November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota

Submitted to:

Talon Metals Corp.

Effective Date of Technical Report: November 2, 2022

Effective Date of Mineral Resource Estimate: October 10, 2022

Prepared By Qualified Persons:

Brian Thomas; P.Geo.

Roger Jackson; P. Geo.

Oliver Peters, P.Eng.

Christine Pint, P.G.

Title of Report

November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota

Project Location

Tamarack, Minnesota USA

Date & Signature Page

This Technical Report on the Tamarack North Project is submitted to Talon Metals Corp. and is effective as of November 2, 2022.

Qualified Person	Responsible for Parts
Signed and Sealed *Brian Thomas, P.Geo.* *Golder Associates Ltd.* Date Signed: November 2, 2022	1.1, 1.2, 1.8, 1.9.1, 1.10.2, 1.10.5, 1.10.6, 2, 3, 4.1, 4.2, 4.3, 5, 6, 14, 25.4, 26.2, 26.5, 26.6, 27
Signed and Sealed *Roger Jackson, P. Geo* *Golder Associates Ltd.* Date Signed: November 2, 2022	1.4, 1.5, 1.6, 1.8, 1.10.1, 1.10.2, 1.10.5, 1.10.6, 3, 7, 8, 9, 10, 11, 12.1, 12.2, 14, 25.1, 25.2, 25.3, 25.4, 26.1, 26.2, 28
Signed and Sealed *Oliver Peters, P.Eng* *Metpro Management Inc.* Date Signed: November 2, 2022	1.7, 1.9.2, 1.10.3, 1.10.5, 1.10.6, 3, 12.3, 13, 25.5, 26.3, 26.5, 26.6
Signed and Sealed *Christine Pint , P.G.* *Barr Engineering Co.* Date Signed: November 2, 2022	1.3, 1.9.3, 1.10.4, 1.10.5, 1.10.6, 3, 4.4, 4.5, 20, 25.6, 26.4, 26.5, 26.6

Table of Contents

LIST OF TABLES

LIST OF FIGURES

1.0 EXECUTIVE SUMMARY

1.1 Introduction

Talon Metals Corp. retained Golder Associates Ltd. (Golder), a member of WSP, as well as Metpro Management Inc. (Metpro) and Barr Engineering Co. (Barr) to prepare an update to the Mineral Resource Estimate (MRE) and a technical report prepared in accordance with Canadian National Instrument (NI) 43-101 for the Tamarack North Project (Technical Report). The purpose of this Technical Report is to support the disclosure of a material change to the MRE based on drilling completed since the technical report entitled “NI 43-101 Technical Report Updated Preliminary Economic Assessment (PEA) #3 of the Tamarack North Project – Tamarack, Minnesota” with an effective date of January 8, 2021 (PEA #3). As a result of the supply agreement entered into between Talon and Tesla Inc. on January 10, 2022 (Tesla Supply Agreement), this Technical Report also introduces the inclusion of Iron (Fe) in Sulphides % in the MRE as a payable by-product.

The Tamarack Project, located in Minnesota, USA, comprises the Tamarack North Project and the Tamarack South Project (refer to Figure 4.1). The Tamarack Project is currently 51% owned by Talon Metals Corp. through its wholly-owned indirect subsidiary, Talon Nickel (USA) LLC (collectively, Talon), and 49% owned by Kennecott Exploration Company (Kennecott).

Qualified Person (QP) site visits to the Tamarack North Project site were conducted by (i) Mr. Brian Thomas (P.Geo.) July 16, 2014, (ii) Mr. Roger Jackson (P.Geo.) between May 9-10, 2022, and (iii) Ms. Christine Pint (P.G) on October 5, 2017, and September 28, 2022. Mr. Peters has not conducted a site visit. Mr. Thomas, Mr. Jackson, Ms. Pint and Mr. Peters are independent QPs, as defined under NI 43-101.

On November 7, 2018, Talon and Kennecott entered into an exploration and option agreement (the 2018 Tamarack Earn-in Agreement) pursuant to which Talon has the right, subject to certain funding and reporting obligations, to increase its interest in the Tamarack Project to a maximum 60% interest. The 2018 Tamarack Earn-in Agreement came into effect on March 13, 2019 (the Kennecott Agreement Effective Date) and Talon is the operator of the Tamarack Project.

1.2 Location and Ownership

The Tamarack Project is located in north-central Minnesota, approximately 89 kilometres (km) (55 miles) west (W) of Duluth and 210 km (130 miles) north (N) of Minneapolis, in Aitkin County. The Tamarack North Project, which this report represents, covers approximately 20,348 acres. The town of Tamarack (population 62, 2020 US Census Bureau) lies within the boundaries of the Tamarack Project (though away from the known mineralization) at an elevation of 386 metres (m) (1,266 feet (ft)) above sea level. The Tamarack Project area is characterized by farms, plantations, wetlands, and forested areas.

On June 25, 2014, Talon entered into an exploration and option agreement with Kennecott (the 2014 Tamarack Earn-in Agreement) pursuant to which Talon received the right to acquire an interest in the Tamarack Project.

On January 4, 2016, pursuant to the terms of the 2014 Tamarack Earn-in Agreement, as amended, Talon earned an 18.45% interest in the Tamarack Project by making payments totalling US$25,520,800.

On January 11, 2018, Talon and Kennecott entered into a mining venture agreement (the Original MVA). Pursuant to the Original MVA, Talon elected not to financially participate in the 2018 winter exploration program at the Tamarack Project. Consequently, Talon’s interest in the Tamarack Project was diluted to 17.56%.

On November 7, 2018, Talon and Kennecott entered into the 2018 Tamarack Earn-in Agreement pursuant to which Talon was granted the right to increase its interest in the Tamarack Project to a maximum 60% interest.

Pursuant to the 2018 Tamarack Earn-in Agreement, Talon took over operatorship of the Tamarack Project and has earned a 51% interest in the Tamarack Project. Talon has the right to further increase its interest in the Tamarack Project to 60% by:

- Completing a Feasibility Study (FS) on the Tamarack Project within seven years of the Kennecott Agreement Effective Date; and
- Paying Kennecott US$10M on or before the seventh anniversary date of the Kennecott Agreement Effective Date.

Upon Talon earning a 60% interest in the Tamarack Project, the parties have agreed to enter into a new mining venture agreement (the New MVA) under which Talon would assume the role of Manager of the Tamarack Project, and the parties would each be required to fund their pro rata share of expenditures in respect of the Tamarack Project or be diluted.

Item 4.0 of this Technical Report contains further details regarding Talon's interest in the Tamarack Project.

1.3 Environmental Considerations and Permitting

The Tamarack North Project will be subject to state and federal environmental review and permitting processes. Throughout the regulatory approval processes, Talon is required to demonstrate that the Tamarack North Project can avoid or mitigate potential environmental impacts in accordance with regulatory requirements, informed by input from tribal governments and community considerations. That demonstration relies in part on the baseline data and studies described in Item 20.1 and the additional environmental work that is expected to be conducted in 2023, described in Item 26.4.

Substantial baseline data collection and studies have been completed to date or will be completed by the end of 2022, which include the following:

- Hydrogeologic studies, including investigation activities of the Quaternary deposits and Bedrock and baseline water level data collection;
- Surface water hydrology studies and baseline flow data collection;
- Water quality monitoring of groundwater and surface water;
- Wetland studies, including delineations, soil sampling, porewater sampling and baseline water level data collection;
- Materials characterization studies, including assessment of the ore, development rock and overburden;
- Biological studies, including aquatic biota, vegetation, wild rice and wildlife studies;
- Cultural resource studies; and
- Noise survey.

The Tamarack North Project will undergo environmental review, a Minnesota state Environmental Impact Statement (EIS) will be prepared, and potentially a federal Environmental Assessment or Environmental Impact Statement. Significant permits and approvals will be needed, including a Permit to Mine, Section 404 Wetland Permit, an Air Permit, a National Pollutant Discharge Elimination System (NPDES) permit, and others. Project permit applications will be prepared once the project design and operation basis have been established. EIS development and permitting include closure plans and analyses to assure satisfactory long-term environmental conditions. A detailed closure plan will be developed in future studies. Talon currently has all of the exploration permits required to continue exploration work on the property.

Talon maintains open communications with regulatory agencies to keep regulators informed on project activities and future plans. Talon has also maintained engagement with the community by hosting quarterly information sessions. The primary purpose of these engagements is to share information and gather feedback that can help shape the project plans.

Talon has advised the Mineral Resource QPs that it is not aware of any environmental liabilities or other significant factors or risks which may affect access, title, or the right or ability to perform work on the Tamarack North Project. The QPs have not independently verified this information as described in Item 3.0 of this Technical Report.

1.4 Geology, Mineralization, and Exploration

The Tamarack Intrusive Complex (TIC) is an ultramafic to mafic intrusive complex that hosts nickel (Ni)-copper (Cu)-cobalt (Co) sulphide mineralization with associated platinum (Pt), palladium (Pd) (PGEs) and gold (Au). The TIC is a multi-magmatic phase intrusion that consists of a minimum of two pulses: the fine grained ortho-cumulate olivine (FGO) and the coarse-grained ortho-cumulative (CGO) intrusion of the TIC (dated at 1105 Ma+/-1.2 Ma, Goldner 2011). The FGO and CGO intrusions are related to the early evolution of the approximately 1.1 Ga Midcontinent Rift (MCR) and have intruded into slates and greywackes of the Thomson Formation of the Animikie Group, which formed as a foreland basin during the Paleoproterozoic Penokean Orogen (approximately 1.85 Ga, Goldner 2011). The TIC is completely buried beneath approximately 35 m to 55 m of Quaternary age glacial and fluvial sediments. The TIC is consistent with other earlier intrusions associated with the MCR that are often characterized by more primitive melts.

The geometry of the TIC, as outlined by a well-defined aeromagnetic anomaly, consists of a curved, elongated intrusion striking north-south (NS) to southeast (SE) over 18 km. The configuration has been likened to a tadpole shape with its elongated, northern tail up to 1 km wide and large, 4 km wide, ovoid shaped body in the south (S) (Figure 7.5). The northern portion of the TIC (the Tamarack North Project), which hosts the currently defined MRE and identified exploration targets, is over 7 km long and is the focus of this Technical Report.

The Ni-Cu-Co sulphide mineralization with associated PGEs and Au formed as the result of segregation and concentration of liquid sulphide from mafic or ultramafic magma and the partitioning of chalcophile elements into the sulphide from the silica melt (Naldrett, 1999). The various mineralized zones at the Tamarack North Project occur within different host lithologies, exhibit different types of mineralization styles, and display varying sulphide concentrations and tenors. These mineralized zones range from massive sulphides hosted by altered sediments in the massive sulphide unit (MSU), to net textured and disseminated sulphide mineralization hosted by the CGO in the semi-massive sulphide unit (SMSU), a predominantly disseminated sulphide mineralization as well as layers of net textured sulphide mineralization, in the 138 Zone to a disseminated sulphide with a basal massive sulphide at the FGO/MZNO footwall in the CGO East and CGO West (Table 1.1). Mineralization in the 138 Zone, where interlayered disseminated and net textured mineralization occurs, is also referred to as mixed zone (MZ) mineralization. All these mineralization types are typical of many sulphide ore bodies around the world. The current known mineral zones of the Tamarack North Project (SMSU, MSU, CGO East, CGO West, and 138 Zone) that are the basis of the MRE are referred to collectively as the "Tamarack Resource Area". Also located within the Tamarack North Project are currently, four lesser-defined mineral zones, namely the 480 Zone, 221 Zone, 164 Zone and the.

Table 1.1: Key Geological and Mineralization Relationships of the Tamarack North Project

Area	Mineral Zone	Host Lithology	Project Specific Lithology	Mineralization Type
Tamarack Zone	SMSU	Feldspathic Peridotite	CGO	Net textured and disseminated sulphides
	MSU	Meta-Sediments/ Peridotite (basal FGO mineralization)	Sediments	Massive sulphides
	138 Zone	Peridotite and Feldspathic Peridotite	MZNO/FGO	Disseminated and net textured sulphides
	CGO East and West	Feldspathic Peridotite	CGO	Disseminated sulphides
		Peridotite FW (basal FGO and MZNO mineralization)	FGO/MZNO	Disseminated, Mixed and massive sulphides
Other	221 Zone	Feldspathic Peridotite	CGO	Disseminated sulphides with ripped up clasts of massive sulphides
	480 Zone	Peridotite	FGO	Disseminated sulphides
	164 Zone	Peridotite	FGO	Blebby sulphides, sulphides veins

The TIC and associated mineralization were discovered as part of a regional program by Kennecott initiated in 1991. The focus on Ni and Cu sulphide mineralization was intensified in 1999 based on a model proposed by Dr. A.J. Naldrett of the potential for smaller feeder conduits associated with continental rift volcanism and mafic intrusions to host Ni sulphide deposits similar to Norilsk in Russia, and Voisey's Bay in Canada.

Disseminated mineralization was first intersected at the Tamarack Project in 2002, and the first significant mineralization of massive and net-textured sulphides was intersected in 2008 at the Tamarack North Project.

To date, exploration has included a wide range of geophysical surveys, including:

- Airborne magnetics and electromagnetics (AEM) (fixed wing and helicopter based);
- Ground magnetics;
- Surface electromagnetics (EM);
- Surface gravity;
- Magnetotellurics (MT);

- Induced polarization (IP);
- Seismic;
- Mise-à-la-masse (MALM);
- Magnetometric resistivity (MMR); and
- Downhole electromagnetics (DHEM).

Kennecott and Talon have conducted extensive drilling at the Tamarack North Project since 2002. This drilling has comprised 439 diamond drill holes (as of October 10, 2022) totalling 172,711.65m with holes between 26.8 m and over 1,236 m depth for an average hole depth of 393 m.

1.5 Sample Preparation, Quality Assurance (QA) / Quality Control (QC) and Security

The Talon sample preparation and QA/QC protocol is consistent with industry best practises. The QA/QC program is based on insertion of certified reference materials (CRM), including a variety of standards, blanks, and duplicate samples, used to monitor the contamination, precision and accuracy of their primary assay lab, and to prevent inaccurate data from being accepted into their assay database.

Talon uses a system of security tags to secure plastic bins used to ship samples from the core shack to the assay lab, ensuring that they have not been tampered with. Samples are prepared and stored in a secure facility and are monitored each step of the way to the lab. Before the bin is sealed, a chain of custody form is placed in the plastic bin, which is signed by the lab and returned to Talon upon receipt.

It is the QP's opinion that the sampling process is representative of the mineralization at the Tamarack North Project and that the sample preparation, the QA/QC procedures used, and the sample chain of custody were found to be consistent with Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) Mineral Exploration Best Practice Guidelines (November 2018).

1.6 Data Verification

1.6.1 Resource Data Verification

The QP compared recent assay data from the 2021-2022 drilling program from the Talon database to the original assay certificates from ALS Minerals for a representative population used for resource estimation. No errors were noted for the base metals, however minor errors were identified with the precious metals. These errors were found to not be material to the MRE but will be corrected by Talon.

A QP site visit was conducted May 9-10 of 2022, by Roger Jackson, P. Geo., of Golder, in which three drill hole collar locations were surveyed using a hand-held global positioning system (GPS) and then compared the coordinates to those provided by Talon. All collars were found to be consistent with the Talon collar coordinates, within the accuracy of the GPS.

As part of the 2022 site visit, the QP conducted verification sampling of drill core representing massive sulphide, semi-massive sulphide and disseminated mineralization. A total of 15 samples were taken along with two additional CRM samples, consisting of one high grade standard and one medium grade standard. Assay values from the verification sample program were consistent with results obtained by Talon, while higher precious metal variances were attributed to the nugget effect.

It is the QP’s opinion that the Tamarack North Project drill hole database has been prepared in accordance with CIM Mineral Exploration Best Practice Guidelines (November 2018) and is of suitable quality to support the MRE in update.

1.6.2 Metallurgical Data Verification

The assays results used to generate metallurgical mass balances were generated by SGS Lakefield in Ontario. The analytical lab is ISO/IEC 17025 certified, which is the international reference for testing and calibration laboratories wanting to demonstrate their capacity to deliver reliable results.

The validity of the mass balances is verified by comparing the direct head assay of a sample with the reconstituted head assay from the individual flotation products.

1.7 Mineral Processing and Metallurgical Testing

The flotation flowsheet and conditions that were established in the 2016/2017 program were further optimized using a composite that represented the entire 8.02 Mt of mineralized material that was reported in PEA #3. The head grade of this composite was 1.69% Ni and 0.95% Cu. The primary focus of the program was to produce Ni and Cu concentrates that provide marketing optionality. The program considered three possible scenarios for the flotation concentrates:

- The **Ni Concentrate Scenario** would include shipping both Ni and Cu concentrates to smelters for processing.
- The **Ni Powder Scenario** would include shipping Cu concentrate to a smelter for processing, and transferring Ni concentrate to a co-located facility for production of Ni powder.
- The **Ni Sulphate Scenario** would still ship the Cu concentrate to smelters, but the Ni concentrate would be converted to Ni sulphates in a hydrometallurgical facility.

The Tesla Supply Agreement eliminated the Ni Concentrate Scenario and the Ni Sulphate Scenario. Under the Tesla Supply Agreement, the Ni concentrate will be delivered to Tesla for further processing instead of at a co-located Ni powder facility. The Cu concentrate will be shipped to a copper smelter.

Since iron in the Ni concentrate may become a payable by-product, the original flowsheet was revised to provide process flexibility to maximize Fe sulphide recovery into the Ni concentrate while minimizing the entrainment of gangue minerals.

1.8 Mineral Resource Estimate (MRE)

Caution to readers: *In this Item, all estimates and descriptions related to Mineral Resource estimates are forward-looking information. There are many material factors that could cause actual results to differ from the conclusions, forecasts or projections set out in this item. Some of the material factors include differences from the assumptions regarding the following: estimates of cut-off grade (COG) and geological continuity at the selected cut-off, metallurgical recovery, commodity prices or product value, mining and processing methods and general* *and administrative (G&A) costs. The material factors or assumptions that were applied in drawing the conclusions, forecasts and projections set forth in this item are summarized in other items of this report.*

This MRE has been prepared by Mr. Roger Jackson (M.Sc., M.Eng., P.Geo), Senior Resource Geologist at Golder, under the supervision of Brian Thomas (P.Geo.), Principal Resource Geologist at Golder, and is summarized in Table 1.2. The effective date of the MRE is October 10, 2022. Mr. Brian Thomas and Mr. Roger Jackson are independent QPs pursuant to NI 43-101.

Table 1.2: Tamarack North Project MRE Effective Date October 10, 2022

Domain	Classification	%Ni Cut-off	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	Fe in Sulphides (%)	NiEq (%)
CGO East MMS/MSU	Indicated Resource	0.5	228	2.84	1.19	0.09	0.31	0.20	0.21	21	3.66
CGO East Disseminated	Indicated Resource	0.5	1,083	0.64	0.44	0.02	0.21	0.11	0.13	2	0.94
CGO West MMS/MSU	Indicated Resource	0.5	330	4.11	1.68	0.11	0.37	0.28	0.19	27	5.22
CGO West Disseminated	Indicated Resource	0.5	586	0.67	0.46	0.02	0.11	0.07	0.07	2	0.96
MSU	Indicated Resource	0.5	490	5.60	2.44	0.12	0.68	0.46	0.26	26	7.10
USMSU	Indicated Resource	0.5	3,338	1.24	0.74	0.03	0.20	0.12	0.12	5	1.70
LSMSU	Indicated Resource	0.5	2,506	1.94	1.05	0.05	0.57	0.34	0.26	8	2.68
Total Indicated	**Indicated Resource**	**0.5**	**8,564**	**1.73**	**0.92**	**0.05**	**0.34**	**0.21**	**0.17**	**8**	**2.34**
CGO East MMS/MSU	Inferred Resource	0.5	158	2.53	1.09	0.08	0.28	0.18	0.19	19	3.29
CGO East Disseminated	Inferred Resource	0.5	823	0.62	0.42	0.02	0.20	0.11	0.12	2	0.91
CGO West MMS/MSU	Inferred Resource	0.5	107	3.51	1.45	0.10	0.31	0.22	0.17	25	4.48
CGO West Disseminated	Inferred Resource	0.5	320	0.66	0.44	0.02	0.10	0.06	0.07	2	0.92
MSU	Inferred Resource	0.5	39	5.94	2.53	0.11	0.54	0.45	0.23	25	7.45
LSMSU	Inferred Resource	0.5	121	0.84	0.60	0.02	0.50	0.28	0.23	2	1.31
USMSU	Inferred Resource	0.5	2,932	0.67	0.41	0.02	0.25	0.14	0.12	2	0.96
138 - MZNO	Inferred Resource	0.5	3,957	0.82	0.63	0.02	0.21	0.12	0.14	2	1.21
Total Inferred	**Inferred Resource**	**0.5**	**8,461**	**0.83**	**0.55**	**0.02**	**0.23**	**0.13**	**0.13**	**3**	**1.19**

Notes: Mineral Resources are in situ and reported at a 0.50% Ni cut-off.
Tonnage estimates are rounded down to the nearest 1,000 tonnes.
Fe in Sulphides % is based on sulphur concentration associated with sulphide minerals and a calculation of stoichiometric Fe concentration in Pentlandite and Pyrrhotite.
Mining recovery and dilution factors have not been applied to the estimates.
NiEq grade based on metal prices in U.S. dollars of $9.50/lb Ni, $3.75/lb Cu, $25.00/lb Co, $1,000/oz Pt, $1,000/oz Pd and $1,400/oz Au using the following formula: NiEq% = Ni%+ Cu% x $3.75/$9.50 + Co% x $25.00/$9.50 + Pt[g/t]/31.103 x $1,000/$9.50/22.04 + Pd[g/t]/31.103 x $1,000/$9.50/22.04 + Au[g/t]/31.103 x $1,400/$9.50/22.04. Fe is not included in the NiEq calculation.
The NiEq values are added for information purposes only, and not used to calculate the %Ni cut-off grade.
No adjustments were made for recovery or payability.

The MRE was derived using Datamine RM® software, with metal grades interpolated into manually constructed mineral domain envelopes (“wireframes”) as illustrated in Figure 14.1. All domains had top-cuts applied to restrict outlier values. The block sizes were 5 m x 5 m x 5 m for the USMSU, LSMSU and the 138 Zone domains, and 2.5 m x 2.5 m x 2.5 m blocks for the MSU, CGO West and CGO East domains. Except for a small portion of the MSU domain, all resource domains were “unfolded” and utilized Ordinary Kriging (OK) methodology to interpolate grades (Ni, Cu, Co, Pt, Pd, Au and S) from either 1.5 m (USMSU, LSMSU, 138 Zone domains) or 1.0 m (MSU, CGO West, CGO East domains) composited drill holes. Specific Gravity (SG) estimates were based on laboratory measurements taken from cut core and where absent, regression formula values were calculated.

Fe in Sulphides % estimates were derived by the calculation of the stoichiometric amount of Fe contained in the amount of Pyrrhotite (Po) and Pentlandite (Pn), based on the estimated Ni, Cu, and Sulphur (S) grades in the resource block model. Refer to Item 14.6.5 for additional details.

The MRE was reported on a “blocks above cut-off” basis, using a 0.5% Ni cut-off, and was then examined visually by the QP and found to have good continuity and reasonable prospects for potential economical extraction using conventional underground mining methods.

The QP is unaware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or any other potential factors that could materially impact the Tamarack North Project MRE provided in this Technical Report.

The MRE may be materially impacted by the following:

- Changes in the break-even COG, as a result of changes in mining costs, processing recoveries, or metal prices.
- Changes in geological knowledge/interpretation, as a result of new exploration data.

The listing of Fe in Sulphides % was calculated using some basic mineralogical assumptions, and although potential metallurgical recovery is currently unknown, it has been included in the MRE due to potential value as a by-product (see Item 14.6.5 for methodology). If the by-product value of recoverable Fe, primarily contained in Pyrrhotite (Po), is significant it could potentially support a decrease to Ni % grade cut-off.

