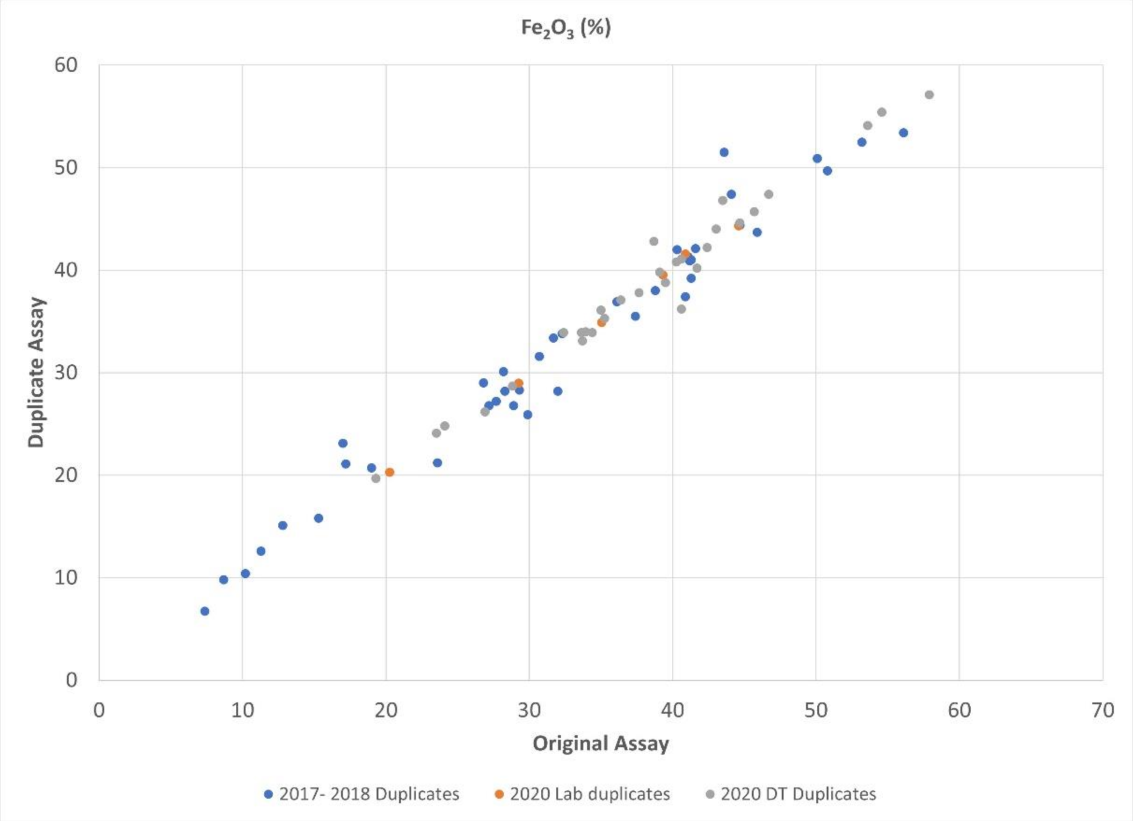


**Figure 11-8: Linear Graph Comparing Original and Duplicate Samples Analyzed from 2017 to 2020 for $Fe_2O_3$**

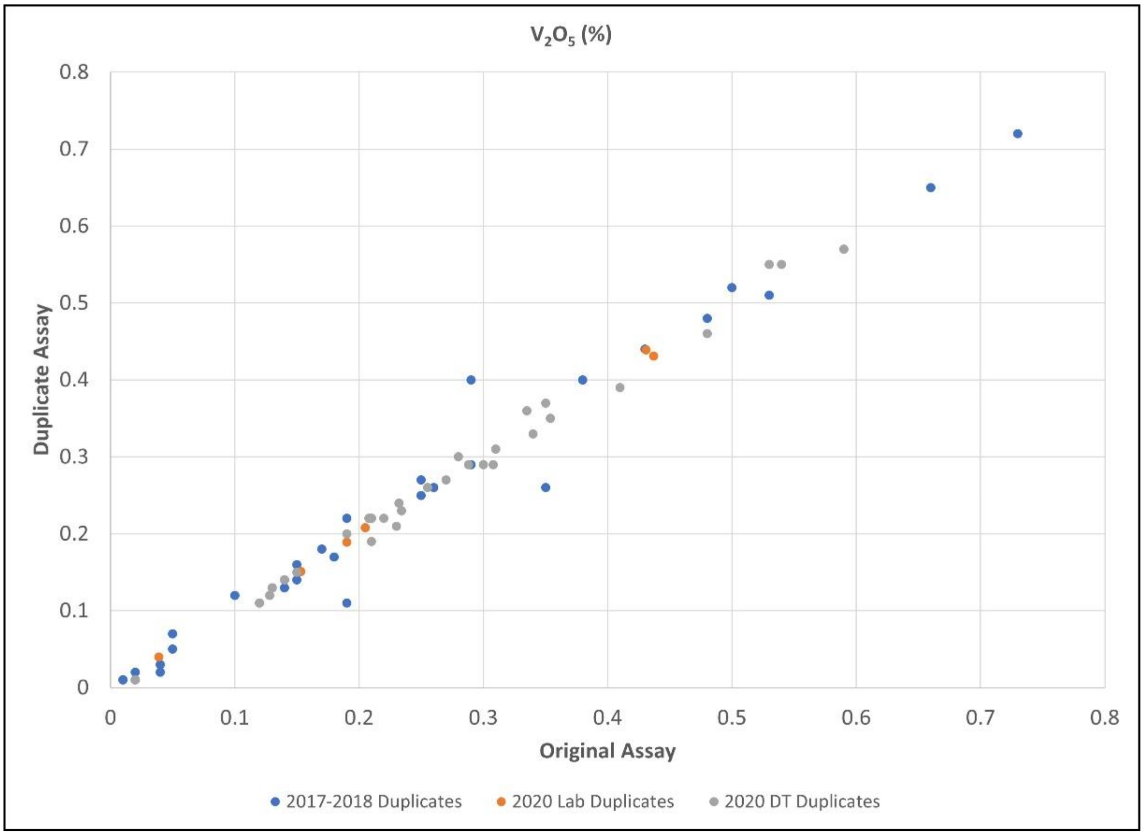


**Figure 11-9: Linear Graph Comparing Original and Duplicate Samples Analyzed from 2017 to 2020 for $V_2O_5$**

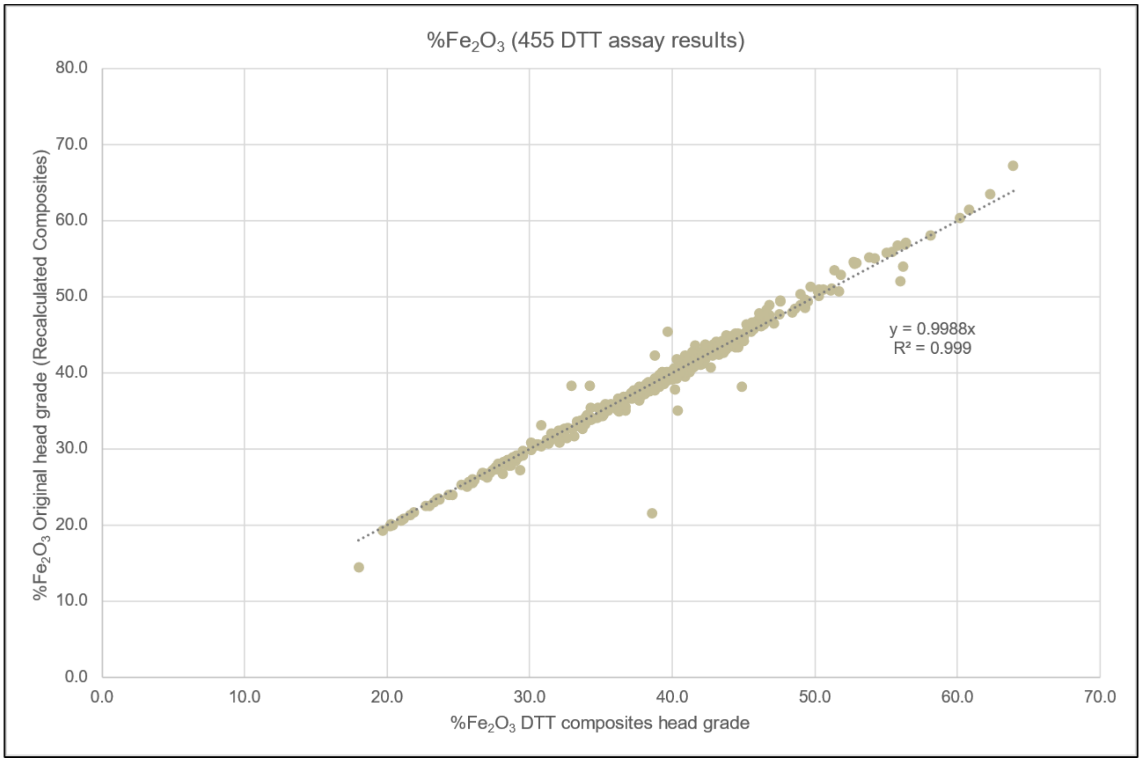


**Figure 11-10: Linear Graph Comparing Original and Duplicate Samples Analyzed in 2021 for $Fe_2O_3$**

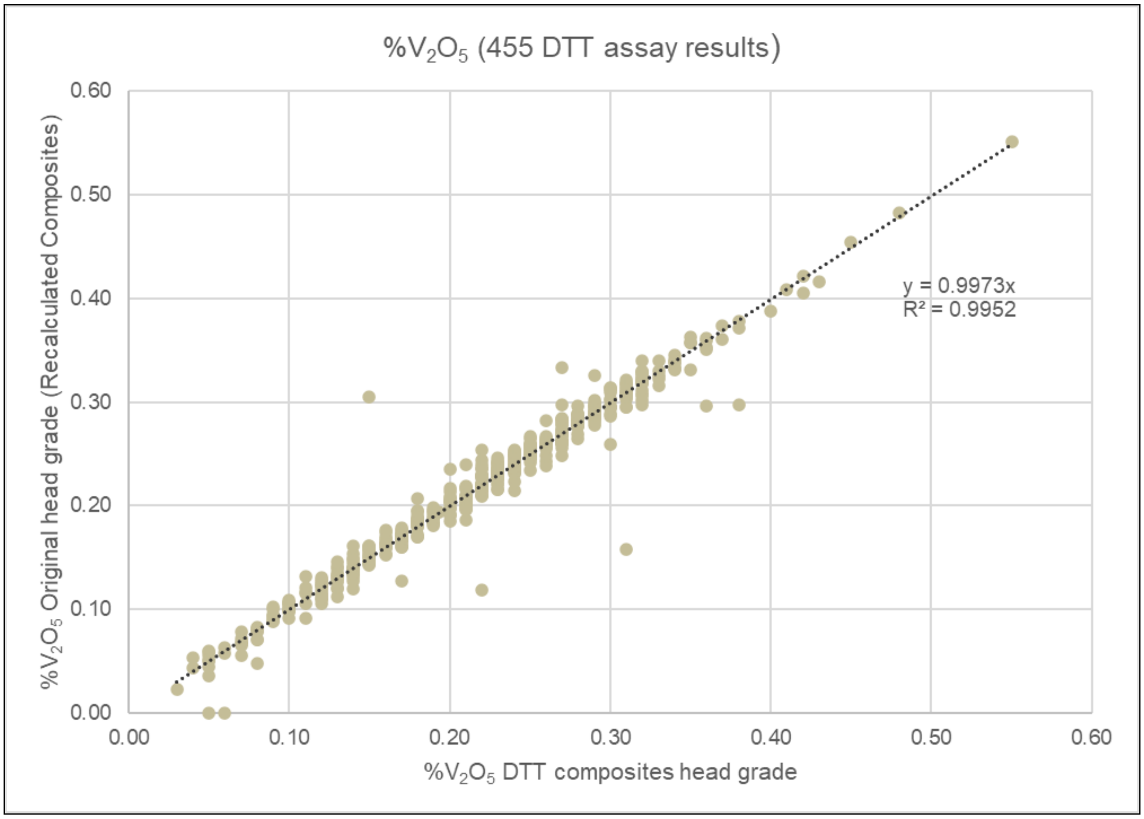


**Figure 11-11: Linear Graph Comparing Original and Duplicate Samples Analyzed in 2021 for $V_2O_5$**

## 11.5 Conclusion

The authors believe that the sample preparation, security, analysis and QA/QC protocols from 2018 to 2021 followed generally accepted industry standards, and the data is valid and of sufficient quality for mineral resource estimation. Although QA/QC data are not available for earlier historical assays, they are considered adequate for estimating inferred resources where the historical assays are not supported by the 2018–2021 drill results.

# 12. Data Verification

This Section covers data verification for information supplied by the issuer (the "Voyager database"). The database close-out date for the 2022 MRE is April 6, 2022.

Data verification included visits to the Property and an independent review of the data for selected drill holes (surveyor certificates, assay certificates, QA/QC program and results, downhole surveys, lithologies, alteration and structures).

## 12.1 Site Visits

Carl Pelletier (P.Geo.) visited the Project from May 17 to May 18, 2022. Onsite data verification included a general visual inspection of the Property and the core storage facilities, a check of drill collar coordinates, and a review of selected mineralized core intervals, the QA/QC program and the log descriptions of lithologies, alteration and mineralization.

## 12.2 Core Review

The core boxes are stored in core racks. The authors found the boxes in good order and properly labelled with the sample tags. The wooden blocks at the beginning and end of each drill run were still in place, matching the indicated footage on each box. The authors validated the sample numbers and confirmed the presence of mineralization in the reference half-core samples (Figure 12-1).

A. Proper labelling of the drill core boxes and mineralization from hole MSN-21-49
B. Sample tag stapled on core box
C. Sawing facility
D. Core racks

**Figure 12-1: Photographs Taken during the Drill Core Review**

## 12.3 Database

The Voyager database contains a total of 201 holes (46,906 m). The database includes 114 historical holes (20,486 m) drilled before 2017 (1960s, 1970s, 1983, 1993 and 2003) and 87 holes (26,420 m) drilled between 2017 and 2021.

### 12.3.1 Drill Hole Locations

Collar position coordinates and azimuths are presented in the database using the UTM system (NAD 83, Zone 17).

Casings were left in place with an identification tag. Collars from 2013 to 2018 drilling campaigns were surveyed by an independent surveyor (Paul Roy, Q.L.S., C.L.S). A Leica GS15 GNSS RTK receiver was set up as a base station at control point MS-1 (5,527,937.63mN, 564,210.33mE). The control point coordinates were determined in June 2018 using Precise Point Positioning from Natural Resource Canada (June 30, 2018 report, Document 7662). A measurement check was performed on existing permanent control point MS-2 (5,527,922.09mN, 564,091.77mE). At the time of the report, the 2020 and 2021 drill holes had not yet been professionally surveyed, but the collars had been check-surveyed by Voyager's project geologist using a handheld GPS. The collars of most historical drill holes were also check-surveyed by Voyager's project geologist using a handheld GPS.

The coordinates of 24 surface holes were confirmed by the author using a handheld GPS (Figure 12-2 and Table 12-1), then compared to the database. All results had acceptable precision.

The collar locations in the Voyager database are considered adequate and reliable.

A. South Zone stripping and trenches
B. Close-up of South Zone mineralization
C. MSN-21-02 collar
D. MSS-18-23 collar

**Figure 12-2: Examples of Onsite Verification**

Table 12-1: Original Collar Survey Data Compared to InnovExplo's Checks

| Hole ID | Original coordinates | | Checked coordinates | | Difference (m) | |
|---|---|---|---|---|---|---|
| | Easting | Northing | Easting | Northing | Easting | Northing |
| MS-13-17 | 562539 | 5529314.6 | 562539 | 5529317 | 0 | 2.4 |
| MSS-17-03 | 563918.6 | 5527987.4 | 563918 | 5527990 | -0.6 | 2.6 |
| MSS-17-07 | 564028.4 | 5528026.9 | 564028 | 5528030 | -0.4 | 3.1 |
| MSS-17-09 | 564026 | 5527948.5 | 564027 | 5527950 | 1 | 1.5 |
| MSS-17-12 | 564025.9 | 5527973.2 | 564026 | 5527975 | 0.1 | 1.8 |
| MSS-17-14 | 563915.1 | 5527942.4 | 563915 | 5527943 | -0.1 | 0.6 |
| MSS-18-23 | 563826.1 | 5528061.2 | 563826 | 5528062 | -0.1 | 0.8 |
| MSN-20-10 | 565305 | 5529907 | 565305 | 5529902 | 0 | -5 |
| MSN-20-13 | 565476 | 5530040 | 565474 | 5530044 | -2 | 4 |
| MSN-21-H-02 | 562606 | 5529397 | 562604 | 5529396 | -2 | -1 |
| MSN-21-H-03 | 562604 | 5529398 | 562604 | 5529401 | 0 | 3 |
| MSN-21-26 | 562902 | 5529747 | 562897 | 5529751 | -5 | 4 |
| MSN-21-27 | 562997 | 5529660 | 563002 | 5529656 | 5 | -4 |
| MSN-21-28 | 563105 | 5529665 | 563105 | 5529657 | 0 | -8 |
| MSN-21-29 | 563074 | 5529590 | 563075 | 5529587 | 1 | -3 |
| MSN-21-30 | 562997 | 5529584 | 562999 | 5529582 | 2 | -2 |
| MSN-21-31 | 563196 | 5529677 | 563199 | 5529661 | 3 | -16 |
| MSN-21-32 | 563203 | 5529629 | 563198 | 5529619 | -5 | -10 |
| MSN-21-39 | 562604 | 5529397 | 562606 | 5529400 | 2 | 3 |
| MSN-21-40 | 562691 | 5529386 | 562691 | 5529389 | 0 | 3 |
| MSN-21-41 | 562692 | 5529385 | 562690 | 5529386 | -2 | 1 |
| MSN-21-43 | 562811 | 5529381 | 562811 | 5529387 | 0 | 6 |
| MSN-21-44 | 562903 | 5529348 | 562903 | 5529346 | 0 | -2 |
| MSN-21-54 | 563297 | 5529638 | 563289 | 5529639 | -8 | 1 |

### 12.3.2 Downhole Survey

Since 2017, down-hole orientation surveys have been performed using a north-seeking Champ Gyro. The Champ Gyro was run down and then up the borehole length, with the up run being a repeat for quality assurance. Azimuth and dip accuracies are 0.75° and 0.15°, respectively. The use of a gyro-based instrument is appropriate for rock with significant proportions of magnetite. No historical holes were surveyed for downhole deviation; however, as these holes were all vertical, only minimal deviation was anticipated.

The downhole survey information was verified for 5% of the holes used in the 2022 MRE. The holes were selected based on their representativeness in terms of the drilling program they were part of and their geographical position with respect to the interpreted mineralized zones.

Minor errors of the type normally encountered in a project database were identified and corrected.

### 12.3.3 Assays

The author was given access to the assay certificates for all drilling programs since 2013. The assays in the database were compared to the original certificates sent from the laboratory. The verified holes represent 5% of the holes used in the 2022 MRE database. The holes were selected based on their representativeness in terms of the drilling program they were part of and their geographical position with respect to the interpreted mineralized zones. Minor errors of the type normally encountered in a project database were identified and corrected.

For the pre-2013 historical holes, only paper logbooks were available for validation by the author. The author compared the historical assays to recent assays to verify and validate the quality of the historical data for these holes. Cumulative probability plots of $Fe_2O_3$ and $TiO_2$ (head grades) show an excellent correlation between recent and historical values (Figure 12-3 and Figure 12-4). A cumulative probability plot of $V_2O_5$ values (head grade) shows a greater proportion of lower grades below 0.1% $V_2O_5$ and higher grades above 0.1% $V_2O_5$ in the recent assays compared to historical assays (Figure 12-5). These discrepancies could be explained by the fact that vanadium grades in historical samples were measured on longer samples (an average of 7 m for historical samples versus 2 to 4 m for recent samples). As vanadium grades are characterized by greater heterogeneity spatially, longer samples cause smoothing of the grades. The differences, however, are not considered material.

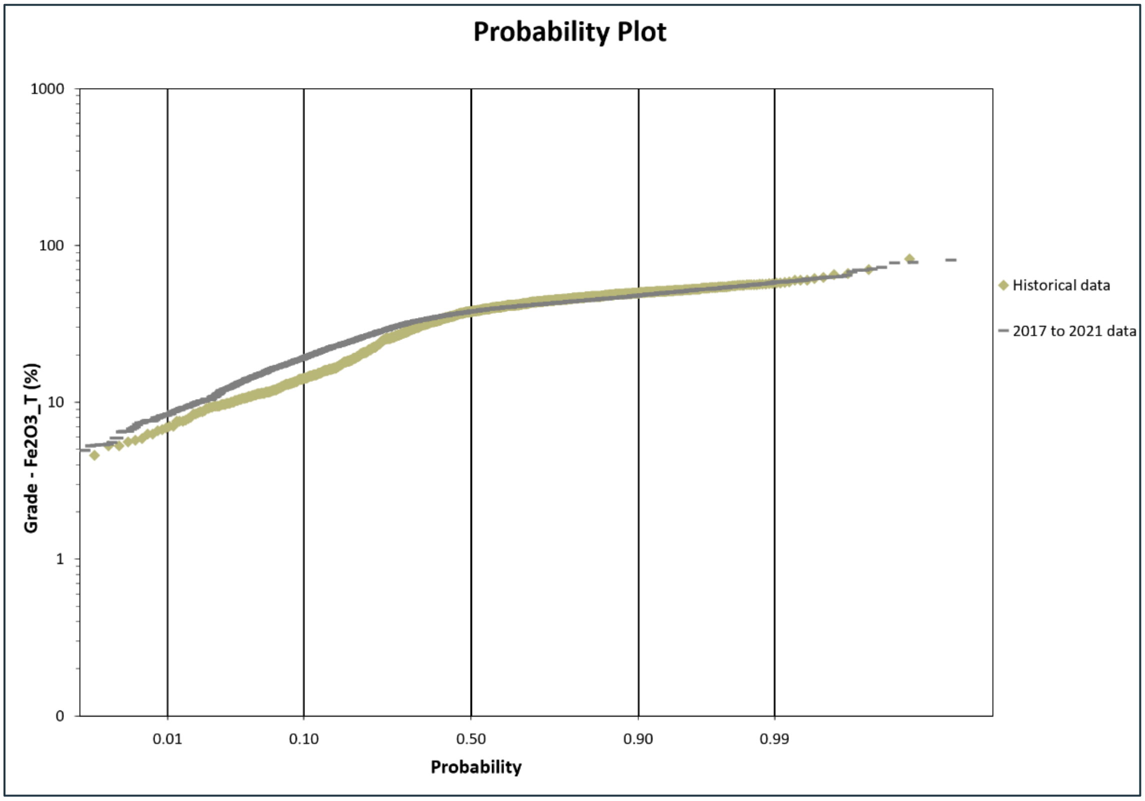


Figure 12-3: Cumulative Probability Plot for $Fe_2O_3$ in Recent and Historical Assays

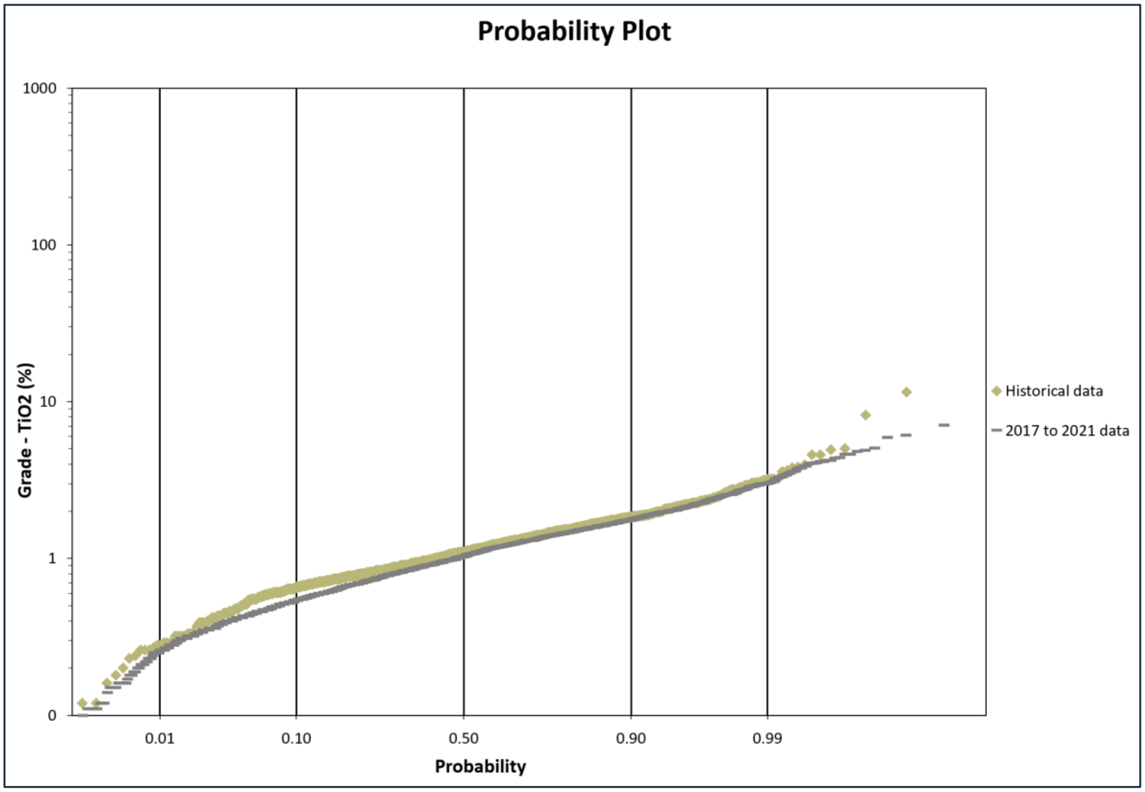


Figure 12-4: Cumulative Probability Plot for $TiO_2$ in Recent and Historical Assays

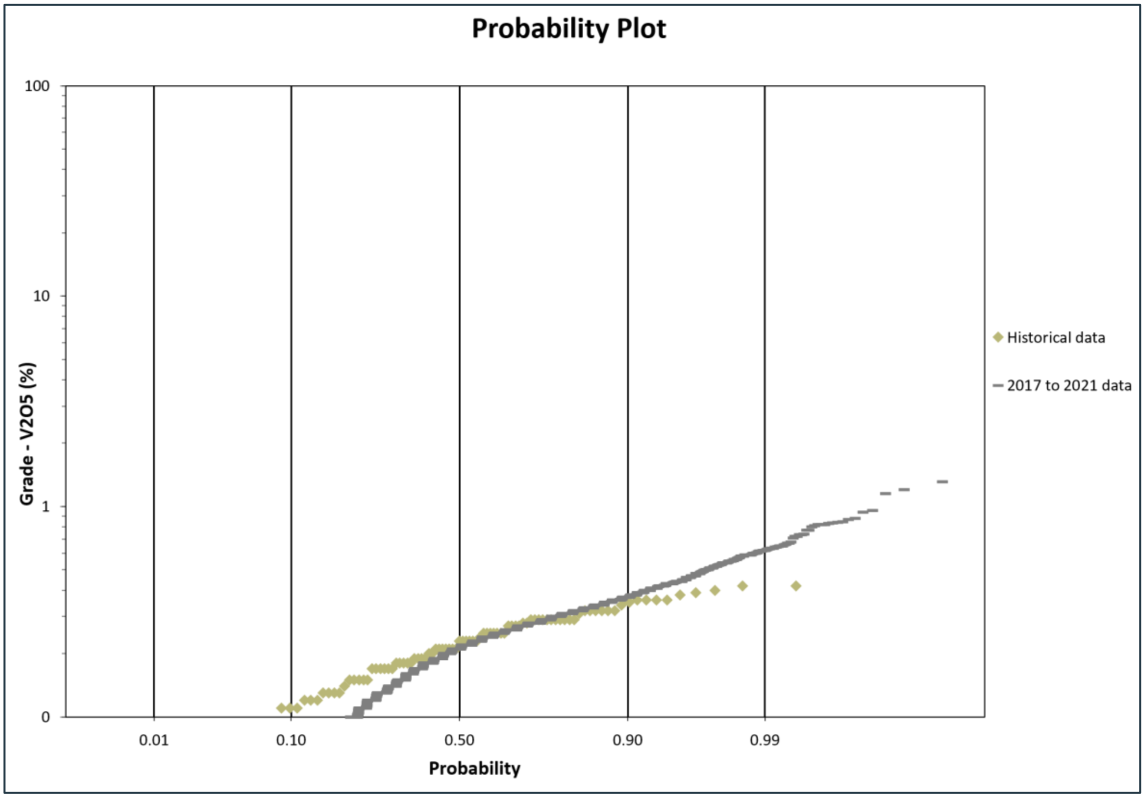


**Figure 12-5: Cumulative Probability Plot for $V_2O_5$ in Recent and Historical Assays**

## 12.4 Conclusion

The author believes his data verification has demonstrated the validity of the data and the project protocols. The author considers the Voyager database valid and of sufficient quality to be used for the mineral resource estimate herein.

# 13. Mineral Processing and Metallurgical Testing

This section summarizes the test work performed on the material from the Mont Sorcier property.

- Historical test work programs were carried out on the project by Campbell Chibougamau Mines Ltd with Lakefield Research of Canada in 1966 (13.1) and the CRM (Centre de Recherche Minérales) in 1975 (13.2);
- More recent testwork was carried out by VONE with COREM in 2017 (13.3) and 2019 (13.4) to support the 2020 Preliminary Economic Assessment.

The following is a summary of the major findings from these test programs.

## 13.1 1966 Lakefield Research of Canada Limited Test Program

In 1966 Lakefield Research of Canada Limited (***Ref Doc 13.1***) executed an autogenous grinding and magnetic separation and pilot plant test program on a 35 tons magnetite bearing sample. As part of the program, tests were carried out to determine liberation with particle size distribution relationships, as well as dry magnetic separation using a Sala-Mortsell drum separator to give additional information on the concentration characteristics of the mineralized material.

Crude mineralized material analyses were obtained by direct sampling of the screen undersize in tests 4 to 10. Magnetic iron assays were obtained from the balance of tests 9 and 11. Results showed on average:

- 28.9% soluble (sol.) Fe;
- 25.3% magnetic (mag.) Fe.

The purpose of the grinding was to reduce the magnetite bearing sample to a degree of fineness that subsequent magnetic separation could produce a finished concentrate of the desired grade. The required grind was thought to be 90% passing 44 µm:

- First tests 1 to 3 were conducted in closed-loop autogenous mill, but only lead to 72.6% passing 44 µm;
- The following tests 4 to 10 used a two-stage grinding process, one open-circuit cascade mill and the other a conventional ball mill, and successfully reached the grind target and produced concentrate grading between 63.7 and 66.7 % Fe.

Concentrates from previous grinding and magnetic separation tests were reground and submitted to further magnetic separation to produce a high-grade concentrate (tests 11 to 15).

Table 13-1 summarizes these results.

**Table 13-1: Two Stage Grinding and Regrind Test Results (Lakefield, 1966)**

| Test No | Description | Concentrate % -44 µm | Concentrate % Sol. Fe | Concentrate % Sol. Fe Recovery |
|---|---|---|---|---|
| 1 | Single grinding | 58.0 | 57.7 | - |
| 2 | Single grinding | 71.8 | 61.5 | - |
| 3 | Single grinding | 72.6 | 62.6 | - |
| 4 | Two-stage grinding | 84.7 | 64.2 | 70.0 |
| 5 | Two-stage grinding | 86.3 | 64.4 | 85.6 |
| 6 | Two-stage grinding | 93.6 | 65.4 | 88.0 |
| 7 | Two-stage grinding | 94.1 | 66.3 | 83.0 |
| 8 | Two-stage grinding | 95.5 | 66.7 | 84.3 |
| 9 | Two-stage grinding | 95.4 | 65.6 | 83.1 |
| 10 | Two-stage grinding | 92.4 | 63.7 | 82.4 |
| 11 | Test 9 concentrate regrind | 98.0 | 68.5 | 82.4 |
| 12 | Test 10 concentrate regrind | 98.8 | 68.5 | 81.3 |
| 13 | Test 2 to 6 concentrate regrind | 97.3 | 67.6 | - |
| 14 | Test 2+6 concentrate regrind | 97.6 | 68.0 | 83.1 |
| 15 | Test 4+5 concentrate regrind | 98.8 | 67.6 | 83.4 |

## 13.2 1975 Centre de Recherches Minerales Test Program

A total of 85 samples from the North zone drill holes were submitted to Davis Tube in order to produce a magnetic concentrate above 64 % Fe with the maximum iron recovery. The possibility to produce a concentrate above 68 % Fe was also tested.