1.9 Conclusions

1.9.1 Data Verification and Mineral Resource Estimate (MRE)

It is the QP’s opinion that the information relating to geology, exploration and MRE presented in this Technical Report is representative of the Tamarack North Project. The QP’s validation of the Talon assays against the original certificates and the check assays, described in Item 11.0 and Item 12.0, provides confidence that the assay dataset is of suitable quality to support the basis of the MRE stated in 14.0 of this Technical Report.

The mineral resources models were constructed incorporating the current geological understanding of the deposits, using the appropriate data described above, and using the appropriate modelling methodologies. The QP performed exploratory data analysis of the assay data, selected appropriate composite lengths, and applied appropriate estimation parameters for the estimation of grades into block model cells. For this MRE, the QP has applied professional judgement and followed the guidance provided in the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019).

The QP has taken reasonable steps to ensure the block model and MRE is representative of the project data, but notes that there are risks related to the accuracy of the estimates related to the following:

- The assumptions used by the QP to prepare the data for resource estimation;
- The accuracy of the interpretation of mineralization;
- Estimation parameters used by the QP;
- Assumptions and methodologies used to estimate SG;
- Orientation of drill holes;
- Geological variability of the deposit;
- The cut-off grades and related assumptions of commodity prices, mining costs and metallurgical recovery.

For these reasons, actual results may differ materially from the reported MREs.

1.9.2 Metallurgy

Metallurgical process development continued through 2021 and 2022 and confirmed the robustness of the primary flowsheet that was presented in PEA #3. The flowsheet was extended with a primary and secondary scavenger cleaning circuit to incorporate a higher level of process flexibility. The optimized flowsheet will facilitate the generation of a 10% Ni concentrate and a separate high-Fe sulphide concentrate, or a lower-grade Ni concentrate with high Fe sulphide content in addition to a Cu concentrate.

Reagent optimization work that was completed in 2021 resulted in updated Ni regression curves with up to 10% higher Ni rougher recoveries for lower grade samples and 2-3 % Ni recovery gains for high grade composites.

The low levels of deleterious elements in the Cu and Ni concentrates are not expected to trigger any penalty payments. The MgO content in the Ni concentrate of the composite was just below the typical 5% threshold of smelters. Also, optimization work to limit gangue recovery into the flotation concentrates is ongoing.

Credits for by-products will mostly derive from Cu and Co with potentially minor contribution from Au, Pt, and Pd. Further, Fe in Sulphides % in the Ni concentrate may become a major by-product.

1.9.3 Environmental

Baseline environmental studies expanded in 2022 and early coordination meetings with the Minnesota DNR, the lead state agency, have begun to discuss the environmental review process. Baseline data collection for resource areas needed for environmental review and permitting are either underway or planned for 2023. The studies completed to date have not identified any environmental issue that could materially impact the ability to mine the resource. It is the QP's opinion that the existing baseline data, and the additional studies and reports planned for 2023 will provide adequate information for the Responsible Government Units (RGUs) to scope and prepare an EIS.

It will be important for Talon to continue to engage with the agencies, tribes and various stakeholders throughout the environmental review and permitting processes.

1.10 Recommendations

1.10.1 Exploration, Drilling and Geophysics

In PEA #3, it was recommended that Talon should focus on resource expansion and definition drilling to progress towards a Prefeasibility Study (PFS) and eventually a FS. It was estimated that between 25,000 m and 30,000 m of drilling would be required, mostly focused on expansion of the Tamarack North Project's current resource area.

Since that time Talon has drilled approximately 49,100 metres, discovering CGO East and CGO West while also increasing contained nickel by 98% in the Indicated Mineral Resource category. Contained nickel in MSU/MMS (Indicated Mineral Resource category) increased by 570%.

On January 20, 2022, Talon signed the Tesla Supply Agreement to supply 75kt of nickel in concentrate over a period of 6 years, starting 2026, which means that Talon has proceeded with the Ni Powder Scenario as contemplated in PEA #3.

Since January 2021, Talon has developed an Advanced Exploration System (AES), which is a unique combination of:

- Magnetotellurics (MT) Surface Electromagnetic (EM), and passive seismic survey equipment operated by Talon's team of geophysicists;
- Five Talon owned and operated drill rigs, producing at a significantly reduced cost per metre, compared to historical cost;
- Borehole electromagnetic (BHEM) and X-hole Seismic Survey equipment also operated by Talon's team of geophysicists;
- Talon's team of onsite geologists responsible for core-logging, geological modelling and exploration planning; and
- Talon's pseudo real-time assay estimating, resource modelling and mine planning system that allows Talon to rapidly prioritize new discoveries according to economic potential.

Additionally, Talon's AES is unique as it is the only holistic system designed to discover and delineate high grade nickel along the MCR in a few years instead of decades.

We therefore recommend that Talon continue exploration along the Tamarack North Project portion of the TIC while focusing on the following areas that show high grade potential:

- Determine if the CGO West mineral resources connect to the Main Zone MSU and if connected, drill the resource into the Indicated category. This work is estimated to require 3,000 to 5,000m of drilling;
- Determine if the CGO East mineral resources connect to the Main Zone MSU and if connected, drill the resource into the Indicated category. This work is expected to require 3,000 to 5,000m of drilling;
- Determine if the MSU below the 138 Zone terminates or extends to the northeast and/or south towards high grade mineralization intercepted in the 164 Zone. Due to the large area between the MSU in the 138 Zone and the 164 Zone this work is expected to require 10,000 m of drilling;

- Deploy the AES in the 221 Zone and 264 Zone to determine the size and extent of high-grade nickel MSU/MMS. Due to the complete lack of drilling between these zones this work is expected to require 15,000 m or more of drilling.

1.10.2 Mineral Resource

The updated MRE provides a reasonable representation of the in situ mineral resources. Recommendations to improve future estimations and to potentially increase mineral resources include:

- Collecting more laboratory SG measurements, in particular for the disseminated mineralization (CGO-West, CGO-East, 138 Zone). The current method of SG determination, using the ALS Minerals OA-GRA08b method, is appropriate for the types of sulphide mineralization in the Tamarack North Project deposits;
- Change the collar location of future drilling into the MSU and LSMSU Domains to provide different intersection angles through the mineralization. This would provide better information on the lateral extents of the sulphide mineralization;
- Conduct new geometallurgical test work on the Tamarack North Project mineralization to confirm the precious metal recoveries in the current flowsheet;
- Conduct additional electron micro-probe test work on the Tamarack North Project mineral domains to better define the elemental composition of the sulphide minerals. Additional test results could better support the approximation of the Fe in Sulphides % algorithm;
- Document the results of metallurgical test work related to Fe in Sulphides % recovery.

1.10.3 Mineral Processing and Metallurgical Testing

The following recommendations are made for metallurgical activities:

- Complete the process development of Talon's high recovery nickel, iron, copper and cobalt flowsheet to maximize metal and sulphur recoveries to concentrates, while reducing sulphur in the tailings;
- Continue flowsheet development with other downstream partners to produce high purity nickel and iron
- Investigate the commercialization of sulphur, produced from the Tamarack North Project's nickel concentrates;
- Continue to explore carbon sequestration and/or the production of Supplementary Cementitious Material (SCM).

If the above activities are successful, Talon will be able to valorize 100% of each tonne of rock, which means maximum environmental protection while deriving significantly higher economic benefits compared to the present nickel supply chain.

1.10.4 Environmental Studies, Permitting, and Social or Community Impact

Recommendations related to environmental review and permitting include additional studies and models to estimate potential environmental impacts, as well as reports that will provide the information needed for development of the EIS.

Talon should collect additional baseline data for groundwater (level and quality), surface water (flow and quality), wetlands (water levels and water quality), vegetation, materials characterization (static and kinetic testing), noise, and biological studies. A meteorological station is being installed at the Tamarack North Project site and monitoring should be conducted. In addition, an archaeological reconnaissance survey and a historic architectural survey and assessment should be planned for 2023.

Modelling potential impacts to the environment from the Tamarack North Project is recommended to commence in early 2023. Modelling efforts should include air modeling, water quantity and quality impact modeling, as well as noise impact modelling. Visual impact analysis should also be performed to establish the visibility of the Tamarack North Project features, and a traffic study should be conducted.

In 2023, Talon should produce the reports and plans needed to support the development of a Draft EIS. These documents would be in five categories: the SEAW, baseline data reports, modelling reports, resource reports, and management plans. These reports would also support preparation of permit applications.

In partnership with the community, Talon should build upon current community engagement plans to:

- Identify potential community impacts and opportunities connected to project operations;
- Develop community investment plans that align with the community's long-term development goals;
- Ensure best in class community engagement and understanding of project operations; and
- Promote equal opportunities for good-paying, high quality jobs with involvement of organized labor in the design and establishment of operations.

1.10.5 Feasibility Study (FS)

At this time, there is sufficient resource knowledge, geotechnical data, and environmental baseline data for Talon to commence with a FS for the development of a mine and rail loadout facility at the Tamarack North Project and an out-of-state battery minerals processing facility. The engineering work for the FS will consist of three main scope areas:

- Underground mine;
- Surface facilities at underground mine; and
- Processing Facility.

Environmental and regulatory considerations must be taken into account during every step of the engineering design, as well as opportunities for innovation and cost savings. Models for CAPEX, OPEX, and revenue will be created in order to develop a definitive economic analysis of the project.

1.10.6 Budget for Recommended Work

Table 1.3 provides the budget for recommended work.

Table 1.3: Budget for Recommended Work

Item	Description	Amount (US$)	Amount (C$)
1.0	Exploration, Drilling, Geophysics and Mineral Resource	$5,900,000	$8,000,000
2.0	Metallurgy and Processing	2,200,000	2,900,000
3.0	Environmental Studies, Permitting, Social or Community Impact and Government Relations	10,000,000	13,600,000
4.0	Engineering and Feasibility Study	12,000,000	16,400,000
5.0	Tamarack Land Package	1,000,000	1,400,000
6.0	Local Site Costs, Legal Support, Data Management and Other	2,400,000	3,200,000
	Total	**$33,500,000**	**$45,500,000**

2.0 INTRODUCTION

Golder, (a member of WSP), Metrpo , and Barr. were retained by Talon to prepare an update to MRE and a Technical Report prepared in accordance with NI 43-101 for the Tamarack North Project. The purpose of this Technical Report update is to support the disclosure of a material change to the MRE based on drilling completed since PEA #3, as well as the inclusion of Fe in Sulphides % in the MRE as a by-product, based on terms included in the Tesla Supply Agreement.

Four independent NI 43-101 MREs for the Tamarack North Project have been prepared to date, each by or under the supervision of Mr. Brian Thomas (B.Sc., P. Geo.), Principal Resource Geologist at Golder. The effective date of this MRE is October 10, 2022.

A summary of the metallurgical test work completed on the Tamarack North Project, including hydrometallurgical test work performed in 2020, has been compiled by Mr. Oliver Peters (P. Eng). Mr. Peters is the Principal Metallurgist and President of Metpro.

A summary of the baseline environmental data that has been collected to date, an overview of the environmental review and permitting requirements, and information on additional environmental studies, modelling and reporting that will be completed to support environmental review and permitting has been compiled by Ms. Christine Pint (P.G). Ms. Pint is a Senior Hydrogeologist and Vice President at Barr.

2.1 Sources of Information

The sources of information utilized in the preparation of this Technical Report were provided by Talon and by Kennecott. This Technical Report is based on the following data and pre-existing reports:

- PEA #3
- The 2014 Tamarack Earn-in Agreement (and all amendments thereto).
- The Original MVA.
- The 2018 Tamarack Earn-in Agreement.
- The New MVA.
- The Amended MVA.
- Tamarack Magmatic Nickel Copper Sulphide Due Diligence (Talon) report.
- Talon internal reports.
- Kennecott internal reports.
- Kennecott database of surface drill holes that included:
- Ni, Cu, Co, Pt, Pd, Au, lithology sample/assay data;
- Sample SG;
- Drill hole collar survey data and down-hole survey data; and

- QA/QC summary data and graphs.
- Assay certificates from ALS Minerals.
- Metal price assumptions based on an average of forecast long-term prices provided by major financial institutions located in North America and Europe.
- Further sources of information utilized by the QPs are listed in Item 27.0.

2.2 Qualified Persons (QPs)

The QPs listed in Table 2.1: are responsible for the preparation of this Technical Report and are all considered as independent QPs as defined by NI 43-101. Certificates are also contained in Item **Error! Reference source not found.**. The following QPs have completed property site visits:

- Brian Thomas, P. Geo., completed site visit on July 16, 2014;
- Roger Jackson, P. Geo., completed site visit between May 9-10, 2022;
- Christine Pint, P. G., completed site visits on October 5, 2017 and September 28, 2022.

Table 2.1: List of Responsible QPs

Name	Title, Company	Responsible for Item
Brian Thomas, P.Geo.	Principal Resource Geologist, Golder	1.1, 1.2, 1.8, 1.9.1, 1.10.2, 1.10.5, 1.10.6, 2, 3, 4.1, 4.2, 4.3, 5, 6, 14, 25.4, 26.2, 26.5, 26.6, 27
Roger Jackson, P.Geo.	Senior Resource Geologist, Golder	1.4, 1.5, 1.6, 1.8, 1.10.1, 1.10.2, 1.10.5, 1.10.6, 3, 7, 8, 9, 10, 11, 12.1, 12.2, 14, 25.1, 25.2, 25.3, 25.4, 26.1, 26.2, 28
Oliver Peters, P.Eng.	Principal Metallurgist and President, Metpro	1.7, 1.9.2, 1.10.3, 1.10.5, 1.10.6, 3, 12.3, 13, 25.5, 26.3, 26.5, 26.6
Christine Pint, P.G.	Vice President, Senior Hydrogeologist, Barr	1.3, 1.9.3, 1.10.4, 1.10.5, 1.10.6, 3, 4.4, 4.5, 20, 25.6, 26.4, 26.5, 26.6

Talon participated in the preparation of this Technical Report under the supervision of the QPs named above.

2.3 Units of Measure and Abbreviations

All units of measure used in this Technical Report are in the metric system, unless stated otherwise. Currencies outlined in the report are in US dollars (US$) unless otherwise stated.

The following symbols and abbreviations are used in this Technical Report:

<	Less than
>	Greater than
#	Number
%	Percent
°	Degree
°C	Degrees Celsius
3D	Three dimensional
µm	Micron
AEM	Airborne Electromagnetic
Ag	Silver
AISC	All in Sustaining Cost
Al	Aluminium
Al_2O_3	Alumina, aluminum oxide
AMT	Audio-frequency magnetotellurics
ARD	Acid rock drainage
As	Arsenic
ATV	Acoustic televiewer
Au	Gold
Avg	Average
Azm	Azimuth
B.Sc	Bachelor of Science
BATs	Best Available Technologies
BH	Borehole
BHEM	Borehole electromagnetic
Bi	Bismuth
Bouguer	Regional earth gravity anomaly identified by height and bedrock corrections
BNSF	Burlington Northern Santa Fe (railway company)
BTS	Brazilian tensile strength
BWi	Bond Work Index
Ca	Calcium
$CaCO_3$	Calcium carbonate
CAPEX	Capital expenditure
CCD	Counter-current decantation
Cd	Cadmium
CEO	Chief Executive Officer
cfm	Cubic feet per minute

CFR	Code of Federal Regulations
CFTF	Co-disposed Filtered Tailings Facility
CGO	Coarse grained ortho-cumulate olivine
CIM	Canadian Institute of Mining, Metallurgy, and Petroleum
cm	Centimetre
cm/s	Centimetres per second
cm^3	Cubic centimetre
CMC	Carboxy methyl cellulose
Co	Cobalt
COG	Cut-off Grade
Cpy	Chalcopyrite
Cr	Chromium
CRM	Certified reference material
CSAMT	Controlled source audio-frequency magnetotellurics
.csv	Comma-separate values file (electronic file format)
Cu	Copper
$CuSO_4$	Copper sulphate
CV	Coefficient of Variation
DDR	Dip Direction
DHEM	Downhole Electromagnetic
dmt	Dry metric tonnes
EDA	Exploratory data analysis
EM	Electromagnetic
EMIT	Electromagnetic Imaging Technology
EPA	Environmental Protection Agency
Fe	Iron
FGO	Fine grained ortho-cumulate olivine
Fo	Forsterite
FS	Feasibility Study
Ft	Feet
FW	Footwall
G&A	General and Administrative
G	Gram
g/cc	Gram per cubic centimetre
g/t	Grams per tonne
GLTZ	Great Lakes Tectonic Zone
Golder	Golder Associates Ltd
Gpm	Gallons per minute
GPS	Global positioning system
HELP	Hydrogeologic Evaluation of Landfill Performance
Hg	Mercury
HQ	Hole (outside diameter): 96 mm; core (inside diameter): 63.5 mm

HS	High-sulphide
HW	Hanging wall
ICP	Inductively coupled plasma
ICP-AES	Inductively coupled plasma atomic emission spectroscopy
ICP-MS	Inductively coupled plasma mass spectroscopy
ID^2	Inverse distance squared
In	Indium
IP	Induced polarization
IRR	Internal rate of return
ISO	International Organization for Standardization
JCR	Joint condition rating
Kennecott	Kennecott Exploration Company
Kg	Kilogram
kg/m^2	Kilograms per square metre
Km	Kilometre
Lb	Pound(s)
LCT	Locked cycle test
LG	Low grade
Li	Lithium
LOM	Life of Mine
LV	Low voltage
M	Million
M	Metre
m^2	Square metre
m^3	Cubic metre
MALM	Mise-à-la-masse (test method)
mASL	Metres above sea level
MCR	Mid Continent Rift
MDH	Minnesota Department of Health
MDNR	Minnesota Department of Natural Resources
MEPA	Minnesota Environmental Policy Act
Metpro	Metpro Management Inc.
Mg	Magnesium
mg/L	Milligrams per litre
MgO	Magnesium oxide, magnesia
mGal	Milligal
MGS	Minnesota Geological Survey
mL	Millilitre
ML	Metal leaching
Mm	Millimetre
MMR	Magnetometric resistivity
MMS	Mixed massive sulphide

Mn	Manganese
MOU	Memorandum of Understanding
MPa	Megapascal
MPCA	Minnesota Pollution Control Agency
MPUC	MN Public Utility Commission
MRV	Minnesota River Valley
MSU	Massive Sulphide Unit
MT	Magnetotelluric
Mt	Million tonnes
Mtpa	Million tonnes per annum
MVA	Mining Venture Agreement
MZ	Mixed zone
MZNO	Mixed Zone Olivine
NAAQS	National Ambient Air Quality Standards
NAG	Non-Acid Generating
NI 43-101	National Instrument 43-101
Ni	Nickel
NiEq	Equivalent nickel
NN	Nearest Neighbour
NPDES	National Pollutant Discharge Elimination System
NPR	Neutralization potential to acid potential
OB	Overburden
OEM	Original Equipment Manufacturer
OK	Ordinary Kriging
P. E.	Professional Engineer (US designation)
P. Eng.	Professional Engineer (Canadian designation)
P. Geo.	Professional Geologist
Pr. Eng.	Professional Engineer (South African designation)
PAX	Potassium amyl xanthate
Pb	Lead
Pd	Palladium
PEA	Preliminary Economic Assessment
PEM	Privacy enhanced mail (electronic file format)
PFS	Prefeasibility Study
PGE	Platinum group element
PGM	Platinum group metal
pH	Potential of hydrogen (measure of acidity)
PLS	Pregnant leach solution
Pn	Pentlandite
Po	Pyrrhotite
Ppm	Parts per million
Pt	Platinum

QA	Quality assurance
QC	Quality control
QCu	Density-weighted copper grade
QCo	Density-weighted cobalt grade
QEMSCAN	Quantitative Evaluation of Materials by Scanning Electron Microscope
QNi	Density-weighted nickel grade
QP	Qualified Person
Re	Rhenium
RGU	Responsible Government Unit
RIM	Radio Imaging Method
RMR	Rock mass rating
ROFR	Right of first refusal
ROM	Run of mine
RQD	Rock quality designation
RTE	Rare, Threatened, and Endangered
S	Sulphur
Sb	Antimony
SCR	Solid core recovery
Se	Selenium
SED	Metasediments
SEM	Sequential excavation method
SG	Specific gravity
SHPO	State Historic Preservation Office
SMSU	Semi-massive sulphide unit
SPLP	Synthetic Precipitation Leaching Procedure
STP	Step data
T, t	Tonnes
t/m^3	Tonnes per cubic metre
Talon	Talon Metals Corp.
TCS	Triaxial compressive strength
TCR	Total core recovery
TDEM	Time domain electromagnetic
Te	Tellurium
TEM	Transient electromagnetic
TIC	Tamarack Intrusive Complex
Tl	Thallium
Tpa	Tonnes per annum
Tph	Tonnes per hour
Tpd	Tonnes per day
TSF	Tailings Storage Facility
U-Pb	Uranium-Lead
UCS	Uniaxial compressive strength (Chapter 11), Unfolded coordinate system (Chapter 14)

US	United States
US$	United States Dollars
USACE	US Army Corps of Engineers
UTEM	University of Toronto Electromagnetic System
UTM	Universal Transverse Mercator (coordinate system)
VPmg	3D modelling and inversion program for gravity, gravity-gradient, TMI and magnetic gradient data
VWP	Vibrating wire piezometer
Zn	Zinc

3.0 RELIANCE ON OTHER EXPERTS

This Technical Report has been prepared by Golder, Metpro and Barr for Talon. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to Golder, Metpro and Barr at the time of report preparation;
- Assumptions, conditions, and qualifications as set forth in this report; and
- Data, reports, and other information supplied by Talon and other third-party sources.

In Items 4.2 Property Ownership, 4.4 Permitting, 4.5.2 Environmental Liabilities, and 4.5.3 Significant Risk Factors of this Technical Report, the QPs have relied upon, and believe there is a reasonable basis for this reliance on, information provided by Talon regarding mineral tenure, surface rights, ownership details, the 2014 Tamarack Earn-in Agreement, the Original MVA, the 2018 Earn-in Agreement, and other agreements relating to the Tamarack North Project, royalties, environmental obligations, permitting requirements and applicable legislation relevant to the Tamarack North Project. The QPs have not independently verified the information in these items and have fully relied upon, and disclaim responsibility for, information provided by Talon in these items.

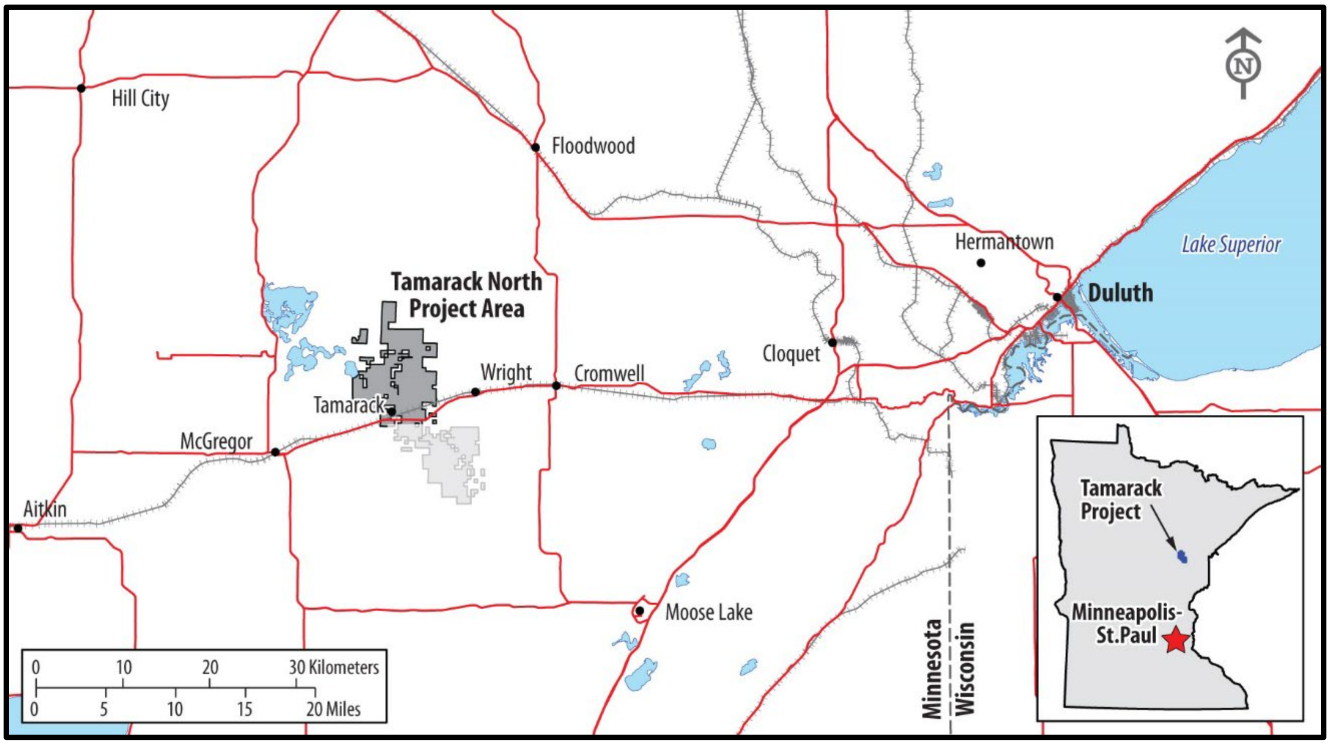
In Item 14.0, the QPs have relied upon Talon for details regarding the Tesla Supply Agreement in support of including Fe in Sulphides % in the MRE. The QPs have not independently verified the information in this agreement and have fully relied upon, and disclaim responsibility for, information provided by Talon in this Item.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Property Location

The Tamarack Project, located in north-central Minnesota, is approximately 100 km (62 miles) W of Duluth and 210 km (130 miles) N of Minneapolis, in Aitkin County (Figure 4.1). The Tamarack North Project, which this report represents, covers approximately 20,348 acres. The boundary between the Tamarack North Project and the Tamarack South Project is located approximately along the 5165000 N Universal Transverse Mercator (UTM) line. More specifically, it occurs along the southern extremity of State Mineral Leases MM 10006 N, MM-9768-P, and MM-9767-P (Figure 4.2). The current Tamarack North Project mineralization is centred at approximately 490750 E/5168700 N NAD 83 15 N. The town of Tamarack, which gives the project its name, lies in the southern portion of the Tamarack North Project area (though away from the known mineralization).

Figure 4.1: Location of the Tamarack North Project



4.2 Property Ownership

Both Kennecott and Talon hold interests in the Tamarack Project, which comprises the Tamarack North Project and the Tamarack South Project. As of the date of this Technical Report, Talon holds a 51% interest, and Kennecott holds a 49% interest, in the Tamarack Project. Talon is presently the operator of the Tamarack Project.

On November 7, 2018, Talon and Kennecott entered into the 2018 Tamarack Earn-in Agreement, pursuant to which Talon has the right to increase its interest in the Tamarack Project to a 60% interest. The 2018 Tamarack Earn-in Agreement is described in Item 4.3.

Prior to the 2018 Tamarack Earn-in Agreement, the relationship between Talon and Kennecott was governed by several other agreements (2014 Tamarack Earn-in Agreement and Original MVA), which are further described below.

4.2.1 2014 Tamarack Earn-in Agreement

On June 25, 2014, Talon entered into the 2014 Tamarack Earn-in Agreement pursuant to which Talon received the right to acquire an interest in the Tamarack Project.

On January 4, 2016, pursuant to the terms of the 2014 Tamarack Earn-in Agreement, as amended, Talon earned an 18.45% interest in the Tamarack Project by making payments totalling US$25,520,800 broken down as shown in Table 4.1.

Table 4.1: Total Payments by Talon to Earn an 18.45% interest in the Tamarack Project

Option payments	$	1,000,000
Exploration	$	21,200,000
Land purchases	$	3,320,800
TOTAL	**$**	**25,520,800**

On December 16, 2016, Talon entered into an amending agreement with Kennecott in respect of the 2014 Tamarack Earn-in Agreement which provided, among other things, that Kennecott could elect at any time up to and including September 25, 2017, to grant Talon the right to purchase Kennecott's interest in the Tamarack Project for a total purchase price of US$114M (the Tamarack Purchase Option) (the Kennecott Decision Deadline).

On the Kennecott Decision Deadline, Talon received notification from Kennecott that it had decided to grant Talon the Tamarack Purchase Option on the terms of the 2014 Tamarack Earn-in Agreement. Pursuant to the 2014 Tamarack Earn-in Agreement, Talon had until November 6, 2017 (which was subsequently extended to December 31, 2017), to advise Kennecott as to whether or not it would exercise the Tamarack Purchase Option.

On November 16, 2017, Talon advised Kennecott that it had elected not to exercise the Tamarack Purchase Option. Consequently, under the terms of the 2014 Tamarack Earn-in Agreement, in February 2018 the parties were required to proceed to execute and deliver and operate under the Original MVA.

4.2.2 Original Mining Venture Agreement (Original MVA)

On January 11, 2018, Talon and Kennecott entered into the Original MVA.

Some notable characteristics of the Original MVA included the following:

- Kennecott was appointed Manager of the Tamarack Project, with a number of explicit duties and obligations articulated under the Original MVA;
- Talon and Kennecott agreed to establish a management committee to determine overall policies, objectives, procedures, methods and actions under the Original MVA, and to provide general oversight and direction to the manager who was vested with full power and authority to carry out day-to-day management under the

Original MVA. The management committee consisted of two members appointed by Talon and two members appointed by Kennecott;

- Upon formation of the Original MVA and beginning with the first program and budget under the Original MVA, each proposed program and budget had to provide for an annual expenditure of at least US$6.15M until the completion of a FS (as defined under the Original MVA). The failure of either party to fund its share of each proposed program and budget was to result in dilution (and in certain circumstances accelerated dilution) in accordance with the terms of the Original MVA;
- In the event either party's participating interest in the Tamarack Project diluted below 10%, such party's interest would be converted into a 1% net-smelter return (NSR) royalty; and
- In the event of a proposed transfer of either party's interest in the Tamarack Project to a third party, the other party had a right of first refusal (ROFR). In the event the non-transferring party elected not to exercise its ROFR, the non-transferring party had a tag-along right, while the transferring party had a drag-along right.

On January 11, 2018, pursuant to the terms of the Original MVA, Talon elected to not financially participate in the 2018 winter exploration program at the Tamarack Project. Consequently, Talon's interest in the Tamarack Project was diluted below 18.45%, and eventually diluted to 17.56%.

During the term of the 2018 Tamarack Earn-in Agreement, the Original MVA is in abeyance and the terms of the 2018 Tamarack Earn-in Agreement govern the relationship between Talon and Kennecott in respect of the Tamarack Project.

4.3 2018 Tamarack Earn-in Agreement

On November 7, 2018, Talon entered into an exploration and option agreement (the 2018 Tamarack Earn-in Agreement), which provides Talon with the right to acquire up to a 60% interest in the Tamarack Project. The 2018 Tamarack Earn-in Agreement came into effect on the Kennecott Agreement Effective Date.

Pursuant to the terms of the 2018 Tamarack Earn-in Agreement, Talon took over operatorship of the Tamarack Project and Talon had the right to acquire a 51% interest in the Tamarack Project upon:

- The payment of US$6 million in cash to Kennecott;
- The issuance of US$1.5 million worth of common shares of Talon to Kennecott;
- Within 3 years of the effective date of the 2018 Tamarack Earn-in Agreement, Talon either spending US$10 million or completing a PFS on the Tamarack Project; and
- Within 3 years of the effective date of the 2018 Tamarack Earn-in Agreement, Talon paying Kennecott an additional US$5 million in cash.

In late September 2021, approximately 6 months ahead of schedule, Talon completed all of the requirements and earned a 51% interest in the Tamarack Project. Rather than receiving US$5m in cash, Kennecott agreed to accept 10,543,333 units of Talon (each a KEX Earn-in Unit) at a deemed issuance price of C$0.60 per KEX Earn-in Unit in full satisfaction of the US$5m cash obligation. Each KEX Earn-in Unit is comprised of one common share of Talon and one-half of one purchase warrant. Each whole warrant was exercisable to acquire a Talon common share until September 29, 2022 at an exercise price of $0.80 per share. No warrants were exercised by Kennecott.

Talon has the right to increase its interest in the Tamarack Project to 60% by:

- Completing a FS on the Tamarack Project within 7 years of the effective date of the 2018 Tamarack Earn-in Agreement; and
- Paying Kennecott the additional sum of US$10 million in cash on or before the seventh anniversary of the effective date of the 2018 Tamarack Earn-in Agreement (March 13, 2026).

4.3.1 The New MVA

Upon Talon earning a 60% interest in the Tamarack Project, Talon and Kennecott have agreed to enter into a new mining venture agreement (the New MVA).

Some notable characteristics of the New MVA include the following:

- Talon will be appointed Manager of the Tamarack Project, with a number of explicit duties and obligations articulated under the New MVA;
- Each party will be required to fund its pro rata share of expenditures or be diluted;
- Talon and Kennecott will establish a management committee to determine overall policies, objectives, procedures, methods and actions under the New MVA, and to provide general oversight and direction to the Manager who will be vested with full power and authority to carry out the day-to-day management under the New MVA. The management committee will consist of two members appointed by Talon and two members appointed by Kennecott;
- In the event either party's participating interest in the Tamarack Project dilutes below 10%, such party's interest will be converted into a 1% NSR;
- In the event of a proposed transfer of either party's interest in the Tamarack Project to a third party, the other party will have a ROFR.

4.3.2 Other Potential Mining Venture Agreement

In addition to the 2018 Tamarack Earn-in Agreement and the New MVA, Talon and Kennecott have contemplated one remaining potential scenario that would necessitate the entering into an alternative form of mining venture agreement from the New MVA.

In the event Talon does not earn a 60% interest in the Tamarack Project, the parties have agreed to enter into an amended mining venture agreement (Amended MVA) pursuant to which Talon will continue to be the Manager of the Tamarack Project and will be required to free-carry Kennecott through to the completion of a FS (as defined under the Amended MVA). Under the Amended MVA, and beginning with the first program and budget under the Amended MVA, each proposed program and budget by Talon must provide for an annual expenditure of at least US$6.15M until the completion of a FS (as defined under the Amended MVA), failing which Talon will be subject to dilution.

4.3.3 Mineral Tenure

4.3.3.1 Introduction

Land in Minnesota is held by a combination of private, state and federal ownership. In addition, surface estate owner(s) may be the same or different to the mineral estate owner(s) (i.e. mineral interest may be severed from surface interest and form its own property ownership right).

The Tamarack North Project comprises:

- Minnesota State Leases (many of which also include the surface rights);
- Private Mineral Leases, Surface Use Agreements and Options to Purchase; and
- Fee Mineral and Surface Interests owned outright by Kennecott.

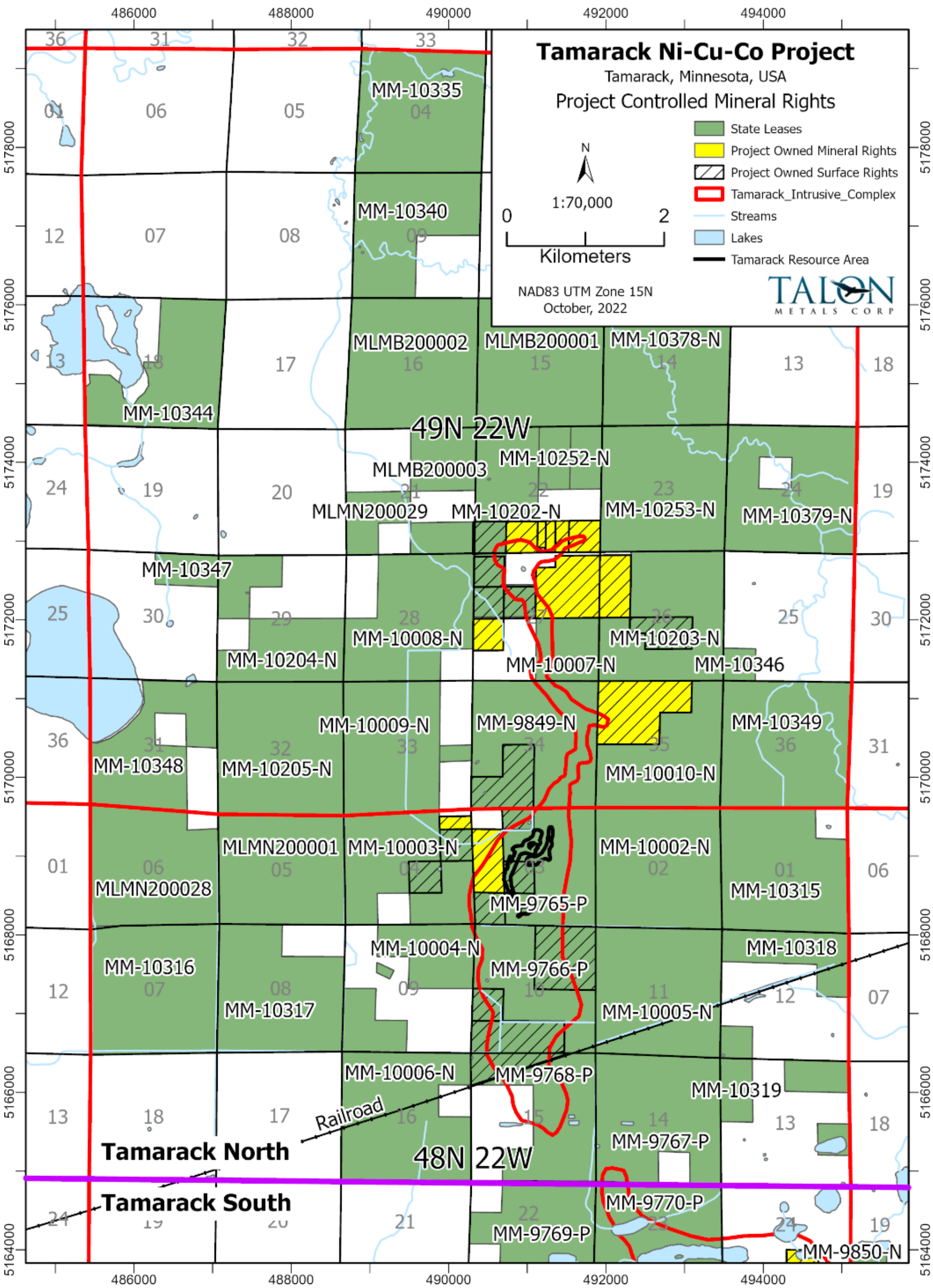
These various interests are summarized in Table 4.2. The mineral and surface rights owned or controlled by Kennecott and Talon are summarized in Figure 4.2. All Tamarack North Project mineral and surface interests are held in Kennecott's name and are currently subject to the 2018 Tamarack Earn-in Agreement. The Tamarack land package has been reduced from 28,334 acres (2018) to 20,348 acres in order to save costs and shed non-essential land holdings.

Table 4.2: Summary of Tamarack North Project Interests

Type	Number	Acreage
Minnesota State Leases	40	18,730
Private Mineral Leases	0	0
Fee Minerals and Surface Interests	19	1,618
Total	**59**	**20,348**

It is noted that all locations for mineral leases and other property locations are described in the US Public Land Survey System in Township, Range, Section and Section subdivisions.

Figure 4.2: Tamarack North Project Mineral and Surface Rights



4.3.3.2 Minnesota State Leases

State Leases to Explore, Mine and Remove Metallic Minerals (State Leases) are issued by the Minnesota Department of Natural Resources (MDNR) and may be held for up to 50 years. “Metallic Minerals” are defined in the State Leases as “any mineral substances of a metalliferous nature, except Fe ores and taconite ores”. State Leases allow a mining company to engage in mineral exploration and mineral development located on the State-owned property, subject to compliance with all laws and issued permits.

The Tamarack North Project comprises 40 State Leases, covering an area of approximately 18,730 acres (Table 4.3) contains further details of State Leases). The State Leases are issued on standard lease forms and generally contain uniform terms and conditions.

In order to keep the State Leases in good standing, certain quarterly and/or annual payments must be made to the State and/or County. Rental payments must be made to the State, and are paid quarterly in arrears on each February 20, May 20, August 20 and November 20 for the previous calendar quarter. The quantum of such rental payments are as follows:

- Initially, US$1.50 per acre for the unexpired portion of the then current year and US$1.50 per acre for each of the two succeeding years;
- US$5 per acre for the next three calendar years, payable quarterly;
- US$15 per acre for the next five calendar years, payable quarterly; and
- US$30 per acre per calendar year for the duration of the lease.

All State Leases are currently in good standing.

A county tax is also levied on the State Leases, with the current amount being US$0.40 per acre, payable on May 15 of each year.

An operating mining company must also pay a production royalty. The base royalty consists of a base rate (3.95%) and in some cases an additional royalty (applicable only to those leases acquired through state bids or negotiations with the State). Details are included in Table 4.3. State leases also contain a royalty escalation clause that increases the base royalty as the net return value per (imperial) ton of raw ore increases. The net return value per ton is calculated based on the net smelter return excluding transportation and insurance costs. This escalation of the royalty rate begins at a net return value per ton less an inflation adjustment of approximately $100/ton as of the date of this report of US$75.01. It rises to the maximum of 20% if such net return value less the inflation adjustment exceeds US$444/ton. In addition, there is a 2% net proceeds tax which is calculated based on gross income less expenses necessary to convert raw ores to marketable quality.

The State of Minnesota has an option to cancel a mineral lease after the end of the 20th year if, by that time, a lessee is not actively engaged in mining ore under the lease from the mining unit, a mine within the same government township as the mining unit or an adjacent government township and has not paid at least US$100,000 to the State in earned royalty under a state lease in any one calendar year. The State must exercise that option within the 21st year of the lease. If the State does not cancel within the 21st year, the lessee has until the end of the 35th calendar year to meet the conditions. If the lessee has not met the conditions by the end of the 35th year, the State has another window to cancel the lease during the 36th calendar year of the lease.

Table 4.3: Tamarack North Project State Lease Details

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 9765-P	9/7/2000	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 3: Lot 3, NE/4SW/4, SW/4SW/4 Minerals and mineral rights Sec. 3: Lots 1-2, S/2NE/4, SE/4NW/4, SE/4SW/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	482.26
MM 9766-P	9/7/2000	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 10: NE/4NW/4, S/2NW/4, NW/4SE/4 Minerals, mineral rights and surface Sec. 10: SW/4, NE/4 Minerals and mineral rights Sec. 10: NW/4NW/4, NE/4SE/4, S/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640
MM 9767-P	9/7/2000	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 14: N/2NE/4 Minerals, mineral rights and surface Sec. 14: N/2SE/4, SE/4SE/4, S/2NE/4, NW/4, NE/4SW/4, NW/4SW/4 except 2.58 acres for highway right-of-way, E/2SE/4SW/4 Minerals and mineral rights Sec. 14: SW/4SW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	577.42
MM 9768-P	11/9/2005	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 15: SW/4NE/4, NE/4NW/4 except 3.17 acres for railroad right-of-way, NW/4NW/4 except 2.14 acres for railroad right-of-way Minerals and mineral rights Sec. 15: NE/4NE/4 except 0.80 acres for railroad right-of-way, NW/4NE/4 except 3.17 acres for railroad right-of-way, SE/4NE/4, SE/4SW/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	430.72
MM 9849-N	9/6/2001	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 34: NE/4NE/4, E/2NW/4 Minerals, mineral rights and surface Sec. 34: W/2NW/4, NW/4NE/4, SW/4 Minerals and mineral rights Sec. 34: S/2NE/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10002-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 2: Lots 1-4, S/2NE/4, S/2NW/4, S/2 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	605.04
MM 10003-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 4: SW/4NE/4, SE/4NE/4, SW/4SW/4, N/2SE/4 Minerals and mineral rights Sec. 4: Lots 2-4, S/2NW/4, N/2SW/4, S/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	505.85
MM 10004-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 9: S/2NE/4, NE/4NW/4 Minerals and mineral rights Sec. 9: N/2NE/4; SE/4NW/4, that part commencing at NW corner, thence S along W line of SE/4NW/4 206 ft to Round Lake Road the point of beginning, thence S along same W line a distance of 427 ft, thence deflect left 73° a distance of 612.5 ft, thence deflect left 87° 10 minutes a distance of 400 ft to centre of Round Lake Road, thence deflect left 92° along said road a distance of 762 ft to point of beginning; W/2SW/4; SE/4SW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	326.50
MM 10005-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 11: All Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10006-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 16: N/2NE/4, SW/4NE/4, W/2, SE/4 Minerals and mineral rights	600.00
MM 10007-N	6/5/2003	50 years	3.95%	0.40%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 27: W/2NW/4, SE/4 Minerals and mineral rights Sec. 27: SE/4NW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	280.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10008-N	6/5/2003	50 years	3.95%	0.40%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 28: NE/4, NE/4SE/4, SW/4SE/4 Minerals, mineral rights and surface Sec. 28: E/2NW/4, NE/4SW/4 Minerals and mineral rights Sec. 28: W/2SW/4, SE/4SW/4, NW/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	520.00
MM 10009-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 33: N/2NE/4SE/4 Minerals and mineral rights Sec. 33: W/2NE/4, W/2, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	500.00
MM 10010-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 35: E/2NE/4, SW/4NE/4, SW/4, NE/4SE/4 except coal and iron, NW/4SE/4 except coal and iron, SW/4SE/4 except coal and iron, SE/4SE/4 except coal and iron Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	440.00
MM 10202-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 22: N/2SW/4 Minerals, mineral rights and surface Sec. 22: NW/4, SW/4SW/4, E/2NE/4 Minerals and mineral rights	360.00
MM 10203-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 26: E/2NE/4, W/2NE/4, E/2NW/4, NE/4SW/4, NW/4SE/4 Minerals and mineral rights Sec. 26: W/2SW/4, SE/4SW/4, NE/4SE/4, S/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	560
MM 10204-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 29: SW/4NW/4, E/2SW/4, SW/4SW/4, W/2SE/4, undivided ½ interest in N/2NW/4 Minerals and mineral rights Sec. 29: E/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	400.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10205-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 32: E/2SE/4 Minerals, mineral rights and surface Sec. 32: N/2, SW/4, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10252-N	9/30/2009	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 22: W/2NE/4 Minerals and mineral rights, except coal and iron	80.00
MM 10253-N	9/30/2009	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 23: All Minerals and mineral rights, except coal and iron	640.00
MM 10315	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 1: SE/4NE/4, NE/4SE/4 Minerals and mineral rights Sec. 1: Lots 2-4, SW/4NE/4, S/2NW/4, SW/4, W/2SE/4, SE/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	588.30
MM 10316	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 7: Lots 1-4, E/2, E/2NW/4, E/2SW/4 Minerals and mineral rights	626.07
MM 10317	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 8: E/2SW/4 Minerals, mineral rights and surface Sec. 8: S/2NE/4, NW/4, W/2SW/4, SE/4 Minerals and mineral rights	560.00
MM 10318	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 12: NW/4NE/4, N/2NW/4 Minerals, mineral rights and surface Sec. 12: SE/4NE/4, SW/4SW/4 Minerals and mineral rights Sec. 12: NE/4NE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	240.00
MM 10319	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 13: N/2NE/4, W/2NW/4 Minerals and mineral rights Sec. 13: NE/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	200.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10335	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 4: Lots 3-4, SW/4NW/4, NW/4SW/4, NE/4SE/4 Minerals, mineral rights and surface Sec. 4: SE/4NE/4, SE/4SE/4, SW/4SE/4 Minerals and mineral rights Sec. 4: Lots 1-2, SW/4NE/4, SE/4NW/4, NE/4SW/4, S/2SW/4, NW/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	610.96
MM 10340	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 9: NE/4NE/4, SW/4NE/4 except the north 100 ft, SE/4NE/4 except the N 100 ft, NE/4NW/4, S/2SW/4 Minerals and mineral rights Sec. 9: NW/4NE/4, SW/4NE/4 the N 100 ft, SE/4NE/4 the N 100 ft, W/2NW/4, SE/4NW/4, N/2SW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	480.00
MM 10344	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 18: Lots 3-6, N/2NE/4, SE/4NE/4, E/2SE/4 Minerals and mineral rights Sec. 18: SW/4NE/4, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	438.97
MM 10346	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 25: SW/4SW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	40.00
MM 10347	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 30: N/2NE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	80.00
MM 10348	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 31: Lot 1, SE/4NE/4, undivided ½ interest in NE/4NE/4, undivided ½ interest in NW/4NE/4 Minerals and mineral rights Sec. 31: Lots 2-4, E/2SW/4, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	430.36