The tests (***Ref Doc 13.2***) showed the sample must be ground to 98% -45 µm to produce a magnetic concentrate with a grade between 62.7% and 68.1% Fe, with $TiO_2$ between 0.57% and 2.77% and $V_2O_5$ between 0.4% and 0.7%.

It also showed that grinding at a coarser size did not have a significant effect on the Fe recovery.

## 13.3 2017 COREM Test Program

The study (***Ref Doc 13.3***) was performed using sample material from drillhole MSS-17-06 only. The testing was done on a composite of 24 separate 4 kg samples that were combined to produce a 96 kg composite with a grade of 0.39% $V_2O_5$, 32.2% Fe, and 42% Magnetite, which is significantly higher than the average indicated and inferred resource grade.

A Bond Ball Mill Work Index at 53 µm was performed on the composite sample and resulted in 18.6 kWh/t, which classified the material as hard.

### 13.3.1 Mineralogical Liberation

A mineralogical study was performed from -300 µm to -38 µm using the Mineral Liberation Analyzer (MLA) in order to identify the liberation of the magnetite.

Figure 13-1 shows the fraction of liberated magnetic for the composite and by size fractions. None of the size fractions contained 90% or more of liberated magnetite. The liberation of magnetite increases significantly with size and reaches a maximum of 78% of the particle weight for the -38 µm fraction.

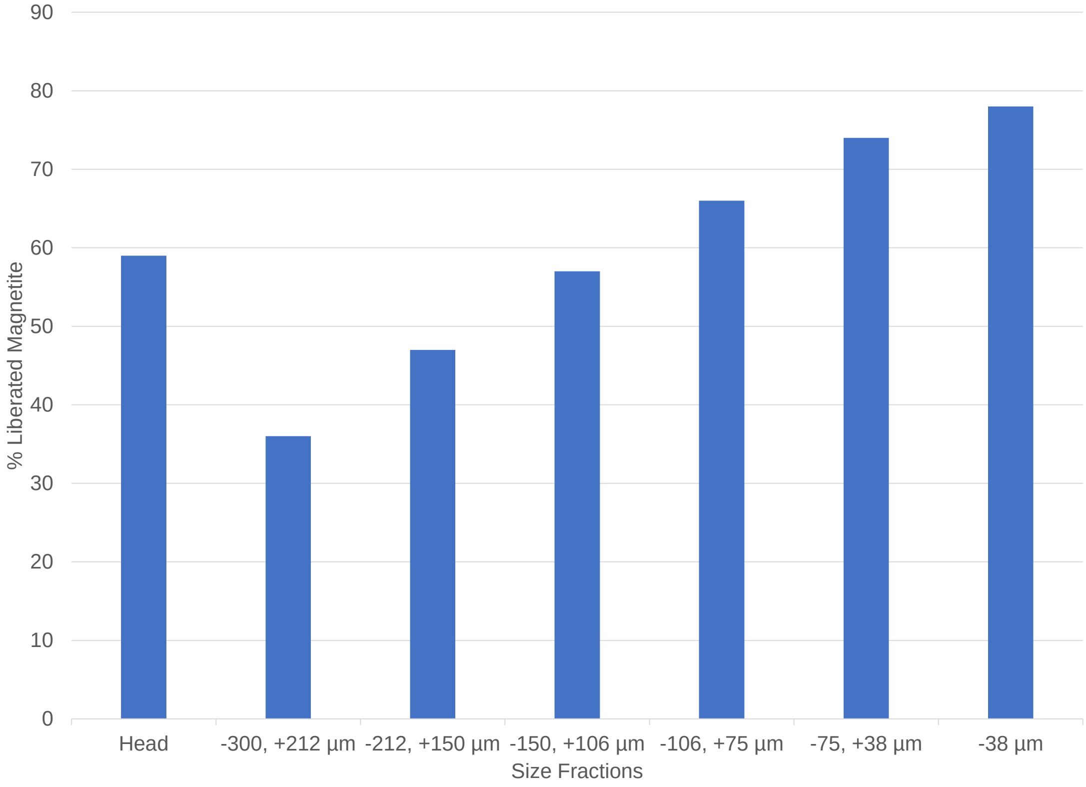


**Figure 13-1: MLA Liberation Results (COREM 2017)**

### 13.3.2 Magnetic Recovery Tests

COREM carried out Davis Tube tests at 80% passing 75 µm, 53 µm and 38 µm (Table 13-2), which showed that while recovery of iron and vanadium does not vary significantly with grind size, there is an effect on the Fe grade of the concentrate produced, with a grind size of -38 µm required to achieve a concentrate grade of >65% Fe.

A magnetic production was performed with a lab scale Low Intensity Magnetic Separator (LIMS) on a 30 kg composite at 80% passing 38 µm and confirmed the Davis Tube results.

**Table 13-2: Davis Tube and LIMS Production Test Results (COREM, 2017)**

| Test | Concentrate % Fe | Concentrate % $SiO_2$ | Concentrate % $V_2O_5$ | Weight Recovery (%) | Fe Recovery (%) | $V_2O_5$ Recovery (%) |
|---|---|---|---|---|---|---|
| DTT $P_{80}$ = 75 µm | 63.3 | 3.0 | 0.69 | 47.0 | 93.7 | 81.4 |
| DTT $P_{80}$ = 53 µm | 64.4 | 2.4 | 0.69 | 47.0 | 93.3 | 81.4 |
| DTT $P_{80}$ = 38 µm | 65.1 | 2.1 | 0.71 | 46.0 | 93.9 | 81.2 |
| LIMS $P_{80}$ = 38 µm | 66.3 | 2.0 | 0.73 | 46.0 | 91.4 | 79.5 |

### 13.3.3 Alkali Roasting and Leaching Results

The LIMS concentrate was subjected to a series of alkali roasting tests in order to render vanadium amenable to leaching, followed by a water leaching step.

Following several preliminary roasting optimization tests (using 50 g concentrate samples) at varying temperatures, a 4 kg sample was roasted with NaOH salt at 400°C, and then leached in water and a final concentrate precipitated. The final roasting / leaching test showed 69.2% recovery of vanadium to the leach solution. The final vanadium concentrate was obtained after a 1-hour calcination step, which led to the production of a 64.6% $V_2O_5$ concentrate.

## 13.4 2019 COREM Test Program

In 2019, COREM (***Ref Doc 13.4***) processed drill core samples from Vanadium One. The material sent for testing was stored in bags and composited into four composite samples, based on Vanadium One's instructions. The composite samples were labelled "North High Grade" (NHG), "North Low Grade" (NLG), "South High Grade" (SHG) and "South Low Grade" (SLG).

The objective of the 2019 project was to carry out grindability and concentrability test work on these composites. The testwork methodology is presented on Figure 13-2.

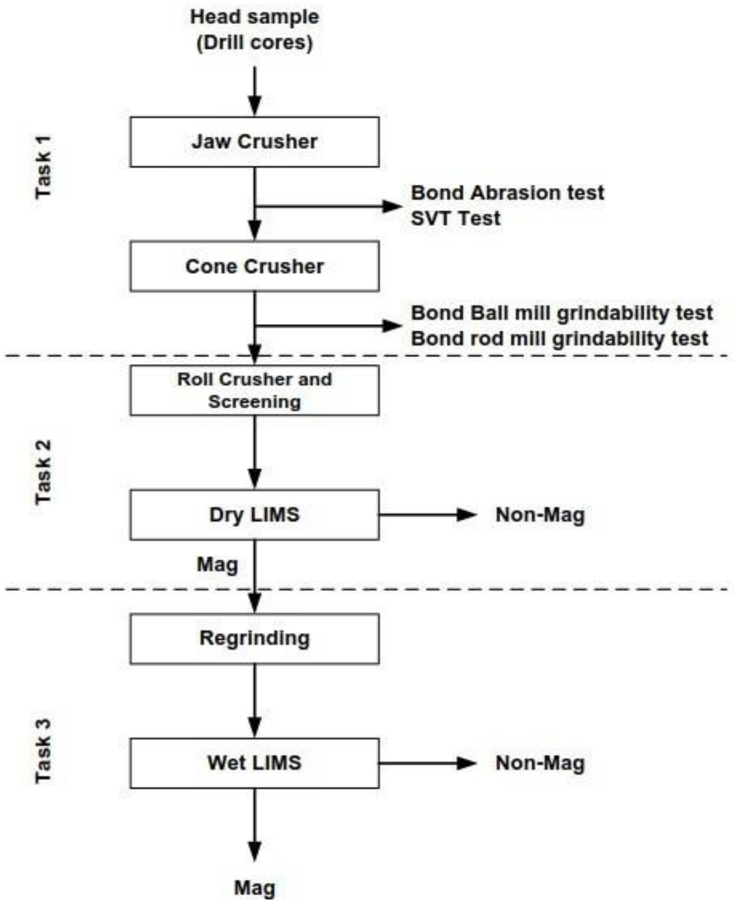


**Figure 13-2: Testwork Methodology (COREM 2019)**

### 13.4.1 Composite Sample Characterization

The head analyses of the composite samples are summarized in Table 13-3:

- At the exception of the NLG sample, magnetite and total iron content were significantly higher than the average indicated and inferred resource grades;
- The main impurities were $SiO_2$ and MgO;
- Based on the Satmagan and the Fe values, it can be assumed that iron-bearing minerals were not only magnetite.

**Table 13-3: Composite Composition (COREM, 2019)**

| Composite | Fe (%) | Mag. (%) | $SiO_2$ (%) | $Al_2O_3$ (%) | MgO (%) | CaO (%) | $TiO_2$ (%) | $V_2O_5$ (%) |
|---|---|---|---|---|---|---|---|---|
| North High Grade (NHG) | 32.0 | 38 | 22.2 | 2.1 | 20.9 | 0.8 | 1.2 | 0.38 |
| North Low Grade (NLG) | 24.5 | 26 | 26.3 | 6.0 | 21.6 | 1.9 | 1.0 | 0.19 |
| South High Grade (SHG) | 35.5 | 45 | 19.1 | 1.1 | 21.0 | 0.2 | 1.0 | 0.50 |
| South Low Grade (SLG) | 31.2 | 39 | 20.9 | 1.1 | 23.2 | 0.4 | 0.7 | 0.25 |
| **Average** | **30.8** | **37** | **22.1** | **2.6** | **21.7** | **0.8** | **1.0** | **0.33** |

### 13.4.2 Grindability Tests

The grindability tests included standard Bond abrasion test, rod and ball mill work indices and SAG variability test (SVT).

Table 13-4 summarizes the results of the grindability tests. The standard grindability tests average results indicated:

- Abrasion index (Ai): The material was classified as non-abrasive;
- Bond rod mill work index (RWI) and Bond ball mill work index (BWI): The material was classified as hard;
- SVT tests results: The material was classified at the 82.9 percentile, which means that this material was harder than 82.9% of the materials tested by Starkey & Associate Inc.

**Table 13-4: Grindability Test Results Summary (COREM, 2019)**

| Composite | Ai (g) | RWI (kWh/t) | BWI (kWh/t) | SVT (kWh/t) |
|---|---|---|---|---|
| North High Grade (NHG) | 0.0458 | 16.4 | 20.0 | 10.8 |
| North Low Grade (NLG) | 0.0255 | 18.0 | 19.2 | 19.0 |
| South High Grade (SHG) | 0.0184 | 13.8 | 19.6 | 13.8 |
| South Low Grade (SLG) | 0.0153 | 12.7 | 19.6 | 10.3 |
| **Average** | **0.0263** | **15.2** | **19.6** | **13.5** |

### 13.4.3 Preconcentration Stage with Dry LIMS

The concentrability test work included preconcentration using dry Low Intensity Magnetic Separator (LIMS) at a crushing size of 6.3 mm, 3.35 mm and 1.0 mm (Table 13-5). Based on the results, the following average metallurgical performances of the magnetic products were calculated:

- Weight yield of 82.7%;
- Magnetite grade of 41% at a 98.3% recovery;
- Iron grade of 33.4% at a 95.1% recovery;

- $V_2O_5$ grade of 0.37% at a 94.6% recovery.

Based on these results, it can be concluded that preconcentration will remove low-grade material in an early stage of the beneficiation process, and thus result in potential savings in energy and CAPEX for downstream equipment. Weight removal, concentrate magnetite and iron grade increase when crushing size is reduced at the cost of iron recovery. Decreasing the crushing size from 6.3 mm to 1.0 mm leads to an additional 13% weight removal at the cost of 3% iron recovery.

**Table 13-5: LIMS Preconcentration Test Results Summary (COREM, 2019)**

| Test No | Feed % Fe | Concentrate % Fe | Concentrate % Mag | Concentrate % $V_2O_5$ | Weight Recovery (%) | Fe Recovery (%) | $V_2O_5$ Recovery (%) |
|---|---|---|---|---|---|---|---|
| Average $P_{95}$ = 6.3 mm | 30.8 | 31.6 | 38 | 0.35 | 88.4 | 96.6 | 96.5 |
| Average $P_{95}$ = 3.35 mm | 30.8 | 32.5 | 40 | 0.36 | 84.1 | 95.1 | 95.0 |
| Average $P_{95}$ = 1.0 mm | 30.8 | 36.2 | 45 | 0.41 | 75.5 | 93.6 | 92.3 |
| Average NHG | 32.0 | 35.1 | 43 | 0.45 | 87.0 | 97.1 | 98.8 |
| Average NLG | 24.5 | 28.2 | 31 | 0.21 | 75.8 | 89.6 | 91.4 |
| Average SHG | 35.5 | 36.3 | 46 | 0.52 | 87.6 | 97.7 | 98.7 |
| Average SLG | 31.2 | 34.2 | 43 | 0.31 | 80.2 | 96.1 | 98.4 |
| **Average (all)** | **30.8** | **33.4** | **41** | **0.37** | **82.7** | **95.1** | **98.3** |

### 13.4.4 Davis Tube Concentration Tests

During the concentration tests, the Davis tube tests results showed that, at a grind of P95 ~38 µm for the four composite samples, the average weight recovery of the mag product was 47.3% grading 65.8% Fe, 89% magnetite and 0.67% $V_2O_5$, with corresponding recoveries of 92.0% Fe, 98.3% magnetite and 85.3% $V_2O_5$.

- The NLG composite sample had the lowest weight yield and final Fe grade;
- The SLG and SHG composites samples showed similar performance and the highest recoveries and final grades.

Figure 13-3 presents a summary of the Davis Tube concentration tests:

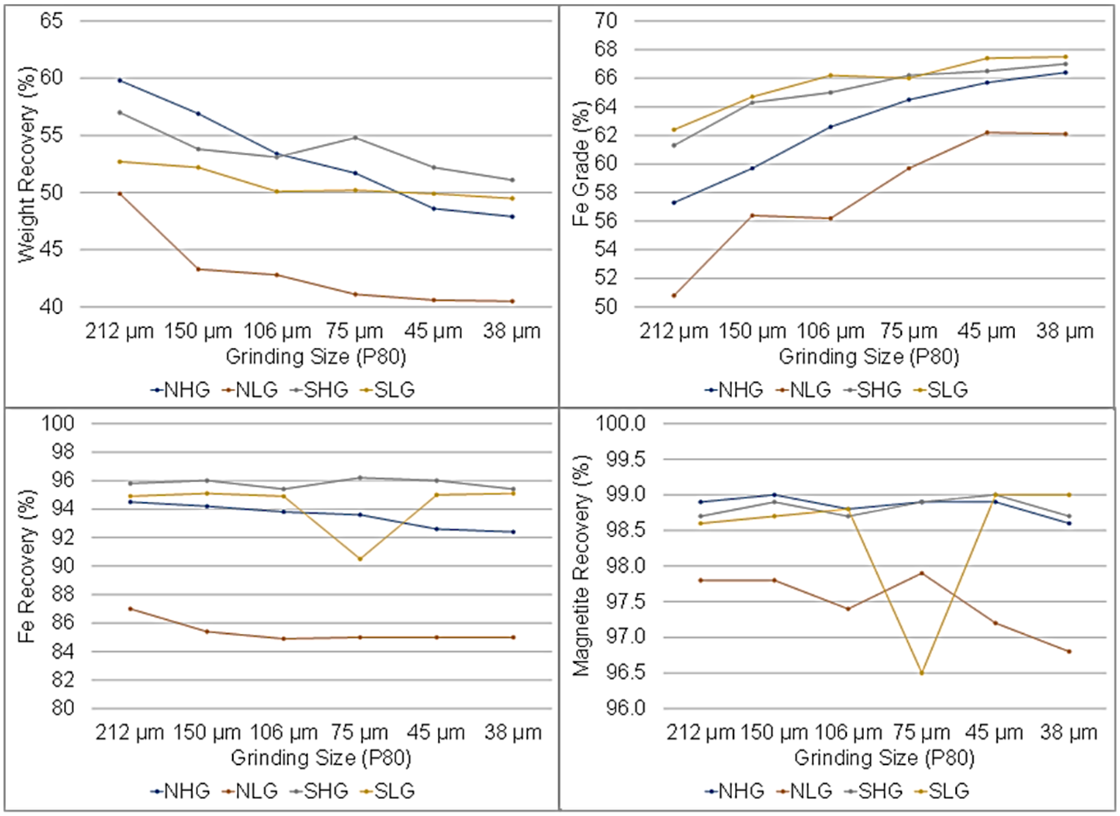


**Figure 13-3: Davis Tube Concentration Test Summary (COREM 2019)**

### 13.4.5 Wet LIMS Concentration Tests

From the wet LIMS tests results performed on NHG and SHG composite samples at -106 µm and -38 µm (Table 13-6), it can be observed that:

- Globally, the wet LIMS results were consistent with the Davis tube results. The quality of the wet LIMS magnetic products was slightly lower than the Davis tube magnetic products. This behavior was expected because the separation of the wet LIMS is less efficient than the Davis tube separation due to a less efficient washing of the wet LIMS magnetic product compared to that of the Davis Tube;
- The quality upgrade of the concentrate when ground to 38 µm instead of 106 µm was limited, especially for the NHG composite sample;
- $SiO_2$, MgO, $TiO_2$ and $Al_2O_3$ grades in the magnetic concentrate remained similar despite grinding size.

**Table 13-6: Wet LIMS Concentration Summary Results (COREM, 2019)**

| Composite | Concentrate Grade (%) | | | | | | Recovery (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Fe | Mag | $V_2O_5$ | $SiO_2$ | MgO | $TiO_2$ | Weight | Fe | $V_2O_5$ |
| $P_{95}$ = 106 µm – NHG | 61.1 | 84 | 0.75 | 4.9 | 5.0 | 1.9 | 50.4 | 90.3 | 84.4 |
| $P_{95}$ = 38 µm – NHG | 61.8 | 84 | 0.75 | 4.5 | 4.5 | 1.7 | 47.5 | 86.0 | 82.9 |
| $P_{95}$ = 106 µm – SHG | 63.8 | 85 | 0.85 | 2.9 | 4.4 | 1.2 | 52.7 | 94.6 | 87.1 |
| $P_{95}$ = 38 µm - SHG | 65.7 | 89 | 0.87 | 1.8 | 3.1 | 1.1 | 49.8 | 92.2 | 84.4 |

Table 13-7 presents the final concentrate mass balance recoveries of the pre-concentration step at 3.35 mm and concentration step at a $P_{95}$ of 106 µm and 38 µm. Weight recoveries are high due to the high magnetite content of the samples tested.

**Table 13-7: Final Concentrate Global Mass Balance (COREM, 2019)**

| Composite | Recovery (%) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Weight | Fe | Mag | $V_2O_5$ | $SiO_2$ | MgO | $TiO_2$ |
| $P_{95}$ = 106 µm – NHG | 44.3 | 87.8 | 94.6 | 83.8 | 9.7 | 10.1 | 60.8 |
| $P_{95}$ = 38 µm – NHG | 41.7 | 83.6 | 90.8 | 80.3 | 8.4 | 8.7 | 50.0 |
| $P_{95}$ = 106 µm – SHG | 47.6 | 93.0 | 96.6 | 85.2 | 6.6 | 9.1 | 62.8 |
| $P_{95}$ = 38 µm - SHG | 45.0 | 90.6 | 94.4 | 82.5 | 4.0 | 6.3 | 52.9 |

## 13.5 2022 Testwork

### 13.5.1 Recovery Model Development (Soutex 2022)

The drill hole database from Mont Sorcier was used to develop a geometallurgical model to predict iron recovery of geological samples, units or blocks based on their iron and magnetite content (Satmagan). The model was developed based on drill hole samples for which:

- Davis Tube Tests were performed, and complete results were logged in the database:
    - A total of 154 Davis Tube test ($P_{80}$ = 38 µm) results on composites from 2021 drill holes were used to develop the model which will be updated when new Davis Tube tests results will be available.
- Complete chemical analysis was logged in the database, including magnetite content of the samples using Satmagan.

The developed model is as follows:

$$Fe\ Recovery\ (\%) = 73.87 \times \frac{Feed\ Magnetite\ Grade\ (\%)}{Feed\ Fe\ Grade\ (\%)} - 7$$

The model is valid for the production of a concentrate at 65% Fe at 0.52% $V_2O_5$ and assumes typical magnetic process performances that available testwork showed were achievable.

Figure 13-4 presents the Fe recovery predicted by the model and the available Davis Tube Test results, while Table 13-8 compares the predicted and test recoveries for 2019 NHG and SHG composites samples.

**Table 13-8: Final Concentrate (COREM, 2019) – Test versus Model Recoveries**

| Composite | Feed Grade (%) | | Test Recovery (%) | | Model Recovery (%) | |
|---|---|---|---|---|---|---|
| | Fe | Mag | Weight | Fe | Weight | Fe |
| P95 = 38 µm - NHG | 32.0 | 38.0 | 41.7 | 83.6 | 39.7 | 80.7 |
| P95 = 38 µm - SHG | 35.5 | 45.0 | 45.0 | 90.6 | 47.3 | 86.6 |

For a feed at 25.46% Fe and 27.75% Magnetite (indicated resources grades), the model predicts an iron recovery of 73.5% and a weight recovery of 28.8%. These recoveries will be used as a basis for the updated plant design.

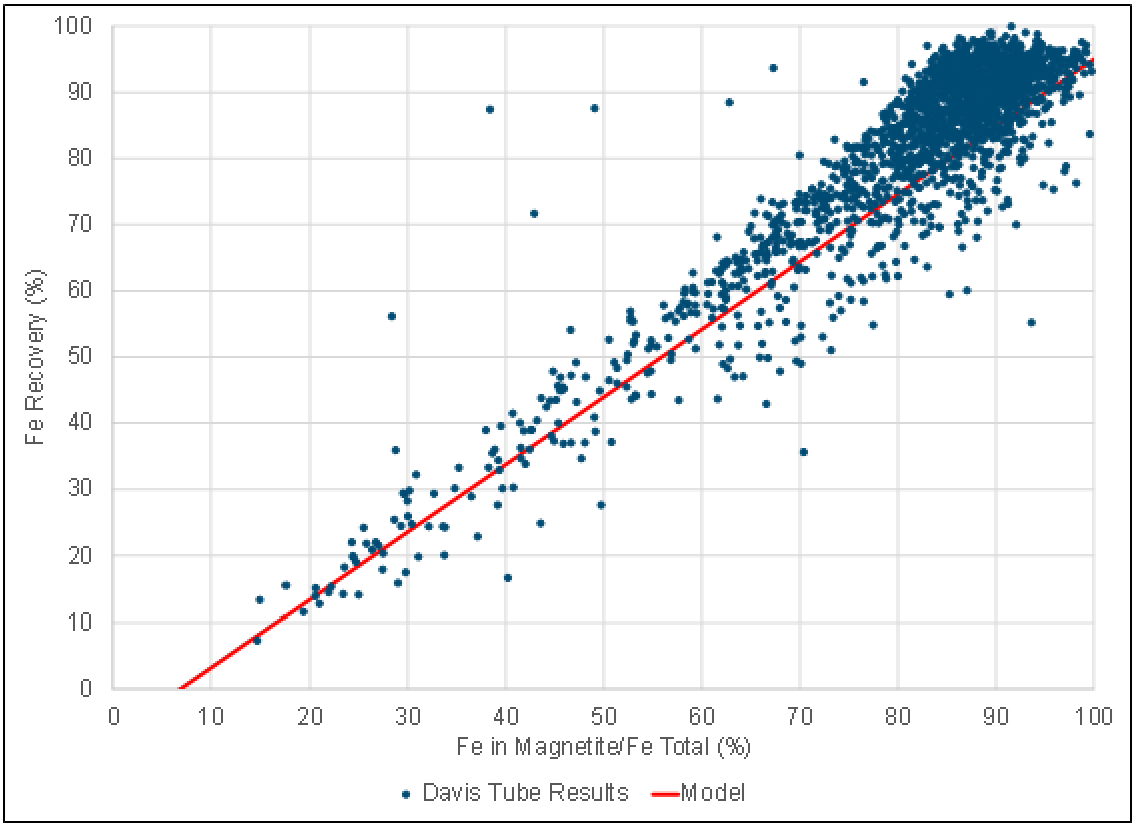


**Figure 13-4: Fe Recovery Model (Soutex 2022)**

### 13.5.2 Sulphur Flotation (SGS 2022)

The sulphur content of Mont Sorcier ore is variable, but averages 0.7% S. Davis Tube tests performed showed the presence of sulphur mineral recovered through a magnetic process (pyrrhotite), while other minerals are rejected through a magnetic process (pyrite). Thus, it can be assumed a magnetic process will produce a concentrate with sulphur grade above 0.4% from time to time. This value being too high for some markets, preliminary reverse flotation tests were conducted to evaluate the feasibility of producing low-sulphur content iron concentrate:

- A composite sample from the 2021 drilling campaign was generated to represent the average ROM;
- Preliminary flotation tests were conducted on magnetic concentrates produced by stage grinding to a $P_{80}$ of 38 µm and magnetic separation;
- Preliminary tests showed it was possible to reduce the magnetic concentrate sulphur grade below 0.4% from a magnetic concentrate grading 0.73% S:
    - The lowest grade achieved was 0.12% S;
    - Magnetite recovery ranging from 75% to 94% was achieved.

Although preliminary, these test results indicate that sulphur removal by reverse flotation is feasible. Further tests will need to be performed in the next engineering phase to confirm the maximum reduction achievable while maximizing magnetite recovery.

# 14. Mineral Resources Estimates

The mineral resource estimate update for the Mont Sorcier Project (the "2022 MRE") was prepared by Marina Iund (P.Geo.) and Carl Pelletier (P.Geo.), using all available information. The main objective was to update the results of the previous mineral resource estimate for the Project, dated June 25, 2021 (Longridge et al., 2021; the "2021 MRE"). The updated estimate includes data from new drill holes on the North Zone.

The effective date of the 2022 MRE is June 6, 2022.

## 14.1 Methodology

The resource area has an E-W strike length of 4.8 km, a width of approximately 1.5 km, and a vertical extent of 750 m below surface.

The 2022 MRE was prepared using Leapfrog 2021.2 ("Leapfrog") and GEOVIA Surpac 2021 ("Surpac") software. LeapFrog was used to model the lithologies, mineralized zones and fault wireframes. Surpac was used for the estimation, which consisted of 3D block modelling and the inverse distance square ("ID2") interpolation method. Statistical, capping and variography studies were completed using Snowden Supervisor v8.13 and Microsoft Excel software.

The main steps in the methodology were as follows:

- Review and validate the database;
- Validate the geological model and interpretation of the mineralized units;
- Validate the drill hole intercepts database, compositing database and capping values for geostatistical analysis and variography;
- Validate the block model and grade interpolation;
- Revise the classification criteria and validate the clipping areas for mineral resource classification;
- Assess the resources with "reasonable prospects for economic extraction" and select appropriate cut-off grades and pit shell; and
- Generate a mineral resource statement.

## 14.2 Drill Hole Database

Forty-two (42) new diamond drill holes ("DDH") have been drilled on the North Zone since the 2021 MRE.

The updated database from Voyager contains 201 holes (46,906 m). The database includes 114 historical holes (20,486 m) drilled before 2017 (1960s, 1970s, 1983, 1993 and 2003) and 87 holes (26,420 m) drilled between 2017 and 2021.

Holes from the 1980s were used to build the geological model but not the resource estimate. All these holes are located outside the mineralized zones, except hole MS84-SC-83-14, which does pass through the North Zone but was not sampled as iron and vanadium were not the targeted commodities at the time. These holes are not included in the 2022 MRE database. Therefore, the 2022 MRE database contains 170 holes (43,178 m), including 83 historical holes (16,758 m) drilled before 2017 (1960s, 1970s, 1993 and 2003) and 87 holes (26,420 m) drilled between 2017 and 2021. It contains 7,395 sampled intervals taken from 27,432 m of drilled core (Table 14-1), with assay results and coded lithologies from the drill core logs.

The older drilling campaigns took place between 1963 and 1966. Samples were assayed for head grade $Fe_2O_3$_T and $TiO_2$ over intervals approximately 7 m long. These campaigns also yielded some larger composite sample intervals, collected in the 1970s from the old holes, that vary from 10 m to 60 m. These composites were assayed for $Fe_2O_3$_T and $TiO_2$ head grades. A Davis Tube magnetic concentrate fraction was also prepared from the composites and assayed for several other oxides, including $V_2O_5$.

Holes from the 1974 drilling program were assayed for head grade $Fe_2O_3$_T and Cu over intervals of approximately 2 m.

Holes from the 1993 drilling program were assayed for head grade $Al_2O_3$, $Fe_2O_3$_T, MgO, $TiO_2$, $SiO_2$, CaO, $Cr_2O_3$, $K_2O$, MnO, $Na_2O$, $P_2O_5$, $Na_2O$ and Cu over intervals of approximately 3 m.

Holes from the 2013 drilling program were assayed for head grade $Al_2O_3$, $Fe_2O_3$_T, MgO, $TiO_2$, $SiO_2$, CaO, $Cr_2O_3$, $K_2O$, MnO, $Na_2O$, $P_2O_5$, $Na_2O$, $V_2O_5$ and S over intervals of approximately 3 m. Satmagan tests were also performed to estimate magnetite percentages.

The latest drilling programs were completed between 2017 and 2021. Diamond drill core was sampled over intervals of 2 m in the South Zone and 4 m in the North Zone. They were assayed for $Al_2O_3$, $Fe_2O_3$_T, MgO, $TiO_2$, $SiO_2$, CaO, $Cr_2O_3$, $K_2O$, MnO, $Na_2O$, $P_2O_5$, $Na_2O$, and $V_2O_5$ in both the head grade and the magnetic fraction produced using Davis Tube magnetic separation. Sulphur head grades were collected for some intervals. Satmagan tests were also performed to estimate the percentage of magnetic Fe (“Fe Mag”).

The 170 DDH cover the 4.8-km strike length of the Project at a reasonably regular drill spacing of 100 to 200 m. Until 2020, drilling was spaced at 100 m in the South Zone and 500 m in the North Zone. In 2021, Voyager completed drilling at 100 m spacing in the core of the North Zone.

**Table 14-1: Detail of Variables Assayed for Samples included in the 2022 MRE Database**

| | Variables Assayed | 1960s DDH | 1974 DDH | 1993 DDH | 2013 DDH | 2017 to 2021 DDH |
|---|---|---|---|---|---|---|
| Head Grade | $Fe_2O_3$_T | x | x | x | x | x |
| | $TiO_2$ | x | | x | x | x |
| | $V_2O_5$ | | | | x | x |
| | $Al_2O_3$ | | | x | x | x |
| | CaO | | | x | x | x |
| | Cu | | x | x | | partially |
| | $Cr_2O_3$ | | | | x | x |
| | $K_2O$ | | | x | x | x |
| | MgO | | | x | x | x |
| | MnO | | | x | x | x |
| | $Na_2O$ | | | x | x | x |
| | $P_2O_5$ | | | x | x | x |
| | S | | | | x | partially |
| | $SiO_2$ | | | x | x | x |
| | Fe Mag | | | | x | x |
| Davis Tube Test | $Fe_2O_3$_T | x | partially | | | x |
| | $TiO_2$ | x | partially | | | x |
| | $V_2O_5$ | x | partially | | | x |
| | $Al_2O_3$ | x | partially | | | x |
| | CaO | | | | | x |
| | Cu | x | partially | | | |
| | $Cr_2O_3$ | | | | | x |
| | $K_2O$ | | | | | x |
| | MgO | x | partially | | | x |
| | MnO | | | | | x |
| | $Na_2O$ | x | | | | x |
| | $P_2O_5$ | | | | | x |
| | $SiO_2$ | x | partially | | | x |

Since only $Fe_2O_3$_T was assayed systematically, the percentage of magnetite was estimated using the regression formulas obtained from the Satmagan (Fe Mag) and $Fe_2O_3$_T results (Figure 14-1 and Figure 14-2). As the Satmagan test estimates the percentage of Fe magnetic, results were multiplied by 1.381 to obtain the magnetite percentage ($Fe_3O_4$).