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10349	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 36: W/2 Minerals, mineral rights and surface Sec. 36: E/2 Minerals and mineral rights	640.00
MM 10378-N	3/4/2011	50 years	3.95%	0.55%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 14: W/2NW/4, SE/4NW/4, NE/4SW/4, SW/4SW/4, SE/4SW/4 Minerals, mineral rights and surface Sec. 14: NW/4SW/4, NE/4NE/4 except the N 2 rods and the E 2 rods, NW/4NE/4, NE/4NW/4 Minerals and mineral rights Sec. 14: NE/4NE/4 the N 2 rods, NE/4NE/4 the E 2 rods except the N 2 rods, S/2NE/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10379-N	3/4/2011	50 years	3.95%	0.55%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 24: W/2NE/4, SE/4NE/4, S/2SW/4, E/2SE/4, W/2SE/4, NE/4NE/4, NE/4NW/4, undivided ¾ interest in NW/4NW/4, undivided ¾ interest in SW/4NW/4, undivided ¾ interest in NE/4SW/4, undivided ¾ interest in NW/4SW/4 Minerals and mineral rights	600.00
MLMB200001	3/3/2016	50	3.95%	0.75%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 15: undivided $^{1}/_{3}$ interest in NE1/4-NW1/4, undivided $^{2}/_{3}$ interest in NW1/4-NW1/4, undivided $^{1}/_{3}$ interest in NW1/4-NW1/4, undivided $^{2}/_{3}$ interest in SW1/4-NW1/4, undivided $^{1}/_{3}$ interest in SW1/4-NW1/4, undivided $^{1}/_{3}$ interest in SE1/4-NW1/4, undivided $^{1}/_{3}$ interest in NE1/4-SW1/4, undivided $^{1}/_{3}$ interest in NW1/4-SW1/4, undivided $^{2}/_{3}$ interest in SW1/4-SW1/4, undivided $^{1}/_{3}$ interest in SW1/4-SW1/4, undivided $^{1}/_{3}$ interest in SE1/4-SW1/4, undivided $^{1}/_{3}$ interest in NE1/4-SE1/4, undivided $^{1}/_{3}$ interest in NW1/4-SE1/4 SE1/4-SE1/4, undivided $^{1}/_{3}$ interest in SE1/4-SE1/4 Mineral and mineral rights Sec. 15: undivided $^{2}/_{3}$ interest in NE1/4-NW1/4, undivided $^{2}/_{3}$ interest in SE1/4-NW1/4, undivided $^{2}/_{3}$ interest in NE1/4-SW1/4, undivided $^{2}/_{3}$ interest in NW1/4-SW1/4, undivided $^{2}/_{3}$ interest in SE1/4-SW1/4, undivided $^{2}/_{3}$ interest in NE1/4-SE1/4, undivided $^{2}/_{3}$ interest in NW1/4-SE1/4, undivided $^{2}/_{3}$ interest in SW1/4-SE1/4, undivided $^{2}/_{3}$ interest in SE1/4-SE1/4 Mineral, mineral rights, and surface rights	640

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MLMB200002	3/3/2016	50	3.95%	0.75%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 16: W1/2-NE1/4, NW1/4, S1/2, E1/2-NE1/4 Mineral and mineral rights	640
MLMB200003	3/3/2016	50	3.95%	0.75%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 21: NE1/4 Mineral and mineral rights	160
MLMN200001	2/24/2017	50	3.95%	0.50%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 5: Lot Four, SW1/4, S1/2-SE1/4 - Mineral and mineral rights Sec. 5: Lot One, Lot Two, S1/2-NE1/4, Lot Three, N1/2-SE1/4 Mineral, mineral rights and surface rights	556.31
MLMN200028	2/24/2017	50	3.95%	0.50%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 6: S1/2-NE1/4, SE1/4-NW1/4, E1/2-SW1/4, Lot Six, Lot Seven, SE1/4 Mineral and mineral rights Sec. 6: Lot Two, Lot Three, Lot Four, Lot Five Mineral, mineral rights, and surface rights	581.71
MLMN200029	2/24/2017	50	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 21: undivided ½ interest NE1/4-SW1/4, undivided ½ interest NW1/4-SW1/4, undivided ½ interest SW1/4-SW1/4, undivided ½ interest SE1/4-SW1/4, undivided ¾ interest SE1/4-SE1/4 Mineral and mineral rights	110

4.3.3.3 Private Mineral Leases, Surface Use Agreements and Options to Purchase

In addition to the State Leases, Kennecott previously held surface use agreements covering privately owned interests (Private Agreements). The purchase options under the Private Agreements have all been exercised by Kennecott and the properties are now owned and included in Table 4.4

Kennecott has entered into easement agreements with certain property owners that allow the parties to install and monitor groundwater monitoring wells for a nominal annual fee.

4.3.3.4 Fee and Mineral Surface Interests

The parties also own fee surface and/or mineral interests, which cover approximately 1618 acres of land within the Tamarack North Project area. Details of the fee surface and mineral interests are detailed in Table 4.4. In certain instances, as part of the purchase price paid for the mineral rights, Kennecott agreed (in its previous capacity of Manager under the Original MVA) to pay a royalty to the previous mineral rights owner. The royalties range from a 2% NSR to a 3.9% NSR. There are also buy-back rights on certain of these royalties.

Table 4.4: Summary of Fee Mineral and Surface Interests

Township	Range	Section	Acreage
48 North	22 West	Sec. 3: NW/4 SW/4, SW/4 NW/4 except Parcel Nos. 8 and 9	80 (Surface and Mineral)
49 North	22 West	Sec. 22: SE/4SW/4	40 (Surface and Mineral)
48 North	22 West	Sec. 3: Government Lot 3	26.54 (Surface Only)
49 North	22 West	Sec 35: NW/4, NW/4 NE/4, NE/4 NW/4	240 (Surface and Mineral)
48 North	22 West	Sec. 3: SW/4 SW/4 except parcel no. 7	40 (Surface Only)
48 North	22 West	Sec. 3: NE/4 SW/4	40 (Surface Only)
49 North	22 West	Sec. 22: SE/4 SE/4 except Parcel No. 28	36 (Surface and Mineral)
49 North	22 West	Sec. 22: SW/4 SE/4 excepting certain lands	36.5 (Part Surface and Minerals, Part Surface Only)
49 North	22 West	Sec. 22 SW1/4 SW1/4 less 1.80 AC CO RD R/W	38.2 (Surface only)
48 North	22 West	Sec. 10: NW/4 SW/4 except Parcel No.6, Highway Plat No. 10; NE/4	198 (Surface Only)
48 North	22 West	Sec. 4: SE/4 NE/4	38.18 (Surface Only)
48 North	22 West	Sec. 4: NW/4 SE/4	40 (Surface Only)
48 North	22 West	Sec. 10: S/2 SW/4, SW/4 SE/4 Sec. 15: NE/4 NW/4 excepting certain lands	177.92 (Surface Only)
49 North	22 West	Sec. 26: W/2NW/4 Sec. 26: N/2 NE/4 SW/4, SE/4 NE/4 SW/4, NW/4 SE/4 Sec. 27: NE less 10 acres in the NW corner	300 (Surface and Minerals) (Surface) (Surface and Mineral)
49 North	22 West	Sec. 34: NE/4SW/4, SE/4SW/4, SW/4SW/4 excepting certain lands	118.01 (Surface Only)
48 North	22 West	Sec. 4: The South 561’ of Lot 1	16.51 (Surface and Mineral)
49 North	22 West	Sec. 27: NWNW excepting certain lands	36.49 (Surface Only)
49 North	22 West	Sec. 27: SWNW excepting certain lands	37.96 (Surface Only)
49 North	22 West	Sec. 27: NWSW excepting certain lands Sec. 27: SENW excepting certain lands	78.18 (Surface and Mineral) (Surface Only)

4.3.4 Surface Rights

The State Leases also grant the parties the right to use surface lands owned by the State of Minnesota within the leased land.

From a legal standpoint, where surface rights are owned by third parties, the State Leases provide that written notice to the owner of the surface estate must be provided at least 20 days in advance of surface activities and contemplate compensation payable by lessees to surface owners for any disturbance of the surface estate. Many states also address the rights of surface owners in case law, and although the Minnesota Supreme Court has not specifically opined on the issue, the general rule is that mineral rights carry with them the right to use as much of the surface as reasonably necessary to reach and remove the minerals, unless otherwise restricted by the mineral severance deed. Guidance provided by the MDNR takes this approach.

Notwithstanding the above, to date, the approach for surface access over areas that Talon (or previously Kennecott) is interested in drilling has been to negotiate with the applicable surface landowner a surface use agreement. Also, in certain cases, Kennecott negotiated an option to purchase the surface lands (which all options to purchase have now been exercised).

In the case of Private Agreements where there has been no severance of the surface and mineral estates, surface use is provided as part of the mineral lease. Where the mineral and surface estates are severed and where surface rights are held privately, surface access has typically been negotiated with the surface owner.

The surface rights held under the 2018 Tamarack Earn-in Agreement are detailed in Table 4.4.

4.3.5 Tax Forfeiture and Leasing of Mineral Rights

The Minnesota Severed Mineral Interests Law (Forfeiture Law) requires owners of severed mineral interests (i.e. mineral rights that are owned separately from the surface interest) to register their interests with the office of the county recorder.

Severed mineral interests are taxed. If the mineral interest owner does not file the severed mineral interest statement within the deadline provided by the law, the mineral interest forfeits to the State after notice and an opportunity for a hearing.

The owner, to avoid forfeiture, must prove to the court that the taxes were timely paid and that the county records specified the true ownership, or, in the alternative, that procedures affecting the title of the interest had been timely initiated and pursued by the true owner during the time when the interest should have been registered. To the extent the owner fails to prove this, the forfeiture to the State is deemed to be absolute. Additionally, if the owner of record fails to show up to the hearing, the forfeiture to the State is also deemed to be absolute.

The State may lease mineral rights prior to the completion of the forfeiture procedures, provided that the leased rights are limited to exploration activities, exploratory boring, trenching, test pitting, test shafts and drifts, and related activities. A lessee under such a lease may not mine the leased mineral rights until the forfeiture procedures are completed.

The State may have obtained interests in certain of the mineral rights leased under one or more of the State Leases pursuant to the Forfeiture Law and the forfeiture procedures may not have been completed for all the lands covered by these State Leases (forfeiture procedures are not required to have been completed until a lessee is looking to mine a property).

Until the forfeiture procedures have been completed, there is a remote risk that the owner of a mineral interest that the State has leased for the Tamarack North Project will demonstrate at a required hearing that the owner was in compliance with the registration and taxation requirements as detailed above. In such a case, the mineral rights would revert to this original owner. However, the State Leases that compose the area where the mineral resources are contained are not at risk of reversion to an original owner under Forfeiture Law.

4.4 Permitting

The Tamarack North Project is currently in the exploration phase. Talon, in its capacity as Operator under the 2018 Tamarack Earn-in Agreement, is responsible for making application for the required permits and approvals for exploration. Federal, state, and local entities all have regulatory authority over various elements of the Tamarack North Project. Key agencies involved with project permitting include the US Army Corps of Engineers (USACE), US Fish and Wildlife Service, MDNR, State Historic Preservation Office (SHPO), Minnesota Department of Health (MDH), Minnesota Pollution Control Agency (MPCA), Aitkin County, and City of Tamarack.

Information on permits and approvals required for pursuing exploration operations at the Tamarack North Project are provided in Table 4.5.

Information on permits and approvals required for future construction and operation of a mine at the Tamarack North Project are provided in Item 20.2 and Item 20.3

Table 4.5: Summary of Current and Potential Exploration Permits/Approvals

Federal		**Permit Obtained**
Agency	**Permit/Approval**	
USACE	Nationwide Permit No 33 – Temporary Construction, Access, and Dewatering	Yes
SHPO	National Historic Preservation Act – Section 106	Yes
US Fish & Wildlife Service	Endangered Species Act Compliance – Section 7	Yes
State		
Agency	**Permit/Approval**	
MDNR	Exploration Plan	Yes
MDH	Explorer's License; Designated Responsible Individual; Drilling Machine Registration	Yes
MDH	Exploratory Boring Notification; Temporary and Permanent Sealing Reports	Yes
MDH	Environmental Well Maintenance Permit	Yes
MPCA	NPDES/SDS Construction Storm Water Permit (General Permit)	Yes
MPCA	NPDES/SDS Industrial & Storm Water Discharge Permit (General Permit)	Yes
MPCA	Storm Water Pollution Prevention Plan	Yes
MDNR	Permit to Work in Public Waters, including Public Waters Wetlands	Yes
MDNR	Water Appropriation Permit	Yes
MDNR	Wetland Conservation Act approvals for activities impacting certain wetlands	Yes
MDNR	Threatened and Endangered Species Review	Yes
Local		
Agency	**Permit/Approval**	
City of Tamarack	Zoning and Building Permits	Yes

Federal		Permit Obtained
Agency	**Permit/Approval**	
County	Interim Use Permit; Conditional Use Permit	Yes
County	Zoning Permits	Yes

4.5 Environmental

4.5.1 Baseline Work

Information on environmental baseline data collected for the Tamarack North Project is included in Item 20.1.

4.5.2 Environmental Liabilities

Talon has advised the Mineral Resource QPs that it is not aware of the property having any environmental liabilities. A review of the MPCA's "What's in my Neighbourhood" database was completed for the property by Talon, and no contaminated site records were identified. The QPs have not independently verified this information as described in Item 3.0 of this report.

4.5.3 Significant Risk Factors

Talon has advised the QPs that it is not aware of any significant factors or risks which may affect access, title, or the right or ability to perform work on the Tamarack North Project. The QPs have not independently verified this information as described in Item 3.0 of this report.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Introduction

The Tamarack Project is located in north-central Minnesota, approximately 100 km (62 miles) west of Duluth and 210 km (130 miles) north of Minneapolis, in Aitkin County (Figure 4.1). The area is characterized by farms, plantations, wetlands and forested areas. The town of Tamarack (population 62, 2020 Census), which gives the project its name, lies within the boundaries of the Tamarack North Project (though away from the known mineralization) at an elevation of 386 m above sea level (mASL). The Tamarack Project's field office is located in the city of Tamarack. Other small towns in the area are Wright (10 km east from Tamarack) and McGregor (15 km west from Tamarack).

5.2 Accessibility

Access to the Tamarack North Project is via paved state and county highways and roads. From the city of Duluth, the Tamarack North Project can be accessed by Interstate 35 south for 32 km and then onto State Highway 210 W for 61 km to the town of Tamarack. The Tamarack North Project is easily accessible from Tamarack by paved road, with the current known mineralization located approximately 500 m laterally from a paved all-weather road.

5.3 Physiography

The Tamarack North Project transitions between the Minnesota/Wisconsin Upland Till Plain and the Glacial Lakes Upham and Aitkin ecoregion as defined by the Environmental Protection Agency (EPA) (Level III and IV Ecoregions of Minnesota, June 2015). The topography is level to gently rolling as is typical of old glacial lake plains. The soils are dominated by clay-silt to silty-sand Culver associated moraine deposits or by silty sand to sandy silt with clay interpreted as reworked pre-existing lake and stream sediments. Peat bogs are also found overlying the glacial till in the area (Jennings and Kostka, 2014). Relief is minimal, and where found is generally a result of small till moraines. As a result of the flat to gentle relief, poor drainage has allowed the area to be dominated by lowland conifers surrounding sedge meadows and marshland. Areas of higher relief will support aspen-birch and upland conifers.

5.4 Climate

The climate of Minnesota is typical of a continental climate, with hot summers and cold winters. Minnesota's location in the Upper Midwest allows it to experience some of the widest variety of weather in the US, with each of the four seasons having its own distinct characteristics. The annual average temperature at the Tamarack North Project is 5°C. The temperature averages a high of -7°C and a low of -18°C in January and a high of 26°C and a low of 13°C in July. Annual rainfall averages approximately 764 mm. Annual snowfall averages 142 centimetres (cm). (Tamarack Weather Averages, November 2017). Exploration operations at the Tamarack North Project can be conducted throughout the whole year (subject to any permitting restrictions) and future mining activities could be conducted on a year-round basis.

5.5 Local Resources

The mining support industries and industrial infrastructure in Minnesota are well developed and of a high standard, though most of the mining in the State occurs in the Mesabi Iron Range approximately 150 km to the northeast. Any exploration and mining efforts will be well served by an extensive talent pool located throughout the area.

5.6 Sufficiency of Surface Rights

The Tamarack North Project has an extensive package of surface rights (see Figure 4.2). There are sufficient rights to allow for mining operations and supporting infrastructure in the area of mining interest.

6.0 HISTORY

6.1 Discovery

Starting in 1972, the Minnesota Geological Survey (MGS) oversaw a 12-year program to collect high-resolution airborne magnetic data over the entire State, including the Tamarack area. The program was paid for by a penny per pack tax on cigarettes sold in the State. This program ran concurrently to an MDNR-sponsored program of regional lake sediment sampling. As part of the follow up to the airborne surveys, the State carried out a program of scientific drilling to try to identify the bedrock source of selected magnetic anomalies. Information from MDNR staff involved with the program indicates that the magnetic anomalies were prioritized by the presence of anomalous lake sediment geochemistry. This is reported as being the case for the TIC, with two local lakes being anomalous in Ni, Cu and chromium (Cr).

In the summer of 2000, Kennecott leased mineral title in Aitkin County from the State of Minnesota covering areas of the Tamarack North Project. There were no apparent non-ferrous leases in this area previous to Kennecott's initial leasing (Historic State Nonferrous Metallic Mineral Leases, October 2017).

Kennecott began exploration on the Tamarack North Project in 2001 when Kennecott flew an airborne MEGATEM and magnetic survey covering most of the TIC. Ground EM and gravity surveys were also carried out to refine anomalies identified in the airborne survey.

Prior to 2002, the Tamarack area was subject to only very limited exploration efforts and there had been no prior mineral production from the Tamarack North Project. The relatively thick post mineral, glacial fluvial sediment cover and nearly complete lack of bedrock exposure severely hampered any early exploration; the nearest known bedrock exposure to the Tamarack North Project is located approximately 15 km to the SE of the deposit.

In the winter of 2002, Kennecott began drilling at the Tamarack North Project (see Item 9.0 for further details of exploration work conducted by Kennecott). Drilling has occurred continuously on site since 2002, except for the years 2006 and 2019 (see Item 10.0 for further details of the drilling programs conducted by Kennecott).

6.1.1 Historical Drilling

The historical drilling at the Tamarack Project is restricted to the two drill holes by the MGS that were targeted as follow-up on anomalies generated by the State Aeromagnetic Survey. These included AB-6 (1984) located north of the town of Tamarack, which intersected peridotite, and AB-5 (1984), which was drilled further south and intersected metamorphosed sediments. This drilling is not part of the current resource but contributes to the overall regional geological interpretation.

6.2 Kennecott Drilling Programs (2002-2013)

Kennecott conducted extensive drilling at the Tamarack North Project dating back to 2002 (Table 6.1). Prior to Talon's involvement, this drilling comprised 182 diamond drill holes (Figure 6.1, Figure 4.1 and Figure 6.2) totalling 67,541 m with holes between 33.5 m and over 956 m depth for an average hole depth of 534 m. Drilling had been conducted in both summer and winter programs.

Drilling at the Tamarack North Project was initiated in the winter of 2002, with L02-01 intersecting broad zones of low grade (LG) disseminated sulphide mineralization N of the Tamarack Resource Area.

Between 2003 and 2004 drilling was limited to a few holes (Figure 6.1) with the first multi-hole program of 13 holes carried out in the winter of 2007, when the first significant intersection of disseminated sulphide mineralization was made with drill hole 07L031 north of the Tamarack Resource Area.

Drilling was stepped up in the summer and winter of 2008 with 51 drill holes after the first intersections of the SMSU in drill hole 08L042. During the subsequent delineation of the SMSU Zone in the same year, the MSU was first intersected in drill hole 08TK0049.

Drilling was reduced in 2009 to 15 holes following the economic downturn and mainly tested new targets while focusing on the 480 Zone to the north of the Tamarack North Project. In 2010, 20 holes were drilled to test new targets with continued focus on the 480 Zone. Drilling in 2011 included five holes north of the Tamarack Resource Area.

In 2012, the program stepped up with 27 holes drilled to the south of the SMSU, with the first wide intersection of predominantly disseminated mineralization and interlayered net textured mineralization from drill hole 12TK0138 (in what was later to be called the 138 Zone).

During the 2013 campaign, 39 holes were drilled. The highlights included the defining of the 138 Zone, the first intercept of massive sulphide veins in meta-sediments in what is referred to as the 164 Zone (located approximately 1.5 km south of the 138 Zone), and further encountering of disseminated mineralization to the north of the Tamarack Resource Area.

Table 6.1: Breakdown of Drilling Conducted by Kennecott to 2013

Year	Number of Holes	Metres	Targets
2002	1	276	CGO Bend
2003	8	2,009	Tamarack, CGO Bend, 221 Zones
2004	3	915	Tamarack, 221 Zone, 164 Zones
2007	13	3,082	Tamarack and CGO Bend Zones
2008	51	19,286	Tamarack, CGO Bend, 221, 480 Zones
2009	15	5,215	Tamarack, 164, CGO Bend, 480 Zones
2010	20	7,347	Tamarack, 142, 164, CGO Bend, 221, 480 Zones
2011	5	1,857	Tamarack, CGO Bend, 480 Zones
2012	27	13,683	Tamarack, 164, 142 Zones
2013	39	13,378	Tamarack, CGO Bend, 142, 164 Zones
2014	12	7,297	Tamarack, CGO Bend, 480 Zones
2015	16	10,242	164 Zone, 221 Zone, 480 Zones, 226 Zones, Bowl, Neck
2016	30	21,588	Tamarack, Neck, 221 Zone, CGO Bend
2017	12	5,455	480 Zones, 221 Zone, 164 Zone
2018	4	2,868	221 Zone, 480 Zones
2019	0	0	
TOTAL	256	114,498	

Note: Due to pre-collared holes (OB) existing in one year and the full cored hole not drilled/completed till a following campaign, the hole completion date has been used as the qualifier for Year and Metreage drilled.

Figure 6.1: Plan View Showing the Locations of the Holes Drilled between 2002 and 2013 at Tamarack North

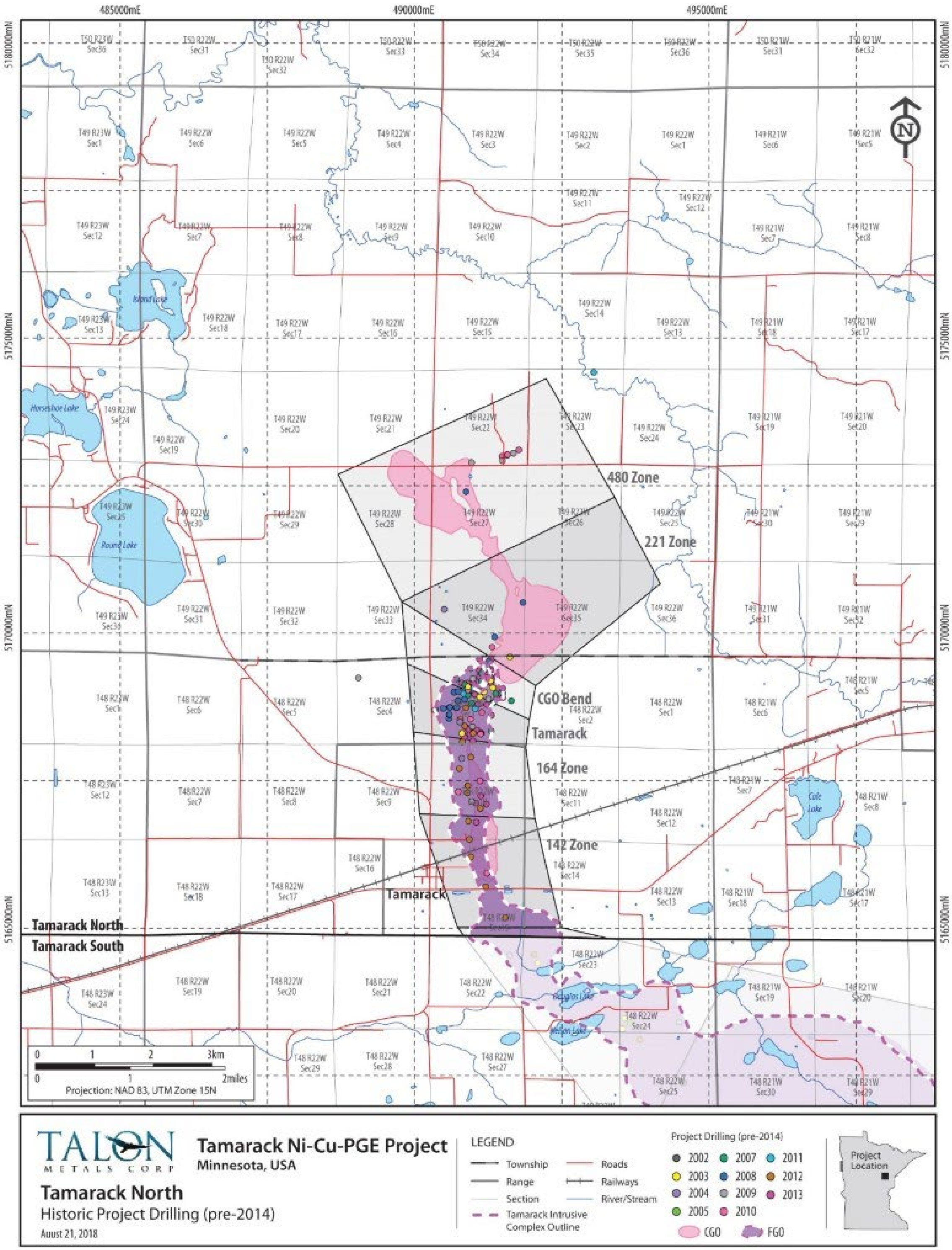
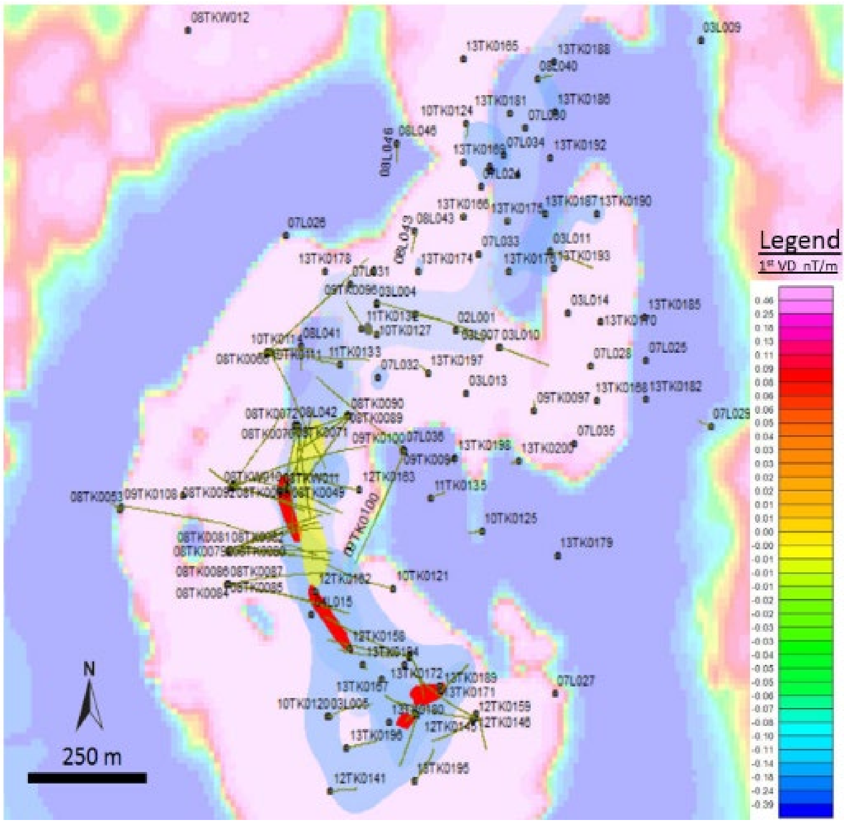


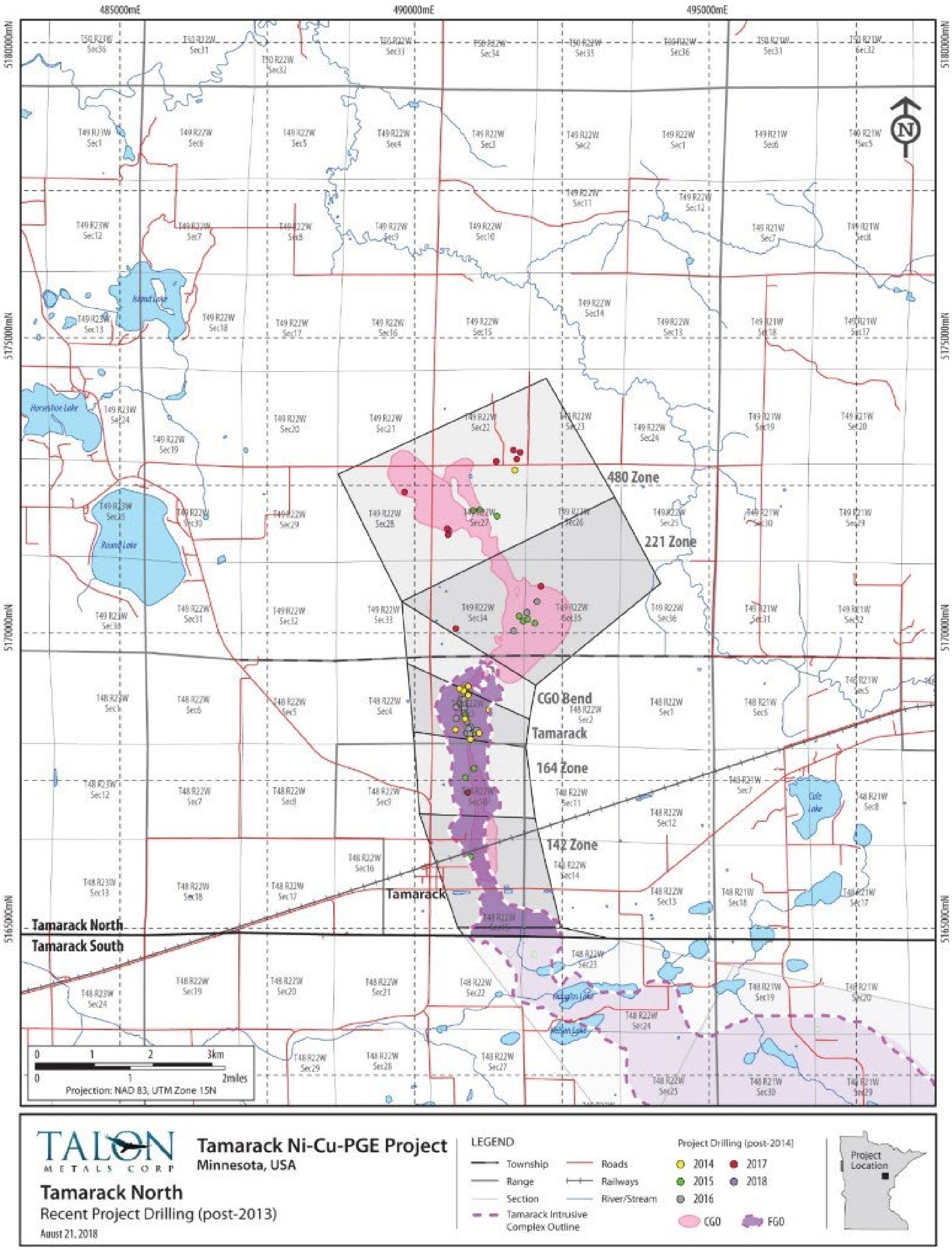
Figure 6.2: Enlarged Map Showing Localities of Drill Holes, in the Tamarack North Project (background 1VD magnetic image). Modified from Kennecott Internal Report and Survey Data, 2013



6.3 Kennecott-Talon Drilling Programs (2014-2018)

The drilling programs conducted by Kennecott (in its capacity as Operator under the 2014 Tamarack Earn-in Agreement) were generally focused on the discovery of large tonnage economic Ni-Cu mineralization compliant with a Rio Tinto Tier One target (large, long-lived, low cost and upper quartile of worldwide commodity specific deposits). Subsequently however, the drilling targeted a wide range of purposes: 1) new targets based on current geologic models, 2) new targets based on geophysical characteristics but no lithologic knowledge, 3) extrapolation of existing mineralization, and 4) infill/delineation of existing mineralization.

Figure 6.3: Plan View Showing the Locations of the Holes Drilled between 2014 and 2019 at Tamarack North



The 2014 drilling season saw 12 new holes drilled primarily concentrated in the Tamarack Resource Area; extension of the MSU/SMSU was the primary focus. The continuation of the CGO intrusion between the Tamarack and 164 Zones was also tested. A single hole in the 480 Zone tested a magnetic low (Figure 6.3).

The 2015 drilling season saw 10 new holes drilled, one historical hole deepened, and two holes pre-collared through overburden (OB) (Table 6.2 notes). 12LV0143 was deepened due to a reinterpreted borehole electromagnetic (BHEM) suggesting the possibility of a CGO intrusion at depth. The 480 Zone was tested targeting further magnetic lows. Several holes in the 221 Zone tested newly discovered mineralization within a thin "FGO-Like" brecciated intrusion that occurred at the contact between a thick overlying CGO intrusion and the host sedimentary (SED) Thomson Formation. The remaining holes tested for a continuation of the CGO intrusion south of the Tamarack Resource Area within the 164 and 142 Zones (Figure 6.3).

2016 drilling saw an aggressive campaign where 19 new holes and four new wedge (daughter) holes were drilled, and a previously pre-collared hole (15TK0220) was completed. Further drilling testing the newly recognized, but thin mineralization at the base of the CGO intrusion continued in the 221 and CGO Bend Zones. The rest of the drilling was devoted to extending MSU and infilling both the existing MSU and SMSU mineralization.

The 2017 drilling program consisting of 12 holes was primarily focused to the north of the 221 Zone with the exception of one hole located to the far west of the 221 Zone and another in the 164 Zone (Figure 6.3 for locations). One hole consisted of a pre-collared depth (OB). Four holes were focused on extending previously identified (2009-2010) shallow mineralization within the 480 Zone. Two holes were in the previously untested western 480 Zone and targeted a negative magnetic anomaly and a high gravity anomaly. Two holes located southwest of the 480 Zone targeted negative magnetic and low gravity anomalies. One hole located to the extreme north of the 221 Zone was targeted as a significant step-out of the existing thin, deep basal mineralization that is characteristic of the 221 Zone. Drill hole 17TK0261 targeted a high gravity anomaly approximately 670 m west of the Talon-modelled CGO intrusion. The final hole within the 164 Zone targeted a potential basal depression in the Talon-modelled FGO intrusion interpreted from gravity and magnetic data.

The 2018 campaign saw four holes drilled: one new hole in the 480 Zone and three wedge holes in the 221 Zone. The 480 Zone hole followed up on a DHEM anomaly from previous drilling. The three wedge holes in the 221 Zone were 25 to 35 m step-outs from hole 15TK0229 looking for extensions of known MSU mineralization.

No drilling was completed in 2019.

Table 6.2: Breakdown of Drilling Conducted by Kennecott pursuant to the 2014 Tamarack Earn-in Agreement

Year	Number of Holes	Metres	Targets
2014	12	7,298	Tamarack, CGO Bend and 480 Zones
2015	12	7,580	480, 221, Tamarack, 164, and 142 Zones
2016	24	13,596	Tamarack, CGO Bend, and 221 Zones
2017	12	5,456	480, 221, and 164 Zones
2018	4	1,383	480 and 221 Zones
TOTAL	**64**	**35,313**	

*Hole 12LV0143 was deepened by 494.5m in 2015.

Note: Due to pre-collared holes (OB) existing in one year and the full cored hole not drilled/completed till a following campaign, the hole completion date has been used as the qualifier for Year and Metreage drilled.

6.4 Historical Mineral Resource Estimates (MREs)

On October 6, 2014, Talon published a maiden NI 43-101 Technical Report and MRE (effective date August 29, 2014) for the Tamarack North Project, as summarized in Table 6.3. The resource estimates were estimated using modern block modelling techniques in accordance with existing CIM best practise guidelines, at the time of reporting, and were reported in accordance with NI 43-101. These estimates are no longer current and have been superseded. The QP has not completed sufficient work for them to be considered as being current.

Table 6.3: Historical Tamarack North Project Maiden Resource Statement (Effective Date August 29, 2014)

Domain	Mineral Resource Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
SMSU	Indicated Mineral Resource	3,751	1.81	1.00	0.05	0.41	0.25	0.19	2.35
SMSU	Inferred Mineral Resource	949	1.12	0.62	0.03	0.25	0.16	0.14	1.47
MSU	Inferred Mineral Resource	158	5.25	2.47	0.11	0.66	0.44	0.22	6.42
138 Zone	Inferred Mineral Resource	2,012	0.95	0.78	0.03	0.23	0.14	0.17	1.33
TOTAL	**Indicated Mineral Resource**	**3,751**	**1.81**	**1.00**	**0.05**	**0.41**	**0.25**	**0.19**	**2.35**
TOTAL	**Inferred Mineral Resource**	**3,119**	**1.22**	**0.82**	**0.03**	**0.26**	**0.16**	**0.16**	**1.63**

Notes: All resources reported above a 0.9% NiEq cut-off.

Mining recovery and dilution factors have not been applied to the estimates.

Tonnage estimates are rounded down to the nearest 1,000 tonnes.

Estimates do not include metallurgical recovery.

*Where used in this MRE, NiEq% = Ni%+ Cu% x 2.91/9.20 + Co% x 14/9.20 + Pt [g/t]/31.103 x 1,400/9.2/22.04 + Pd [g/t]/31.103 x 600/9.2/22.04 + Au [g/t]/31.103 x 1,300/9.2/22.04

An updated Mineral Resource statement estimate was publicly disclosed in a press release (effective dated April 3, 2015) entitled "Talon Metals Announces 167% Increase in Tonnage for the Inferred Massive Sulphide Resource, and an Increase in Grade from 6.42% to 7.26% NiEq in the Massive Sulphide Unit at Tamarack" resulting from an increase in the MSU inferred mineral resource (see Table 6.4). A technical report was not published at the time, as the increase was determined not to be material to the overall project tonnage. The resource estimates were estimated using modern block modelling techniques in accordance with existing CIM best practise guidelines, at the time of reporting, and were reported in accordance with NI 43-101. These estimates are no longer current and have been superseded. The QP has not completed sufficient work for them to be considered as being current.

Table 6.4: Historical Tamarack North Project Updated MRE (Effective Date April 3, 2015)

Domain	Mineral Resource Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
SMSU	Indicated Mineral Resource	3,751	1.81	1.00	0.05	0.41	0.25	0.19	2.35
SMSU	Inferred Mineral Resource	949	1.12	0.62	0.03	0.25	0.16	0.14	1.47
MSU	Inferred Mineral Resource	422	6.00	2.48	0.013	0.78	0.53	0.26	7.26
138 Zone	Inferred Mineral Resource	2,012	0.95	0.78	0.03	0.23	0.14	0.17	1.33
TOTAL	**Indicated Mineral Resource**	**3,751**	**1.81**	**1.00**	**0.05**	**0.41**	**0.25**	**0.19**	**2.35**
TOTAL	**Inferred Mineral Resource**	**3,386**	**1.63**	**0.94**	**0.04**	**0.31**	**0.19**	**0.17**	**2.11**

Notes: All resources reported above a 0.9% NiEq cut-off.
Mining recovery and dilution factors have not been applied to the estimates.
Tonnage estimates are rounded down to the nearest 1,000 tonnes.
Estimates do not include metallurgical recovery.
*Where used in this MRE, NiEq% = Ni%+ Cu% x 2.91/9.20 + Co% x 14/9.20 + Pt [g/t]/31.103 x 1,400/9.2/22.04 + Pd [g/t]/31.103 x 600/9.2/22.04 + Au [g/t]/31.103 x 1,300/9.2/22.04

An updated Mineral Resource statement estimate was publicly disclosed in a technical report and published in a news release (effective dated February 15, 2018) entitled "Talon Metals Files Updated National Instrument 43-101 Technical Report on the Tamarack North Project" resulting from an increase in the MSU inferred mineral resource (see Table 6.5). The resource estimates were estimated using modern block modelling techniques in accordance with existing CIM best practise guidelines, at the time of reporting, and were reported in accordance with NI 43-101. These estimates are no longer current and have been superseded. The QP has not completed sufficient work for them to be considered as being current.

Table 6.5: Historical Tamarack North Project Updated Resource Statement (Effective Date February 15, 2018)

Domain	Mineral Resource Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
SMSU	Indicated Resource	3,639	1.83	0.99	0.05	0.42	0.26	0.2	2.45
Total	**Indicated Mineral Resource**	**3,639**	**1.83**	**0.99**	**0.05**	**0.42**	**0.26**	**0.2**	**2.45**
SMSU	Inferred Mineral Resource	1,107	0.9	0.55	0.03	0.22	0.14	0.12	1.25
MSU	Inferred Mineral Resource	570	5.86	2.46	0.12	0.68	0.51	0.25	7.24
138 Zone	Inferred Mineral Resource	2,705	0.95	0.74	0.03	0.23	0.13	0.16	1.38
Total	**Inferred Mineral Resource**	**4,382**	**1.58**	**0.92**	**0.04**	**0.29**	**0.18**	**0.16**	**2.11**

Notes: All resources reported at a 0.83% NiEq cut-off.
No modifying factors have been applied to the estimates
Tonnage estimates are rounded to the nearest 1,000 tonnes.
Metallurgical recovery factored into the reporting cut-off
*Where used in this MRE, NiEq% = Ni%+ Cu% x $3.00/$8.00 + Co% x $12.00/$8.00 + Pt [g/t]/31.103 x $1,300/$8.00/22.04 + Pd [g/t]/31.103 x $700/$8.00/22.04 + Au [g/t]/31.103 x $1,200/$8.00/22.04

An updated MRE was publicly disclosed in PEA #3 and published in a press release (effective date of January 8, 2021) entitled “Talon Metals Announces Updated PEA on the Tamarack North Project: After-tax NPV Increases 96% to US$569 Million” resulting from a conversion of a portion of the MSU from Inferred to Indicated mineral resource (see Table 6.5). The resource estimates were estimated using modern block modelling techniques in accordance with the CIM Estimation of Mineral Resources and Mineral Reserves Best Practise Guidelines (2019) and were reported in accordance with NI 43-101. These estimates are no longer current and have been superseded. The QP has not completed sufficient work for them to be considered as being current.

Table 6.6: Historical Tamarack North Project MRE (Effective Date January 8, 2021)

Domain	Classification	%Ni Cut-Off	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
Upper SMSU	Indicated Resource	0.5	1,462	1.32	0.78	0.04	0.17	0.11	0.11	1.81
Lower SMSU	Indicated Resource	0.5	2,340	2.08	1.10	0.05	0.55	0.34	0.25	2.87
MSU	Indicated Resource	0.5	124	5.72	2.36	0.12	0.60	0.46	0.23	7.23
Total	**Indicated Resource**	0.5	**3,926**	**1.91**	**1.02**	**0.05**	**0.41**	**0.26**	**0.20**	**2.62**
Upper SMSU	Inferred Resource	0.5	2,652	0.76	0.47	0.02	0.25	0.14	0.12	1.10
Lower SMSU	Inferred Resource	0.5	115	0.86	0.51	0.02	0.57	0.36	0.24	1.34
MSU	Inferred Resource	0.5	443	5.93	2.52	0.12	0.70	0.52	0.26	7.53
138	Inferred Resource	0.5	3,953	0.82	0.63	0.02	0.21	0.12	0.14	1.21
Total	**Inferred Resource**	0.5	**7,163**	**1.11**	**0.68**	**0.03**	**0.26**	**0.16**	**0.14**	**1.57**

Notes: All resources reported at a 0.5% Ni cut-off.
No modifying factors have been applied to the estimates.
Tonnage estimates are rounded to the nearest 1,000 tonnes.
Metallurgical recovery factored into the reporting cut-off.
Where used in this MRE, NiEq% = Ni%+ Cu% x $3.00/$8.00 + Co% x $25.00/$8.00 + Pt [g/t]/31.103 x $1,000/$8.00/22.04 + Pd [g/t]/31.103 x $1,000/$8.00/22.04 + Au [g/t]/31.103 x $1,300/$8.00/22.04. No adjustments were made for recovery or payability in the calculation of NiEq.

The 2014, 2015, 2018 and 2021 historical MREs are no longer current and the QP has not completed sufficient work to consider either the 2014, 2015, 2018 or 2021 MREs as current and therefore, they should not be relied upon.

The 2014, 2015, 2018 and 2021 historical estimates were reported in accordance with NI 43-101. The MREs followed the CIM Estimation of Mineral Resource and Mineral Reserves Best Practices Guidelines (November 2003, November 2019) and were classified according to CIM Definition Standards for Mineral Resources & Mineral Reserves (May 2014).

The MREs were derived using a geostatistical block modelling approach based on linear interpolation of the drill hole assay data available at the time of reporting.

A detailed chronology of business agreements, decisions, and developments between Kennecott and Talon with respect to the Tamarack North Project is contained in Item 4.0.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geological Setting; Introduction

The TIC, (minimum age of 1105 Ma+/-1.2 Ma, Goldner 2011) is an ultramafic to mafic intrusion, hosting Ni-Cu-Co sulphide mineralization with associated PGEs and Au, that formed during the early evolution of the Mesoproterozoic mid-continental rift (MCR). The TIC intruded into slates and greywackes of the Thomson Formation of the Animikie Group, which formed as a foreland basin during the Paleoproterozoic Penokean Orogen (approximately 1.85 Ga, Goldner 2011). The TIC has subsequently been completely buried beneath approximately 30 to 60 m of Quaternary age glacial and fluvial sediments.

The lack of outcrop has limited the understanding of the TIC in its regional geological context relative to its location in the deformed southern margin of the Animikie Basin. The TIC is intruding part of the Penokean accreted terrain, based on U-Pb dating of the CGO intrusion (Goldner, 2011). The TIC intrudes deformed sediments deposited in the foreland basin of the accreted terrane, which likely was in turn dissected by subsequent rifting associated with the MCR, leading to a complex geological setting. The regional geological setting is described below within the context of the major depositional periods and tectonic events (Figure 7.1 and Figure 7.2).