Davis Tube test results were used to estimate the Fe Recovery and the Weight Recovery. The methodology used to define those parameters is described in Section 13.5.

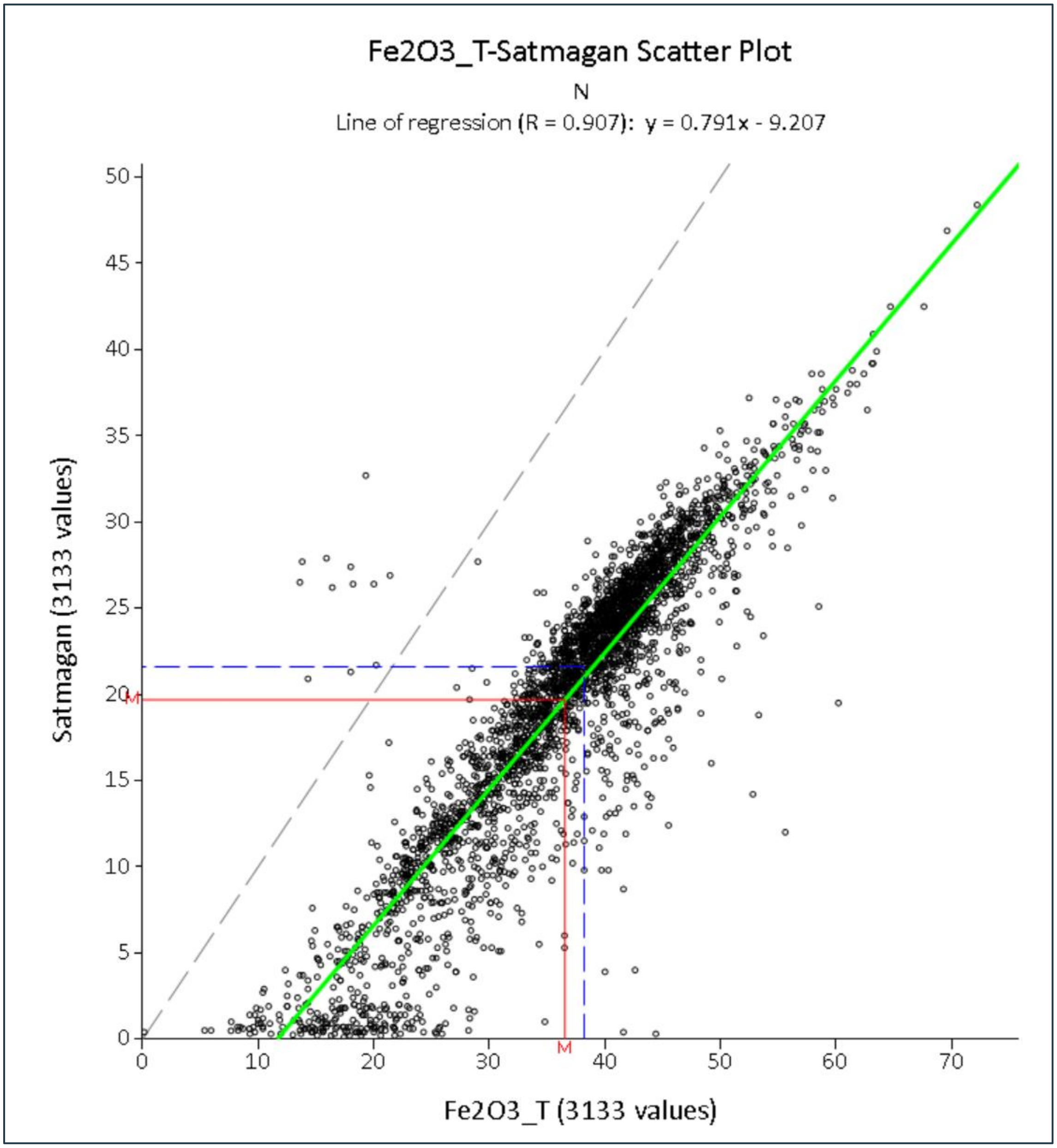


**Figure 14-1: Linear Regression Formula between $Fe_2O_3$_T and Fe Mag, North Zone**

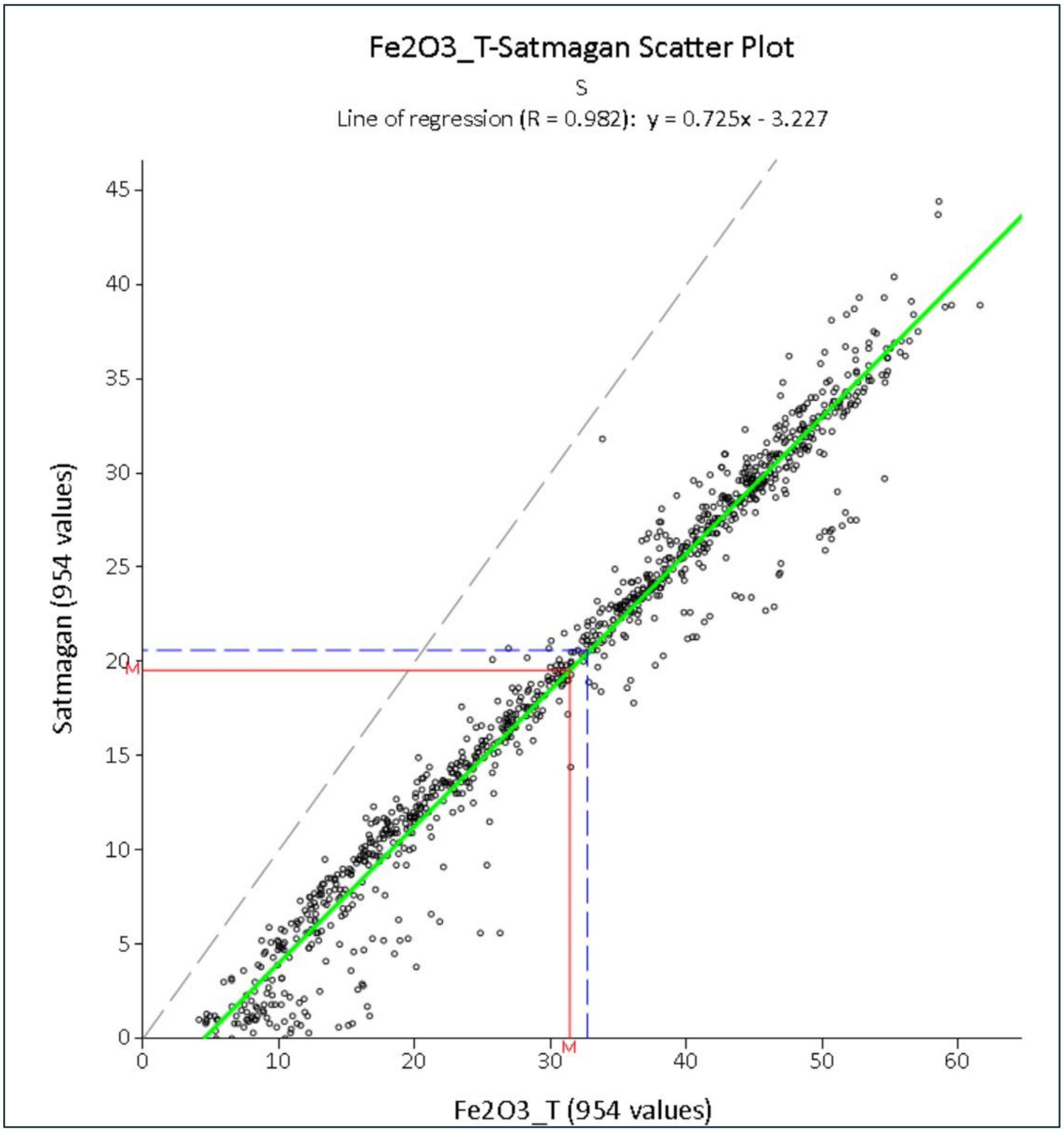


**Figure 14-2: Linear Regression Formula between $Fe_2O_3$_T and Fe Mag, South Zone**

In addition to the basic tables of raw data, the Surpac database includes several tables containing the calculated drill hole composites and wireframe solid intersections required for the statistical analysis and resource block modelling.

## 14.3 Geological Model

The geological model was based on Voyager's geological interpretation using geophysical and drilling data and geological mapping. All geological solids were modelled in Leapfrog and were snapped to drill holes.

The two magnetite-bearing ultramafic units were used as mineralized domains for the South and North zones. The mineralized domains were extended up to a depth of -280 m, and the lateral extensions were limited based on the magnetic survey data.

The North Zone is divided into five (5) units based on textural and mineralogical characteristics (see section 8.3 for more detail). A sinistral fault with a displacement of approximately 150 m divides the North Zone into a central/western part and an eastern part. As the eastern part has seen less drilling, the subdivisions in this area is less understood and less well-defined. Therefore, it was decided not to subdivide the eastern part, using instead the magnetite-bearing ultramafic unit as is.

Two surfaces were created to define the topography and the overburden/bedrock contact. The topography was created using DTM data from 2021 (5-m resolution). The overburden-bedrock contact was modelled using logged overburden intervals.

Figure 14-3 shows a 3D isometric view of the geological wireframes used for the 2022 MRE.

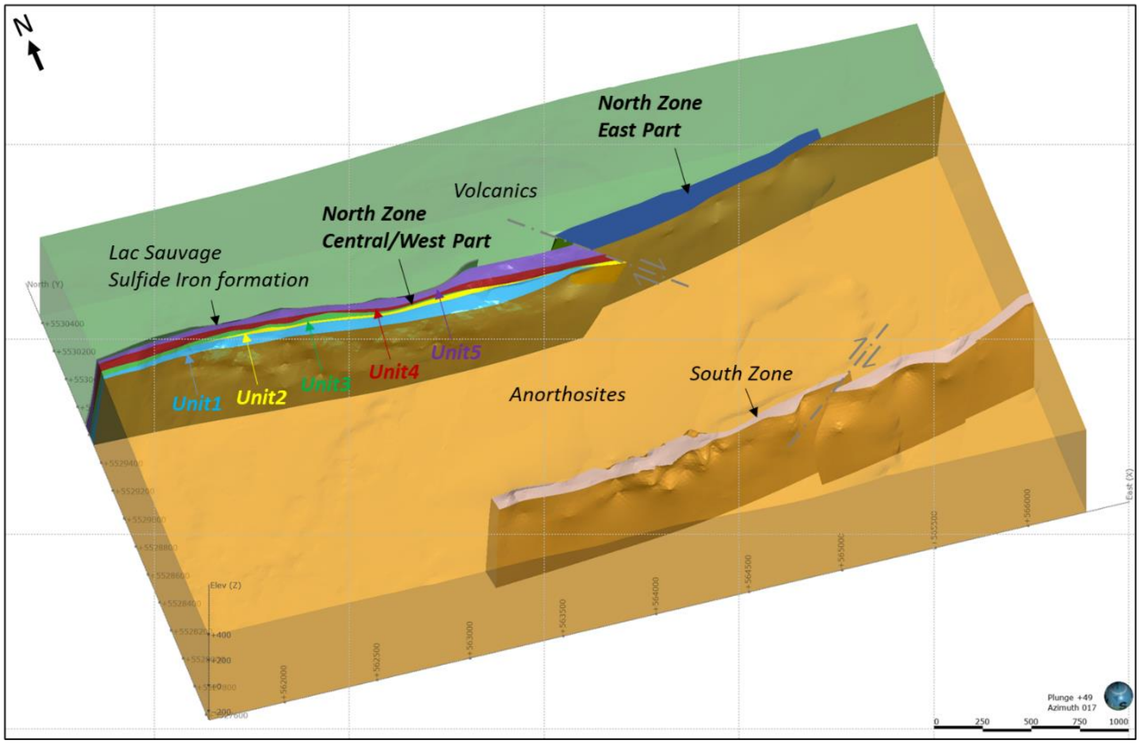


**Figure 14-3: General Isometric View Showing the Geological Wireframe Used for the 2022 MRE**

## 14.4 Density

Density measurements were taken using gas pycnometry at both SGS and Activation Laboratories. Of the 7,463 samples in the 2022 MRE database, 2,941 (39%) were measured for density. All samples were collected in the mineralized domains. Density is expected to show a positive correlation with total iron of the sample. It will depend on the relative proportions of magnetite (SG = 5.15), plagioclase feldspar (SG = 2.6 to 2.7), pyroxene (SG = 3.2 to 3.95) and olivine (SG = 3.3). A regression through the data gives a polynomial curve that corresponds well to a theoretical mixing model between magnetite, olivine and feldspar (Figure 14-4).

The polynomial formula:

$$SG = 0.0002(Fe_2O_3)^2 + 0.0051(Fe_2O_3) + 2.8145$$

was used to calculate the density of samples without density measurements, based on the $Fe_2O_3$_T of the sample.

The density of the mineralized domains was then interpolated based on variography study (see Section 14.8).

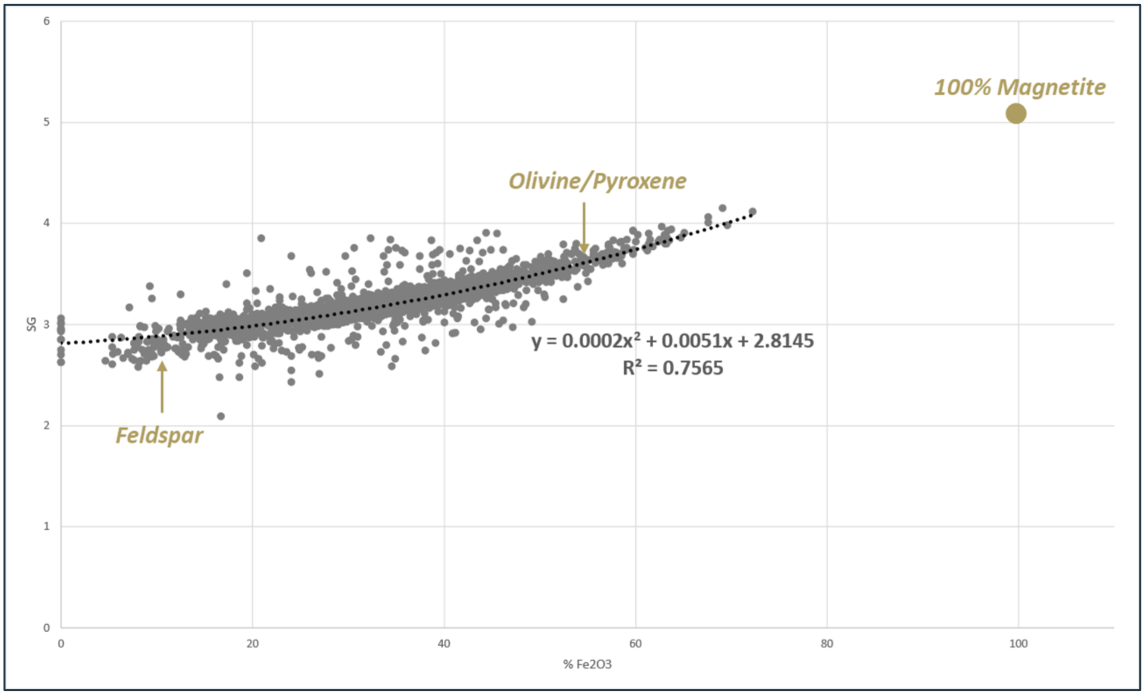


**Figure 14-4: Plot of $Fe_2O_3$ (total) vs Density (SG) for All Samples Measured for Density**

As the unmineralized material and the overburden have no density measurements, a bulk density of 2.80 g/$cm^3$ was attributed to the unmineralized material (anorthositic and volcanic rocks), and a bulk density of 2.00 g/$cm^3$ was attributed to the overburden.

## 14.5 High-Grade Capping

Basic univariate statistics were performed on the raw assay datasets for the North and South zones. Three oxides were studied: $Fe_2O_3$_T, $TiO_2$ and $V_2O_5$. The following criteria were used to decide if capping was warranted:

- The coefficient of variation ("COV") of the assay population is above 2.0;
- The quantity of metal contained in the top 10% highest grade samples is above 40%, and/or the quantity in the top 1% of the highest-grade samples is higher than 10%;
- The probability plot of the grade distribution shows abnormal breaks or scattered points outside the main distribution curve;
- The log-normal distribution of grades shows erratic grade bins or distanced values from the main population.

The capping threshold decided for all domains is consistent with the combination of three criteria:

- A break in the probability plot;
- A coefficient of variation below 2.0 after capping;
- The total metal contained in the top 1% of the highest-grade samples is below 10% after capping.

No high-grade capping was applied. Table 14-2 summarizes the statistical analysis by domain and by oxides. Figure 14-5 and Figure 14-6 show examples of graphs supporting the capping threshold decisions.

**Table 14-2: Summary of Univariate Statistics on Raw Assays**

| Domain Name | Oxide | No. of Samples | Max Grade (g/t) | Uncut Mean Grade (g/t) | Uncut COV | High-Grade Capping (g/t) |
|---|---|---|---|---|---|---|
| North | $Fe_2O_3$_T | 3,993 | 80.76 | 37.25 | 0.27 | none |
| | $V_2O_5$ | 3,296 | 1.31 | 0.22 | 0.57 | none |
| | $TiO_2$ | 3,883 | 8.22 | 1.16 | 0.48 | none |
| South | $Fe_2O_3$_T | 1,559 | 82.06 | 30.95 | 0.46 | none |
| | $V_2O_5$ | 1,058 | 0.82 | 0.22 | 0.73 | none |
| | $TiO_2$ | 1,840 | 11.48 | 1.09 | 0.65 | none |

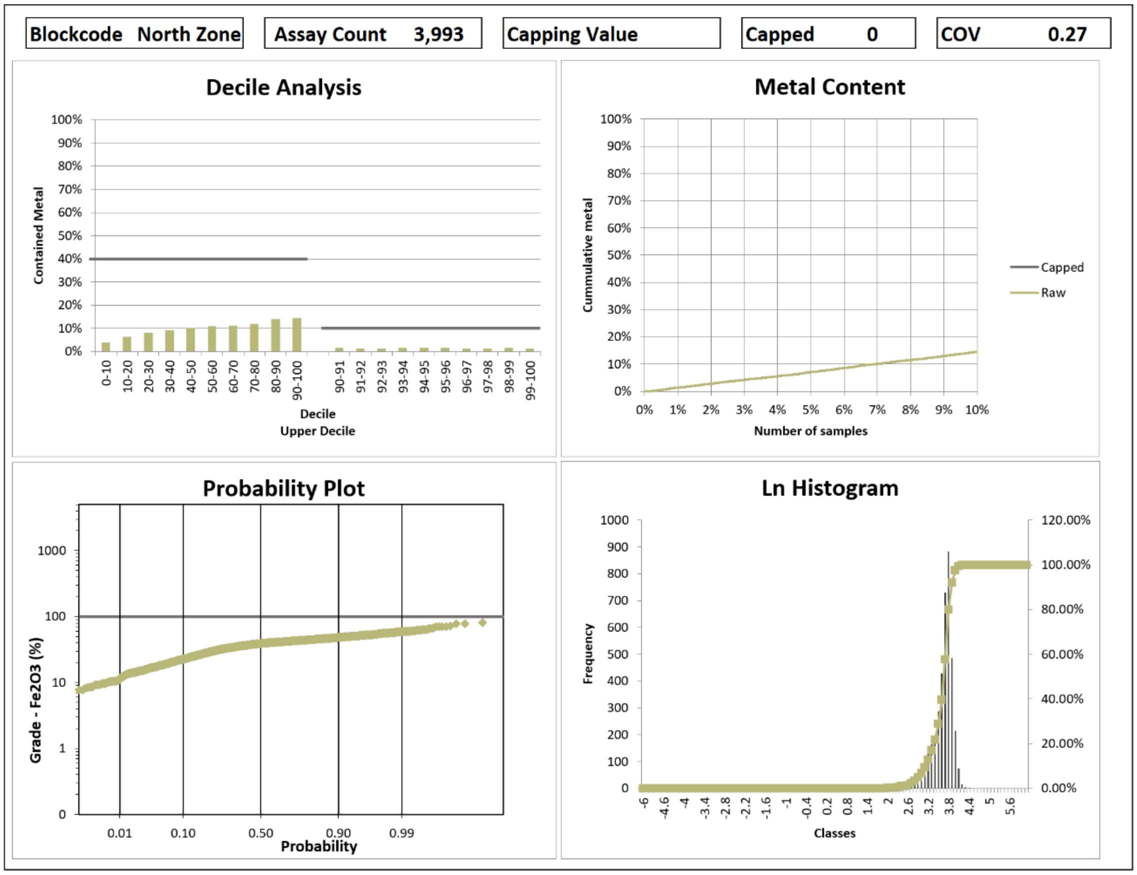


**Figure 14-5: Example of Graphs Supporting the Decision not to Cap $Fe_2O_3$_T for the North Zone**

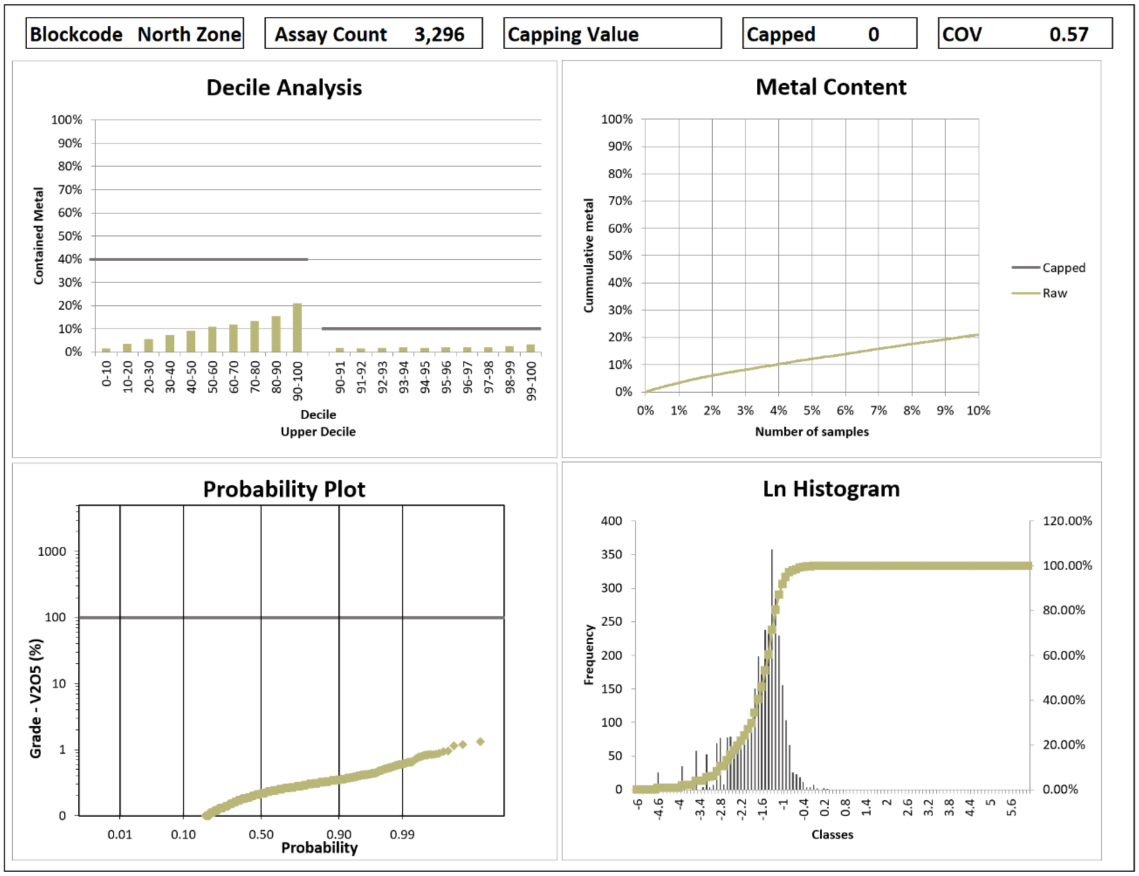


**Figure 14-6: Example of Graphs Supporting the Decision not to Cap $V_2O_5$ for the North Zone**

## 14.6 Compositing

The assays were composited within each mineralized domain to minimize any bias introduced by variations in sample lengths. The thickness of the mineralized domains, the proposed block size and the original sample length were considered when selecting the composite length.

The sampling intervals in the 2013 to 2021 drilling programs were typically 4 m long in the North Zone and 2 m in the South Zone. The sampling intervals in the 1960s were roughly 7 m long, and the composite samples collected from the 1960s holes were between 10 m and 60 m (Figure 14-7).

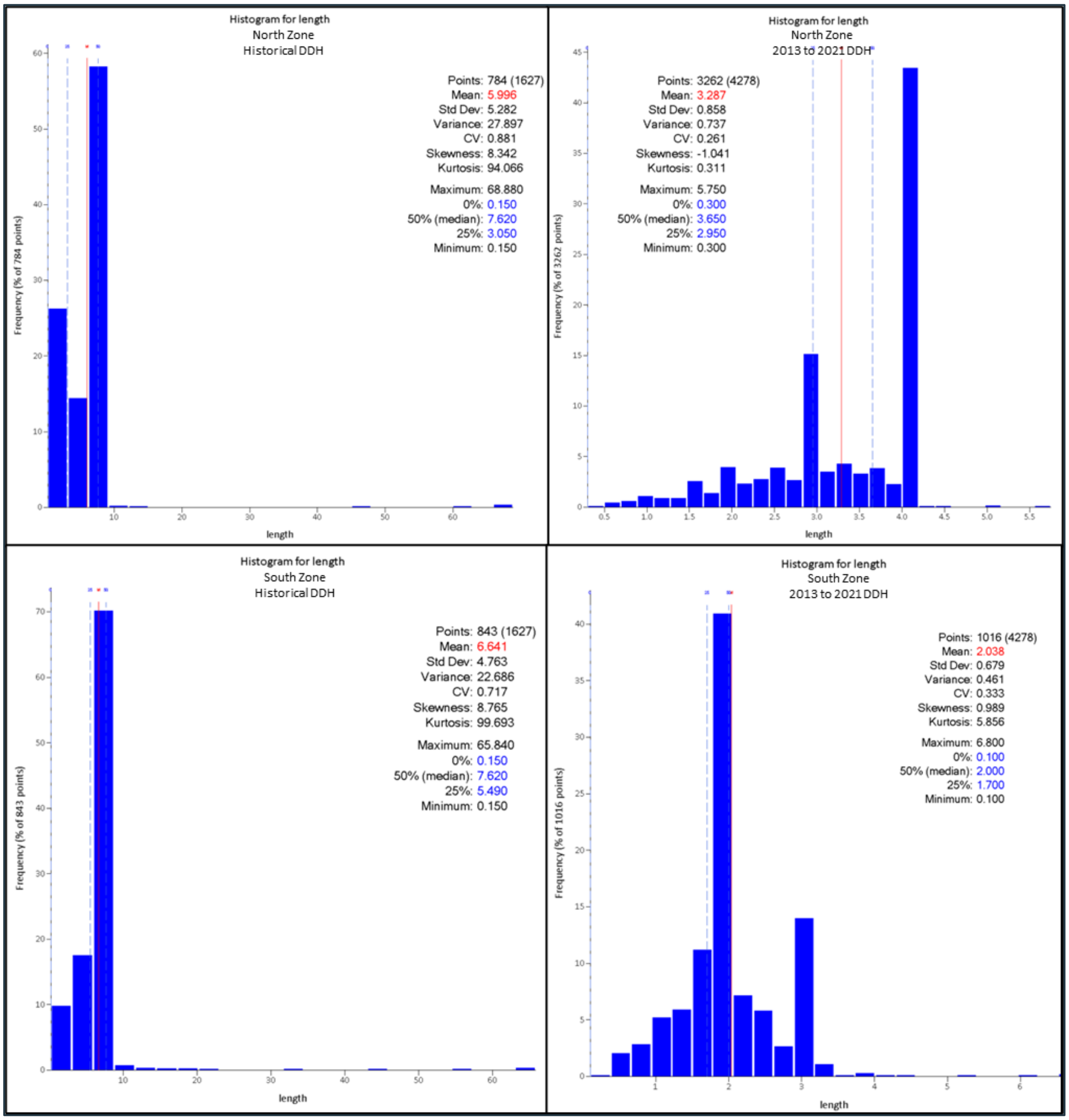


**Figure 14-7: Histogram for Raw Sample Length by Mineralized Domains and by Drilling Periods**

For drill holes from the 2013 to 2021 drilling campaigns, the intervals defining each mineralized domain were composited to 4-m equal lengths for the North Zone and 10-m equal lengths for the South Zone. As sample lengths range from 7 m to 60 m in historical drill holes, it was decided that compositing would not be performed to minimize their weight during the interpolation process.

No grade was assigned to missing sample intervals as most of them are from historical holes. It is assumed that the lack of sampling reflects the different exploration targets (metals) at the time and not because the geologist in charge of the core logging was considering the unsampled intervals as unmineralized for the metals of interest in the 2022 MRE.

A total of 972 composites were generated for the South Zone and 7,456 for the North Zone.

Table 14-3 summarizes the basic statistics for the raw data and composites.

**Table 14-3: Summary Statistics for the Raw Data and Composites**

| Domain Name | South Zone | | | North Zone | | |
|---|---|---|---|---|---|---|
| **Element** | $Fe_2O_3$_T | $V_2O_5$ | $TiO_2$ | $Fe_2O_3$_T | $V_2O_5$ | $TiO_2$ |
| **No. of Raw Assay Samples** | 2,367 | 1,884 | 2,578 | 4,116 | 3,371 | 4,014 |
| **Raw Assays Max Grade (%)** | 82.06 | 0.82 | 11.48 | 72.20 | 1.31 | 8.22 |
| **Raw Assays Mean Grade (%)** | 33.28 | 0.24 | 1.07 | 37.36 | 0.22 | 1.15 |
| **Raw Assays COV** | 0.41 | 0.62 | 0.57 | 0.27 | 0.57 | 0.48 |
| **No. of Composites** | 765 | 446 | 915 | 3,772 | 2,751 | 3,700 |
| **Composite Max Grade (%)** | 64.05 | 0.65 | 11.48 | 66.71 | 1.18 | 8.08 |
| **Composite Mean Grade (%)** | 32.43 | 0.25 | 1.17 | 37.76 | 0.22 | 1.20 |
| **Composite COV** | 0.37 | 0.52 | 0.84 | 0.24 | 0.53 | 0.45 |

## 14.7 Block Model

A block model was built to enclose a large enough volume to host an open pit. The model corresponds to a sub-blocked model in Surpac with no rotation. The user block size was defined as 10m x 10m x 10m with a minimal sub-block size of 2.5m x 2.5m x 2.5m. Block dimensions reflect the sizes of mineralized domains and plausible mining methods. All blocks with more than 50% of their volume falling within a selected solid were assigned the corresponding solid block code. Table 14-4 lists the properties of the block model. Table 14-5 details the naming convention for the corresponding Surpac solids and the rock codes and precedence assigned to each solid.

**Table 14-4: Block Model Properties**

| Properties | Y (rows) | X (columns) | Z (levels) |
|---|---|---|---|
| Min. Coordinates | 5,527,550 | 560,850 | -270 |
| Max. Coordinates | 5,530,590 | 566,350 | 580 |
| User Block Size | 10 | 10 | 10 |
| Min. Block Size | 2.5 | 2.5 | 2.5 |
| Rotation | 0 | 0 | 0 |

**Table 14-5: Block Model Naming Convention and Rock Codes**

| Domain Name | Description | Rock Code | Precedence |
|---|---|---|---|
| Air | Air | 1 | 1 |
| OB | Overburden | 33 | 5 |
| Waste | Unmineralized domain | 70 | 10 |
| SM | Massive sulphide unit | 71 | 11 |
| Unit1a | Mineralized domain. North Zone West | 101 | 21 |
| Unit2a | Mineralized domain. North Zone West | 102 | 22 |
| Unit3a | Mineralized domain. North Zone West | 103 | 23 |
| Unit4a | Mineralized domain. North Zone West | 104 | 24 |
| Unit4b | Mineralized domain. North Zone West | 105 | 25 |
| Unit5a | Mineralized domain. North Zone West | 106 | 26 |
| Unit_North_East | Mineralized domain. North Zone East | 107 | 27 |
| Unit_South | Mineralized domain. South Zone | 201 | 28 |

## 14.8 Variography and Search Ellipsoids

Three-dimensional directional variography was carried out in Snowden Supervisor on capped composites. $Fe_2O_3$_T, $Fe_3O_4$, $TiO_2$, $V_2O_5$, MgO, S and density were studied individually for each zone. For that study, the North Zone was considered as a whole and not as separate units.