Figure 7.1: Major Depositional Periods and Structural Events Affecting Geological Emplacement and History of the TIC - Modified After Lundin Mining Corporation (2013)

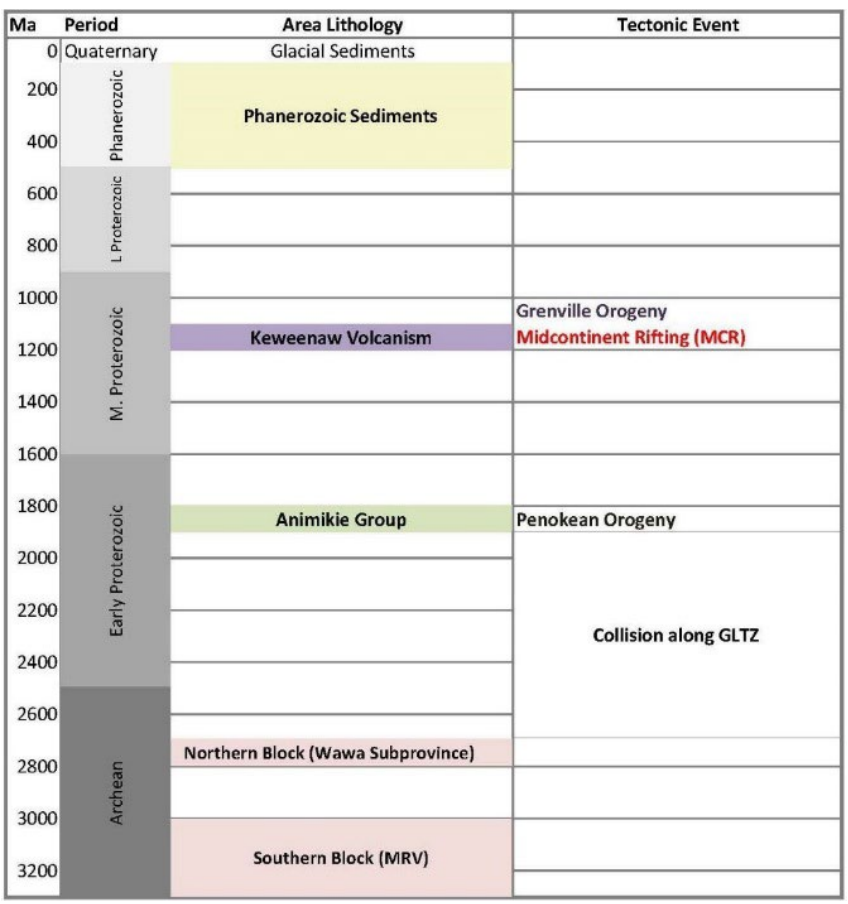
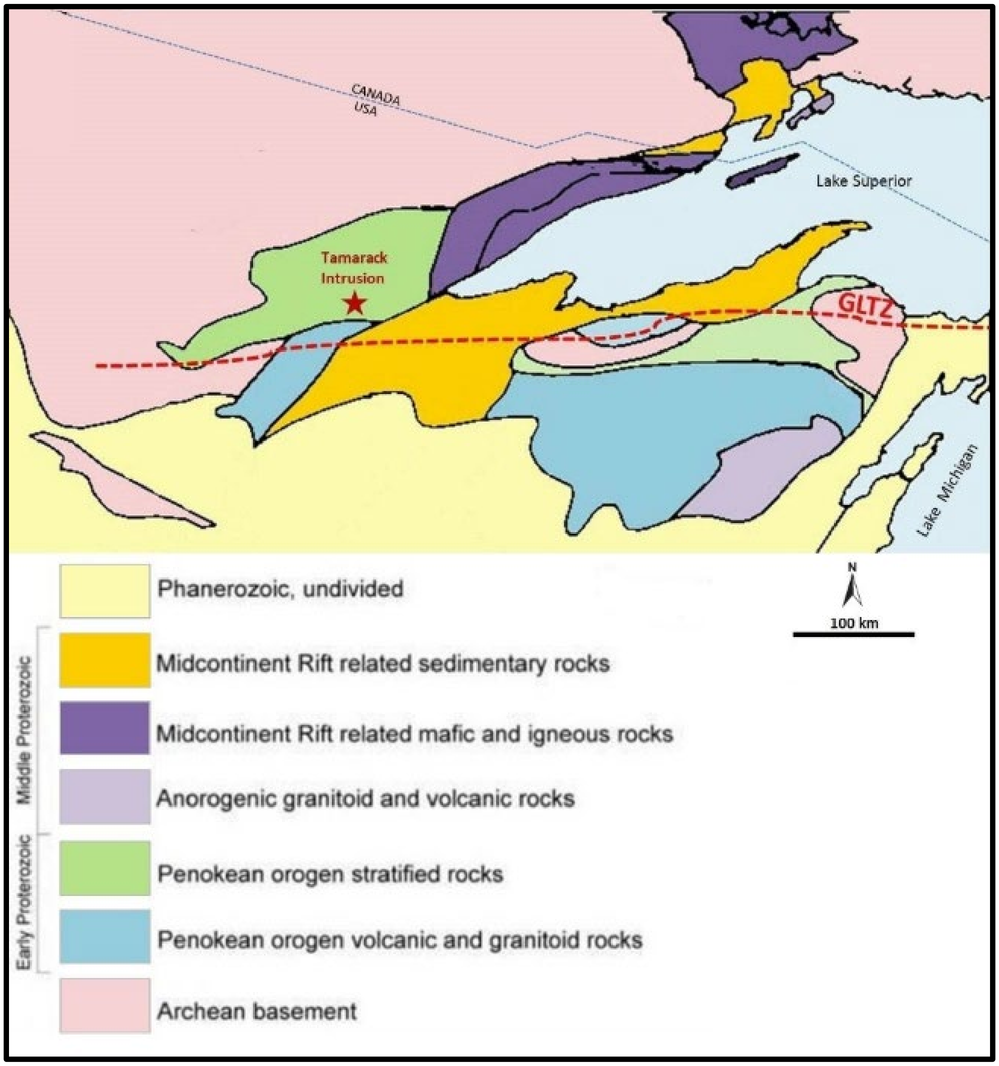


Figure 7.2: Regional Geological and Tectonic Setting for the TIC. The Great Lakes Tectonic Zone (GLTZ) Structure Represents an Inferred Position Due to Younger, Overlying Lithology - Modified from Khirkham (1995) and Lundin Mining Corporation (2013)



7.1.1 Archean Stratigraphy and the Great Lakes Tectonic Zone (GLTZ)

Archean basement and supra-crustal rocks underlie the Paleoproterozoic Animikie SED Basin. The nearest outcrop of Archean basement rocks is located 35 km south of the TIC in the McGrath gneiss dome. In western Minnesota, the Archean is divided into an older, southern block referred to as the Minnesota River Valley (MRV) Terrane and the northern Wawa Sub-province of the Archean Superior Craton (Figure 7.1).

The southern Paleoarchean MRV Terrane comprises 3.3 Ga gneiss and predominantly Middle Archean aged migmatite and amphibolite, intruded by Late Archean granitoids.

The northern Wawa Sub-province comprises late Archean (2.6-2.7 Ga) supra-crustal rocks intruded by a variety of intrusions. Wawa Sub-province rocks are believed to form the basement beneath the southern part of the Animikie Basin at Tamarack.

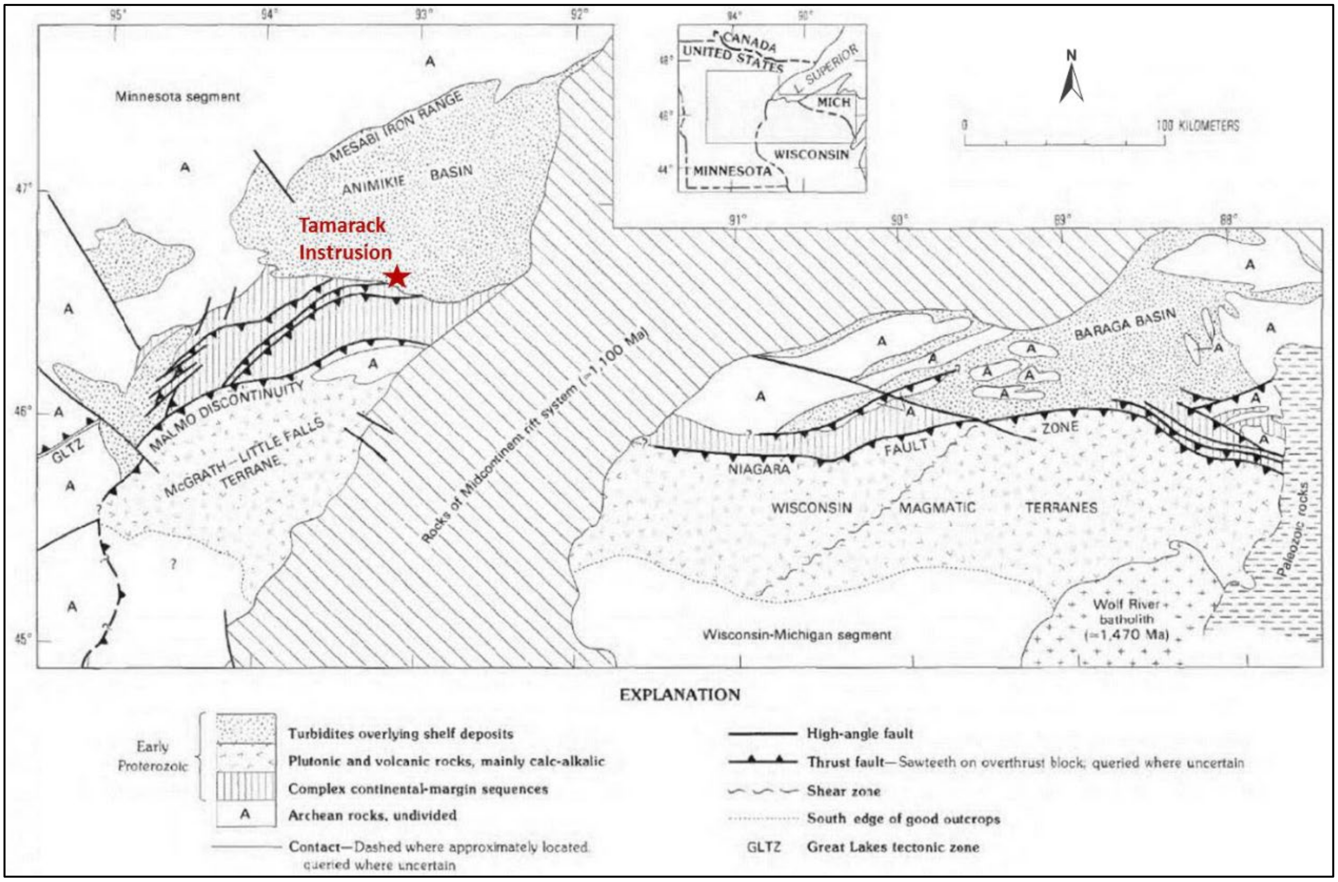
A broad east-west striking regional structural zone marks the boundary between the MRV Terrane and the Wawa Sub-province and is referred to as the Great Lakes Tectonic Zone (GLTZ) (Figure 7.2). The GLTZ can be inferred eastward from western Minnesota into northern Michigan. Kinematic analysis in the only known outcrop of the GLTZ south of Marquette, Michigan, suggests the GLTZ dips steeply southward at this location, and that vergence was to the northwest, indicative of an oblique collision that brought the Paleoarchean rocks over the younger Archean rocks of the Wawa Sub-province (Sims et al., 1993) approximately between 2,692-2,686 Ma (Schneider et al., 2002).

Possible structures related to the GLTZ may have localized other Paleoproterozoic SED basins and later MCR related intrusions in the region (Owen et al., 2013). Although the exact location of GLTZ beneath the Animikie Basin is uncertain, it has been interpreted by Holm et al. (2007) to occur just south of the TIC. Based on this interpretation it may be possible that the GLTZ played a role in the localization of the Tamarack intrusion.

7.1.2 Paleoproterozoic; the Animikie Basin and the Penokean Orogen

The depositional and tectonic history of the Penokean Orogen is dated at around 1.85 Ga and in Minnesota consists of two main components: one is a fold and thrust belt representing an accreted terrain to the south, while the other is a foreland basin (Animikie Basin) formed to the north as a result of a collision between the continental margin of the Archean Superior Province Craton and the Pembine-Wausau oceanic arc (Southwick et al., 1988, 1991; Schulz and Cannon, 2007) (Figure 7.3).

Figure 7.3: Location of TIC in Relation to MCR and Southern Boundary of the Animikie Basin with Tectonic Imbrication and Foredeep Development of the Penokean Orogen.



Note: Interpretation based on Regional Geophysics and Results of Test-Drilling by Southwick et al., 1991.

In east-central Minnesota, the Animikie Group sediments unconformably overlie the more intensely deformed North Range Group and Mille Lacs Group and the Archean basement. The Animikie Group sediments include the basal quartzite and conglomerate of the Pokegama Formation; the Biwabik banded iron formation and inter-bedded argillite, siltstone and sandstone of the Virginia Formation which are exposed in the iron ore mines of the Mesaba Iron Range along the northern margin of the Animikie Basin. In the north part of the basin these sediments are weakly metamorphosed. Metamorphism and deformation increase towards the south where similar sediments have a well-developed axial planer foliation and are folded into north verging upright folds that become increasingly tighter and possibly overturned along the south margin of the basin. These more deformed and metamorphosed sediments are referred to as the Thomson Formation and have been interpreted to be the deformed equivalents of the Virginia Formation (Severson et al, 2003). Boerboom (2009) has subdivided the Thomson Formation into Upper and Lower sequences. The Lower sequence comprises carbonaceous siltstone and mudstone that is locally sulphide rich, and a proposed source for the sulphide in the TIC. The Upper Thomson consists of turbidite-like siltstone and sandstone.

At the Tamarack North Project, the TIC is hosted within the Upper Thomson Formation. The Lower Thomson Formation, which is interpreted to underlie the TIC at depth, sub-crops to the south of the Tamarack North Project and dips towards the north (beneath the Upper Thomson Formation). A prominent seismic reflector under the TIC deposit at a depth of 4.6 to 4.8 km may represent the unconformity of the crystalline basement or potentially the base of the Lower Thomson Formation in the TIC area (Goldner 2011).

7.1.3 Mesoproterozoic Mid-Continental Rift (MCR)

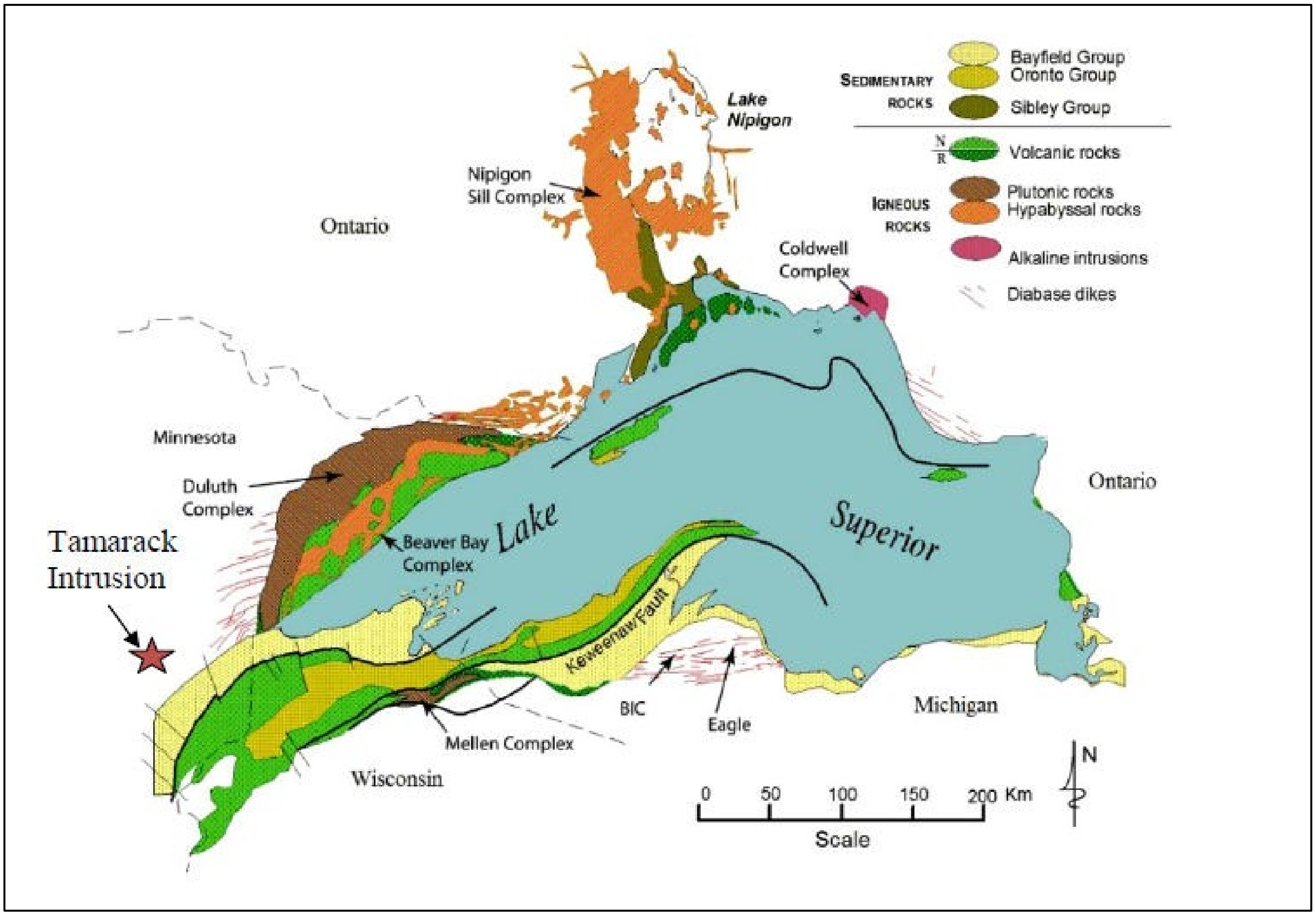
The Mesoproterozoic MCR is represented by a large igneous province that formed from intra-continental rifting at approximately 1.1 Ga (Hutchinson et al., 1990) as a result of mantle plume convection. The MCR extends along a 2,000 km arcuate path from the Lake Superior region to the southwest as far as Kansas and to the southeast beneath Lower Michigan (Hinze et al., 1997). Although only exposed in the Lake Superior area, the extent of the MCR beneath younger cover can be interpreted from its pronounced gravity and aeromagnetic signature.

In the Lake Superior region, the Keweenaw Flood Basalt province represents the exposed portion of the MCR system. Seismic data indicates the rift below Lake Superior contains more than 25 km of volcanic rocks buried beneath up to 8 km of rift sediments (Bornhorst et al., 1994).

The Keweenaw Flood Basalt province was formed over a period of approximately 23 Ma (Miller and Vervoort, 1996) and shows various magnetic polarity reversals. Volcanism occurred in distinct phases, with an earlier phase dominated by low alumina basalts (<15% Al_2O_3) that includes both olivine and pyroxene phyric picrites. These may have been derived from primitive magmas tapping a deep mantle source. The later volcanic phases are dominated by high alumina basalts (>15% Al_2O_3) consistent with Mid Ocean Ridge Basalt chemistry. The evolution of the MCR closely resembles that of other large igneous provinces such as the North Atlantic Igneous Province and the Siberian Traps. In the North Atlantic Igneous Province, picritic volcanic rock associated with an early phase of “plateau like” flood basalts, are spread out over an area of 2,000 km (Larsen et al., 2000).

In addition to the extrusive rocks, a large volume of intrusive rocks was emplaced that include the Duluth Complex, the Mellen Complex, the Coldwell Complex, the Beaver Bay Complex, and the Nipigon Sill Complex, in addition to numerous dyke swarms and sills that may have acted as feeders for lava flows along the flanks of the rift. The TIC is one of the numerous smaller satellite intrusions including Eagle; Echo Lake; Bovine Intrusive Complex intrusions in upper Michigan; the Coldwell Complex near Marathon, Ontario; the Seagull Lake; Kitto, and Disraeli Lake intrusions in the Lake Nipigon area; and the Crystal Lake Gabbro in the Thunder Bay area (Goldner 2011, Figure 7.4). Many of these smaller intrusions, relative to the MCR volcanics, are falling within the same time frame, occur distally, and have more primitive melt signatures. They are interpreted to represent the early evolution of the MCR.

Figure 7.4: Locality of TIC and Geology of Lake Superior Region with Location of Other Intrusive Components of the MCR (Goldner 2011, Modified from Miller et al., 1995)



The MCR was terminated by a compressional tectonic phase resulting in the inversion of original, graben bounding, normal faults, into reverse faults. The compressional event has been interpreted be the result of the Grenville Orogeny, which may have started as early as 1080 Ma and was probably completed by 1040 Ma (Bornhorst et al., 1994). The orogeny resulted in rotation of blocks towards the rift axis with local sediments derived from the erosion of uplifted horst blocks (e.g., Hinckley Sandstone formation in Minnesota). There is currently no evidence to suggest that the TIC has been affected by this rotational event.

7.1.4 Cretaceous

Cretaceous sediments that include fluvial conglomerates and sandstones, overlain by transgressive tidal flats deposits (including lignite layers) and progressively deeper marine sediments representing a transgression, are preserved in western and central Minnesota. These sediments often overlie a well-developed paleo-lateritic weathering profile. At Tamarack, Cretaceous siltstone and sandstone unconformably overlie parts of the TIC in the north. A layer of Kaolinitic mudstone up to 30 m thick occurs in the northeast portion of the TIC and is similar to other deposits that have been mined in the MRV for manufacturing brick and tiles.

7.1.5 Quaternary

Thick glacial-lacustrine deposits cover most Minnesota including the Tamarack area. These deposits are a complex sequence of lobes representing multiple glacial advances and retreats that occurred during the last Pleistocene glaciation from 10,000 to 100,000 years ago. Fluvial reworked glacial sediments and varved clay layers occur between various lobe layers. Varved clay layers underlie widespread peat bogs in the Tamarack area. These layers are likely to have been deposited in Glacial Lake Upham which covered much of northeast Aitkin County.