Performed in connection with the geological knowledge of the Project, the main steps in the variography process are:

- Examine the strike, dip and dip plane of the mineralized zones to define the direction and plunge of the best continuity in the mineralization;
- Estimate the nugget effect (C0) based on the downhole variogram;
- Model the major, semi-major and minor axes of continuity.

Table 14-6 documents the variogram model parameters of each element by zone.

Figure 14-8 shows examples of the variography study of $Fe_3O_4$ for the North Zone.

**Table 14-6: Variogram Model Parameters**

| Zone | Dataset | Variogram Components | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Orientation (Surpac) | | | Nugget (C0) | First Structure - Spherical | | | | Second structure - Spherical | | | |
| | | | | | | Sill | Range | | | Sill | Range | | |
| | | Z | X | Y | | | X (m) | Y (m) | Z (m) | | X (m) | Y (m) | Z (m) |
| North Zone | Density | 106 | 28 | 67 | 0.05 | 0.1 | 255 | 115 | 30 | 0.85 | 400 | 200 | 40 |
| | $Fe_2O_3$_T | 102 | 19 | 69 | 0.15 | 0.4 | 45 | 35 | 15 | 0.45 | 400 | 400 | 45 |
| | Fe Mag | 102 | 19 | 69 | 0.05 | 0.45 | 100 | 100 | 20 | 0.5 | 325 | 310 | 75 |
| | $TiO_2$ | 79 | -37 | 65 | 0.05 | 0.1 | 55 | 55 | 10 | 0.8 | 500 | 450 | 35 |
| | $V_2O_5$ | 98 | 9 | 70 | 0.05 | 0.05 | 100 | 100 | 10 | 0.9 | 450 | 400 | 80 |
| | MgO | 102 | 19 | 69 | 0.05 | 0.3 | 150 | 90 | 80 | 0.65 | 720 | 450 | 90 |
| | S | 106 | 28 | 67 | 0.05 | 0.1 | 210 | 155 | 25 | 0.85 | 400 | 300 | 50 |
| South Zone | Density | 80 | 0 | 80 | 0.1 | 0.4 | 80 | 25 | 25 | 0.5 | 325 | 300 | 125 |
| | $Fe_2O_3$_T | 78 | -10 | 80 | 0.1 | 0.55 | 205 | 145 | 60 | 0.35 | 450 | 350 | 110 |
| | Fe Mag | 78 | -10 | 80 | 0.1 | 0.4 | 155 | 50 | 25 | 0.5 | 450 | 350 | 110 |
| | $TiO_2$ | 84 | 20 | 79 | 0.05 | 0.5 | 125 | 90 | 15 | 0.6 | 450 | 200 | 85 |
| | $V_2O_5$ | 78 | -10 | 80 | 0.1 | 0.1 | 240 | 55 | 40 | 0.8 | 250 | 150 | 65 |
| | MgO | 84 | 20 | 79 | 0.05 | 0.55 | 115 | 95 | 10 | 0.4 | 400 | 110 | 80 |
| | S | 80 | 0 | 80 | No data | | | | | | | | |

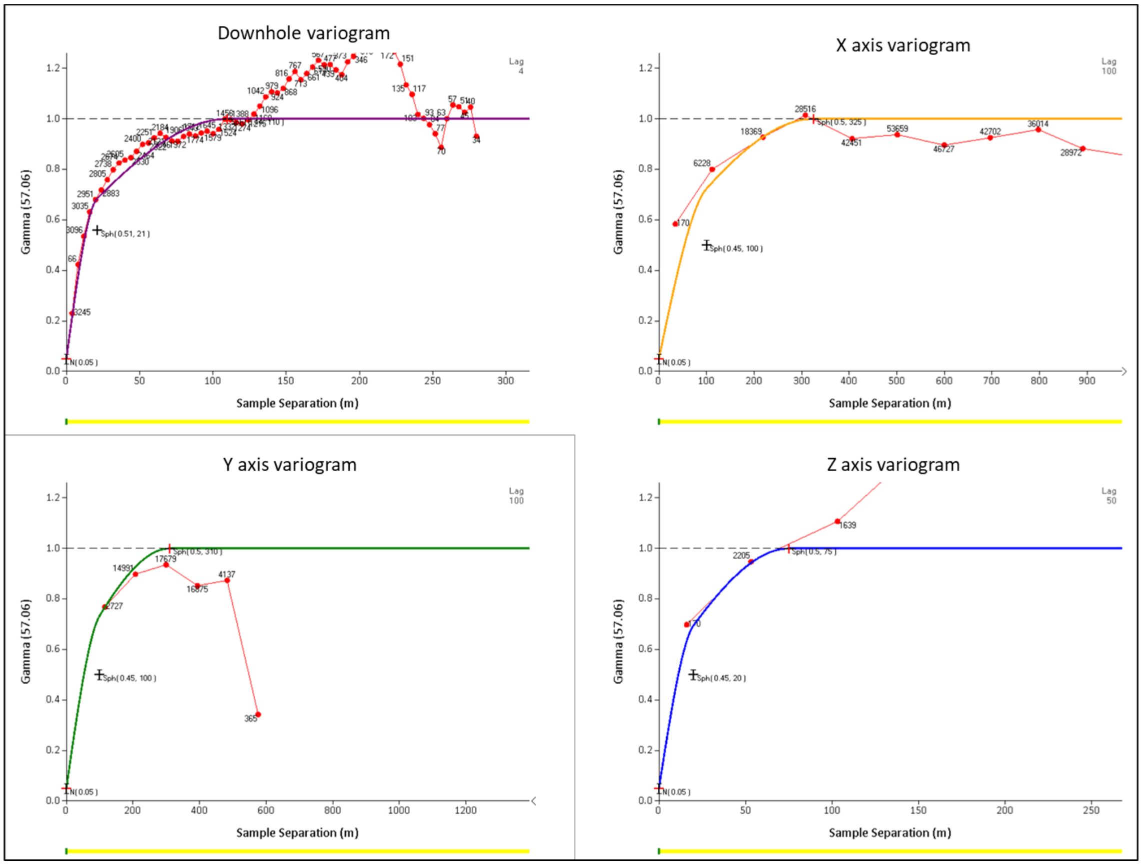


Figure 14-8: Variography Study of Fe Mag for the North Zone

## 14.9 Grade Interpolation

The variography study provided the parameters used to interpolate the grade model using capped composites. The interpolation was run on point area workspaces extracted from the composite datasets (flagged by zone). A cumulative 2-pass or 3-pass search was used for the resource estimate. The interpolation profiles were applied to each mineralized zone using hard boundaries to prevent block grades from being estimated using sample points with different block codes other than the block being estimated. For the east part of the North Zone, the search ellipsoid was adjusted to the zone's orientation.

Several models were produced using the nearest neighbour ("NN"), inverse distance squared ("ID2") and ordinary kriging ("OK") methods to choose the one that best honoured the raw assays and composite grade distribution for that particular Project. Models were compared visually (on sections, plans and longitudinals), statistically and with swath plots. The aim was to limit the smoothing effect to preserve local grade variations but avoid smearing high-grade values.

The method retained for the resource estimation was ID2.

The two strategies and the parameters for the grade estimation are summarized in Table 14-7. Figure 14-9 to Figure 14-10 show examples of composites and ellipsoids in longitudinal views.

**Table 14-7: Interpolation Strategies**

| Folder | Pass | Search Ellipsoid Range | Number of Composites | | |
|---|---|---|---|---|---|
| | | | Min | Max | Max per hole |
| North Zone | 1 | x 1 | 7 | 20 | 3 |
| | 2 | x 1 | 4 | 20 | 3 |
| | 3 | x 1 | 2 | 20 | 3 |
| South Zone | 1 | x 1 | 3 | 20 | 2 |
| | 2 | x 1 | 1 | 20 | 2 |

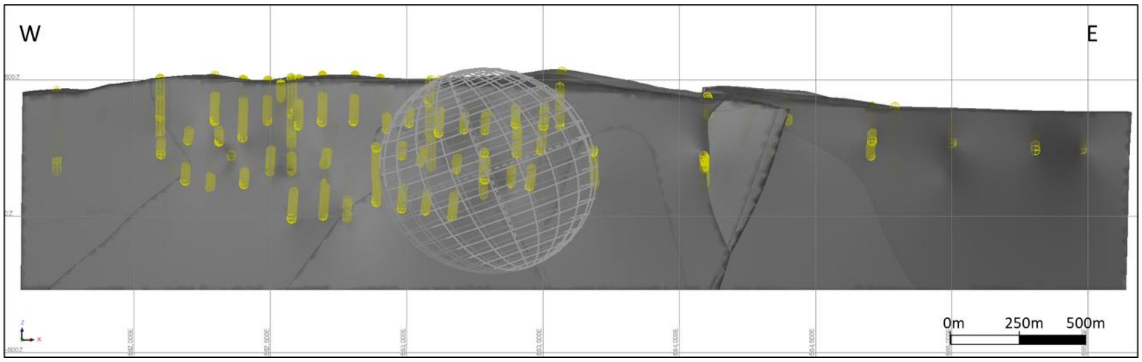


**Figure 14-9: Longitudinal View (looking North) of the Mineralized Zone Wireframes, Composites and Search Ellipsoid for $Fe_2O_3$_T in the North Zone**

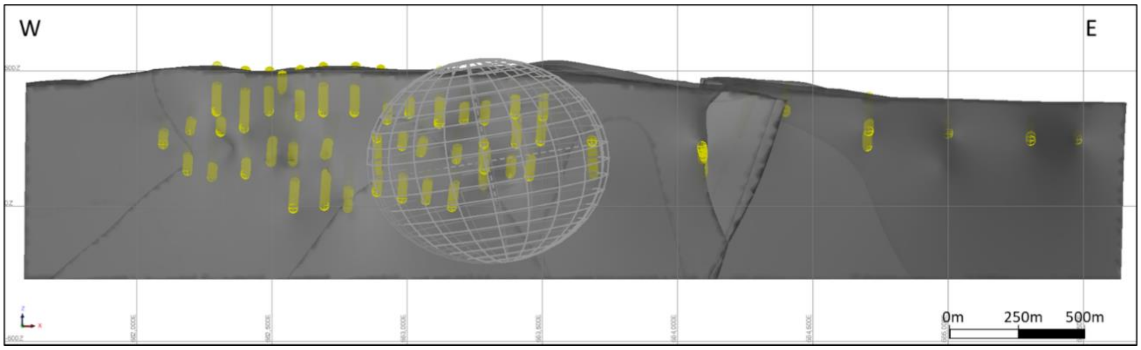


**Figure 14-10: Longitudinal View (looking North) of the Mineralized Zone Wireframes, Composites and Search Ellipsoid for $V_2O_5$ in the North Zone**

## 14.10 Block Model Validation

Block model grades and composite grades were visually compared on sections, plans and longitudinal views for densely and sparsely drilled areas. The grade distribution had a good match without excessive smoothing in the block model. The process confirmed that the block model honours the drill hole composite data (Figure 14-11).

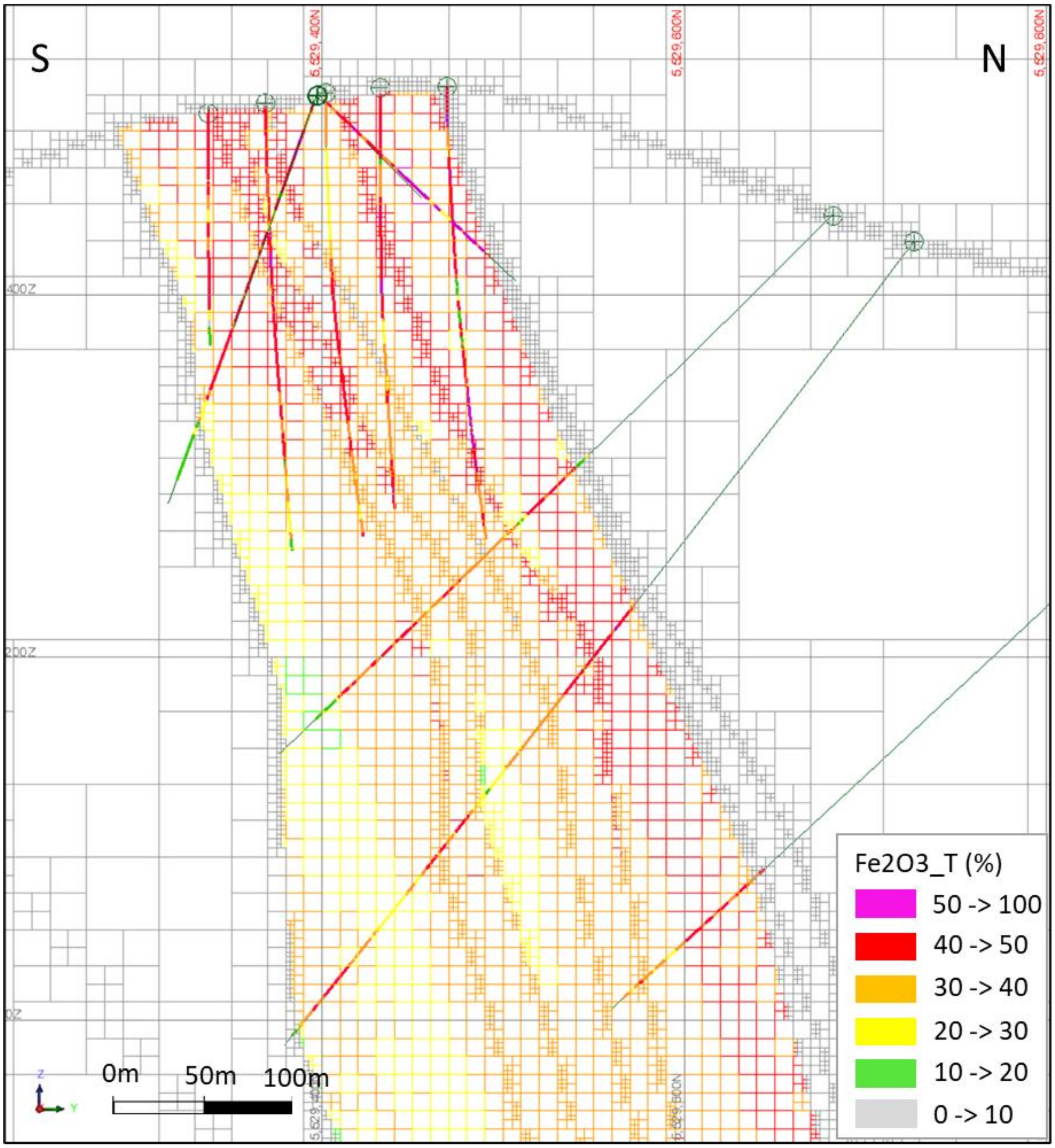


**Figure 14-11: Block Model Interpolated $Fe_2O_3$_T Values versus Drill Holes Assays (section view 551,600N)**

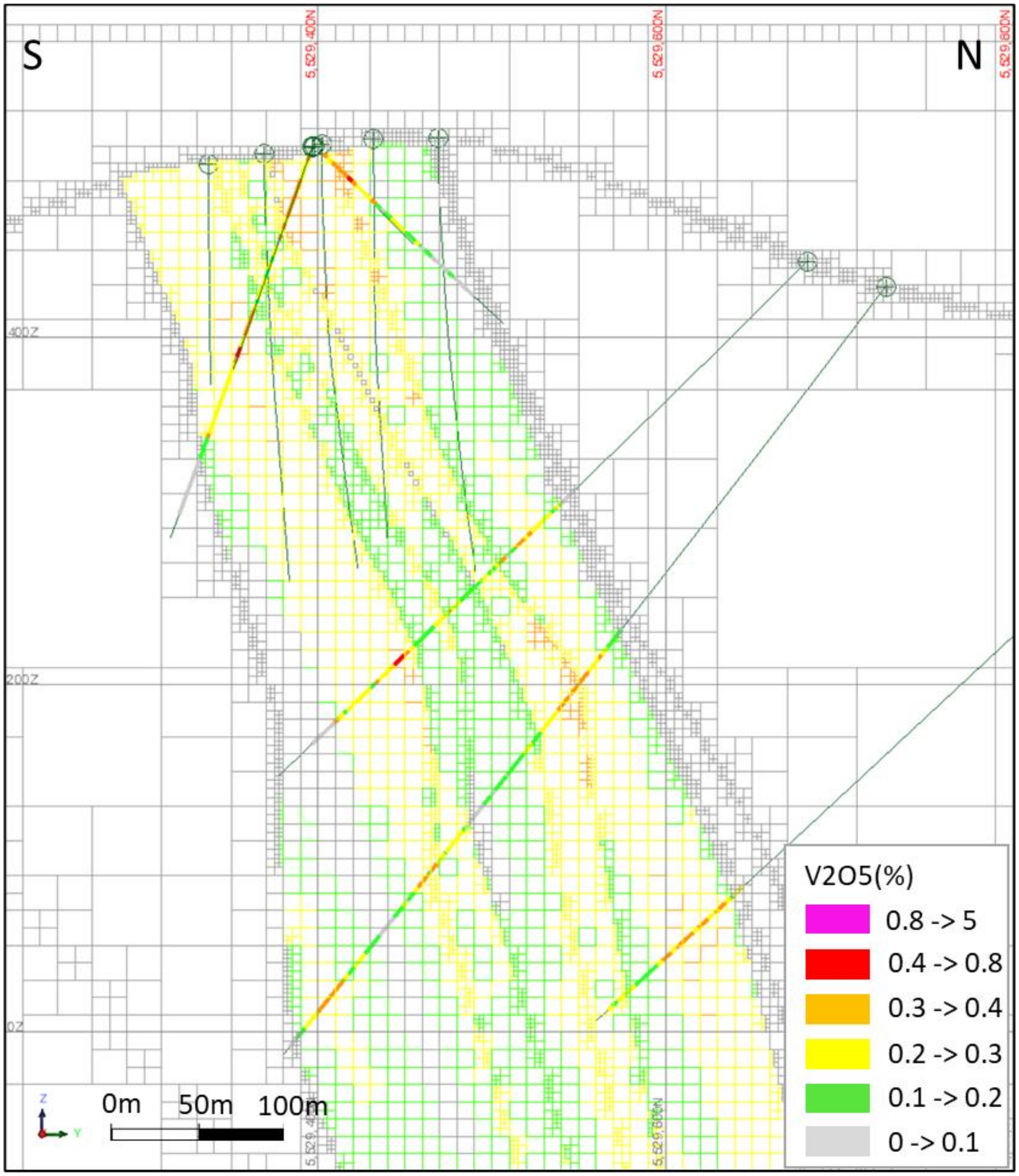


**Figure 14-12: Block Model Interpolated $V_2O_5$ Values versus Drill Holes Assays (section view 551,600N)**

The trend and local variation of the estimated ID2 model were compared to the composite data using statistics and swath plots in three directions (North, East and Elevation). As previously sated, several models were produced for each zone using NN, ID2 and OK methods to check the local bias of every method. Table 14-8 presents the results of the statistical comparison.

Generally, the comparison between composite and block grade distribution did not identify any significant issues. Figure 14-13 shows an example of the swath plot used to compare the block model grades to the composite grades. In general, the model correctly reflects the trends demonstrated by the composites, with the expected smoothing effect.

**Table 14-8: Comparison of Block Models and Composite Mean Grades**

| Domain | Element | Parameter | Composite | Declustered Composite | ID2 Model | OK Model | NN Model |
|---|---|---|---|---|---|---|---|
| North Zone | $Fe_2o_3$_T | Number | 6,914 | 6,914 | 3,221,296 | 3,221,296 | 2,221,758 |
| | | Mean (g/t) | 37.27 | 36.02 | 35.33 | 35.26 | 35.96 |
| | | COV | 0.26 | 0.29 | 0.19 | 0.18 | 0.28 |
| | $V_2O_5$ | Number | 6,090 | 6,090 | 2,855,075 | 2,855,075 | 2,185,871 |
| | | Mean (g/t) | 0.22 | 0.21 | 0.19 | 0.19 | 0.20 |
| | | COV | 0.55 | 0.66 | 0.42 | 0.43 | 0.57 |
| | $TiO_2$ | Number | 6,743 | 6,743 | 3,079,824 | 3,079,824 | 2,228,730 |
| | | Mean (g/t) | 1.15 | 1.27 | 1.24 | 1.25 | 1.22 |
| | | COV | 0.47 | 0.49 | 0.36 | 0.36 | 0.46 |
| | Density | Number | 7,456 | 7,456 | 3,232,721 | 3,232,721 | 2,558,988 |
| | | Mean (g/t) | 3.24 | 3.19 | 3.19 | 3.17 | 3.22 |
| | | COV | 0.07 | 0.08 | 0.05 | 0.05 | 0.07 |
| South Zone | $Fe_2o_3$_T | Number | 765 | 765 | 663,272 | | |
| | | Mean (g/t) | 32.43 | 28.41 | 27.65 | | |
| | | COV | 0.37 | 0.45 | 0.3 | | |
| | $V_2O_5$ | Number | 446 | 446 | 214,489 | | |
| | | Mean (g/t) | 0.25 | 0.19 | 0.18 | | |
| | | COV | 0.52 | 0.7 | 0.53 | | |
| | $TiO_2$ | Number | 915 | 915 | 722,349 | | |
| | | Mean (g/t) | 1.17 | 1.25 | 1.42 | | |
| | | COV | 0.84 | 0.92 | 0.67 | | |
| | Density | Number | 972 | 972 | 589,020 | | |
| | | Mean (g/t) | 3.12 | 3.02 | 3 | | |
| | | COV | 0.08 | 0.08 | 0.06 | | |

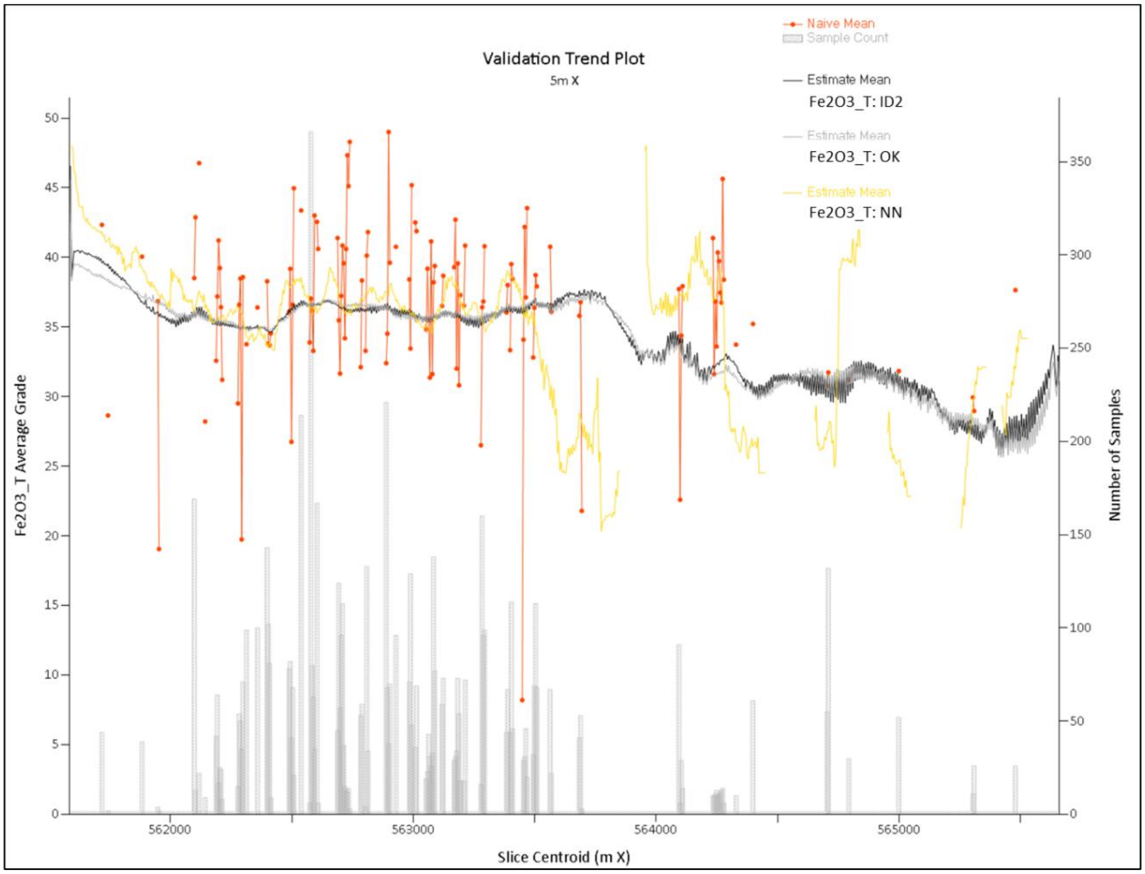


**Figure 14-13: Swath Plot Comparing ID2, OK and NN Interpolations to DDH Composites for $Fe_2O_3$_T at North Zone (sliced by section, looking North)**

## 14.11 Mineral Resource Classification

By default, all interpolated blocks were assigned to the "exploration potential" when creating the grade block model. Subsequent reclassification to the indicated or inferred category was done according to the following criteria:

Inferred category criteria:

- Blocks showing geological and grade continuity;
- Blocks from well-defined mineralized zones only;
- Blocks interpolated by a minimum of two holes; and
- Blocks in areas where drill spacing is no more than 200 m.

Indicated category criteria:

- Blocks showing geological and grade continuity;

- Blocks from well-defined mineralized zones only;
- Blocks interpolated by a minimum of tree holes; and
- Blocks in areas where drill spacing is no more than 100 m.

No measured resources were defined.

Some blocks were locally upgraded to the inferred or indicated category, and some blocks were locally downgraded to inferred or exploration potential to homogenize (smooth out) the resource volumes in each category and avoid isolated blocks from being included in a category domain.

Final block classification was done using a series of outline rings (clipping boundaries) built on a longitudinal view.

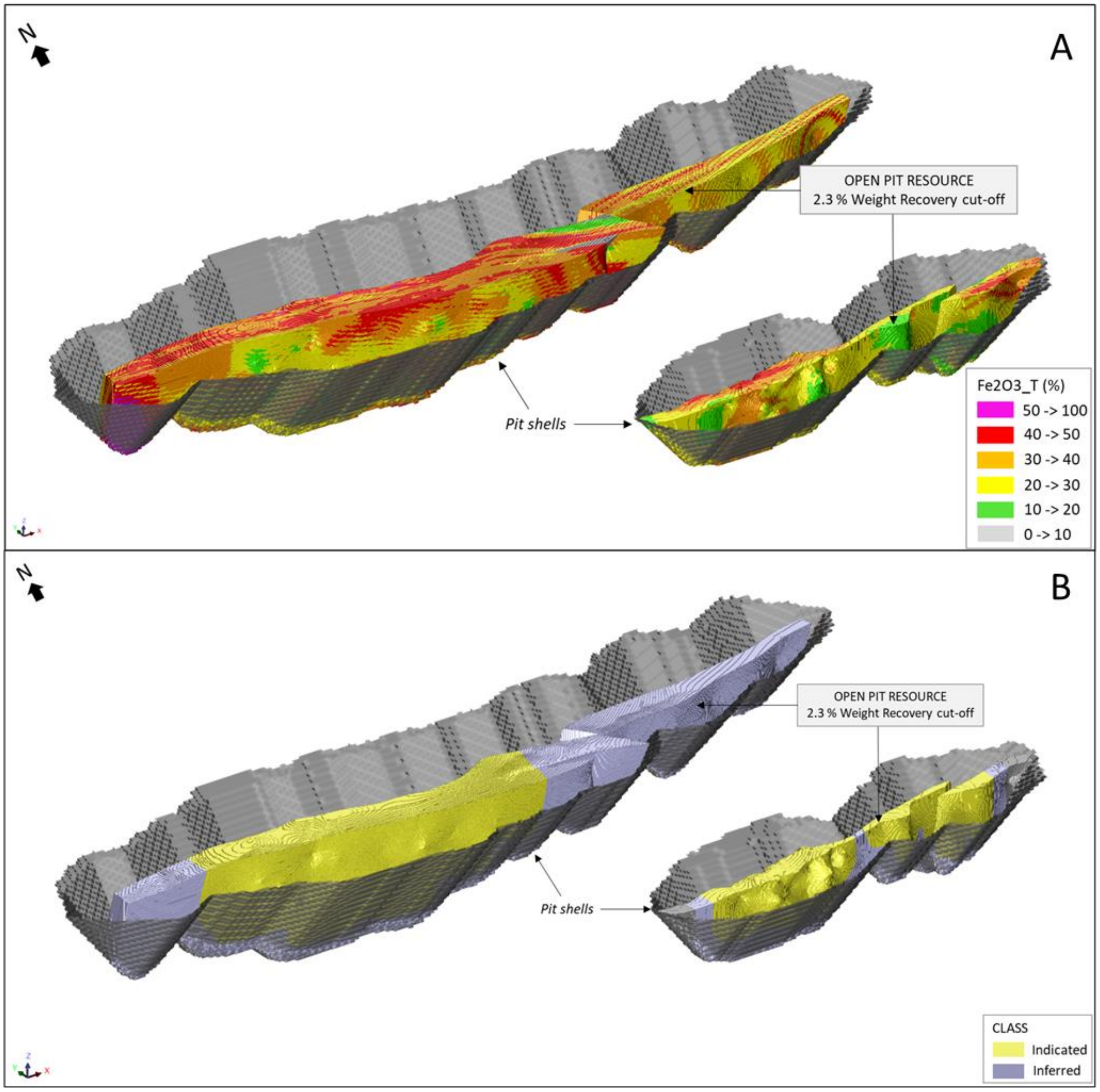
## 14.12 Cut-off Grade for Mineral Resources

Specific extraction methods are used only to establish a reasonable cut-off grade ("CoG") for various parts of the Project. No PEA, PFS or FS studies have been completed for the current 2022 MRE to support the economic viability and technical feasibility of exploiting any part of the mineral resource by any particular mining method.

The CoG must be re-evaluated in light of prevailing market conditions and other factors, such as iron ore price, exchange rate, mining method, related costs, etc.

Under CIM Definition Standards, mineral resources should have "reasonable prospects of eventual economic extraction".

A Whittle pit shell was used to constrain the 2022 MRE on each zone for its near-surface potential. Resource-level optimized pit shells and the corresponding open-pit cut-off grade are used for the open pit resource statement. Figure 14-14 presents isometric views showing the optimized pit-shell designs of the classified mineral resources.



A. $Fe_2O_3$_T value;
B. Classification value

**Figure 14-14: Isometric Views of the Mineral Resources and the Whittle Optimized Pit-Shells (blocks selection: in pit-shells and above COG)**

Mineral resources were compiled using a minimum cut-off grade ("CoG") for a potential open pit extraction scenario: 2.3% Weight Recovery.

The Weight Recovery parameter is based on the metallurgical studies described in Section 13. The Weight Recovery is the percentage of the mass from the feed recovered in the concentrate, it's calculated as following:

$$\text{Weight Recovery} = \text{Fe Recovery} \times \text{Feed Fe grade} / \text{Concentrate Fe grade}$$

With:

$$\text{Fe Recovery} = 73.87 \times (\text{Fe Mag} / \text{Feed Fe grade}) - 7$$

And:

$$\text{Concentrate Fe grade} = 65\%$$

The CoG parameters and assumptions are presented in Table 14-9.

**Table 14-9: Input Parameters Used to Estimate the Cut-off Grade**

| Parameter | Unit | Value for Open Pit |
|---|---|---|
| Fe Conc. 62% price | US$/t | 134 |
| Exchange Rate | US:CAD | 1.30 |
| Royalty | % | 3% |
| Royalty | CAD$/t Fe conc. 65% | 5.46 |
| Transport | CAD$/t Fe conc. 65% | 52.90 |
| Cost of Selling | CAD$/t Fe conc. 65% | 58.36 |
| Total Processing Cost | CAD$/t treated | 190 |
| Metallurgical Recovery | % | 100% |
| Concentrate Grade | % | 65% |
| Mining Cost | CAD$/t treated | 3.30 |
| Mining Overburden Cost | CAD$/t treated | 2.45 |
| G&A | CAD$/t treated | 0.75 |
| Total Base Cost | CAD$/t treated | 4.37 |
| Cut-off grade | Weight Recovery % | 2.30% |

## 14.13 Mineral Resource Estimates

The authors have classified the current mineral resource estimate as Indicated and Inferred based on data density, search ellipse criteria, drill hole spacing and interpolation parameters. The authors also believe that the requirement of "reasonable prospects for eventual economic extraction" has been met by having:

- Resources constrained by a pit shell with a 50° angle in rock and a 30° angle in overburden; and
- Cut-off grades based on reasonable inputs amenable to a potential open-pit extraction scenario.

The 2022 MRE is considered reliable and based on quality data and geological knowledge. The estimate follows CIM Definition Standards.

Table 14-10 presents the results of the in-pit portions of the 2022 MRE at a cut-off grade of 2.3% Weight Recovery.

Table 14-11 presents the sensitivity of the in-pit at different cut-off grades. The reader should be cautioned that the figures provided in the sensitivity table should not be interpreted as a mineral resource statement. The sole purpose of reporting quantities and grade estimates at different cut-off grades is to demonstrate the resource model's sensitivity to the selection of a reporting cut-off grade.

Compared to the 2021 MRE (Longridge et al., 2021), the 2022 MRE converts approximately 40% of the whole rock tonnage from the Inferred category to Indicated, and adds 220 Mt of whole rock to the Indicated Resource in the North Zone. As only inferred resources were defined in the North Zone in the 2021 MRE, that conversion represents a new total Indicated Resource of 559 Mt whole rock at 28.2% $Fe_3O_4$, corresponding to 163 Mt of 65% Fe/0.52% $V_2O_5$ concentrate.

The variations are due to several factors: the addition of 42 new assayed holes on the North Zone since 2020, the adjustment of the economic parameters to reflect current economic conditions, and the adjustment of the metallurgical parameters to include the new Davis Tube test results.

The Inferred Resource tonnage in the South Zone is lower than the 2021 MRE even though it has not been drilled since then. The author felt it necessary to declassify some inferred resources in the South Zone. As a result, the whole rock resource decreased by 62 Mt. It should be noted that this material is supported by historical drilling from 1966 and could be upgraded in the future.

### Table 14-10: Mont Sorcier Project 2022 Mineral Resource Estimate

| Zone | Category | Tonnage | | | | Head Grade | | | | | | | | Conc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rock (Mt) | Fe Rec (%) | W Rec (%) | Conc. (Mt) | $Fe_2O_3$ (%) | Fe (%) | $Fe_3O_4$ (%) | $V_2O_5$ (%) | $TiO_2$ (%) | MgO (%) | $SiO_2$ (%) | S (%) | Fe (%) |
| North | Indicated | 559.3 | 72.05 | 29.21 | 163.4 | 37.70 | 26.35 | 28.20 | 0.21 | 1.10 | 19.78 | 25.13 | 1.12 | 65.00 |
| | Inferred | 470.5 | 72.97 | 27.39 | 128.9 | 34.90 | 24.40 | 26.41 | 0.18 | 1.32 | 19.79 | 27.91 | 0.49 | 65.00 |
| South | Indicated | 119.2 | 82.04 | 26.85 | 32.0 | 30.43 | 21.27 | 25.64 | 0.17 | 1.49 | 24.09 | 24.43 | | 65.00 |
| | Inferred | 76.2 | 81.38 | 25.23 | 19.2 | 28.83 | 20.15 | 24.11 | 0.13 | 1.46 | 22.39 | 23.14 | | 65.00 |
| **Total** | **Indicated** | **678.5** | **73.52** | **28.80** | **195.4** | **36.42** | **25.46** | **27.75** | **0.20** | **1.17** | **20.54** | **25.01** | | **65.00** |
| | **Inferred** | **546.6** | **73.96** | **27.09** | **148.1** | **34.05** | **23.80** | **26.09** | **0.17** | **1.34** | **20.15** | **27.25** | | **65.00** |

Notes to accompany the Mineral Resource Estimate:

1) The independent and qualified persons for the mineral resource estimate, as defined by NI 43-101, are Marina Iund, P.Geo., Carl Pelletier, P.Geo., Simon Boudreau, P.Eng. all from InnovExplo Inc. and Mathieu Girard P.Eng from Soutex. The effective date is June 6th, 2022
2) These mineral resources are not mineral reserves, as they do not have demonstrated economic viability. The mineral resource estimate follows current CIM Definition Standards.
3) The results are presented undiluted and are considered to have reasonable prospects for eventual economic extraction by having constraining volumes applied to any blocks using Whittle software and by the application of cut-off grades for potential open-pit extraction method.
4) The estimate encompasses two (2) zones (North and South), subdivided into 8 individual zones (7 for North, 1 for South).
5) No high-grade capping was applied.
6) The estimate was completed using sub-block models in GEOVIA Surpac 2021.
7) Grade interpolation was performed with the ID2 method on 4 m composites for the North zone and on 10 m composites for the South zone.
8) The density of the mineralized zones was interpolated with the ID2 method. When no density analysis was available, the density value was estimated using linear regression with $Fe_2O_3$ analysis. For the unmineralized material, a density value of 2.8 g/cm3 (anorthosite and volcanics), 3.5 g/cm3 (Massive sulfide formation) and 2.00 g/cm3 (overburden) was assign.
9) The mineral resource estimate is classified as Indicated and Inferred. The Inferred category is defined with a minimum of two (2) drill holes for areas where the drill spacing is less than 400 m, and reasonable geological and grade continuity have been shown. The Indicated category is defined with a minimum of three (3) drill holes within the areas where the drill spacing is less than 200 m, and reasonable geological and grade continuity have been shown. Clipping boundaries were used for classification based on those criteria.
10) The mineral resource estimate is locally pit-constrained for potential open-pit extraction method with a bedrock slope angle of 50° and an overburden slope angle of 30°. It is reported at a rounded cut-off grade of 2.30% Weight Recovery. The cut-off grade was calculated for the concentrate using the following parameters: royalty = 3%; mining cost = CAD$3.30; mining overburden cost = CAD$2.45; processing cost = CAD$3.62; G&A = CAD$0.75; selling costs = CAD$58.36; Fe price = CAD$190/t; USD:CAD exchange rate = 1.3; and mill recovery = 100% (concentrate). The cut-off grades should be re-evaluated considering future prevailing market conditions (metal prices, exchange rates, mining costs etc.).
11) The number of metric tonnes was rounded to the nearest thousand, following the recommendations in NI 43-101 and any discrepancies in the totals are due to rounding effects.
12) The authors are not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, or marketing issues, or any other relevant issue not reported in the Technical Report, that could materially affect the Mineral Resource Estimate.
13) Note that the figures in the current table are slightly different from those disclosed on June 9th, 2022. In the course of writing this technical report, some adjustments were made to some deep inferred blocks in the block model resulting in a small decrease of the inferred MRE. The lost is transferred to exploration potential.

### Table 14-11: Cut-off Grade Sensitivity for the In-pit Portion of the Mont Sorcier Project

| Category | Cut-off (%) | Tonnage |  |  |  | Head Grade |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Rock (Mt) | Fe Rec (%) | W Rec (%) | Conc. (Mt) | $Fe_2O_3$ (%) | Fe (%) | $Fe_3O_4$ (%) | $V_2O_5$ (%) | $TiO_2$ (%) | MgO (%) | $SiO_2$ (%) |
| Indicated | 3.26 | 677.4 | 73.51 | 28.82 | 195.2 | 36.45 | 25.48 | 27.77 | 0.21 | 1.16 | 20.56 | 25.03 |
|  | 2.69 | 678.4 | 73.50 | 28.79 | 195.4 | 36.43 | 25.46 | 27.75 | 0.20 | 1.17 | 20.54 | 25.01 |
|  | 2.30 | 678.6 | 73.52 | 28.79 | 195.3 | 36.41 | 25.45 | 27.74 | 0.20 | 1.16 | 20.54 | 25.01 |
|  | 2.00 | 678.5 | 73.52 | 28.80 | 195.4 | 36.42 | 25.46 | 27.75 | 0.20 | 1.17 | 20.54 | 25.01 |
|  | 1.78 | 678.5 | 73.52 | 28.80 | 195.4 | 36.42 | 25.46 | 27.75 | 0.20 | 1.17 | 20.54 | 25.01 |
| Inferred | 3.26 | 491 | 74.37 | 27.47 | 134.9 | 34.35 | 24.01 | 26.45 | 0.18 | 1.33 | 20.21 | 27.33 |
|  | 2.69 | 529 | 74.13 | 27.22 | 144.0 | 34.14 | 23.86 | 26.21 | 0.18 | 1.34 | 20.21 | 27.29 |
|  | 2.30 | 546.6 | 73.95 | 27.09 | 148.0 | 34.06 | 23.81 | 26.09 | 0.18 | 1.34 | 20.15 | 27.25 |
|  | 2.00 | 557.5 | 73.83 | 27.01 | 150.6 | 34.02 | 23.78 | 26.02 | 0.17 | 1.34 | 20.11 | 27.20 |
|  | 1.78 | 563.9 | 73.80 | 26.97 | 152.1 | 33.98 | 23.75 | 25.98 | 0.17 | 1.34 | 20.07 | 27.16 |

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# 15. Mineral Reserve Estimate

There is no Reserve at this time.

# 16. Mining Methods

It is planned to mine Mont Sorcier using traditional truck shovel open pit mining operations for the North zone of the project.

The mine will need to support a processing plant with nominal output of 5 Mtpa dry concentrate requiring on average 16.5 Mtpa mineralized material from the pit (peaking at 18.5 Mtpa). Plant recovery will depend on quality of mineralized material and concentration of the primary mineral – magnetite. Waste mining will be on average about 16 Mtpa.

## 16.1 Pit Optimization

Pit optimization and PEA-level mining schedules were prepared using Hexagon MinePlan software.

### 16.1.1 Pit Optimization Parameters

Optimization parameters are divided into groups related to various aspects of the pit optimization process and software project set-up.

The Mont Sorcier deposit will be mined with a traditional drill and blast and truck and loader (shovel or excavator) mining method. The plant would process mineralized material feed with wet magnetic separation to produce vanadium-enriched magnetite concentrate. The concentrate would be loaded and railed to the Port of Saguenay, Québec, Canada. From there, the concentrate would be stored, loaded and shipped to the market (assumed to be a China based steel producer).

Pit optimization derives the size of the open pit from physical (block model) and economic parameters. The most significant economic parameter is the product price Voyager can realize through a fixed contract or on an open market. The price for the concentrate was obtained from a combination of long-term forecasts as well as guidance pricing from the nearby iron ore operations. Pricing for vanadium credits, was sourced from a desktop marketing study in the previous PEA. Details of the pricing is given in Section 19 of the report.

Operating costs shown below were estimated by DRA with details given in Section 21.

Table 16-1: Pit Optimization Results

| Factor | Price ($/t conc) | Pit # | Cumulative Mineralization t | Cumulative Overburden t | Cumulative Waste t | Cumulative Total Waste t | Cumulative Weight Recovery % | Cumulative Concentrate t | Cumulative Net CF $ | Strip Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.05 | $ 6.75 | 71 | 0 | 0 | 0 | 0 |  | 0 | $ - | 0.00 |
| 0.10 | $ 14 | 72 | 0 | 0 | 0 | 0 |  | 0 | $ - | 0.00 |
| 0.15 | $ 20 | 73 | 46,566,569 | 3,228,049 | 5,357,661 | 8,585,710 | 33.35 | 15,529,951 | $ 1,792,925,572 | 0.18 |
| 0.20 | $ 27 | 74 | 161,002,643 | 8,173,492 | 65,293,340 | 73,466,833 | 31.96 | 51,462,878 | $ 5,794,023,486 | 0.46 |
| 0.25 | $ 34 | 75 | 249,183,873 | 12,096,418 | 175,181,794 | 187,278,212 | 31.21 | 77,776,157 | $ 8,542,820,770 | 0.75 |
| 0.30 | $ 41 | 76 | 333,687,355 | 14,856,280 | 326,391,473 | 341,247,753 | 30.40 | 101,445,582 | $ 10,863,010,947 | 1.02 |
| **0.31** | **$ 42** | **95** | **354,955,781** | **15,480,169** | **370,223,057** | **385,703,226** | **30.17** | **107,098,730** | **$ 11,392,584,787** | **1.09** |
| 0.32 | $ 43 | 96 | 387,010,535 | 16,071,070 | 443,317,776 | 459,388,846 | 29.90 | 115,702,226 | $ 12,186,210,414 | 1.19 |
| 0.33 | $ 45 | 97 | 410,139,359 | 16,647,987 | 500,595,119 | 517,243,107 | 29.74 | 121,974,763 | $ 12,756,751,642 | 1.26 |
| 0.34 | $ 46 | 98 | 424,068,664 | 17,044,372 | 537,503,760 | 554,548,133 | 29.66 | 125,760,748 | $ 13,095,778,242 | 1.31 |
| 0.35 | $ 47 | 77 | 440,268,640 | 17,645,867 | 582,748,813 | 600,394,680 | 29.56 | 130,159,042 | $ 13,483,762,394 | 1.36 |
| 0.40 | $ 54 | 78 | 486,406,554 | 19,863,066 | 730,004,734 | 749,867,800 | 29.31 | 142,579,368 | $ 14,530,672,493 | 1.54 |
| 0.45 | $ 61 | 79 | 504,032,240 | 20,792,673 | 799,123,251 | 819,915,924 | 29.22 | 147,292,477 | $ 14,896,214,426 | 1.63 |
| 0.50 | $ 68 | 80 | 518,106,133 | 21,795,061 | 867,145,730 | 888,940,792 | 29.17 | 151,134,649 | $ 15,168,378,189 | 1.72 |
| 0.55 | $ 74 | 81 | 525,392,490 | 22,389,828 | 906,701,517 | 929,091,345 | 29.13 | 153,064,805 | $ 15,291,072,117 | 1.77 |
| 0.60 | $ 81 | 82 | 530,824,219 | 22,786,854 | 939,798,926 | 962,585,780 | 29.10 | 154,491,720 | $ 15,372,593,436 | 1.81 |
| 0.65 | $ 88 | 83 | 534,426,335 | 23,205,881 | 965,240,292 | 988,446,173 | 29.09 | 155,453,125 | $ 15,420,286,252 | 1.85 |
| 0.70 | $ 95 | 84 | 538,486,154 | 23,566,927 | 997,164,512 | 1,020,731,439 | 29.07 | 156,541,157 | $ 15,467,264,926 | 1.90 |
| 0.75 | $ 101 | 85 | 540,129,918 | 23,715,567 | 1,010,392,654 | 1,034,108,221 | 29.06 | 156,957,522 | $ 15,482,314,807 | 1.91 |
| 0.80 | $ 108 | 86 | 542,172,962 | 24,021,368 | 1,029,961,173 | 1,053,982,540 | 29.05 | 157,513,843 | $ 15,498,761,421 | 1.94 |
| 0.85 | $ 115 | 87 | 544,303,269 | 24,238,527 | 1,049,698,573 | 1,073,937,100 | 29.04 | 158,040,455 | $ 15,510,424,892 | 1.97 |
| 0.90 | $ 122 | 88 | 546,307,649 | 24,560,135 | 1,071,918,440 | 1,096,478,576 | 29.03 | 158,576,426 | $ 15,518,155,846 | 2.01 |
| 0.95 | $ 128 | 89 | 546,489,264 | 24,576,979 | 1,073,902,258 | 1,098,479,237 | 29.03 | 158,622,502 | $ 15,518,610,809 | 2.01 |
| 1.00 | $ 135 | 90 | 547,586,766 | 24,676,422 | 1,085,938,503 | 1,110,614,925 | 29.02 | 158,887,110 | $ 15,519,385,709 | 2.03 |
| 1.05 | $ 142 | 91 | 548,458,204 | 24,849,097 | 1,096,595,938 | 1,121,445,034 | 29.01 | 159,104,359 | $ 15,518,236,729 | 2.04 |
| 1.10 | $ 149 | 92 | 549,192,553 | 25,029,110 | 1,106,748,525 | 1,131,777,635 | 29.01 | 159,301,458 | $ 15,516,371,229 | 2.06 |
| 1.15 | $ 155 | 93 | 549,903,655 | 25,179,229 | 1,117,183,577 | 1,142,362,806 | 29.00 | 159,487,554 | $ 15,512,557,177 | 2.08 |

## 16.2 Pit Design

Based on the selected pit from pit optimization work, a final pit was designed including a ramp, and catch berms following geotechnical slope parameters determined previously.

The final pit presented in Figures 16-1 to 16-3 contains 354 Mt of mineralized material grading 30.10% Weight Recovery and a stripping ration of 1.0 to 1.

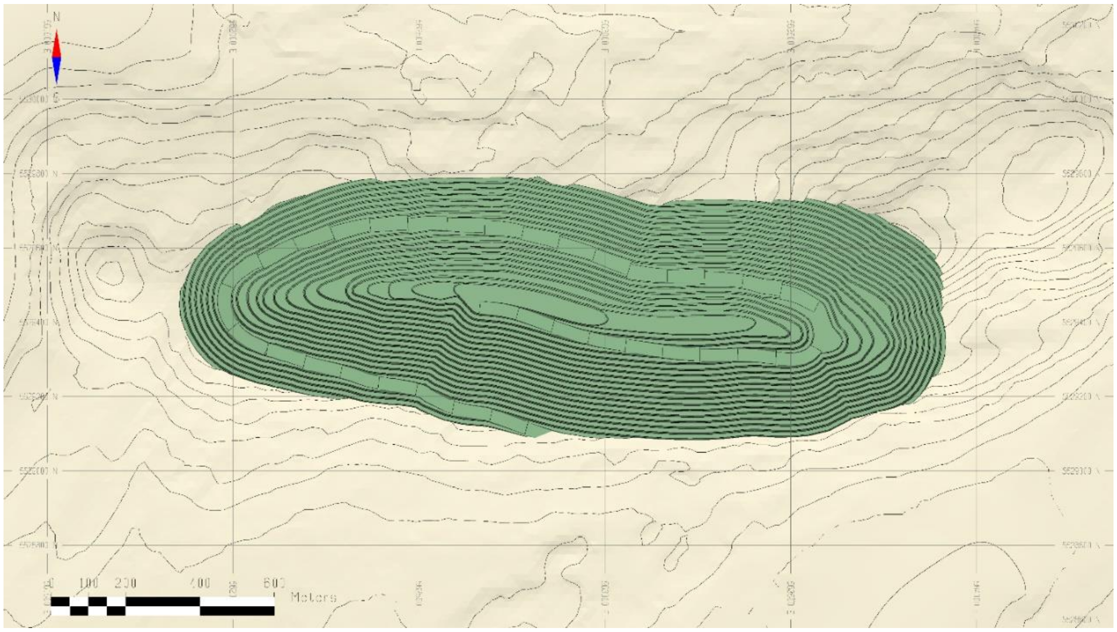


Figure 16-1: Mont Sorcier Pit Design (Plan View)

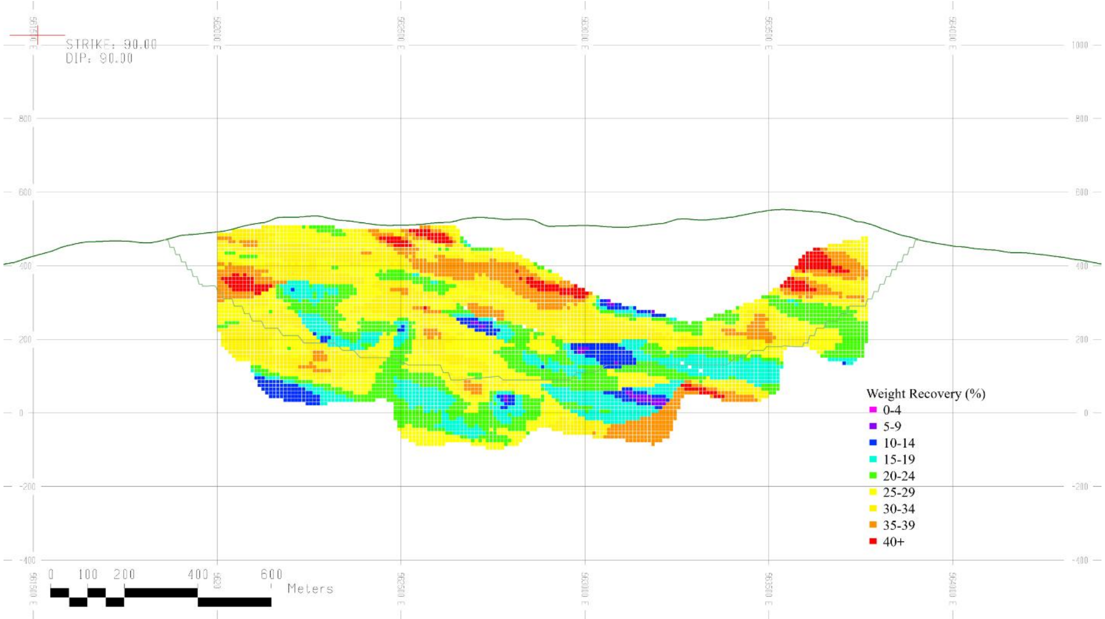


Figure 16-2: Mont Sorcier Pit Design (Longitudinal)

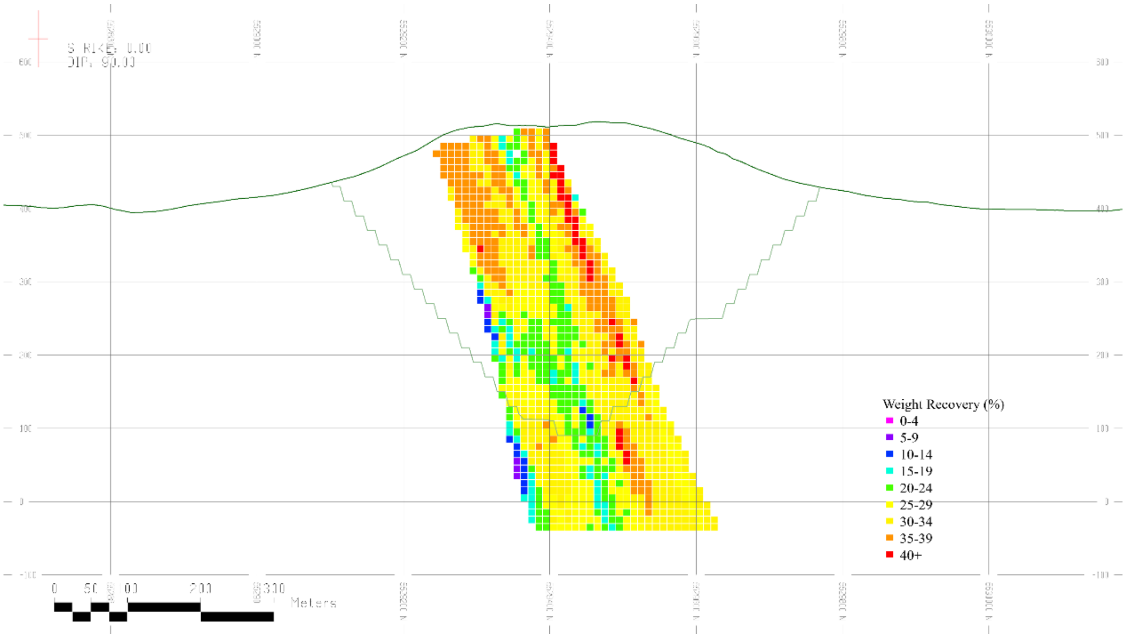


**Figure 16-3: Mont Sorcier Pit Design (NS Cross-Section)**

## 16.3 Mine Schedule

The pit design was used to create a high level schedule to determine mine equipment fleet requirements and to determine mine operating costs for use in the PEA economic evaluation.

The mine planning was established using Hexagon Mine Plan Schedule Optimizer (MPSO). This tool determines the most productive cut mining sequence and the optimum schedule requirements to achieve the highest net present value (NPV) and practical schedules.

MPSO requires setup objectives, constraints and economic parameters for each period and subsequently performs multiple iterations until satisfactory results are obtained.

Truck haulage times were estimated in Talpac software.

The production schedule (mine plan) was developed for the Project to produce 5 million tonnes of iron concentrate per year, and it is presented below in Table 16-2 and Figure 16-4.

### Table 16-2: Mont Sorcier Mine Plan

| Mt Sorcier PEA Mine Schedule | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Period | Mineralized Material | | | Waste | | | Total Material moved (MT) | Strip Ratio |
| | Tonnage (M) | Weight Recovery | Concentrate (MT) | Overburden (MT) | General (MT) | Total (MT) | | |
| 1 | 15.9 | 31.4086 | 5.0 | 1.1 | 8.5 | 9.6 | 26 | 0.60 |
| 2 | 15.5 | 32.2695 | 5.0 | 1.1 | 8.5 | 9.6 | 25 | 0.62 |
| 3 | 15.3 | 32.646 | 5.0 | 1.1 | 8.5 | 9.6 | 25 | 0.63 |
| 4 | 15.3 | 32.755 | 5.0 | 1.1 | 8.5 | 9.6 | 25 | 0.63 |
| 5 | 15.5 | 32.1809 | 5.0 | 1.1 | 8.5 | 9.6 | 25 | 0.62 |
| 6 | 15.8 | 31.6971 | 5.0 | 0.2 | 15.9 | 16.0 | 32 | 1.02 |
| 7 | 16.4 | 30.4289 | 5.0 | 0.2 | 15.9 | 16.0 | 32 | 0.98 |
| 8 | 16.2 | 30.8669 | 5.0 | 0.2 | 15.9 | 16.0 | 32 | 0.99 |
| 9 | 15.9 | 31.5311 | 5.0 | 0.2 | 15.9 | 16.0 | 32 | 1.01 |
| 10 | 15.6 | 32.1378 | 5.0 | 0.2 | 15.9 | 16.0 | 32 | 1.03 |
| 11 | 15.7 | 31.9045 | 5.0 | 0.4 | 16.6 | 17.0 | 33 | 1.08 |
| 12 | 16.3 | 30.7282 | 5.0 | 0.4 | 16.6 | 17.0 | 33 | 1.04 |
| 13 | 16.9 | 29.6088 | 5.0 | 0.4 | 16.6 | 17.0 | 34 | 1.01 |
| 14 | 16.8 | 29.6949 | 5.0 | 0.4 | 16.6 | 17.0 | 34 | 1.01 |
| 15 | 16.6 | 30.1246 | 5.0 | 0.4 | 16.6 | 17.0 | 34 | 1.02 |
| 16 | 16.3 | 30.68 | 5.0 | 0.0 | 27.2 | 27.2 | 43 | 1.67 |
| 17 | 17.9 | 27.9586 | 5.0 | 0.0 | 27.2 | 27.2 | 45 | 1.52 |
| 18 | 18.5 | 27.025 | 5.0 | 0.0 | 27.2 | 27.2 | 46 | 1.47 |
| 19 | 17.9 | 27.9627 | 5.0 | 0.0 | 0.9 | 0.9 | 19 | 0.05 |
| 20 | 17.1 | 29.2363 | 5.0 | 0.0 | 0.1 | 0.1 | 17 | 0.00 |
| 21 | 14.2 | 30.2999 | 4.3 | 0.0 | 0.0 | 0.0 | 14 | 0.00 |
| **Total** | **341** | **30.54** | **104** | **8** | **288** | **296** | **637** | **0.87** |

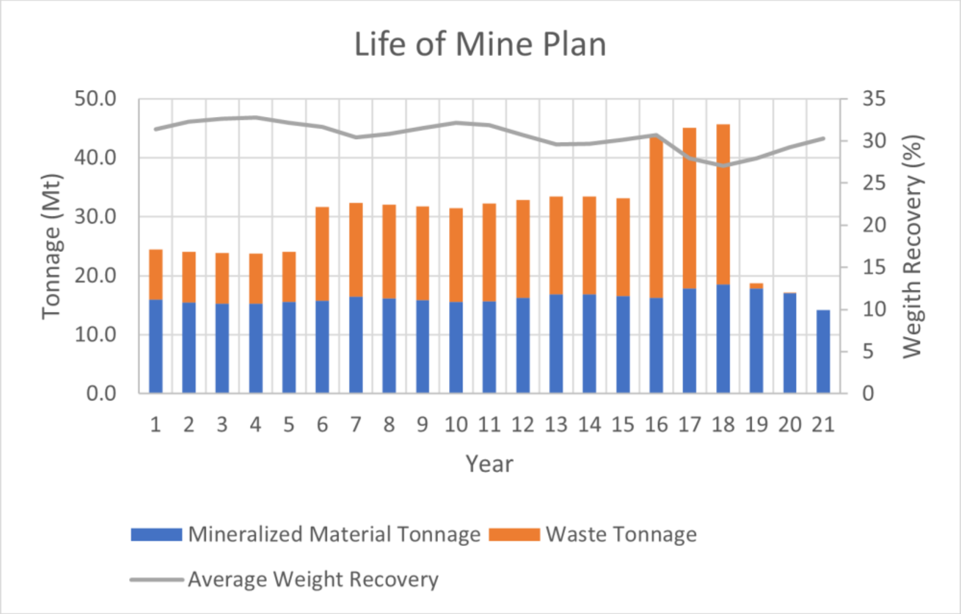


**Figure 16-4: Mont Sorcier Material Movement**

## 16.4 Mining Fleet

The planned mine production fleet will consist of 190 t trucks and matching large excavators (49 t). The fleet will be supported by production drills, wheel loaders and dozers. Purchase of equipment is spread over a number of years, in line with the mine production schedule. Table 16-3 lists the primary mine production equipment.

**Table 16-3: Summary of Primary Mobile Equipment**

| Pit Production Equipment | Maximum # of Units (Year 18) |
|---|---|
| Hydraulic Excavators / Face Shovels | 2 |
| Wheel Loader – Pit and Dump | 1 |
| Wheel Loaders – Rail Only | 2 |
| Mining Trucks (190t) | 14 |
| Track Dozers – D9 | 3 |
| Wheel Dozer – 10.1 m$^3$ SU Blade | 1 |
| Motor Graders – Large Blade | 2 |
| Water Trucks (20,000 gallons) | 2 |
| Hydraulic Excavators (49 t) | 2 |
| Production Drills (203 mm holes) | 6 |
| Auxiliary Drills (140 mm holes) | 2 |
| Impact Breaker | 1 |
| Utility Wheel Loaders – Stemming | 2 |
| Utility Articulated Dump Trucks – Stemming | 2 |

The primary mining equipment will require support or auxiliary equipment to support pit operation and maintenance of equipment, roads, dewatering, fleet management, lighting and carry the workforce from the town and around the production areas. Table 16-4 lists the ancillary and support transport equipment.

**Table 16-4: Summary of Ancillary and Support Equipment**

| Ancillary and Support Equipment | Maximum # of Units (Year 18) |
|---|---|
| Mechanic Service Trucks | 2 |
| Integrated Tool Carrier | 2 |
| Tire Service Truck | 1 |
| Fuel and Lube Trucks | 2 |
| Dispatch System | 1 |
| Lowboy Tractor and Trailer – 150 ton | 1 |
| Pit Buss | 2 |
| Pickup Trucks | 20 |
| Portable Lighting Plants | 8 |
| Excavator with Impact Hammer | 1 |

# 17. Recovery Methods

The various metallurgical test programs presented in Section 13 of this Report are the basis for the process design and the processing flowsheet proposed in this section with the respective design criteria, material and water balance, equipment selection and sizing. In the following sections the design basis and criteria of the processing plant are presented together with the description of each of the processing sections. This information provides the basis for the processing plant and related capital and operating cost estimates.

## 17.1 Design Basis and Process Design Criteria

The process plant described in the following sections is designed to produce 5.0 Mtpa of magnetite concentrate on average over the Life of Mine. The Run Of Mine (ROM) is calculated based on a magnetite plant weight recovery of 28.8%.

The iron and weight recoveries are based on the recovery model developed from Mont Sorcier drill hole database and presented in Section 13.

The process plant design is based on testing performed to date (per Section 13), knowledge acquired in the processing of magnetite-rich deposits in the Iron Range in Northern USA and comparable projects in Eastern Canada.

Table 17-1 summarizes the general parameters upon which the beneficiation plant's design has been based for the Mont Sorcier Project.

A design factor of 20% is applied on nominal requirements to ensure that process equipment has enough capacity to take care of the expected feed variation encountered in day-to-day operations.

In addition to the previous PEA, the concentrator has a cleaner flotation circuit to ensure sulphur levels below 0.4% for all ore type in order to make a product suitable for Europe and to increase Fe levels.