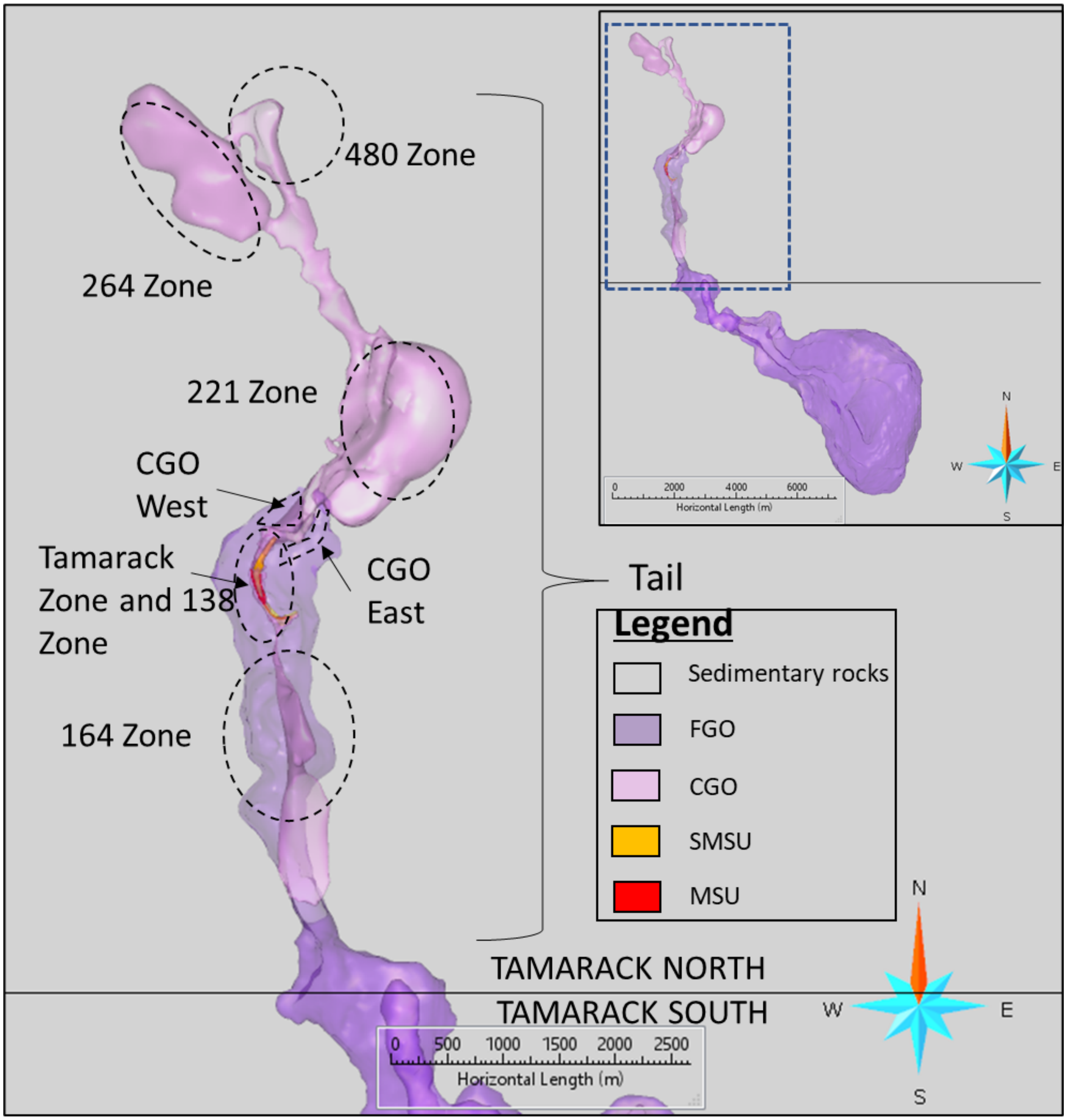
7.2 Property Geology

7.2.1 Introduction

The TIC consists of a multistage magmatic event composed of a mafic to ultramafic body that is associated with the early evolution of the MCR (with the youngest intrusion dated at 1105 Ma +/- 1.2 Ma, Goldner, 2011). This age is significantly older than other Duluth Complex Intrusions, which consistently date at 1099 Ma. The TIC is consistent with other earlier intrusions associated with the MCR in that they are often characterized by more primitive melts.

The TIC has intruded into Thomson Formation siltstones and sandstones of the Animikie Group and is preserved beneath remnant shallow Cretaceous fluvial and tidal sediments and Quaternary glacial sediments which unconformably overlie the intrusion. The geometry of the TIC, as outlined by the well-defined aeromagnetic anomaly (Figure 7.5), consists of a curved, elongated intrusion striking north-south to southeast over 18 km. The configuration has been likened to a tadpole shape with its elongated, northern tail up to 1 km wide and large, 4 km wide, ovoid shaped body in the south (Figure 7.5). The over 7 km long northern portion of the TIC (the Tamarack North Project) is the focus of this resource update technical report and hosts the currently defined resource and identified exploration targets.

Figure 7.5: Interpreted Bedrock Geology Map Showing 18 km Long Strike of TIC with Long Narrow Intrusion that Hosts Currently Defined Mineralization Termed "Tail" forming Tamarack North Project (Kennecott Aeromagnetic Survey, Modified by Talon, 2017)



7.2.2 Paleoproterozoic (Thomson Formation)

The TIC intrudes into a folded and metamorphosed (greenschist facies) sequence of siltstone and sandstone turbiditic sediments of the Upper Thomson Formation that dip shallowly towards the north. Contact metamorphism peripheral to the TIC ranges from granoblastic to spotted hornfels and partial melting. Observations from core at the Tamarack North Project indicate that SED and structural fabrics have largely been obliterated by the contact metamorphism.

7.2.3 Overview of the Tamarack North Project

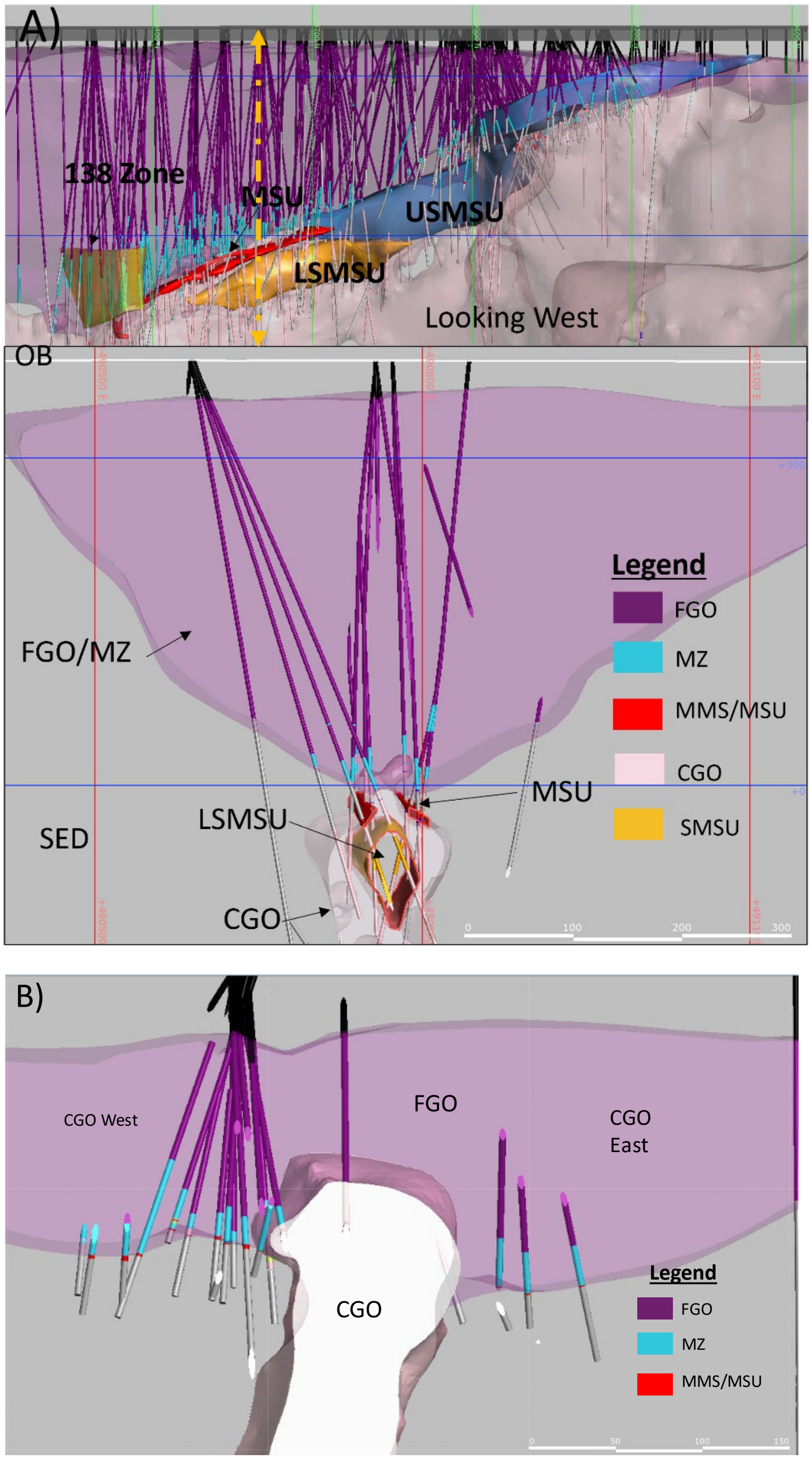
The Tamarack North Project has been interpreted to consist of at least two and possibly three separate phases of intrusions based on contact relationships and textural and geochemical differences. The two main intrusive distinguishable phases include an FGO that forms the wider, upper part of the intrusion in the mid and southern part of the tail; and a coarse grained, dyke-like intrusive phase of CGO. The CGO intruded along structures and underplated the base of the FGO in the form of a keel that sub-crops as a result of pre-Cretaceous erosion in the north of the 'tail' area. North of the Tamarack Resource Area, the CGO intrusive extends in a curvilinear shape with a north-south orientation. In some areas (i.e., 221 Zone), the CGO appears to over-plate an FGO-like intrusion. The recent 3D (Three Dimensional) inversion geological model using Magnetic and Gravity surveys best exemplifies the nature of the CGO intrusion (see Figure 7.5).

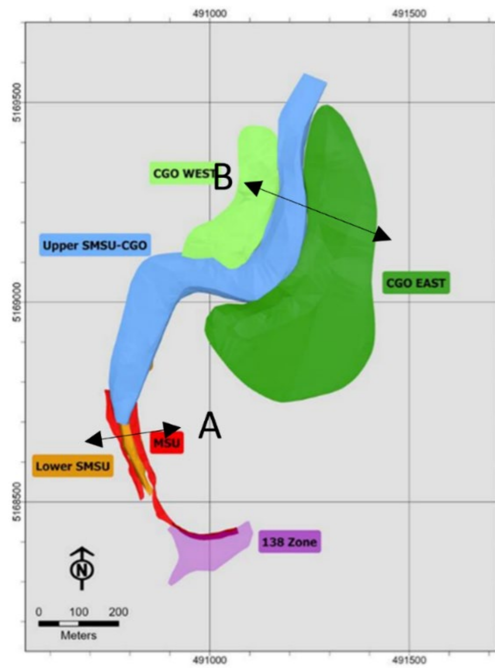
Associated with the contact between these two intrusions is also a hybrid phase: the MZNO. The MZNO geochemical signature resembles that of the FGO, however its mineralogy is slightly different with possible country rock contamination associated with possible sediment assimilation by FGO magma. It is interpreted that the MZNO represents a contaminated FGO by thermal erosion of the country rock sediments; thus, in the geological model, both lithologies have been combined into single one: the FGO (Figure 7.6:). Sulphide mineralization occurs within various lithological settings but is primarily associated near the FGO/CGO contact, within the 138 Zone, along the CGO/Sediment contact (Figure 7.6:A), and along the MZ-FGO/Sediment contact in the CGO East and West (Figure 7-6B). More specifically, these zones are the SMSU (occurring in the upper part of the CGO near the FGO contact); the MSU (hosted within sediment but proximal to the FGO/CGO contact); and the 138 Zone (occurs south of the SMSU and within a large zone of MZNO).

Other less developed exploration targets with defined mineralization include the shallow mineralization within the 480 Zone towards the northern part of the 'tail', the 164-style mineralization in the 164 Zone towards the southern end of the 'tail', widespread disseminated to mixed massive sulphide (MMS) mineralization developed at shallow depths in the FGO, north of the SMSU mineralization, and disseminated sulphide mineralization hosted in the CGO extending north of the SMSU, both known as the CGO Bend Zone.

The TIC consists of a tilted intrusion dipping to the south and east based on the magmatic layering observed in the FGO. The FGO is eroded progressively towards the north exposing the CGO north of the Tamarack North Project (Figure 7.5). However, evidence for tectonic block rotation as a cause for this apparent dip has not been conclusively proven.

Figure 7.6: Plan, Long Section (S-N) and Cross Section Showing Main Components of Tamarack North Project Resource Area





Note: A) Longitudinal and cross-section though the Main zone, including CGO at Base Intruding Dyke-Like Beneath FGO in Shape of a Keel. MZ intrusive occurs near interface of the two intrusions. Mineralization in SMSU occurs at top of the CGO, MSU occurs in what is interpreted as a wedge of remnant wall rock. In 138 Zone to the south of this section matrix and disseminated mineralization occurs in the MZ. Horizontal gridlines are mASL, and B) plan view and section through the CGO West and East showing the relationship between the FGO-MZ and footwall contact with the meta-sedimentary, the emplacement of the mixed and massive sulphide (MMS/MSU).

7.2.4 Intrusion Types

The different intrusions of the Tamarack North Project include the following.

7.2.4.1 FGO

The FGO is a chonolithic intrusion that forms an elongated, south plunging, gutter-shaped intrusion primarily in the center and south portions of the Tamarack North Project and is progressively eroded to the north. To the north, in the 480 Zone, the FGO intrusion appears to have a more complex plumbing system and does not appear to have been as affected by erosion. The FGO intrusion is approximately 1 km wide at its erosional surface and up to 475 m thick. The intrusion is composed primarily of dunite/peridotite with FGO. The olivine (forsterite (Fo) at 70-86%, Goldner, 2011) decreases in modal amount downward towards the basal contact. The FGO intrusion is magmatically layered and defined by specific geochemical markers. The Magmatic layering dips to the south at 8° to 12°. The magmatic layering is observed in Geochemical profile which consists of, from base to top, a Basal FGO, Mid-Lower FGO, FGO cumulate, Intermediate FGO, and upper FGO. In the northern part of the FGO intrusion, the contact zone with sediments (country rock) is marked by a FGO and MZNO lithology. The Ni content of olivine is relatively low as plotted on a Ni vs Fo plot (Figure 7.7). Mineralization can occur as disseminated, MMS, or blebby sulphides near or at the base of the FGO. When comparing Ni content of olivine vs the Mg number, we can determine that the FGO was sulphur saturated and likely provided the metals to form the mineralization within the FGO Zone/CGO;

7.2.4.2 CGO

The CGO intrusion (age dated at 1105 Ma +/- 1.2 Ma) is currently interpreted as a separate, younger intrusion than the FGO. Observation of chilling against the FGO, coupled with FGO-like xenoliths, SED and MSU within CGO, and magnetic field reversal corresponding to CGO magnetic polarity overprinting in part of the magnetic signature of the FGO, all indicate that the CGO post-dates the FGO. In the Tamarack Resource Area, the CGO behaves as a dyke and underplates and has eroded the base of the FGO complex (described as the Keel). The SMSU defined mineralization in the Tamarack North Project is contained within and near the top of the CGO. North of the Tamarack Resource Area, the CGO intrusion sills out into the country rock. Within the 221 Zone and 480 Zone the CGO appears to over-plate the FGO intrusion. The CGO is, lithologically, a feldspathic peridotite (60-30 modal percent olivine) with olivine gabbro present at the FGO contact with enclosing sediments. The olivine’s are substantially coarser in grain than those of the FGO, reaching as much as 1 cm in diameter. They also define a higher Ni trend on a plot of Ni content vs Fo (Figure 7.7). Although the CGO is chilled against the FGO in the north, further south the contact between the CGO and FGO bodies is commonly marked by what has been logged as MZNO. In this unit, the two distinctive intrusive types (FGO-CGO) do not show any obvious chill zone, and FGO and CGO occur together with finer grained olivine occurring in the interstices between coarser olivine. When comparing Ni content of olivine vs the Mg number, we can determine that the CGO was sulphur under-saturated, never reached saturation within the study area, and did not provide significant metals to sulphides.

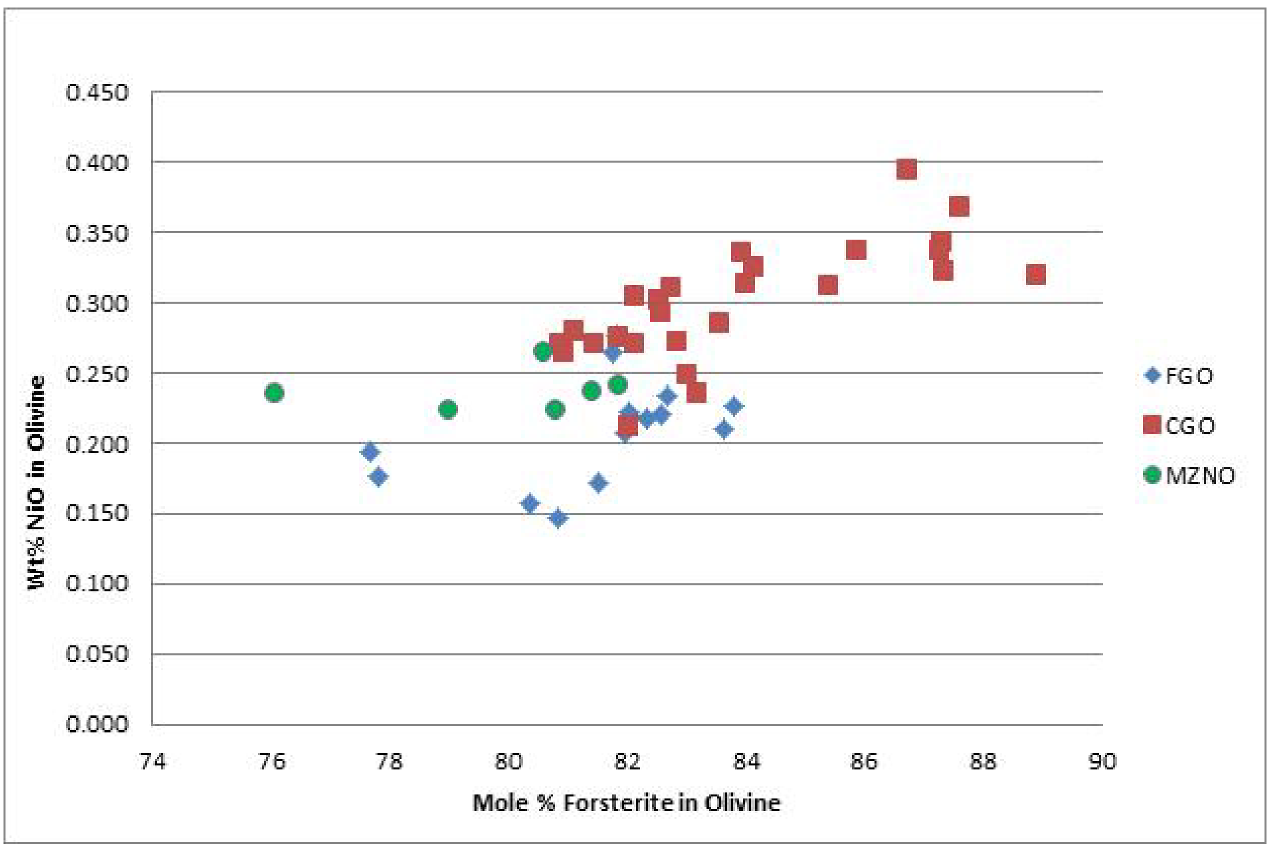
7.2.4.3 MZNO

MZNO lithology is the least understood of the TIC. Possible Geological models for the emplacement of the MZNO include:

- The MZNO represents the contaminated lower portion of the FGO by country rock (meta-SED rocks) due to thermal erosion;
- Separate intermediate phase intrusion between the FGO and CGO; and
- A zone of mixing between the CGO and FGO.
- The MZNO represents an early phase intrusion that predates the FGO.

MZNO is characterized by a bimodal population of CGO and FGO with Ni vs Fo plotting intermediate between CGO and FGO (Figure 7.7). MZNOs often host varying amounts of disseminated sulphide mineralization that, within the 138 Zone, is significantly concentrated to form a mineral resource.

Figure 7.7: Plot of Ni in Olivine vs Fo Content of Olivine. FGO defines a Continuous Trend with Lower Ni Content than in CGO. FGO Olivine Defines a Narrow % Fo Range (82-84% Fo) Compared to CGO (81 89% Fo). Olivine From MZ Falls Between the Two Trends. (Data from Goldner, 2011)



7.2.5 Mineralization

The Ni-Cu-Co-PGE mineralization at the Tamarack North Project, occurs as various types ranging from disseminated to net textured to massive sulphides. Sulphide mineralogy is dominantly pyrrhotite (Po), pentlandite (Pn), chalcopyrite (Cpy), with minor cubanite. Pn occurs as coarse grains and as intergrowths with Po.

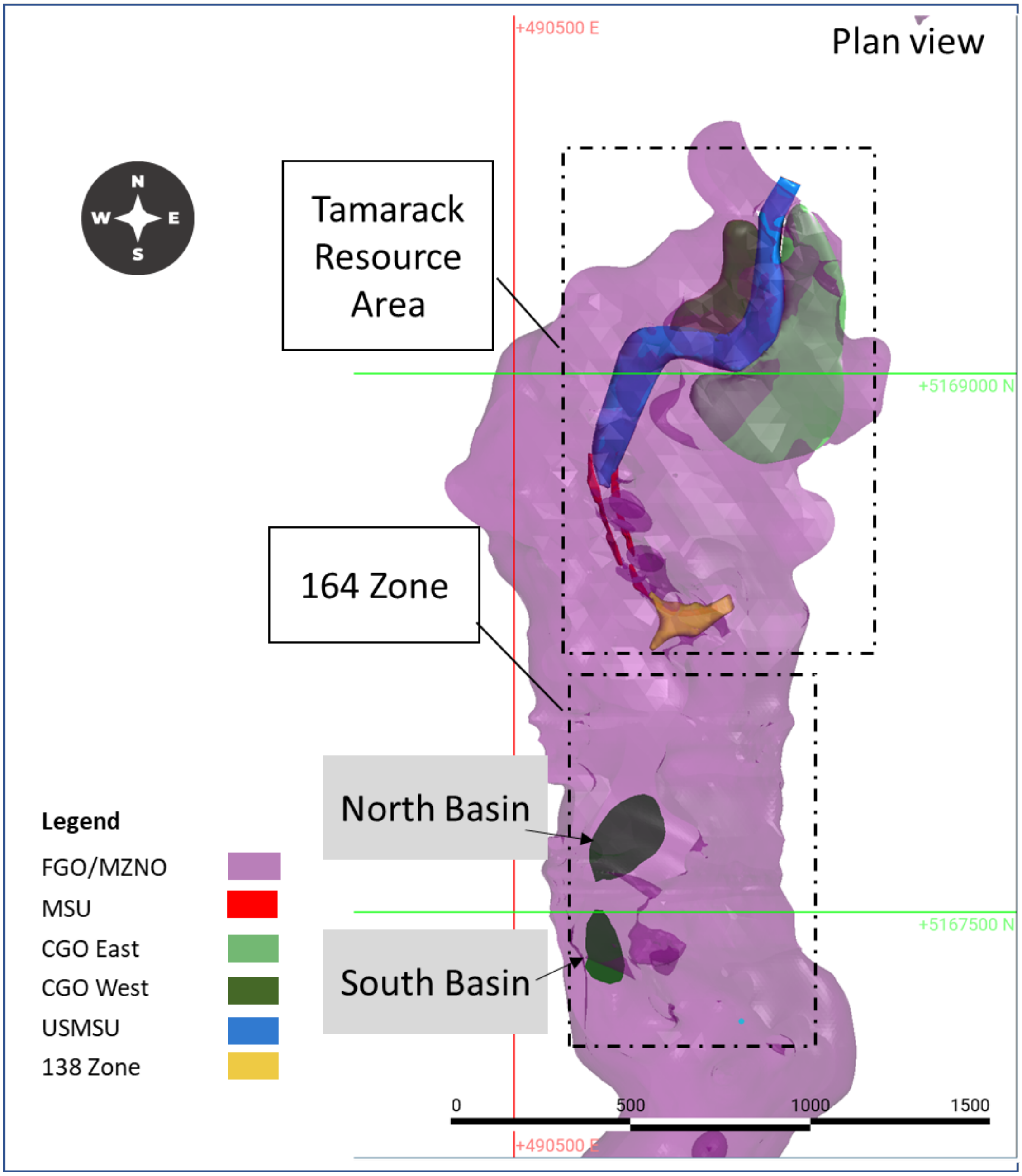
Although some of the mineralization names at the Tamarack North Project are used to describe mineralization lithologically in terms of sulphide concentration, they have historically been used at the Tamarack North Project to describe specific mineralized materials. These deposits have different mineralization styles, with different metal tenors, genetic implications, and different resource potential.

7.2.5.1 The 164 Zone

The mineralization type within the 164 Zone (Figure 7.8), which is located around 1.5 km south of the 138 Zone, typically occurs as variable massive sulphide veins and pods <2 m thick with blebby disseminated mineralization occurring at the base of FGO intrusion on the wall-rock contact (500 m depth), and often within hornfelsed and partially melted sediments near the chilled contact with the FGO. Mineralization is generally low tenor and has been interpreted as early cumulate mineralization associated with the base of the FGO. In the 164 Zone, the base of the FGO is more complex: thick intervals of variable textured gabbro, magmatic breccia, and thin sills or dykes occur within the partially melted meta-sediment where coarse blebby disseminated mineralization occurs in variable textured gabbro with granophyric patches.