**Table 17-1: General Process Design Criteria for the Processing Plant**

| Parameters | Value | Units |
|---|---|---|
| **Concentrator - General** | | |
| *Operating Schedule* | | |
| Operating Hours Per Day | 24 | h |
| Annual Operating Days | 365 | d/y |
| Crushing Availability | 65 | % |
| Concentrator Availability | 90 | % |
| *Plant Capacity* | | |
| Concentrator Solid Feed Rate | 18.5 | Mtpa |
| Concentrator Hourly Feed Rate | 2 345 | t/h |
| *Concentrate Production* | | |
| Concentrate Solid Production Rate | 5 | Mtpa |
| Concentrate Hourly Production Rate | 675 | t/h |
| **Material Characteristics** | | |
| *Feed Ore* | | |
| Iron Grade | 25.46 | % |
| Magnetite ($Fe_3O_4$) Grade | 27.75 | % |
| Vanadium ($V_2O_5$) Grade | 0.2 | % |
| Sulphur Grade | 1.12 | % |
| *Finisher LIMS Concentrate* | | |
| Iron Grade | 65.0 | % |
| Magnetite ($Fe_3O_4$) Grade | 88.2 | % |
| Vanadium ($V_2O_5$) Grade | 0.5 | % |
| Silica Concentrate Grade | <3 | % |
| *Cleaner Flotation Concentrate (Option)* | | |
| Sulphur Grade | <0.4 | % |
| **Recoveries (Finisher LIMS Concentrate)** | | |
| Iron Recovery | 73.5 | % |
| Weight Recovery | 28.8 | % |

## 17.2 Process Flowsheet and Mass Balance

Figure 17-1 presents a simplified flowsheet that summarizes the process while a material (mass) and water balance summary for the concentrator is presented in Table 17-2. The equipment list is based on the flowsheet diagrams and the equipment sizing is based on the mass balance.

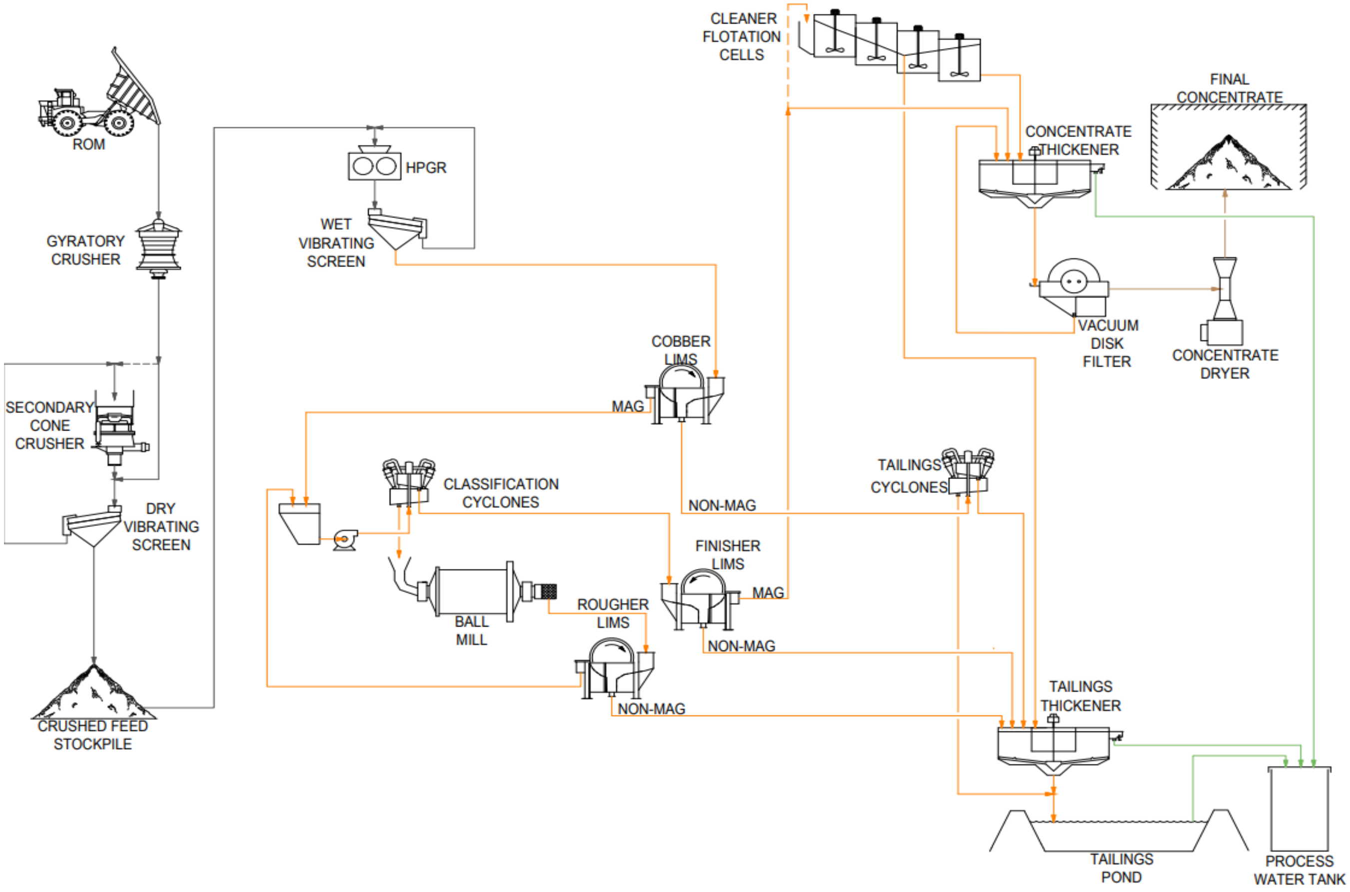


**Figure 17-1: Process Plant Simplified Flowsheet**

**Table 17-2: Material and Water Balance**

| Stream Name | Solid (t/h) | % Solids (%) | Slurry (m³/h) |
|---|---|---|---|
| **Crushing and Stockpiling** | | | |
| Primary Crusher Discharge | 3 247 | 97 | - |
| Crushing Scalping Screen O/S | 3 052 | 97 | - |
| Crushing Scalping Screen U/S | 3 247 | 97 | - |
| **Primary Grinding and Cobber Magnetic Separation** | | | |
| Primary Grinding Fresh Feed | 2 345 | 97 | - |
| Primary Grinding Mill Discharge | 5 066 | 96 | - |
| Primary Grinding Screen O/S | 2 721 | 95 | - |
| Primary Grinding Screen U/S | 2 345 | 90 | 1 014 |
| Cobber LIMS Magnetic | 1 642 | 50 | 2 139 |
| Cobber LIMS Non-Magnetic | 704 | 21 | 2 892 |
| **Secondary Grinding and Rougher Magnetic Separation** | | | |
| Classification Cyclones U/F | 4 104 | 65 | 3 298 |
| Classification Cyclones O/F | 1 023 | 20 | 4 327 |
| Secondary Grinding Mill Discharge | 4 104 | 60 | 3 824 |
| Rougher LIMS Magnetic | 3 485 | 50 | 4 346 |
| Rougher LIMS Non-Magnetic | 619 | 10 | 5 967 |
| **Finisher Magnetic Separation** | | | |
| Finisher LIMS Magnetic | 675 | 50 | 820 |
| Finisher LIMS Non-Magnetic | 347 | 9 | 3 820 |
| **Concentrate Dewatering and Drying** | | | |
| Concentrate Dewatering Thickener U/F | 675 | 65 | 507 |
| Vacuum Disc Filter Cake | 675 | 90 | 220 |
| Dried Concentrate | 675 | 98 | 158 |
| **Tailings Cyclones** | | | |
| Tailings Cyclones O/F | 106 | 4 | 2 353 |
| Tailings Cyclones U/F | 598 | 65 | 539 |
| **Tailings Thickener** | | | |
| Tailings Thickener Feed | 1 072 | 8 | 12 428 |
| Tailings Thickener U/F | 1 072 | 60 | 1 106 |

## 17.3 Description of Processing Plant Facilities

The following process description gives an overview of the recovery circuit selected based on the test work and above presented design criteria. The process description is divided into the following sections:

- Crushing;

- Grinding and magnetic separation;
- Cleaner flotation;
- Concentrate dewatering and drying;
- Tailings management.

The recovery process for the Mont Sorcier project consists of a crushing circuit (gyratory and cone crushers), a grinding circuit with primary HPGR grinding followed by secondary ball mill grinding, a magnetic upgrading circuit followed by a reverse flotation circuit for sulphur removal. Magnetic/flotation concentrate is thickened, filtered and dried before shipping while magnetic and flotation tailings are thickened before being sent to the tailings pond.

The water management system covers the fresh, process, fire and gland water storage and distribution needs while the service area covers reagents preparation and the compressed air system.

### 17.3.1 Crushing Circuit

ROM ore is hauled by trucks to the crushing plant from the mine. The ore is dumped directly into a gyratory crusher feed hopper which has a capacity of two (2) truckloads. A rock breaker is provided to break oversized boulders.

The crushed product from the 750 kW gyratory crusher is transported by conveyor to the secondary crushing area and into a cone crusher, which operates in a closed loop with a dry vibrating screening system. The screen oversize reports back to the cone crusher, while the screen undersize is conveyed to the 12 h live capacity crushed ore covered stockpile. The crushing circuit produces a -63 mm crushed product at an average throughput rate of 3 247 t/h. It is expected to operate 65% of the time in order to achieve the yearly throughput of 18.5 Mt/y.

The crushing area is serviced by a dedicated compressed air system and dust collectors.

### 17.3.2 Grinding and Magnetic Separation

#### 17.3.2.1 Primary Grinding and Cobber Magnetic Separation

The crushed mineralized material is withdrawn from the crushed ore stockpile by apron feeders onto the crushed stockpile conveyor which reports to the feed bin of the primary grinding unit. The primary grinding unit is a High Pressure Grinding Roll (HPGR) of 2.6 m diameter by 2 m width, whose role is to reduce the top size from 63 mm to 1 mm. The HPGR runs in closed circuit with wet vibrating screens. The discharge of the HPGR feeds the wet vibrating screens. The screen oversize product is conveyed back to the HPGR while the screen undersize is pumped to the first stage of magnetic separation - the cobber Low Magnetic Separation Separator (LIMS) units.

The cobber LIMS are 3.6 m long concurrent separators. Concurrent separators are typically used for coarse feeds for a first step of magnetic separation. The magnetic concentrate is pumped to the secondary grinding classification cyclones while the non-magnetic outlet is pumped to the dewatering cyclones. The dewatering cyclones decrease the water content below 40% before the underflow is pumped to the tailings pond.

#### 17.3.2.2 Secondary Grinding and Rougher Magnetic Separation

The secondary grinding classification cyclones are the entry point of a closed circuit formed with the secondary grinding mills and the Rougher LIMS. The product exiting the circuit, the classification cyclones overflow, will have a $P_{80}$ of 38 µm. To meet the design throughput and achieve the required product size, three (3) 8.9 diameter x 14.7 m EGL ball mill powered by two (2) 10 MW motors will be required. Design is based on preliminary grinding information and comparable projects.

Cyclone overflow reports to the final step of magnetic separation, the finisher LIMS, while the cyclone underflow flows to the secondary grinding mill. The secondary grinding mill product is fed to 3.6 m long counterrotation rougher LIMS to immediately reject the non-magnetic particles that have been liberated whatever their size. This reduces the grinding energy requirements as coarser size particles have an exit point before reaching the classification cyclone cut size. The rougher LIMS concentrate is recirculated back to the classification cyclones while the rougher LIMS tails report to the tailings thickener.

#### 17.3.2.3 Finisher Magnetic Separation

The finisher magnetic separation step is the final step of the magnetic concentration process. Finisher LIMS are fed by the overflow from the secondary grinding classification cyclones. The finisher LIMS are 3.6 m long countercurrent double drum separators. Countercurrent separators are preferred to be able to produce a high-grade magnetic concentrate from a fine feed. The non-magnetic product is sent to the tailings thickener and the finisher LIMS magnetic product reports to the cleaner flotation circuit or directly to the concentrate dewatering and drying circuit.

### 17.3.3 Cleaner Flotation

The cleaner flotation circuit is fed with the finisher magnetic concentrate. It will include a reverse sulphur flotation circuit to lower the sulphur grade below 0.4% and a reverse silica flotation circuit when low silica concentrate is required.

The iron concentrate (flotation tails) is pumped to the concentrate dewatering and drying circuit while the sulphur- and silica-rich flotation concentrates are pumped to the tailings thickener.

### 17.3.4 Concentrate Dewatering and Drying

The concentrate dewatering and drying circuit removes water from the magnetic concentrate slurry to reduce the moisture below 2%. This is accomplished with a thickener, disc filters and fluidized bed dryers. Concentrate moisture needs to be the lowest possible to avoid freezing during train transportation in winter and reduce transportation costs.

The concentrate thickener is fed with the finisher LIMS concentrate or the cleaner flotation concentrate depending on the sulphur and silica grade requirements. It is a 60 m diameter high-rate thickener that thickens the concentrate to 65% solids. Flocculant is added to assist the thickening process and to reduce the loss of solids to the overflow stream. Typical unit area requirements for this type of duty and materials were assigned for equipment sizing at this stage of the study.

The overflow of the thickener is pumped to the process water tank while the underflow is pumped to twelve (12) vacuum disc filters where moisture is reduced to about 10%. Filtrate is pumped back to the concentrate thickener.

Finally, the filtered concentrate is conveyed on the filter cake conveyor to two (2) fluidized flash dryers, where moisture is reduced to 2%. The dried concentrate is conveyed via a covered conveyor toward the concentrate stockpile which is also located in an enclosed area to avoid exposure of the concentrate to rain and snow.

### 17.3.5 Tailings Thickening

Rougher and finisher LIMS tails, tailings cyclones overflow and flotation sulphur- and silica-rich tailings are directed to a 45 m high rate tailings thickener and are thickened to about 65% solids. Flocculant is added to assist the thickening process and to reduce the loss of solids to the overflow stream. The tailings overflow is pumped to the process water tank and the underflow is pumped to the tailings management facility (TMF) together with the tailings cyclones underflow.

### 17.3.6 Utilities and Services Area

The concentrator utilities and services area includes water supply and plant instrument air distribution.

Two (2) separate water supply systems are provided to support the operation: a fresh water tank and a process water tank:

- Fresh water is supplied from the nearby lake system and is used for fire water emergency use, reagents preparation and gland seal water;

- Process water consists of concentrate and tailings thickener overflow and reclaimed water from the tailings pond.

Plant air service is provided by a plant air compressor and dryer, and instrument air compressor and dryer systems.

### 17.3.7 Reagents Area

The reagents used in the concentrator include:

- **Flotation**: sulphur and silica collectors, frother and pH modifier;
- **Concentrate dewatering and tailings thickener**: flocculant

All the reagents will be prepared in a containment area in a separate reagent preparation and storage area. The reagent storage tanks will be equipped with level indicators and instrumentation to ensure that spills do not occur during operation. Appropriate ventilation and fire and safety protection will be provided at the facility.

The liquid reagents will be added in undiluted form to various process circuits via individual metering pumps.

All the reagents received in solid form will be mixed with fresh water to the required solution strength in their respective mixing tanks, and stored in separate holding tanks before being metered to the process at the required addition points.

# 18. Project Infrastructure

The Property is easily accessible by an all-weather gravel road heading east off Highway QC-167, approximately 10 km east-northeast of Chibougamau. This gravel road passes through the northern claims, and forestry roads give access to lakes and different sectors in the southern and central portions of the Property.

The overall mine and plant infrastructure consists of open pit, waste and overburden dumps, crushing plant as well as buildings (concentrator, offices, workshops) and service areas.

Drainage ditches will be constructed around the open pit and dumps to direct water runoff to settling ponds to avoid contamination. A haulage road will be constructed between the mine and the crushers.

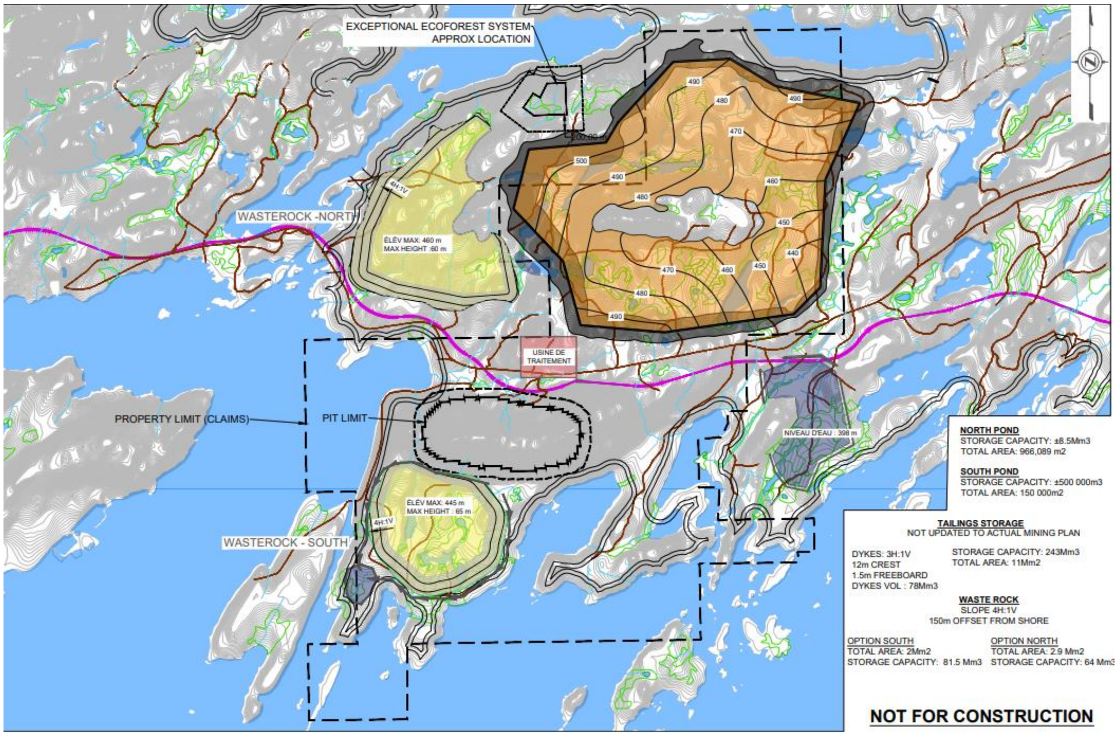
The concentrate will be transported via a new, 49 km-long railway spur line to connect with the existing CN rail infrastructure, from where it will be transported for approximately 300 km to the Saguenay port. The rail transportation system involves six trains each with 120 gondola-type railcars operating throughout the year. At port, the iron concentrate will be loaded directly into ocean freight vessels.

No permanent accommodation camp will be constructed, with the accommodation strategy involving mining and milling personnel commuting on a per shift basis from the town of Chibougamau. A new 315 kV powerline will be built along with a substation to connect to the main powerline.

Critical surface infrastructure is associated with the tailings dam and waste rock dumps. Locating this critical infrastructure given the numerous environmental constraints and ensuring capital costs and operational costs are optimized has been a key focus since the previous PEA.

A conceptual overall site arrangement is shown in Figure 18-1, which indicates locations and approximate sizes for:

- Treatment Plant Area;
- Mining Pit;
- Tailings Area;
- Waste Rock Dumps.



**NORTH POND**
STORAGE CAPACITY: ±8.5Mm3
TOTAL AREA: 966,089 m2

**SOUTH POND**
STORAGE CAPACITY: ±500 000m3
TOTAL AREA: 150 000m2

**TAILINGS STORAGE**
NOT UPDATED TO ACTUAL MINING PLAN

DYKES: 3H:1V
12m CREST
1.5m FREEBOARD
DYKES VOL : 78Mm3

STORAGE CAPACITY: 243Mm3
TOTAL AREA: 11Mm2

**WASTE ROCK**
SLOPE 4H:1V
150m OFFSET FROM SHORE

OPTION SOUTH
TOTAL AREA: 2Mm2
STORAGE CAPACITY: 81.5 Mm3

OPTION NORTH
TOTAL AREA: 2.9 Mm2
STORAGE CAPACITY: 64 Mm3

**NOT FOR CONSTRUCTION**

**Figure 18-1: Outline of Mine, Tailings, Waste Rock and Plant Locations**

In addition, the infrastructure includes on site and off site infrastructure.

On-site Infrastructure includes:

- Haulage Roads and Site Roads;
- Mine Workshop;
- Fuel Storage and Filling Station;
- Explosives Preparation and Storage;
- Security Gatehouse;
- Administrations Buildings;
- Site Drainage and Settling Ponds;
- Utility Services;
- Communications;
- Laboratory;
- Reagents Storage;
- Rail Area;

- Rail Maintenance Workshop.

Off-site Infrastructure Includes:

- Utility Services up to the point of transfer "on site";
- In town Offices;
- Port and Terminal Area.

## 18.1 On-Site Buildings and Facilities

### 18.1.1 Ore Storage

A mineralized material stockpile will be located in the vicinity of the mill.

### 18.1.2 Mine and Mill Services Buildings

Mine and mill services buildings will be located to ensure optimal and safe movement of personnel and equipment.

### 18.1.3 Comminution

The crusher and mills will be constructed and operated in an enclosed facility to reduce noise and contain dust while ensuring the safety of operating and maintenance personnel.

### 18.1.4 Concentrator

The concentrator building will house equipment for the recovery and storage of concentrates prior to shipping. The laboratory will be contained within the concentrator building.

### 18.1.5 Mine Office, Warehouse and Workshops

The concentrator and mine will be supported by administrative, supplies and maintenance facilities housed in the office, warehouses, and workshops.  Buildings housing explosives will be located remote from the rest of the surface infrastructure. A parking area will be located near the warehouse and workshops.

### 18.1.6 Security Gatehouse

Site access and exit will be security controlled at all times.

## 18.2 Tailings Dam

Six different potential locations were considered and traded off against one another, and Figure 18-1 above shows the ultimate Base Case adopted. Details of the Trade-Off are contained in the ESIA report. The tailings dam is not yet optimized; that will form part of the detailed design work.

The proposed total tailings dam has a capacity of 243Mm$^3$ (approximately 340 Mt), in excess of the current requirement to store almost 250Mt.

The tailings dam construction will be phased in order to reduce initial capital costs and ensure the facility progresses in line with operational requirements.

The tailings dam envisages a 12 m crest and has 1.5 m freeboard.

## 18.3 Waste Rock Dumps

Waste rock dumps were located in the vicinity of the mine open pit to avoid long hauls. The waste rock dumps will be constructed as the operation develops. It is recognized that the initial waste rock dump will be on land owner by Voyager, though given the size of the deposit not all land for later years has currently been obtained. This land is state land, and impacts to mineral right holders will be negotiated as the operation develops.

## 18.4 Rail Infrastructure

The proposed railroad spur line will start from the site (in a loop), head eastwards and then south, finishing by connecting to the existing CN rail infrastructure. The total length of new rail line will be about 49 km. The rail is a single line with the capacity to receive a train of 120 gondola-type railcars.

Approximately 30 km of the new rail line will closely follow the route proposed and approved by the Environment Agency for the proposed nearby Blackrock operation. The remaining 20 km will follow similar landscape and terrain, with no foreseeable objections at this time.

The workshop for rail equipment maintenance will be a steel structured building unit. The building will be about 75 m long x 40 m wide, and located near the loop.

At this time it is not considered that Blackrock will share the cost of this new rail line; if the Blackrock Project proceeds there could be an opportunity to share costs between Blackrock and Voyager, thus reducing the Mont Sorcier Project capital costs.

## 18.5 Port and Terminal Infrastructure

After connecting to existing CN rail infrastructure, the iron concentrate will be transported by train via an existing rail line to the port of Saguenay, Québec. At the port, it will be unloaded from the train to a dedicated Mont Sorcier products stockpile area. From there a conveyor system will be utilized to load the concentrate onto bulk cargo ships.

The Saguenay Port Authority (SPA) indicates with their current expansion plans to access deeper water, there will be no limit to the size of ship that can be used to transport the product.

# 19. Market Studies and Contracts

## 19.1 Concentrate Pricing

### 19.1.1 Market Studies

Voyager had commissioned an Independent Market Pricing Study to determine the potential value of the vanadium-rich iron product produced by Mont Sorcier, given the lack of available quoted market index prices. The study was completed by Paul Vermeulen of Vulcan Technologies in late-October 2019. The study reviewed main iron index price forecasts as well as estimates of the applicable vanadium credits.

The study reviewed a value-in-use methodology based upon a review of the grade and concentrate chemistry from Mont Sorcier relative to other similar iron products. The study concluded that the concentrate from Mont Sorcier should receive a US$15/t premium to the Platts 65 price iron index for the contained vanadium credits (based on a net attributable value using a long term $V_2O_5$ price of US$7.25/lb).

### 19.1.2 Analyst Forecasts

Vulcan Technologies' (Vermeulen, 2019) price forecast was based on a Platt62 CFR China price of US$76/dmt. Three scenarios are presented in the Vermeulen (2019) report and are based on a 15%, 20% and 30% Platts65 Fe premium over the Platts62 Fe benchmark. A premium for the Mont Sorcier iron and vanadium concentrate Fe grade of 65.5%Fe applied on a dmt unit basis of 15 to 30% provided a forecast of US$92 to 104/dmt for the Platts65 Fe product and a vanadium premium of US$15 to 30/dmt could be achieved driving the price for Mont Sorcier concentrate to approximately US$92 to 134/dmt. A long-term price of US$107/dmt CFR China was forecast for the Mont Sorcier concentrate given the vanadium content and high purity of the concentrate.

Recent Consensus Report estimates conservative long term (2027-2031) iron ore fines (concentrate) CFR China (62% Fe) at US$82/t.

### 19.1.3 Mont Sorcier Concentrate Pricing

Mont Sorcier iron and vanadium concentrate is a high grade (65.5% Fe and 0.6% V), low impurity (alumina, silica, phosphorus) product. The silica level is slightly lower than that of the Platts65 benchmark, however due to low alumina and phosphorus content, it is considered a high purity iron and vanadium concentrate. This should attract improved pricing providing that customers (steel plants) that will benefit from the absence of these elements are targeted. The fine particle size may result in a customer discount depending on the market, however the magnetite content (and decreased sintering/pelletizing costs) will partially / completely offset the possible penalty.

Based on the various market studies and analyst forecasts for iron ore fines and high Fe grade (65%) of Mont Sorcier concentrate and vanadium credits, DRA selected a long term price of US$135/t concentrate CFR China for use in the updated PEA.

## 19.2 Rail Transport and Port Access Agreements

Due to the Mont Sorcier Project's early stage of development, there have been no formal negotiations with the rail transport carrier or Saguenay Port Authority as of the Effective date of this Report. Early discussions have been held with the Saguenay Port Authority and further discussions are ongoing.

## 19.3 Offtakes and Contracts

As of the Effective Date of this Report, there are no contracts or off-take agreements in place relevant to the development of the Mont Sorcier Property.

# 20. Environmental Studies, Permitting and Social or Community Impact

Canada is well advanced in its Regulatory framework for permitting of mining projects and has an advanced level of requirements to assess Environmental and Social Impacts of Projects.

Given the size and scale of the project, the Federal Regulations for Impact Assessment will apply. Voyager has engaged WSP Golder to assist Voyager in its application. WSP Golder is a world recognized leader in environmental and social permits and is fully familiar with Regulations in Canada and Quebec.

Voyager has commenced engagement with local community leaders and the Impact Assessment Agency of Canada (IAAC) Government Agencies. The project is within the James Bay and Northern Quebec Agreement (JBNQA) that relates to Aboriginal communities of the region. The JBNQA is a comprehensive land claim agreement that has a well-defined process.

This section of the report is based upon work prepared by:

- Nordo Stelo for Voyager titled “Mont Sorcier Project Environmental and Social Scoping Study” dated 17 February 2019; and
- Work completed and in progress by WSP Golder.

## 20.1 Environmental and Social Scoping Study

Voyager commissioned Norda Stelo (a technical services firm based in Québec) to carry out an Environmental and Social Scoping Study (ESSS) on the Project (Boulé et al., 2019), which has summarized available information sources and knowledge gaps with respect to:

- Physical environment components (climate and weather; air quality; topography; geology and surface deposits; hydrography and hydrology; sediment and freshwater quality; hydrogeology and groundwater quality);
- Biological environment components (protected areas and wildlife habitats; plant communities; freshwater fish and fish habitat; avifauna; herpetofauna; mammals; special status species);
- Human environment components (population and demographic trends; socio-economic profile; land tenure and zoning; main land uses in the study area; transport infrastructure; historical and current Cree traditional land use; historical and cultural resources).

Key environmental and socio-economic issues identified as part of the ESSS (Boulé et al., 2019) include:

- Biophysical issues:

  - Greenhouse gas emissions;
  - Dust emissions;
  - Water management and effluent quality;
  - Project of biological refuge;
  - Impact on hydrology;
  - Terrestrial habitat losses;
  - Impacts on fish populations and fish habitats;
  - Destruction of wetlands;
  - Contamination of soil, water, plants, fish and animals;
  - Destruction of bird nests;
  - Disturbance of wildlife;
  - Special status plant and wildlife species;
  - Risk management.
- The main socio-economic issues generally raised by the Cree of Eeyou Istchee in the context of mining projects are as follows:
  - Potential for conflicts between mining activities and traditional land uses;
  - Environmentally and culturally sustainable development;
  - Cultural and heritage protection and development;
  - Human health risks;
  - Economic benefits and revenue sharing;
  - Provision of sustainable economic development within the region in order to provide employment and business opportunities for its members;
  - Training and education programs so that members of the community might fully participate in available opportunities.
- Additional socio-economic issues raised for similar projects in the area include:
  - Contamination of traditional food;
  - Access to the area;
  - Hunting pressure on big game, small game and fur-bearing animals;
  - Site safety;
  - Social acceptability;

  - Impact of feed/concentrate transport;
  - Lodging/housing availability;
  - Signature of a framework agreement with the local communities;
  - Training and employment;
  - Creation of local and regional economic benefits.

It is recommended that upcoming environmental studies and project development activities will need to be undertaken in order to advance the Project including:

- Environmental baseline studies;
- Public consultations and engagement;
- Project notice and description of a designated project;
- ESIA;
- Permitting.

In 2022 Voyager engaged WSP Golder for the following activities:

- Study of Mine Waste Surface Infrastructure and Water Management to undertake:
  - Analysis of the option 0 (without fish habitat impact);
  - Analysis of new location options and comparison with initial assumptions (including Goldset);
  - Preliminary analysis and conservation of tailing storage facility sites;
  - Multiple Accounts Analysis of the sites;
  - Preliminary analysis and conservation of options for waste rock management sites;
  - Selection of the options with the highest score for the tailing storage facilities and the waste rock management sites.

WSP Golder conducted a Trade-Off of six main options for the TSF. The Trade-Off considered water habitats impacted and selected the final outcome based on a qualitative trade-off assessment. The work is preliminary in nature and will be developed as part of the Environmental Impact Statement requirements. That said, the work confirmed the likely locations and estimated quantities to store the tailings facilities.

Below is a preliminary list/chapters for the Project Description that is required for the Federal Government. The Project Description is the starting point of the timeline with the Federal and is a public document. The input list is preliminary and will be submitted in French, along with the party responsible for the sections.

## PART A GENERAL INFORMATION

| | | |
|---|---|---|
| 1 | Project Name, Sector and Projected Location | WSP |
| 2 | Developer Information | Voyager Metals |
| 3 | Engagement Activities | Voyager Metals |
| 3-1 | Consultation Process (Future Activities) | Voyager Metals + WSP |
| 3-2 | Main Concerns | WSP + Voyager Metals |
| 3-3 | Future Mobilization Plan | WSP + Voyager Metals |
| 4 | Engagement Activities with Indigenous Groups | WSP + Voyager Metals |
| 4-1 | Information Approach | WSP |
| 4-2 | Future Mobilization Plan | WSP |
| 5 | Regional Studies, Plans or Assessments | WSP + Voyager Metals |
| 5-1 | Studies or Plans Related to the Project | WSP + Voyager Metals |
| 5-2 | Regional Assessments | WSP |
| 6 | Strategic Assessment | WSP |

## PART B PROJECT INFORMATION

| | | |
|---|---|---|
| 7 | Rationale, Necessity and Potential Benefits of the Project | Voyager Metals |
| 8 | Applicable Provisions | WSP |
| 9 | Activities, Infrastructures and Structures and Works, Permanent or Temporary | WSP + Voyager Metals |
| 9-1 | Main Infrastructures and Structures and Permanent Works | WSP + Voyager Metals |
| 9-2 | Mineral Resources and Reserves | Voyager Metals |
| 9-3 | Ore Mining | Voyager Metals |
| 9-4 | Ore Processing | Voyager Metals |
| 9-5 | Management of Waste Rock and Tailings | WSP |
| 9-6 | Water Management and Treatment | WSP |
| 9-7 | Related Infrastructure | WSP + Voyager Metals |
| 9-8 | Restoration and Rehabilitation of the Site | WSP |
| 10 | Maximum Production Capacity and Production Process | Voyager Metals |
| 11 | Project Timeline | WSP + Voyager Metals |
| 12 | Potential Alternatives | WSP + Voyager Metals |
| 12a | Alternatives to the Project | WSP + Voyager Metals |

## PART C LOCATION INFORMATION

| | | |
|---|---|---|
| 13 | Description of the Projected Location | WSP |
| a) | Geographical Coordinates (complete) | WSP |
| b) | Plan of the Site | WSP |
| c) | Official Description of the Field | Voyager Metals |
| d) | Proximity to Local Communities | WSP |
| e) | Proximity to Indigenous Communities | WSP |
| f) | Proximity to State Territory | WSP |
| 14 | Summary Description of the Biological and Physical Environment | WSP |
| 14-1 | Atmospheric Environment | WSP |
| 14-2 | Physiography | WSP |
| 14-3 | Hydrography | WSP |
| 14-4 | Hydrogeology | WSP |
| 14-5 | Vegetation and Wetlands | WSP |
| 14-6 | Aquatic and Benthic Fauna | WSP |
| 14-7 | Avian and Terrestrial Fauna | WSP |
| 14-8 | Species at Risk | WSP |
| 15 | Summary Description of Health, Social and Economic Context | WSP |
| 15-1 | Administrative Context | WSP |
| 15-2 | Vocation of the Territory | WSP |
| 15-3 | Population | WSP |
| 15-4 | Economic Activities | WSP |
| 15-5 | Road and Rail Infrastructure | WSP |
| 15-6 | Hunting, Fishing and Trapping | WSP |
| 15-7 | Heritage and Archaeology | WSP |
| 15-8 | Indigenous Peoples | WSP |

**PART D FEDERAL, PROVINCIAL, TERRITORIAL, ABORIGINAL OR MUNICIPAL INVOLVEMENT**

| | | |
|---|---|---|
| 16 | Financial Support | Voyager Metals |
| 17 | State Territories | WSP |
| 18 | Jurisdictions that Have Powers and Functions in Relation to Environmental Effects Assessment | WSP |
| 18-1 | Government of Canada | WSP |
| 18-2 | Provincial Government | WSP |

**PART E POTENTIAL EFFECTS OF THE PROJECT**

| | | |
|---|---|---|
| 19 | Changes to Environment Components | WSP |
| 20 | Environmental Changes on Federal Lands, in Another Province or Outside Canada | WSP |
| 21 | Impact on Indigenous Peoples | WSP |
| 22 | Changes in Health, Social or Economic Conditions of Indigenous Peoples | WSP |
| 23 | Greenhouse Gas Emissions | WSP |
| 24 | Waste and Emissions | WSP + Voyager Metals |
| 24-1 | Waste Management | WSP + Voyager Metals |
| 24-2 | Residual Hazardous Materials Management | WSP + Voyager Metals |
| 24-3 | Air Emissions | WSP |
| 24-4 | Liquid Discharges | WSP + Voyager Metals |
| 24-5 | Contaminated Soil Management | WSP + Voyager Metals |

**PART F SUMMARY**

It is noted that the Agency will need to review the cumulative effect of the potential project along with other potential projects that are in the process of obtaining any permits. This though is not deemed a fatal flaw and may lead to opportunities for synergies on infrastructure and local community development.

## 20.2 Environmental Assessment Process

### 20.2.1 Context

The Mont Sorcier Project is located in the Nord-du-Québec Region on lands subjected to the JBNQA. The JBNQA was put in place in 1975 by the Government of Québec, the Government of Canada, the GCC(EI), and the Northern Québec Inuit Association. It enacts the environmental and social protection regimes for the James Bay and Nunavik regions. The JBNQA establishes three categories of lands, numbered I, II, and III and defines specific rights for each category.

The Mont Sorcier Project area lies over Category III lands, which are public lands in the domain of the State. The Crees have exclusive trapping rights on these lands, as well as certain non-exclusive hunting and fishing rights. The Crees also benefit from an environmental and social protection regime that includes, among other things, the obligation for proponents to carry out an ESIA for mining projects such as the Mont Sorcier Project and the obligation to consult with First Nations communities. Category III lands include all the lands within the territory covered by the JBNQA that are located south of the 55th parallel and are not included in other land categories. Category III lands are managed by the EIJBRG as established by the Act establishing the EIJBRG (chapter G-1.04). The sections below outline the legislative and regulatory framework applicable to the Mont Sorcier Project. At first, the provincial and federal environmental assessment processes are described. Then, the permitting process that may be required in order to realize the Project is presented.

### 20.2.2 Provincial Environmental Assessment Process

Chapter II of the Title II of the Environment Quality Act (EQA) provides for specific arrangements with regards to environmental assessment applicable to the James Bay territory located south of the 55th parallel in accordance with the provisions contained in the JBNQA. The environmental assessment process for this region differs from the provincial process in that the local First Nation peoples are active participants. The Environmental and Social Impact Review Committee (COMEX) is an independent body composed of members appointed by the governments of Québec and the Cree Nation which is responsible for the assessment and review of the social and environmental impacts of projects located south of the 55th parallel in the territory governed by the JBNQA.

As provided in Section 153 of the EQA, Schedule A of the EQA lists the projects that are automatically subject to the impact assessment and review procedure while Schedule B lists the projects that are automatically exempt from the procedure. Concerning Mont Sorcier Project, Schedule A stipulates that “all mining developments, including the additions to, alterations or modifications of existing mining developments” are automatically subject to the impact assessment and review procedure. In accordance with Section 154 of the EQA, any proponent wishing to carry out a project which is not automatically exempt from the assessment and review procedure must request a certificate of authorization or an attestation of exemption and undergo the social and environmental impacts assessment and review procedure.

#### 20.2.2.1 Step 1 – Notice of Intent and Preliminary Information Statement

This step begins with the preliminary planning of the project, when the proponent is reviewing the possible project alternatives based on technical, economic, environmental, and social aspects of the project in order to select the best options for further studies. The project proponent must complete a Preliminary Information Form. The content of this Preliminary Information Statement is set out under Section 2 of the Regulation respecting the environmental and social impact assessment and review procedure applicable to the territory of James Bay and Northern Québec (chapter Q-2, r. 25). This information concerns the goal, nature and scale of the project, as well as the sites considered or the various development options. In accordance with Sections 155 and 156 of the EQA, the proponent must then send to the appropriate Administrator (here the Deputy Minister of the MELCC) a notice of intent and the preliminary information on the project.

### 20.2.2.2 Step 2 – Assessment and ESIA Guidelines (Directive)

The Administrator sends the file to the Evaluating Committee (COMEV) which is responsible for reviewing and analyzing the preliminary information provided by proponents for projects located south of the 55th parallel. In the case of a project that is not automatically subject to or exempt from the procedure, COMEV makes a recommendation to the Administrator regarding whether or not the development project must undergo an impact assessment.

In the case of a project subject to the procedure, the COMEV issues ESIA guidelines (directive) that are a document outlining the nature and the scope of the ESIA that the proponent must undertake. The guidelines are submitted to the Administrator, who forwards them to the proponent with or without amendments. If the Administrator deems it necessary to amend a COMEV recommendation, he must first consult the COMEV. It must be noted that a general directive exists for the preparation of ESIA in Québec (MELCC, 2018d). Appendix 4 of this directive specifies additional information that is required in the case of an ESIA for a mining project.

### 20.2.2.3 Step 3 – Impact Assessment

During the third step, the project proponent completes an impact assessment study in accordance with the ESIA guidelines (directive) issued by the Administrator. It should be noted that Section 5 of the Regulation respecting ESIA and review procedure applicable to the territory of James Bay and Northern Québec (chapter Q-2, r. 25) defines the essential elements that must be included in an impact assessment report, such as a detailed project description, a description of the biophysical and social environment, an assessment of the project impacts, a description and comparative analysis of project alternatives, a description of mitigation and restoration measures. The accuracy of the details provided in the impact assessment must correspond to the extent and the consequences of the identified impacts. The impact assessment must also meet the expectations of the Review Committee (COMEX) and needs as set forth in the document entitled “Consultations conducted by the proponent: Expectations of the Review Committee” (COMEX, 2016).

### 20.2.2.4 Step 4 – Review

The project proponent submits the impact assessment to the Administrator, who forwards it to the COMEX. The COMEX analyzes each project that must undergo the environmental and social impact assessment and review process, calling on the relevant expertise from various Québec government departments and agencies as well as from the government of the Cree Nation. In the course of its analysis, the COMEX may recommend to the Administrator to ask the proponent to undertake further research or additional studies or to provide any additional information deemed necessary. The documents reviewed by COMEX are made available to the public on the COMEX's website and in MELCC's environmental assessment register, except for documents or information deemed confidential. During this step in the procedure, the public is given the opportunity to make submissions to the COMEX. The COMEX may also hold public hearings or other forms of consultations. This public participation enables the COMEX to gauge the concerns of the people in the territory, and to benefit from the traditional knowledge of the First Nation communities. The COMEX recommends refusal or authorization of the project and, if necessary, determines the applicable conditions. It is the responsibility of the COMEX to specify the amendments or additional measures it considers appropriate.

#### 20.2.2.5 Step 5 – Decision

Taking into consideration the COMEX recommendations, the Administrator decides whether or not to authorize the project. If the Administrator cannot accept the COMEX's recommendation, he must consult the COMEX before making a final decision and informing the proponent. The final decision is also forwarded to the Government of the Cree Nation. If the project is approved, a certificate of authorization is issued in accordance with Section 164 of the EQA.

### 20.2.3 Federal Environmental Assessment Process

Since publication of the previous PEA, Canada has implemented new legislation Titled the Impact Assessment Act. This was Enacted by section 1 of chapter 28 of the Statutes of Canada, 2019, in force August 28, 2019, see SI/2019-86.

This process is managed by the Impact Assessment Agency of Canada, and the file for the Project is with the Quebec City office.

The Act has new processes and timeframes, outlined below.

- **Planning** – Up to 180 days or: 270 days if Province of JBNQA request extra 90 days
- **Impact Statement** – Up to 3 years (includes obtaining data and completing studies)
- **Impact Assessment** – Up to 300 days for Agency and Up to 600 days for Review Panel
- **Decision Making** – Up to 30 days for the Minister and up to 90 days for the Cabinet
- **Post Decision** – Ongoing follow up and monitoring

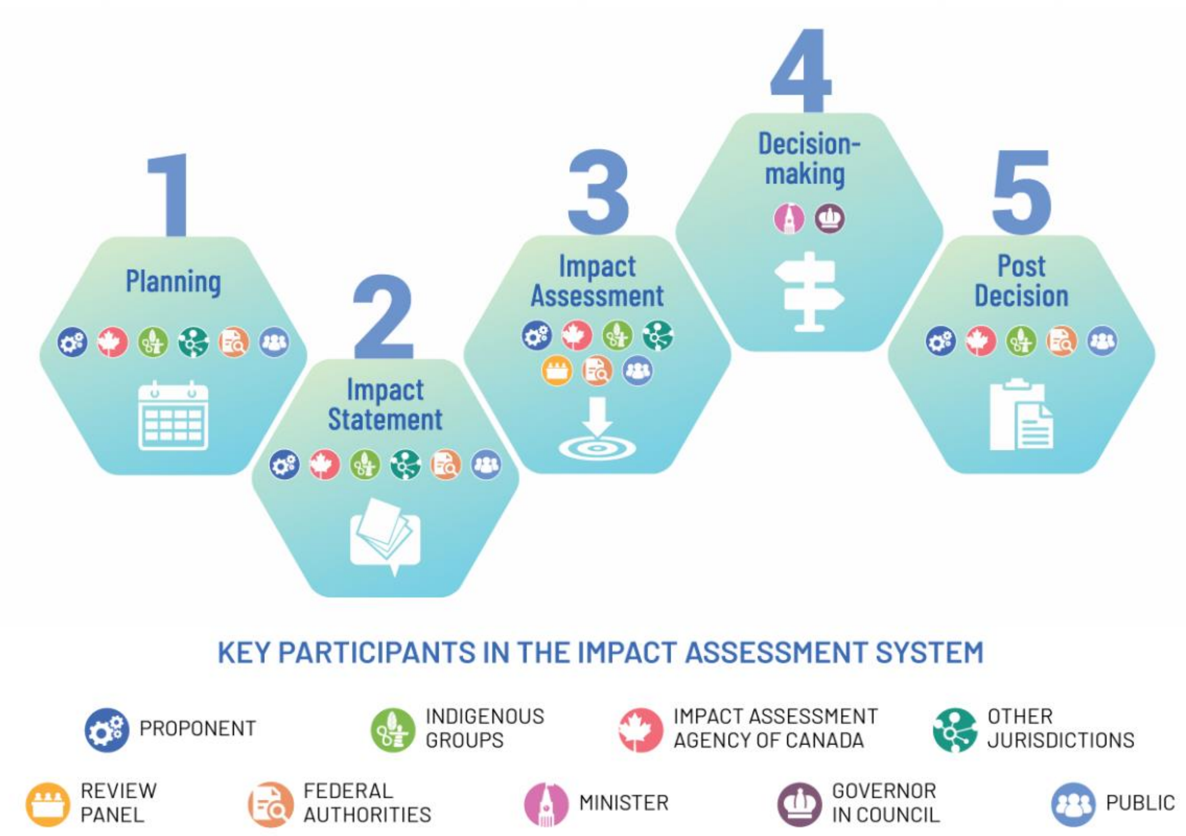


**Figure 20-1: Outline of Federal Assessment Process Phases**

### 20.2.3.1 Phase 1 - Planning

Step by step guide is given as:

1. The Proponent determines if its project is described on the Project List (the Physical Activities Regulation). For this case Mining projects are on the list.
2. If the project includes an activity that is described on the Project List, or if the physical activity has been designated by the Minister, the proponent submits an Initial Project Description to the Agency that meets the requirements of the Information and Management of Time Limits Regulations.
3. The Agency confirms that the proposed project is identified on the Project List and determines whether the Initial Project Description conforms with the regulations. It is anticipated that **there will be a 10-day service standard** for the Agency to complete this review.
4. If requirements outlined in the Information and Management of Time Limits Regulations are missing, the Agency requests that information from the proponent.

5. When the Initial Project Description conforms with the regulations, it is accepted by the Agency. The Agency informs the Proponent and posts it on the Agency's Registry Internet Site. **The 180-day time limit starts when the Notice is posted to the Registry**.
6. In the case where the designated project is regulated by a lifecycle regulator, the Agency will collaborate with the lifecycle regulator to prepare for the possible impact assessment. Mining projects are *not regulated in this manner*.
7. The Agency contacts and consults with Federal authorities who may be in possession of specialist or expert information or knowledge.
8. The Agency engages with provincial, territorial and Indigenous jurisdictions that may have responsibilities in relation to assessment of the designated project in order to prepare for a possible impact assessment. **The Agency may extend the 180-day planning phase by up to 90 days at the request of another jurisdiction to enable cooperation with that jurisdiction**.
9. The Agency identifies the Indigenous groups who may be affected by the project. The list of Indigenous groups the proponent has already contacted and/or engaged with in respect to the Project will help inform this review. The Agency will contact the Indigenous groups to notify them that a potential project is being contemplated that may affect their rights or interests, and to invite their participation in the planning phase.
10. The Agency initiates engagement and consultation activities with Indigenous groups, as well as the public and other participants on the Initial Project Description. The objective of engagement at this stage is to identify key issues of concern and to determine how Indigenous groups and the public would like to be engaged should an impact assessment be required.
11. The Agency prepares a Summary of Issues that includes issues raised by provincial, territorial and Indigenous jurisdictions, Indigenous groups, the public, federal authorities and other participants during consultations and engagement. The Agency provides the Summary of Issues to the proponent and posts a copy to the Registry.
12. The proponent prepares a Response to the Summary of Issues that explains how it intends to address the issues raised, and a Detailed Project Description that meets the requirements of the Information and Management of Time Limits Regulations. Once completed, the proponent submits these documents to the Agency.
13. The Agency reviews the Detailed Project Description and posts it and the Response to the Summary of Issues to the Registry once it is accepted as conforming to the regulations. It is anticipated that there will be a 10-day service standard for the Agency to complete this review.

14. The Agency determines if an impact assessment is required and posts the decision and the reasons for the decision on the Registry.
15. If an impact assessment is required, the Agency continues to engage with Indigenous groups, the public, other jurisdictions, including Indigenous jurisdictions, and federal expert departments in order to develop the Public Participation Plan, the Indigenous Engagement and Partnership Plan, the Impact Assessment Cooperation Plan, the Permitting Plan and the Tailored Impact Statement Guidelines, which includes the scope of the factors that are considered as part of an assessment.
16. The Agency posts the draft Tailored Impact Statement Guidelines on the Registry for comment and posts the draft Plans.
17. The Agency continues to engage and considers the input received in order to finalize the Tailored Impact Statement Guidelines and Plans.
18. Once finalized, the Agency provides the Tailored Impact Statement Guidelines to the proponent and posts the documents to the Registry with the Notice of Commencement before the end of the 180-day planning phase.
19. **Within 45 days from the posting of the Notice of Commencement** on the Registry, the Minister may refer the impact assessment to a Review Panel, if it is the public interest to do so.
20. When the impact assessment is referred to a Review Panel, the Agency posts a notice of the Minister's decision, including the Minister's reasons for referring the project to a Review Panel, on the Registry.
21. If the designated project includes physical activities that are regulated under the Acts listed below, the Minister must automatically refer the impact assessment to an integrated Review Panel:
    - Nuclear Safety and Control Act: such as the construction of a uranium mine or nuclear fission reactor;
    - Canadian Energy Regulator Act: such as the construction of an interprovincial natural gas pipeline;
    - Canada-Newfoundland and Labrador Atlantic Accord Implementation Act or Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act: such as the construction of a floating offshore oil and gas production facility.

*When the Minister receives a request for substitution:*

- At any point in this phase, if the Minister of Environment and Climate Change (the Minister) receives a request from another provincial, territorial and/or Indigenous jurisdiction to substitute the impact assessment process, the

Request for Substitution will be posted to the Registry with an invitation to the public to provide their comments. Indigenous groups will be consulted and engaged on the Request for Substitution.

- The Minister considers comments received and posts the Substitution Decision and the reasons for the decision to the Registry before the end of the 180-day planning phase.

### 20.2.3.2 Phase 2 – Impact Statement

Step by step guide is given as:

1. The Proponent collects information and conducts studies, as described in the Tailored Impact Statement Guidelines.
2. The Proponent continues to engage Indigenous groups and the public to inform its Impact Statement.
3. The Agency continues to engage in order to prepare Indigenous groups and the public for the impact assessment phase.
4. The Proponent develops an Impact Statement containing the information and studies outlined in the Tailored Impact Statement Guidelines and submits it to the Agency. The Agency must be satisfied that the Proponent has provided the required information or studies outlined in Tailored Impact Statement Guidelines within three years from the date the Notice of Commencement is posted on the Agency's Registry Internet Site (the Registry). Upon request from the Proponent, the Agency may extend the timeline.
5. The Agency reviews the Proponent's Impact Statement to determine if it conforms to the Tailored Impact Statement Guidelines.
6. The Agency invites comments on the Impact Statement and engages with federal authorities, lifecycle regulators, Indigenous groups, other jurisdictions and members of the public to ensure all information and studies outlined in the Guidelines are included in the Proponent's Impact Statement.
7. If the Impact Statement does not conform to the Tailored Impact Statement Guidelines, the Agency requires the Proponent to provide the missing information or revisions.
8. When the Agency is satisfied that the Impact Statement contains all of the information and studies outlined in the Guidelines, a notice informing the public that the Impact Statement contains all required information and studies is posted on the Registry. The time limit established by the Agency for Phase 3 begins from this point.

### 20.2.3.3 Phase 3 – Impact Assessment

When the Impact Assessment is by the Agency; the step by step guide is given as:

1. Once the Agency posts the Notice of Determination on its Registry Internet Site (the Registry) that it is satisfied that the Impact Statement contains all of the required information and studies outlined in the Tailored Impact Statement Guidelines, **the time limit of up to 300 days begins**.
2. When a designated project requires an impact assessment by another jurisdiction, including provincial, territorial or Indigenous jurisdictions, the Agency offers to consult and cooperate with the other jurisdiction(s) for the conduct of the impact assessment and implements the Impact Assessment Cooperation Plan developed in the planning phase.
3. Federal authorities that may be in possession of specialist or expert information or knowledge continue their analysis of the Impact Statement relevant to their respective mandates. Federal authorities provide their expert advice on the Proponent's Impact Statement to the Agency. This advice is posted to the Registry.
4. The Agency continues its analysis on the Impact Statement and considers comments received.
5. The Agency may engage the Proponent to seek clarifications, resolve issues or to ask questions on the Impact Statement.
6. The Agency continues to consult Indigenous groups and implement the Indigenous Engagement and Partnership Plan developed in the planning phase.
7. The Agency continues to engage the public and implement the Public Engagement Plan developed in the planning phase.
8. The Agency may hold public meetings or open houses to allow Indigenous groups, stakeholders and the public to participate in the impact assessment process. These events are also opportunities for the public to ask questions of the Proponent, the Agency and federal expert departments.
9. If required, the Agency can initiate an External Technical Review. The Agency would select independent experts and develop science questions to pose to the experts. The independent experts would produce a report that will be considered by the Agency when developing the Impact Assessment Report. The Agency will review any comments received from the Proponent, stakeholders and Indigenous groups on the report so that they are considered in the development of the Impact Assessment Report.
10. The Agency develops the draft Impact Assessment Report. In preparing its analysis, the Agency considers the information and evidence provided by the Proponent,

expert federal departments, Indigenous groups, the public and other jurisdictions, including provincial, territorial and Indigenous.

11. The Agency prepares draft potential conditions.
12. The Agency develops a Consultation Report and consults Indigenous groups on the document.
13. The Agency may co-develop or collaborate on some sections of the Impact Assessment Report, draft potential conditions and Consultation Report with Indigenous groups.
14. The Agency seeks views on the draft Impact Assessment Report and draft potential conditions.
15. The Agency considers the comments received in order to finalize the Impact Assessment Report and potential conditions.
16. The Agency provides the Impact Assessment Report, Consultation Report and recommended potential conditions to the Minister.

When the Impact Assessment is Substituted as outlined in Phase 1; the Agency and expert federal departments are given the opportunity to participate in the process. The Agency may participate in consultation groups and they develop draft potential conditions for the Federal Decision Statement. The Impact Assessment Report produced by the other jurisdiction, the Consultation Report and the recommended potential conditions are provided to the Minister.

#### 20.2.3.4 Phase 4 – Decision Making

1. Based on the Impact Assessment Report, the Minister must determine if the adverse effects within federal jurisdiction and the adverse direct or incidental effects are in the public interest, or refer the determination to the Governor in Council.
2. Prior to making the determination, the decision-maker (whether Minister or Governor in Council) must be satisfied that the Crown duty to consult and accommodate Indigenous peoples has been fulfilled.
3. If the Minister refers the determination to the Governor in Council, a Notice of Referral and the reasons for the referral are posted to the Agency's Registry Internet Site (the Registry).
4. Once the determination is made by the decision-maker (Minister or Governor in Council), the Minister issues a Decision Statement to the Proponent with the reasons for the determination and conditions. **When the Minister makes the public interest determination, the Decision Statement must be issued no later than 30 days after the Impact Assessment Report is posted on the Registry**. **When the Governor in**

**Council makes the public interest determination, the Decision Statement must be issued no later than 90 days after the Impact Assessment Report is posted on the Registry**.

5. The Agency posts the Decision Statement to the Registry.

### 20.2.3.5 Phase 5 – Post-Decision

The Minister issues the Decision Statement including detailed reasons related to the public interest determination, any enforceable conditions with which the Proponent must comply and the final description of the designated project. Conditions must include the implementation of mitigation measures, and the implementation of a follow-up program and where appropriate, an adaptive management plan may be established.

1. The Proponent is responsible for developing and carrying out the follow-up and monitoring programs, but may also include the involvement of Federal Authorities, Indigenous groups and the public in relevant activities.
2. The Agency, where circumstances warrant, may also establish Monitoring Committees that will help to provide additional confidence in the science and evidence used in the follow-up and monitoring programs.
3. The Agency will track and report on the follow-up and monitoring programs and will post information relating to follow-up and monitoring activities to the Registry, including data, summaries and other relevant documents.
4. The Agency is responsible for verifying compliance with the Minister's Decision Statement and undertakes compliance and enforcement measures to encourage compliance with the Decision Statement.
5. In circumstances of non-compliance, enforcement officers and analysts will take the appropriate steps to work with the Proponent to ensure a return to compliance (the state of conformity with the Act and the Minister's Decision Statement).
6. The Agency will establish a review process for non-compliance orders whereby orders are reviewed by the Agency if requested by the person or entity who received the order.
7. The Agency will post the following information to the Agency's Registry Internet Site (the Registry), as appropriate:
   - information or any document(s) provided by a Proponent to comply with a condition set out in the decision statement;
   - any summary report that an enforcement officer or analyst may prepare in their designated role;

   - any notice(s) of non-compliance;
   - a written order issued by an enforcement officer or analyst; and
   - any decisions made by a review officer.

8. The Minister may amend a Decision Statement. In this case, a notice of the intended amendment to the Decision Statement and an invitation for public comment will be posted on the Registry.
9. Any comments received on intended amendments will be considered.

The Minister issues an amended Decision Statement.

The Agency will post the final amended Decision Statement and reasons for the amendment to the Registry.

# 21. Capital and Operating Costs

## 21.1 Capital Cost

Initial capital expenditure (CAPEX) costs for the Mont Sorcier Project are estimated at US$574M, including contingency. The estimate is deemed at Class 5 with the expected accuracy as given by the AACE International (Association for the Advancement of Cost Engineering) in their Cost Estimate Classification System and recommended Practice 18R-97 for Process Industries.

As defined by the AACE, Class 5 estimates are generally prepared based on limited information, and subsequently have wide accuracy ranges. Class 5 estimates, due to the requirements of end use, may be prepared within a limited amount of time. Often, little more than proposed plant type, location, and capacity are known at the time of estimate preparation. Class 5 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, and other parametric and modeling techniques.

Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, long range capital planning, etcetera.

The level of information available to prepare the estimate is outlined below, and compared to the required level to achieve the Class 5 Estimate.

**Table 21-1: Estimate Input Checklist and Maturity Matrix for Each Level of Study**

| | **Level Met** | **Level Required for Each Classification** | | | | |
|---|---|---|---|---|---|---|
| **General Criteria** | | **Class 5 PEA** | **Class 4 PFS** | **Class 3 FS** | **Class 2 Control** | **Class 1 Control** |
| Project Scope | General | General | Prelim | Defined | Defined | Defined |
| Plant Production Capacity | Prelim | Assumed | Prelim | Defined | Defined | Defined |
| Plant Location | General | General | Approx. | Specific | Specific | Specific |
| Soils and Hydrology | None | None | Prelim | Defined | Defined | Defined |
| Integrated Project Plan | Prelim | None | Prelim | Defined | Defined | Defined |
| Project Master Schedule | Prelim | None | Prelim | Defined | Defined | Defined |
| Escalation Strategy | Prelim | None | Prelim | Defined | Defined | Defined |
| Work Breakdown Structure | None | None | Prelim | Defined | Defined | Defined |
| Contracting Strategy | Assumed | Assumed | Assumed | Prelim | Defined | Defined |

| | Level Met | Level Required for Each Classification | | | | |
|---|---|---|---|---|---|---|
| **General Criteria** | | **Class 5 PEA** | **Class 4 PFS** | **Class 3 FS** | **Class 2 Control** | **Class 1 Control** |
| **Engineering Deliverables** | | | | | | |
| Block Flow Diagrams | S/P | S/P | P/C | C | C | C |
| Plot Plans | S | | S | P/C | C | C |
| Process Flow Diagrams | S | | S/P | P/C | C | C |
| Utility Flow Diagrams | | | S/P | P/C | C | C |
| Piping & Instrument Diagrams | | | S | P/C | C | C |
| Heat and Material Balances | | | S | P/C | C | C |
| Process Equipment List | S | | S/P | P/C | C | C |
| Utility Equipment List | | | S/P | P/C | C | C |
| Electrical Single Line Diagram | | | S/P | P/C | C | C |
| Specifications and Datasheets | | | S | P/C | C | C |
| Gen Equipment Arrangements | | | S | P/C | C | C |
| Spare Parts Listing | | | | S/P | P | C |
| Mech Discipline Drawings | | | | S | P | P/C |
| Elec Discipline Drawings | | | | S | P | P/C |
| Instrumentation & Control Dwgs | | | | S | P | P/C |
| Civil/Structural/Site Discipline Dwgs | | | | S | P | P/C |
| None (blank) – Development has not begum. Started (S) – work on deliverable begun, limited to sketches and rough outlines. Prelim (P) Interim cross functional reviews started, awaiting final reviews and approvals. Complete (C) Reviewed and Approved | | | | | | |

As shown above, the level of information contained in this PEA is in line with or exceeds the minimum level and as such the estimate meets the requirement for a Class 5 PEA assessment.

Capital costs were developed and include a continency of 15% for equipment and 30% for plant and infrastructure. Quantities for the Tailings facilities were estimated by WSP Golder for a number of locations and the average value was used to determine estimated quantities for use in the PEA.

The anticipated Initial Capital Spend is US$574M. Their assessment also indicates the changes from the previous PEA.

**Table 21-2: Project Capital Cost Estimate Summary**

| Item | Area / Description | US$ (M) |
|---|---|---|
| 1 | Processing Plant | 175.3 |
| 2 | Infrastructure | 154.2 |
| 3 | Mining | 48.4 |
| 4 | Indirect Costs | 78.3 |
| | **SUB-TOTAL ESTIMATED COST** | **456.2** |
| | Contingency Items 1 and 2 @30% | 98.8 |
| | Contingency Items 3 and 4 @15% | 19.0 |
| | **TOTAL ESTIMATED COST** | **574.0** |

Various assessments for the processing plant were undertaken to estimate the project capital costs. The work for this PEA determined a CAPEX of US$574M (CAD$746.2M).

An allowance of CAD$49M is included in the estimate for an increased rail road. In addition, an allowance of CAD$5M is made for enabling works for construction accommodation.

Sustaining capital is estimated at US$195M over the LOM and is principally related to equipment replacement and future Tailings Dam "raises" to increase the TSF capacity in line with production.

### 21.1.1 Mining Capital Cost

The mine capital costs were originally estimated from quotations from mine equipment vendors and were subsequently adjusted to the final mining fleet required with the mining pit and mining schedule described in Section 16.

New or replacement units are included yearly in sustaining capital costs.

### 21.1.2 Process Plant Capital Cost

The concentrator capital cost estimate includes:

- **Crushing and stockpiling**: Crushers, access ramp, retaining wall, screens, and various conveyors.
- **Main concentrator area**: Feed conveying from crushed mineralized material stockpiles, grinding, regrinding, magnetic separation, classification, dewatering thickeners, filter, dryer, pumps and pipelines.

- **In-plant infrastructure and services**: In-plant roads, electrical substation, distribution within process plant, process and gland seal water, potable water, reclaim water, and fire water distribution.

The overall capital cost for the concentrator includes costs for buildings (including winterization) and foundations as well as costs of all mechanical equipment and bulk materials for construction. Costs also include services, power, distribution and communications.

### 21.1.3 Infrastructure Capital Cost

General Infrastructure includes:

- **Intra-plant infrastructures and services**: Plant access roads, and roads between facilities (plant, mine, TSF, etc.), electrical yard, intra-plant piping, site drainage and settling ponds, domestic waste-water treatment plant, HVAC, compressed air, on-site buildings and facilities, TSF, and communication systems.
- **Off site infrastructure**: Port facilities, rail cars (cost in Area 3), and rail extensions.

A conservative new route for CN rail link to transport concentrate to the Port of Saguenay is allowed for in the CAPEX as compared to a shorter route previously considered in the 2019 PEA. There may be an opportunity in final route selection to reduce rail length back to the shorter route (which would reduce costs correspondingly), depending on local support / opposition for the shorter route which will be investigated further in future project phases.

It remains the intent to use CN rail services and the Company's loading and unloading facilities and personnel. The estimate includes the purchase of 720 rail cars to handle approximately 14,000 tpd of concentrate produced by the Project.

To overcome low temperatures, high winds and heavy rain a dry storage facility that can be operated year-round and will maintain the rail freight schedule without interruption is included. Additionally, a second storage facility and rail car unloading arrangement will be constructed in conjunction with Saguenay Port Authority to facilitate concentrate shipping to China.

### 21.1.4 Indirect Capital Cost

Indirect costs support the Direct Capital costs, and include contingency and allowances for risk.

### 21.1.5 Sustaining Capital Costs

Sustaining capital is estimated at US$226M over the LOM and is principally related to equipment replacement and tailings dam raises during operation.

## 21.2 Operating Costs

The operating costs include manpower to run the overall operations. It is expected that a total of 557 people will be required for all operations including mining, concentrator, G&A, and mobile equipment personnel.

The LOM operating costs were estimated at US$22.74/t of concentrate produced at site.

All in costs for delivery FOB to port of Saguenay are US$40.74/t.

Additional selling costs related to ocean freight are expected to add US$20/t of concentrate assuming delivery to China using long term pricing, though transport to Europe is unlikely to materially change this value. Recent market events have shown metal price will fluctuate with material pricing changes for freight to China. The use of long-term metal price therefore takes into account future freight increases, as these will flow through to the metal price. Transport costs could be reduced significantly should Voyager find a North American purchaser.

The estimated Operating Costs are summarized in Table 21-3 below.

**Table 21-3: Operating Cost Estimate Summary**

| Area | US$/t feed | US$/t concentrate |
|---|---|---|
| Mining | 3.78 | 12.38 |
| Processing | 2.67 | 8.74 |
| Rail Transport | 5.50 | 18.00 |
| G&A (incl TSF) | 0.55 | 1.62 |
| **Total Opex (FOB Saguenay)** | **12.61** | **40.74** |
| Ocean Freight to China | 6.11 | 20.00 |
| **Total Opex (CFR China)** | **18.72** | **60.74** |

### 21.2.1 Operating Costs - Mining

The average mining costs of mining mineralized material and waste in the North Zone is estimated at US$3.78/t of concentrator feed. Mining Costs include equipment operation and maintenance, power, and manpower as well as explosives and mine dewatering.

### 21.2.2 Operating Costs - Processing

The processing operating costs for the Project were estimated annually, based on the mine plan developed for the purposes of the Project and averaged US$8.74/t concentrate. These costs were divided into four areas, namely:

- Labour;
- Reagents and Consumables;

- Power and Utilities;
- Materials Handling.

The operating costs for processing are summarized below.

**Table 21-4: Process Operating Cost Estimate Summary**

| Operating Cost Area | Cost (US$/t concentrate) |
|---|---|
| Labour | 1.95 |
| Reagents and Consumables | 2.46 |
| Power and Utilities | 3.71 |
| Material Handling | 0.62 |
| **Total Operating Cost - Processing** | **8.74** |

The estimated processing operating costs compare well to similar operations in North America.

### 21.2.3 Operating Costs – General & Administrative

G&A was identified as US$1.62/t concentrate and this covered:

- expected costs associated with a General Manager and other Administration personnel. Offices in the local area and their costs are also included; and
- Waste and Tailings Management.

### 21.2.4 Operating Costs – Concentrate Transportation

The Transportation costs were estimated as US$38.00/t CFR to China. This estimate was developed based on the following cost breakdown.

**Table 21-5: Concentrate Transportation Operating Cost Estimate Summary**

| Concentrate Transport Cost Area | US$/t feed | US$/t concentrate |
|---|---|---|
| Rail Rehandle Fee | 0.21 | 0.64 |
| Rail Concentrate to Saguenay | 3.52 | 11.03 |
| Loading and Handling Saguenay Port | 2.02 | 6.34 |
| **Subtotal Transport to Saguenay Port** | **5.75** | **18.00** |
| Saguenay to China | 6.38 | 20.00 |
| **Total Transportation Cost (CFR China)** | **12.14** | **38.00** |

Sea freight costs vary from year to year, however a long term bulk sea freight transport cost of US$20/t is applied and considered appropriate for the purpose of this PEA.

# 22. Economic Analysis

The economic analysis is based on Mineral Resources, and not Mineral Reserves. As such, in accordance with NI43-101 it should be noted "mineral resources that are not mineral reserves do not have demonstrated economic viability."

The economic analysis is based on the preliminary mine design and mine plan for the selected optimized pit shell and using the North Zone Internal Mineral Resource, and considered the following cases:

- Base Case – North Zone - Indicated only with Vanadium Credit.
- Alternate Case - As above with no Vanadium Credit.

The economic analysis is based on the updated Capital and Operational costs developed allowing for anticipated changes due to recent inflation and also for changes in the flowsheet and rail alignment.

All costs and pricing are in Q2 2022 US$.

**Table 22-1: Key Inputs Used for the Project**

| | | | |
|---|---|---|---|
| **Metal Prices** | | | |
| Concentrate Base Fe Price (62% Fe) | $\text{US\$/t Fe}_{\text{conc}}$ | $ | 100.00 |
| Vanadium Content Credit | $\text{US\$/t Fe}_{\text{conc}}$ | $ | 15.00 |
| Grade Premium (66% Fe) | $\text{US\$/t Fe}_{\text{conc}}$ | $ | 20.00 |
| **Foreign Exchange Rate** | | | |
| USD-CAD | | | 1.30 |
| **Discount Rate** | | | |
| Discount Rate | | | 8% |
| **Freight Costs** | | | |
| Rail Transport (FOB Port) | US$/dmt conc | $ | 18.00 |
| Ocean Freight to China (CFR China) | US$/dmt conc | $ | 20.00 |
| **Royalties** | | | |
| Net Profit Royalty Rate | | | 10.0% |
| Royalty Rate (GMR 2% MIC 1%GME) | | | 3.0% |
| **Taxes** | | | |
| Income Tax – Quebec + Federal | | | 26.5% |
| Mining Tax - Mine Mouth Output (1% first 80M, then 4%) | | | |
| **Costs** | | | |
| **CAPEX** | | | |
| Year -2 CAPEX | kUS$ | $ | 180,000 |
| Year -1 CAPEX | kUS$ | $ | 324,000 |

| | | |
|---|---|---|
| Closure Costs (% of Capital) | % | 10% |
| Year -2 Contingency | kUS$ | $ 30,000 |
| Year - 1 Contingency | kUS$ | $ 40,000 |
| **On Site Mining Costs** | | |
| Waste Mining Cost | US$/t | $ 2.33 |
| Ore Mining Cost | US$/t | $ 1.76 |
| **Ore Processing Costs** | | |
| Concentrating Costs | US$/t$_{conc}$ | $ 8.74 |
| **G&A Costs** | | |
| General and Administration | US/t$_{conc}$ | $ 1.82 |

All costs are in US$.

**Table 22-2: Estimated Financial Outputs and Metrics for Business Cases Analyzed**

| Parameter | Unit | LOM Total / Avg. |
|---|---|---|
| **GENERAL** | | |
| Iron Ore Price 62% | US$/t | $ 100.00 |
| Vanadium Price | US$/t | $ 15.00 |
| Premium Price 65% | US$/t | $ 20.00 |
| Mine Life | Years | 21 |
| **PRODUCTION SUMMARY** | | |
| Magnetite Payable | kt | 104,303 |
| **OPERATING COSTS *** | | |
| **Total On site Operating Costs** | **US$/t** | **$ 21.90** |
| Royalties | US$/t | $ 4.10 |
| **Total Cash Costs** | **US$/t** | **$ 26.00** |
| Sustaining Capital | US$/t | $ 2.20 |
| **All-in Sustaining Costs (AISC)** | **US$/t** | **$ 28.20** |
| Rail Transport (FOB Port) | US$/dmt conc | $ 18.00 |
| Ocean Freight to China (CFR China) | US$/dmt conc | $ 20.00 |
| **CFR China US$/t sold** | | **$ 66.20** |

| CAPITAL COSTS | | |
|---|---|---|
| Initial Capital Costs | kUS$ | $ 574,000 |
| Sustaining Capital Costs | kUS$ | $ 226,680 |
| Closure Costs | kUS$ | $ 50,400 |
| **FINANCIALS** | | |
| Pre-Tax NPV (8%) | MUS$ | $ 2,407 |
| Pre-Tax IRR | % | 52.3% |
| Pre-Tax Payback | Years | 1.5 |
| **Post-Tax NPV (8%)** | **MUS$** | **$ 1,607** |
| **Post-Tax IRR** | **%** | **43.0%** |
| **Post-Tax Payback** | **Years** | **1.8** |

| **per t concentrate** | | 21-year LoM |
|---|---|---|
| Revenue / t | US$ | 135 |
| NSR / t | US$ | 97 |
| EBITDA / t | US$ | 70 |
| Net Profit / t | US$ | 42 |
| Revenue per year | US$/y | 670,518 |
| EBITDA per year | US$/y | 347,778 |
| Free cash Flow Post Tax | US$/y | 234,768 |

* Operating Costs rounded to nearest $0.10

# 23. Adjacent Properties

As at the effective date of the Technical Report, the online GESTIM claims database shows several properties under different ownership adjacent to the Property (Figure 23-1). This public information has not been verified by InnovExplo. As at the time of writing, the authors are not aware of any active exploration work in the immediate area of the Property that would be considered relevant to the 2022 MRE.

The Lac Doré deposit, 100% owned by VanadiumCorp Resource Inc., lies approximately 7 km to the south-east of the Property. The mafic Lac Doré complex hosts total measured and indicated mineral resources of 214.93 Mt at 0.4% $V_2O_5$, 27.1% Fe, 7.1% $TiO_2$ and 24.6% magnetite, and total inferred mineral resources of 86.91 Mt at 0.4% $V_2O_5$, 28% Fe, 7.6% $TiO_2$ and 25.9% magnetite (Longridge et al, 2020). The information presented above about mineralization on adjacent properties is not necessarily indicative of mineralization on the Property. The author has not verified any mineral resource estimates or published geological information pertaining to the adjacent properties.

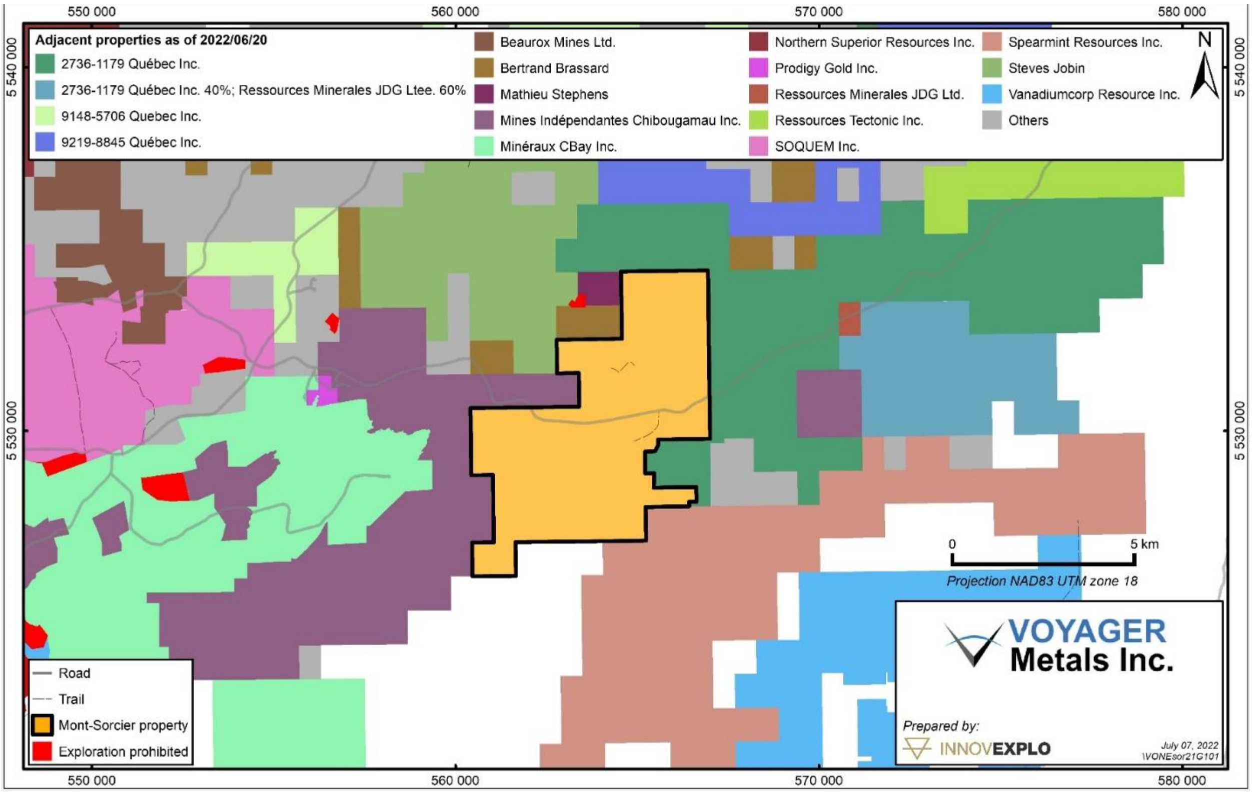
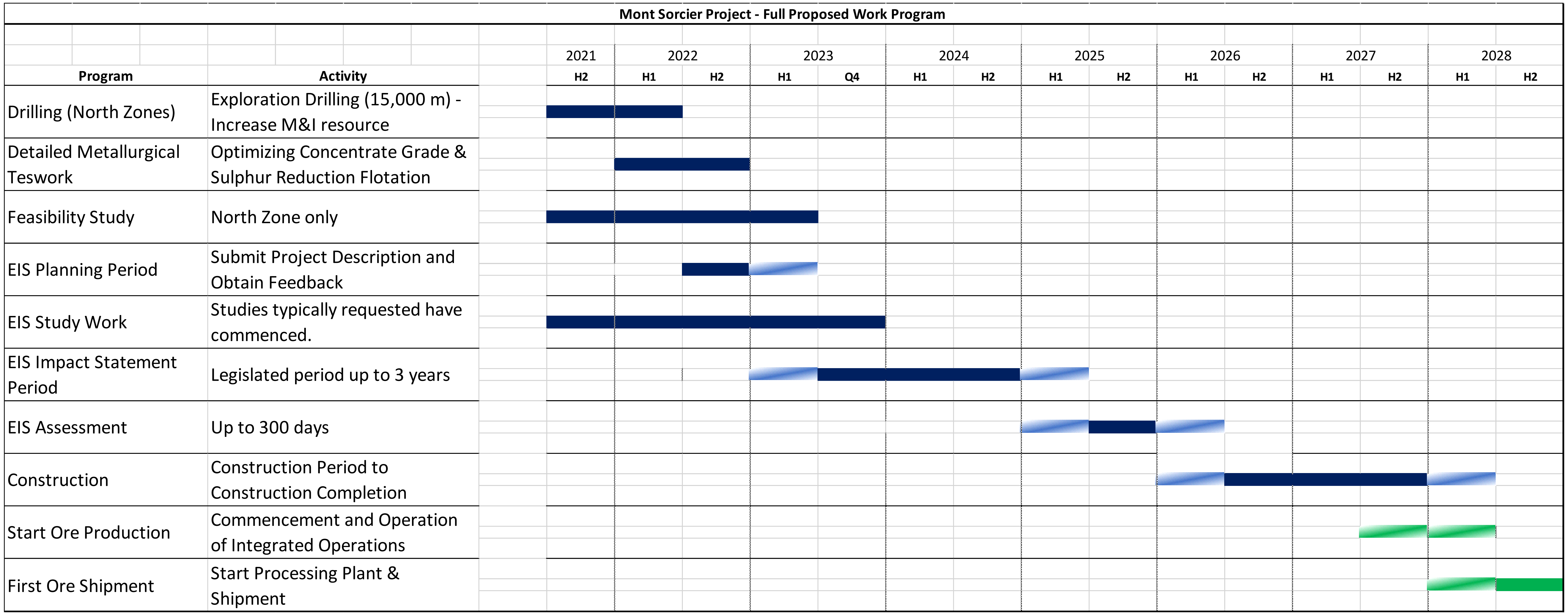


Figure 23-1: Adjacent Properties

# 24. Other Relevant Data and Information

Geotechnical work and hydrogeology work are ongoing and will form part of the FS. Geotechnical assessment indicated no major concerns at this time to the assumed parameters.

## 24.1 Preliminary Execution Schedule



**Mont Sorcier Project - Full Proposed Work Program**

| Program | Activity | 2021 | 2022 | | 2023 | | 2024 | | 2025 | | 2026 | | 2027 | | 2028 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H2 | H1 | H2 | H1 | Q4 | H1 | H2 | H1 | H2 | H1 | H2 | H1 | H2 | H1 | H2 |
| Drilling (North Zones) | Exploration Drilling (15,000 m) - Increase M&I resource | ■ | ■ | | | | | | | | | | | | | |
| Detailed Metallurgical Teswork | Optimizing Concentrate Grade & Sulphur Reduction Flotation | | ■ | ■ | | | | | | | | | | | | |
| Feasibility Study | North Zone only | ■ | ■ | ■ | ■ | | | | | | | | | | | |
| EIS Planning Period | Submit Project Description and Obtain Feedback | | | ■ | ▨ | | | | | | | | | | | |
| EIS Study Work | Studies typically requested have commenced. | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | |
| EIS Impact Statement Period | Legislated period up to 3 years | | | | ▨ | ■ | ■ | ■ | ▨ | | | | | | | |
| EIS Assessment | Up to 300 days | | | | | | | | ▨ | ■ | ▨ | | | | | |
| Construction | Construction Period to Construction Completion | | | | | | | | | | ▨ | ■ | ■ | ■ | ▨ | |
| Start Ore Production | Commencement and Operation of Integrated Operations | | | | | | | | | | | | | ▧ | ▧ | |
| First Ore Shipment | Start Processing Plant & Shipment | | | | | | | | | | | | | | ▧ | 🟩 |

## 24.2 Discussion on Schedule

The critical path of the project is through the permitting process. Currently, it is envisaged the critical path is the time to obtain a Federal Decision. WSP Golder have indicated a date of Q1 2026 to obtain the Decision. This is due to the relatively new Environmental Legislation, so a time frame of approximately 3.5 years from date of this report is allowed for.

Allowing for a two-year build programme means commissioning in Q1 2028 and First Ore Shipment from Q2/Q3 2028. The two-year build programme is considered realistic for a project of this size and nature.

For clarity, with Iron Ore projects: "Ore Shipment" refers to Iron Ore shipment and is not a statement on Ore as the term can relate to a Reserve.

### 24.2.1 Opportunity on Schedule

Historically, Decisions from the Provincial Agencies have taken about two years. With this approximate timeframe a Decision could be obtained in June 2024, construction to Jun 2026 and production in late 2026 or early 2027.

This remains a key opportunity but will require close Community and Government liaison to secure historical timeframes.

# 25. Interpretation and Conclusions

This Technical Report considers a re-scoping of the previous PEA using the 2022 MRE and considers a re-scoping of the economic analysis based on the current work performed as summarized in this PEA.

## 25.1 2022 MRE

The PEA is based on the mineral resource estimate (the "2022 MRE) prepared by InnovExplo. The 2022 MRE covers the South and North zones.

The authors conclude the following:

- The database supporting the 2022 MRE is complete, valid and up to date.
- Geological and magnetite-grade continuity has been demonstrated for both mineralized zones.
- The key parameters of the 2022 MRE (density, capping, compositing, interpolation, search ellipsoid, etc.) are supported by data and statistical and/or geostatistical analysis.
- The 2022 MRE includes indicated and inferred resources for an open pit mining scenario. The 2022 MRE complies with CIM Definition Standards and CIM Guidelines.
- A COG of 2.3% weight recovery was used, corresponding to the potential open pit mining scenario.
- COG was calculated at a 62% Fe concentrate price of US$ 134/t and an exchange rate of 1.30 US$/CAD$, using reasonable mining, processing and G&A costs.
- In a pit mining scenario, the Project contains an estimated Indicated Resources of 678,497,000 t at 27.7% $Fe_3O_4$ and 0.2% $V_2O_5$ for 195,376,000 t of 65% Fe/0.52% $V_2O_5$ concentrate and Inferred Resources of 546,608,000 t at 26.1% $Fe_3O_4$ and 0.17% $V_2O_5$ for 148,056,000 t of 65% Fe/0.52% $V_2O_5$ concentrate.
- Compared to the 2021 MRE, the 2022 MRE results convert approximately 40% of whole rock tonnage from Inferred to Indicated and add 220 Mt of whole rock to the Indicated Resource in the North Zone. As the 2021 MRE only defined Inferred resources in the North Zone, that conversion represents a new total Indicated Resource of 559 Mt whole rock at 28.2% $Fe_3O_4$, corresponding to 163 Mt of 65% Fe/0.52% $V_2O_5$ concentrate. The variations are due to several factors:
    - addition of 42 new assayed holes on the North Zone since 2020,
    - adjustment of the economic parameters to reflect current economic conditions, and
    - adjustment of the metallurgical parameters to include the new Davis Tube test results.

- The Inferred Resource tonnage in the South Zone is lower than in the 2021 MRE, though it has not been drilled since then. It was necessary to declassify some South Zone inferred resources. As a result, the whole rock resource decreased by 62 Mt, though this material is supported by historical drilling from 1966 and could be upgraded in the future.
- Based on the currently available metallurgical test results, mineralized material from the Project could produce an Fe concentrate grading 65% Fe and 0.52% $V_2O_5$ with good magnetite recovery using a conventional magnetic process. The required grinding size could be as fine as 80% passing 38 µm.
- Additional diamond drilling would likely upgrade some of the Inferred Resource to Indicated and/or add to the Inferred Resource since most mineralized zones have not been fully explored at depth. Based on magnetic surveys, only the east part of the South Zone has potential for lateral extension, with undrilled continuity of the magnetic layer detected.

It is reasonable to believe that open pit mining is amenable to the expectation of "reasonable prospects of eventual economic extraction", as stated in the CIM Guidelines. The best potential for adding new resources in the open pit is to continue exploring the deep eastern part of the North Zone and the east extension of the South Zone, as those areas have not yet been extensively drilled. The favourable geology hosting the Project's mineralization is constrained to the west of the North and South Zones and the east of the North Zone. Both zones remain open at depth, but the geological interpretation of the South Zone as a fold hinge could imply a limited vertical extent that drilling has not yet proven. There is potential to add material at depth below the existing mineralized model that could still be accessed with an open-pit operation. The reader is cautioned that these exploration targets are conceptual in nature. There is not sufficient exploration to define it as a mineral resource, and it is uncertain if further exploration will delineate the exploration target as a mineral resource.

Drilling to tighten the drill spacing in the inferred resources should allow for conversion from Inferred to Indicated by adding confidence to the estimate. The reader is cautioned that this conversion targets are conceptual in nature.

The 2022 MRE is considered reliable, thorough, and based on quality data, reasonable hypotheses, and parameters compliant with NI 43-101 requirements per the CIM Definition Standards and CIM Guideline.

## 25.2 Overall

The findings of this PEA demonstrate:

- The North pit has 559 Mt of Indicated Resource and 470.5Mt of Inferred Resource at depth and to the east. The preferred business case for this PEA considers only Indicated Resources from the North Zone.

- The mine plan is for an open pit operation with a Life of Mine of 21 years with a post tax NPV of US$1.6B. The project NPV changes by approximately US$320M per 10% change in price.
- The preferred pit model uses 341.5Mt Indicated Resource. Within the preferred pit shell is 20.9Mt Inferred material that is deemed waste in this PEA. The strip ratio is 0.87, and would reduce to 0.72 if the Inferred material in the pit shell is converted. There can be no guarantee that the Inferred material will convert.
- The model allowed for a further US$20/t transport to China (long term transport price), though European markets will likely cost similar. It is noted higher transport costs tend to move in close correlation to the Iron Ore Pricing showing a high "pass through" relationship in these costs and prices.
- There is a "blue sky" opportunity of a further 20 years Life of Mine (LOM) at 5 Mtpa or a Phase 2 expansion to the current design will further enhance the economics dependent on the Inferred drilling campaign for the North Zone and also the Measured and Indicated for the South Zone. There can be no guarantee that the Inferred Resource will convert to be economic.

The methodology for selecting the optimal pit(s) is a complex trade off against maximizing the NPV, proving adequate LOM with a consistent production profile and managing the impact on on-site costs. The mine plan presented is simply a starting point for the business. It is envisaged, though currently not possible to confirm, that the Inferred Resource will likely require changes to the proposed plan. Given this, Infrastructure and Facilities have been located outside of the shells that were assessed for the known Inferred Resources.

For the North Pit, there is adequate information to make the following Preliminary Assessment:

- The updated internal geological resource model reflects all the drilling completed to date and testing to the end April 2022.
- DRA developed the new mineable material using Hexagon MinePlan software.
- The model focussed on Wrec as opposed to $Fe_2O_3$.
- Sulphur content on average mine feed is 0.7%. Davis Tube Testwork (DTT) indicates this will report as approximately 0.45% in the Low Intensity Magnetic Separation (LIMS) concentrate. It has been proven that with reverse flotation the sulphur content can be reduced below 0.4% with high magnetite recovery.

Furthermore specific conclusions are provided in the following subsections.

## 25.3 Mining

The Mont Sorcier Project is easily amenable to open pit mining using a standard fleet of rigid body mining trucks and excavators.

The production of 5 Mtpa of concentrate will require on average 16 Mtpa of mineralized material to be mined and approximately the same amount as waste material. The current selected pit contains 342 Mt of mineralized material grading 30.53% WtRec and 296 Mt of waste for a stripping ratio of 0.9 to 1.

The mine is designed for 21 years of production all based on indicated resources.

Additional potential exists at depth and laterally to extend mine life.

## 25.4 Metallurgical Testing

The main conclusions from the metallurgical test work realized so far are the following:

- The material from the Mont Sorcier property is non-abrasive and hard;
- The material is mainly magnetic iron and is amenable to recovery by magnetic separation;
- A grind size as fine as $P_{80}$ of 38 µm is required to liberate the magnetite and produce a finished concentrate with an iron grade of 65%;
- Samples from the South Zone respond better in term of Fe grade and recovery than the North;
- Preconcentration at a crushing size between 6 and 1 mm would allow removal of low-grade material and thus potential savings in energy and CAPEX for downstream equipment;
- For a feed at 25.46% Fe and 27.75% Magnetite (indicated resources grades), the model predicts an iron recovery of 73.5% and a weight recovery of 28.8%. These recoveries will be used as a basis for the updated plant design;
- Preliminary sulphur reverse flotation tests indicate reverse flotation can reduce the sulphur content from the magnetite concentrate below 0.4%.

## 25.5 Risks and Opportunities

Table 25-1 identifies the significant internal risks, potential impacts and possible risk mitigation measures that could affect the future economic outcome of the Project. The list does not include external risks that apply to all mining projects, such as: changes in metal prices, exchange rates, availability of investment capital, government regulations, etc.

Significant opportunities that may improve the economics, timing and permitting are identified in Table 25-2, though further information and study are needed to include these opportunities in the project economics.

### Table 25-1: Risks for the Project

| Risk | Potential impact | Possible risk mitigation |
|---|---|---|
| Metallurgical recoveries | Metallurgical tests are preliminary. Recovery could be different to that currently assumed | Additional metallurgical testwork. |
| Environmental, hydrogeological and geotechnical considerations | Environmental, hydrogeological and geotechnical considerations may affect the project but have not yet been assessed (e.g., proximity to the lake and hydrogeology). | Environmental, hydrogeological and geotechnical studies. |
| Social acceptability | The EIS has yet to be completed and work for the EIS may change the scope or project requirements. | Maintain a pro-active and transparent strategy and communication plan with local communities. |
| Difficulty in attracting experienced professionals | The ability to attract and retain competent, experienced professionals is a key success factor | The early search for professionals will help identify and attract critical people. |

### Table 25-2: Opportunities for the Project

| Opportunities | Explanation | Potential benefit |
|---|---|---|
| Experienced workforce | An experienced workforce is already present in the Chibougamau region | Creation of a team-building environment. |
| Resource development potential | Potential to convert inferred mineral resources to a higher level of confidence. | Adding indicated and inferred mineral resources increases the economic value of the mining project. |
| Surface exploration drilling | Potential for adding inferred mineral resources by drilling targets in the known extensions of the mineralized zones. | Adding inferred mineral resources increases the economic value of the mining project. |
| Metallurgical recovery optimization | Metallurgical tests are preliminary, and recoveries could be different than currently assumed | Recovery could be optimized and be better than what is currently assumed. |
| Cost adjustment by adding vanadium to the CoG calculation | Only the iron concentrate price was used to evaluate the CoG. | CoG could be lower than expected. |

# 26. Recommendations

## 26.1 Overall

The post tax NPV (8%) is US$320M per US$10/t concentrate price change. The project remains profitable for all long term metal prices (to US$65/t delivered) and those metal prices do not impact the tonnages from the mining shell. The Project yields considerable profit in higher metal prices envisaged in the mid term.

At this time there are no technical reasons to not proceed with the revised FS using the principles outlined in this PEA. The NPV outcomes are higher than given in the 2019 PEA and yield further potential for LOM or Production rates with increased drilling of the Inferred Resource.

Securing additional land to allow for future expansions, increased mining rates and potential additional resources is recommended.

The following are the key recommendations are made as a result of completing this PEA:

- Proceed with the Feasibility Study (FS) on the basis of this PEA.
- Conduct ongoing engagement with local and First Nations contractors in the area, for full or partial production labour support.
- Develop reverse flotation circuit and incorporate into flowsheet. Determine potential and then optimize the upgrade in the Iron content of the concentrate. There is no guarantee at this time there will be an upgrade in the iron content of the concentrate.
- Develop a detailed execution schedule and optimize timeframes to achieve first production.
- Ensure that the plan and timeframes for integrating environmental permits are properly considered, and obtain a Decision Statement from relevant authorities.
- Optimize the Tailings facility through further development work, and establish in detail the preferred alternative.
- Optimize non-deleterious waste rock dumps.
- As a longer term recommendation, undertake work to increase the Resource and Reserve to the East of the current pit.
- Other specific geology, metallurgy and mining recommendations as described in Sections 26.2, 26.3 and 26.4 below, respectively.

## 26.2 Geology

- Further exploration drilling is recommended using a regularly-spaced drill grid that satisfies the inferred resource category criteria to potentially increase resources and confidence level of the geological model.
- Exploration drilling should be targeted in the extensions of the mineralized zones and in the resource block model to test the potential of the depth extension mainly, but also the lateral extensions which are still open (mainly the East extension of the South Zone).
- Further definition drilling is recommended along strike and at depth to upgrade the Inferred resources to the Indicated category and address the underground potential for all zones.

## 26.3 Metallurgy

Additional test work will be required to validate the proposed process flowsheet in the next engineering phase. The test work should include:

- Characterization of different ore zones by size-by-size analysis and quantitative mineralogical analysis;
- Grindability test work on the different ore zones;
- Preconcentration test work:
    - Preliminary tests on a global composite to confirm the most appropriate preconcentration process and grind size;
    - Tests on the different ore zones to confirm the performance of the selected process.
- Cleaning test work:
    - Davis Tube tests on different ore zones to assess overall magnetic grade-recovery curve of each ore type;
    - Flotation and selective flocculation tests to assess these processes for a production of low sulphur and high iron grade concentrate.
- Grindability test work and piloting of the selected processing route on a bulk sample:
    - To validate metallurgical performances;
    - Determine sizing parameters;
    - Produce material for specific equipment tests (thickening, filtration, drying, material handling and conveying).

## 26.4 Mining

The following activities are recommended for the next phase of project development during the FS:

- Prepare geotechnical and hydrogeological studies to better define pit slope angles and determine any water inflows into the future pit.
- Prepare a geometallurgy model if data is available to be used in preparing optimized mine plans.
- Engage with local contractors for production labour.
- Study the possibility of an all-electric carbon-neutral mining fleet.

## 26.5 Costs Estimate for Recommended Work

The budget for the proposed program is presented in Table 26-1. Recommended expenditures are estimated at CAD$7,220,000. This budget amount represents current commitments toward the project for about a year.

The recommended work program and proposed budget / expenditures reasonably reflect the contemplated activities and their associated costs.

**Table 26-1: Estimated Costs for the Recommended Work Program**

| | **Work Program** | **Budget Cost CAD$** |
|---|---|---|
| A | Environmental Baseline Study | $2,800,000 |
| B | Community Relations and Communication Plan | $250,000 |
| C | Feasibility Study | $4,170,000 |
| *C1* | *Tailing, waste and water management* | *$900,000* |
| *C2* | *Environmental study* | *$300,000* |
| *C3* | *Metallurgical test work and density program* | *$200,000* |
| *C4* | *Geotechnical and hydrogeological studies* | *$850,000* |
| *C5* | *MRE update and feasibility study report* | *$1,900,000* |
| *C6* | *Railway alignment* | *$20,000* |
| | **TOTAL** | **$7,220,000** |

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