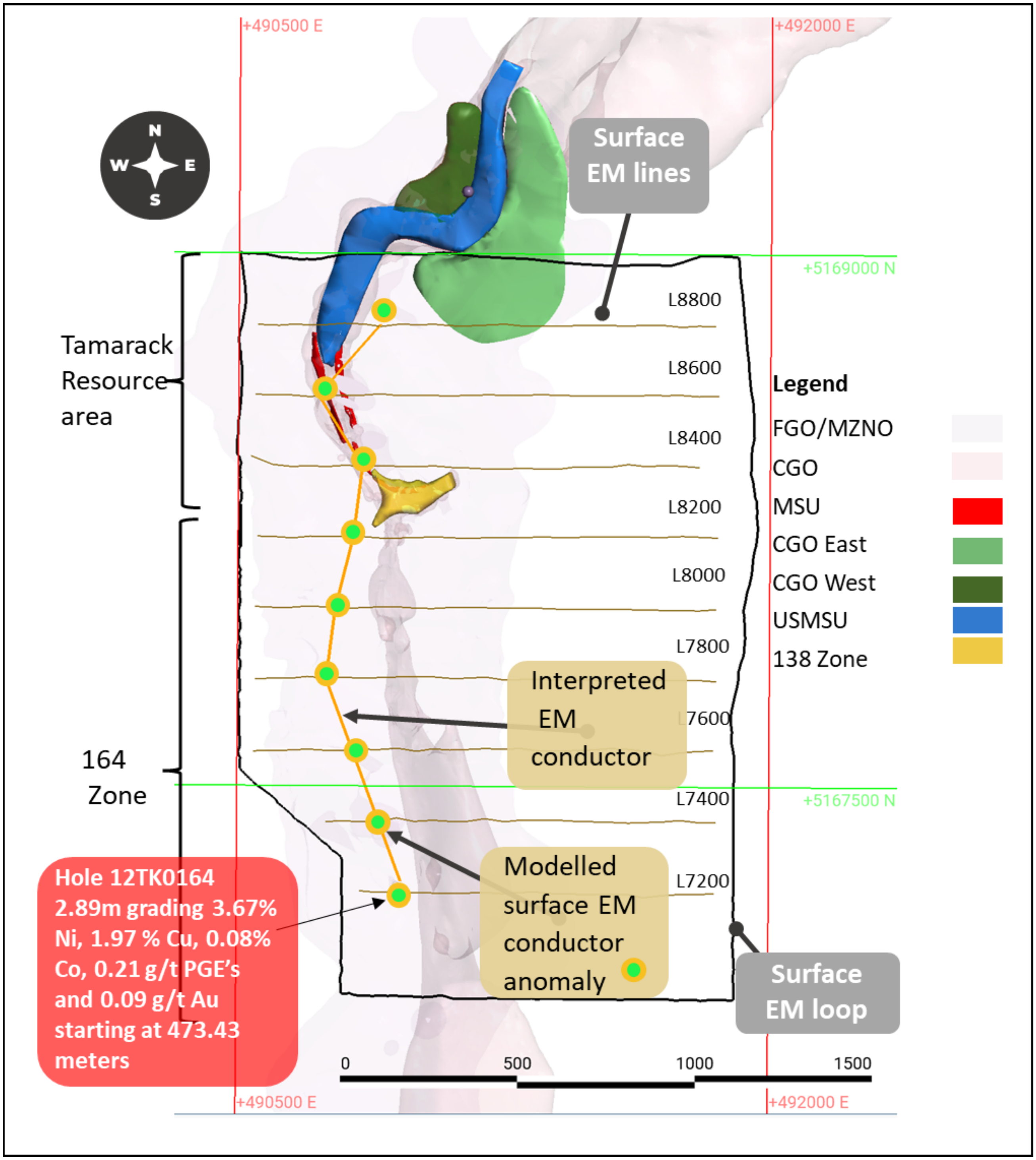
Recent geophysical modelling, using magnetic and gravity surveys has enabled interpretation of the footwall (FW) contact between FGO and country rock sediments. The work was completed by Mira Geoscience and identified the possible location of the keel of the FGO as the loci of sulphide mineralization in the Tamarack Resource Area. Historical and current drilling has only covered the flank of the FGO sediments identifying blebby sulphide (mentioned above). The basin, which remains unexplored, has a local dimension of 100 m x 200 m x 100 m for the southern basin and 170 m x 270 m x 100 m for the northern basin (Figure 7.8).

Figure 7.8: 164 Zone, Showing Emplacement of Interpreted Local Basin at Base of FGO. Results from 3D Interpolation of Integrated Magnetic and Gravity Modelling.



A surface EM survey in the 164 Zone has identified a string of EM anomalies at a depth of 500 to 600 m (Figure 7.9). The surface EM was also deployed over previously define resource areas to calibrate the survey. The same methodology was then used in areas outside of the Tamarack Resource area.

Figure 7.9: Plan View Map of the Tamarack Resource Area and 164 Zone (1 km South of the Tamarack Resource Area) Showing the Location of the Surface EM Survey



Note: The solid orange line shows the location of the interpreted conductive anomalies.

The surface EM appears to connect the Tamarack Resource Area to historical hole 12TK0164, an area of ~1.0 km of strike length within the TIC.

7.2.5.2 The 138 Zone

The 138 Zone exhibits a wide range of disseminated to net-textured and patchy net-textured sulphides. This type of mineralization is referred to as MZNO mineralization. In the 138 Zone, MZNO type sulphides appear to form a wedge-like zone of 200 m length, 120 m to 160 m height and a width of approximately 50 to 90 m, starting at ~350 m depth. The mineralization is hosted in FGO and contaminated FGO, i.e. in MZNO and FGO lithologies.

7.2.5.3 The SMSU

The SMSU forms the bulk of the defined mineral resource and occurs in the upper part of the CGO intrusion as an elongated boudin-aged tubular-shaped (Figure 7.6). Sulphide mineralization occurs within various lithological settings but is primarily associated near the FGO/CGO contact, within the 138 Zone, along the CGO/Sediment contact (Figure 7.6:A), and along the MZ-FGO/Sediment contact in the CGO East and West (Figure 7.6:B). More specifically, these zones are the SMSU (occurring in the upper part of the CGO near the FGO contact); the MSU (hosted within sediment but proximal to the FGO/CGO contact); and the 138 Zone (occurs south of the SMSU and within a large zone of MZNO).

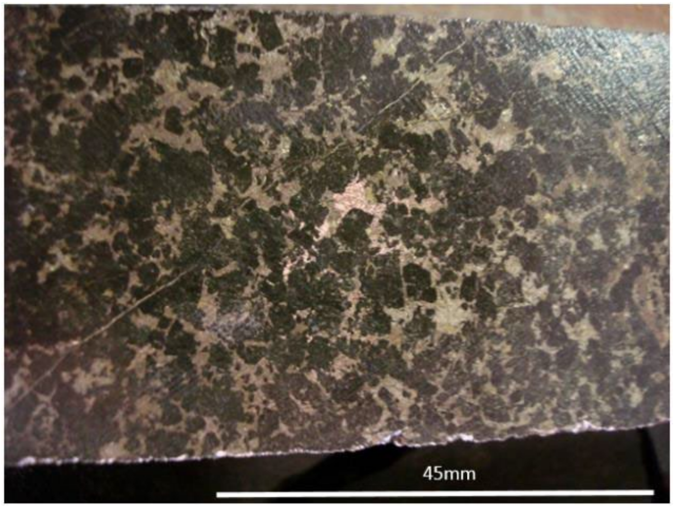
Other less developed exploration targets with defined mineralization include the shallow mineralization within the 480 Zone towards the northern part of the ’tail’, the 164-style mineralization in the 164 Zone towards the southern end of the ’tail’, widespread disseminated to mixed massive sulphide (MMS) mineralization developed at shallow depths in the FGO, north of the SMSU mineralization, and disseminated sulphide mineralization hosted in the CGO extending north of the SMSU, both known as the CGO Bend Zone.

The TIC consists of a tilted intrusion dipping to the south and east based on the magmatic layering observed in the FGO. The FGO is eroded progressively towards the north exposing the CGO north of the Tamarack North Project (Figure 7.5). However, evidence for tectonic block rotation as a cause for this apparent dip has not been conclusively proven.

Two SMSU domains have been modelled, the Upper (USMSU) and Lower (LSMSU). The USMSU body dimensions are 400 m long, 40 m to 80 m wide, and 40 to 70 m vertically at a depth of 300 m to 325 m. The LSMSU body dimensions are 350 m long, 40 m to 65 m wide, and 40 to 70 m vertically at a depth of 445 m to 485 m.

Within the SMSU is a core of interstitial net textured sulphides (50% sulphides) (Figure 7.10). Surrounding the net textured sulphides are disseminated sulphides forming a peripheral halo decreasing towards the CGO margins. This halo has been shown to have elevated Cu and PGE tenors that could be used in targeting SMSU extensions. The LSMSU appears spatially associated with the presence of the MSU, emplaced approximately 50 m below the MSU. LSMSU has only been observed in the CGO when MSU is present at the base of the FGO-Country rock above.

Figure 7.10: SMSU (net textured) Sulphide from Tamarack Drill Core



7.2.5.4 The MSU

MSU-type mineralization is defined as containing 80-90% sulphide (Figure 7.11). The MSU also refers to a mineralized body hosted by intensely metamorphosed and partially melted meta-sediments occurring as fragments or wedges of country rock at the base of the FGO. Typical dimensions of the MSU are 10 to 30 m wide by 0.5 m to 18 m thick. The MSU has a strike length of 550 m at a depth of 275 m north to 550 m south. Close to moderately spaced drilling (35 m to 100 m) to test these massive sulphides suggests that they form southward plunging, pipe-like zones. The zone has been drilled intermittently over 550 m from the SMSU to the 138 Zone. Texturally these massive sulphides occur in intensely metamorphosed sediments.

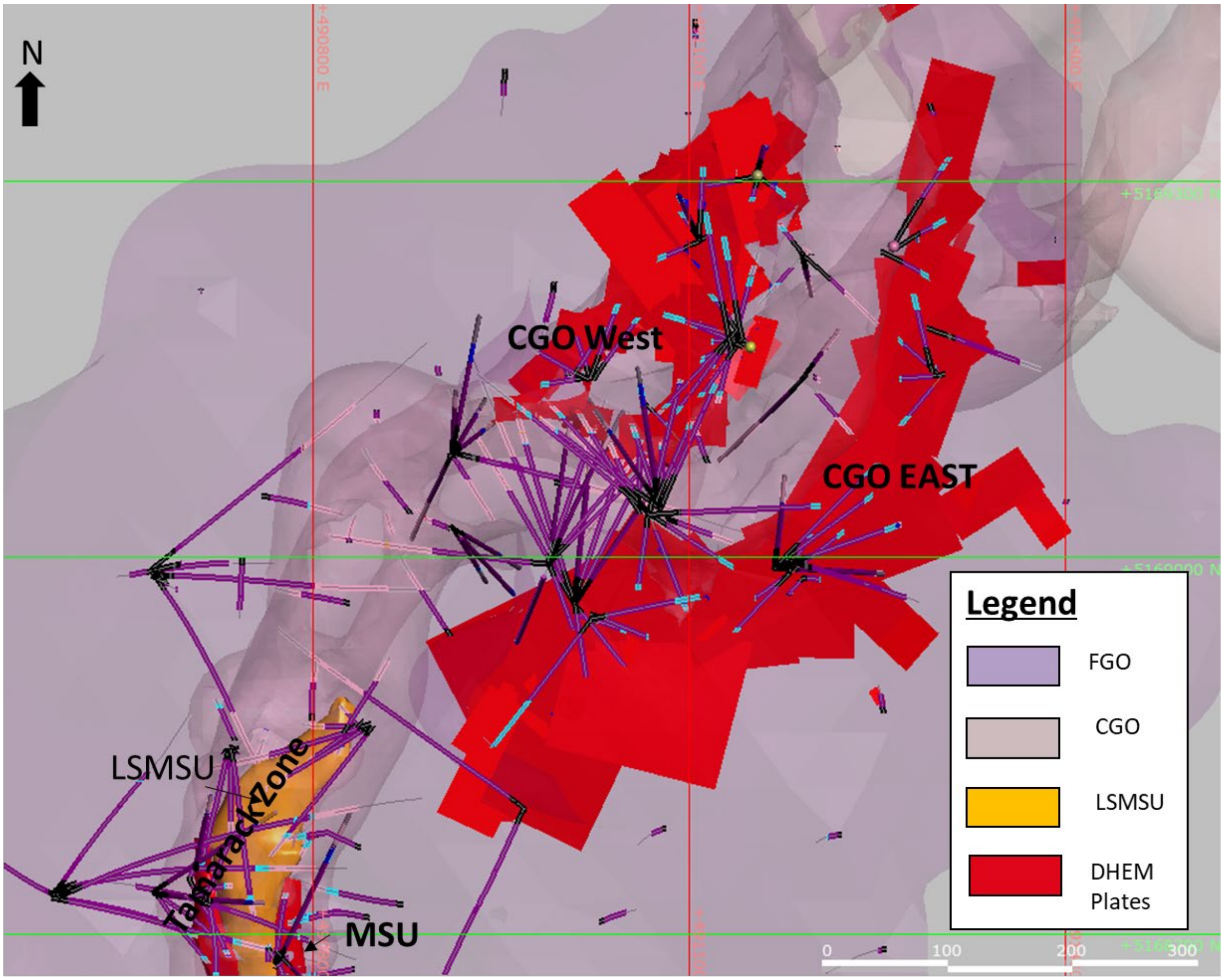
Figure 7.11: MSU from Tamarack Drill Hole 12TK0158

7.2.5.5 CGO East and CGO West New Discovery

The CGO East and West Zones consists of disseminated and basal FGO/MZNO with MSU-MMS mineralization, observed in the CGO East and West (Figure 7.12) and signifies where CGO forms a dog leg bend immediately north of the Tamarack Resource Area. The sulphide mineralization consists of a thick sheet of disseminated sulphide 1 to 38 m, with an accumulation of primary sulphides in the FGO Keel and basin that vary in thickness from 0.2 m to 13.92 m, strike length of 500 to 900 m, at a depth of 150 m to 250 m, and a weak plunge to the south at 15°. The sheet-like mineralization in the CGO East has a span of 500 m (east to west) by 900 m (north to south), whereas the CGO West has a span of 400 m (east to west) by 500 m (north to south). The sulphides are disseminated to blebby to massive in texture. In some instances, a vertical increase in sulphides has been observed with depth. Historical drill hole 13TK0187, which graded 3.82% Ni and 1.62% Cu, 0.63 grams per tonne (g/t) PGE and 0.36 g/t Au over 2.33 m from a depth of 138.94 m was drilled in the northern section of the CGO East (Figure 7.12) was part of a much larger interval of 26.27 m of 0.79% Ni, 0.41% Cu, 0.03% Co, 0.26 g/t PGE's, and 0.12 g/t Au.

The 2021/2022 drilling program was supported by prominent DHEM conductors (Figure 7.12) and a recent low-frequency time domain electromagnetic (TDEM) survey over the eastern trend (Figure 7.12).

Figure 7.12: Plan View Showing CGO East and West up-Dip of the Tamarack Resource Area. The Map Shows the Extent of the DHEM High Conductivity Anomaly in Both the CGO East and West Mineral Domains.



7.2.5.6 The 264 Zone

The limited drilling in the 264 Zone has identified geology similar to the Tamarack Resource Area with the distinction that the CGO is over plating the FGO. Both appear to be a sill-like intrusion within the meta-sedimentary country rock. The mineralization is observed at the base of the FGO in the form of mixed and massive sulphides. Drill hole 18TK0264 intersected 0.25 m of 9.95% Ni, 5.74% Cu, 0.16% Co, 2.46 g/t PGEs and 0.32 g/t Au starting at 539.09 m. Bore hole EM shows an EM anomaly with a northwestern strike and shallow plunge to the northwest at ~-15°.

7.2.5.7 The 480 Zone

The 480 Zone is defined by a narrow, linear east-west trending positive magnetic anomaly at the northern portion of the Tamarack North Project. Drilling in the 480 Zone has intersected disseminated and net textured sulphide mineralization at a relatively shallow depth. The host olivine visually resembles the olivine cumulates of the FGO intrusion to the south and includes intervals of quartz xenolith rich magmatic breccia similar to those in the 164

Zone. The 2017 drilling program tested the extent of the FGO and mineralization in the area. The interpretation of the results in the area have defined the relatively limited extent of mineralization, however, the FGO-like intrusion that is extending east would require additional geophysical surveys to define a suitable target.

7.2.5.8 The 221 Zone

Drilling a bulging pattern in the first vertical derivative along the CGO intrusion has identified significant mineralization near the base of the intrusion. Hole 15TK0221 intersected massive sulphide mineralization with 0.3 m of 2.0% Ni, 0.56% Cu, 0.53 g/t PGE's, and 0.51 g/t Au starting at 682.6 m. The mineralization is located near the footwall contact of the CGO. In other holes the mineralization is hosted in the country rock sediments just below the CGO footwall contact, hole 15TK0229 intersected 9.88 m of 2.35% Ni 1.40% Cu, 0.77g/t PGE's and 0.17g/t Au including a 1.63 m basal zone of high grade massive sulphide mineralization assaying 9.33% Ni, 5.14% Cu, 3.65 g/t PGE's and 0.71 g/t Au. Further work is required to test the extent of the mineralization.

7.2.5.9 Mineralization in the Weathered Laterite Zone

A weathered lateritic profile is irregularly preserved in the northeastern part of Tamarack North Project beneath Cretaceous and Quaternary cover and has concentrated Ni, Cu, Cr, and Fe. The weathered profile is up to 10 m thick at 35 m depth, and consists typically of a 0.5 m pisolithic, limontic hard cap, underlain by massive greenish saprolite and saprock with remnant igneous textures. Native Cu up to 2% (visual estimation) can be observed as 1 to 3 mm nuggets and veinlets in the weathered profile and persists into the serpentinized upper part of the FGO (Goldner, 2011).

7.2.5.10 Quaternary and Cretaceous Cover and Weathering Profile

The Tamarack North Project does not outcrop at surface, as it underlies 20 to 50 m of Quaternary glacial and fluvial sediments and in the north of the Tamarack North Project along the east part of the intrusion. Cretaceous siltstone and mudstone are preserved and unconformably overlie the preserved paleo-weathered lateritic profile of the FGO.

Serpentinization of olivine cumulates occurs over considerable thicknesses in the FGO below the weathered lateritic profile and is believed to be due to supergene alteration processes related to pre-Cretaceous weathering. Magnetite generated by the serpentinization process in the upper layers of the FGO is the main cause for the strong positive magnetic anomaly associated with parts of the Tamarack North Project.

Quaternary glacial-lacustrine deposits between 20 to 50 m cover the TIC with thicknesses increasing towards the south. The deposits are a complex arrangement of glacial and interglacial fluvial sands and silt and clay from lake sediments.

7.2.6 Current Models for Formation of the Ni-Cu-Co Sulphide Mineralization in the Tamarack North Project and Extended Mineralization Area

The Tamarack North Project area contains two intrusions, the FGO rich intrusion and a CGO rich intrusion. Based on the geochemistry, both intrusions are derived from the same high-Mg olivine tholeiitic parental magma (Goldner, 2011).

Based on data available at the time Goldner (2011) proposed that the CGO was emplaced before the FGO intrusion. There are no uranium-lead (U-Pb) zircon age dates for the FGO intrusion, however, contact relationships and paleomagnetic correlations with MCR volcanic rocks may indicate that the FGO is older than the CGO. The FGO is believed to be the primary source of the sulphide mineralization at Tamarack. The FGO intrusion is an open system magma conduit (termed a chonolith) that likely followed a zone of structural weakness in the meta-SED Animikie basin. The FGO magma likely intruded along a rift associated structure to produce the dyke-like CGO and the FGO sill-like body.

The low Ni content of olivine in the FGO coupled with the Ni, Cu, and PGE-depleted geochemistry of the upper part of the intrusion indicate that the magma achieved sulphide saturation well-before the crystallization of large amounts of olivine. In the TIC, the FGO intrusion has the geometry of an elongate lopolithic sill. The FGO magma either carried sulphide formed at a greater depth in the plumbing system or it formed in-situ from the overlying open system magma column as the FGO intruded the Animikie Group SED rocks.

Sulphur Isotope studies indicate that the sulphur originates from a mantle source with some samples suggesting Proterozoic or Archean crust. As the flow rate of magma within the FGO intrusion decreased, the dense immiscible magmatic sulphide started to settle and coalesce towards the base of the intrusion. Sulphide that reached the basal contact, flowed toward topographic lows on the chamber floor and was able to accumulate in pools forming massive sulphide. Crystallization of olivine in the overlying FGO magma column resulted in trapping sulphides as disseminations and blebs. These sulphide textures occur in the ultramafic rocks above the keel of the intrusion and on the flanking sides of the N-S trending lopolithic sheet. The most important control on the loci of massive sulphide deposition is at the base of the FGO or along the keel of the FGO where, for example, the Tamarack Resource Area mineralization occurs.

The second phase of magmatic intrusion occurred at 1105 +-1.2 Ma (U-Pb age date on zircon) to form the CGO intrusion. The CGO intruded along a similar or perhaps, the same structure as the FGO, with a dyke-like configuration. The high Ni content of CGO and the normal Ni abundance levels in the un-mineralized CGO indicate that the magma did not reach sulphide saturation. The existing sulphide is in disequilibrium with the melts that formed the ultramafic rocks of the CGO, and so the CGO magma contributed negligible sulphide to the mineral zones at the TIC. As a result, the CGO did not form the mineral zones found within it.

The evidence suggests that the CGO intruded the country rock directly below the keel of the FGO in the Tamarack Resource Area. The CGO magma eroded the base of the FGO as well as portions of the basal accumulation of previously solidified magmatic sulphide mineralization at the base of the FGO, which represented a proto ore for the CGO mineral zone. The eroded basal sulphide melted and digested by the CGO magma to form the SMSU. The remnant massive sulphides are preserved on the flanks of the FGO keel current as the MSU and the primary massive sulphide mineralization from the FGO keel was likely re-assimilated and re-concentrated by the CGO to form the SMSU which is hosted in the CGO directly below the FGO keel. The mineral zone in the CGO has a zoned composition grading from Ni-rich massive sulphides at the core to more Cu- and PGE-rich mineralization at the flanks. It appears that the nexus of CGO-related mineralization occurs where the CGO is proximal to the keel of the FGO. Whereas in areas where the CGO has not intruded at the Keel of the FGO, sulphide pools at the base of FGO may remain in their primary undisturbed location.

8.0 DEPOSIT TYPES

The Tamarack North Project hosts magmatic Ni-Cu-Co sulphide mineralization with associated PGEs and Au. These deposits form as the result of segregation and concentration of liquid sulphide from mafic or ultramafic magma and the partitioning of chalcophile elements into the sulphide from the silica melt (Naldrett, 1999).

In order to sufficiently concentrate metals in a system, a number of basic factors are necessary including:

- A tectonic rift setting with upwelling mantle and deep-seated structures necessary to generate partial melting of primitive magmas;
- Large volumes of magma flowing through an open system to achieve a high R factor (ratio of silicate melt to sulphide);
- Mid-level external sulphur source from crustal assimilation of sulphur rich rocks to maintain sulphur saturation and continued partitioning with a rising magma;
- Physical and chemical conditions for sulphide accumulation such as cumulate settling, footwall traps or structure, changes in flow velocity, magma mixing and other changes in physical and chemical conditions in the magma likely contributed to sulphide accumulation.

The various mineralized zones at the Tamarack North Project occur within different host lithologies, exhibit different types of mineralization styles, and display varying sulphide concentrations and tenors. These mineralized zones range from massive sulphides hosted by altered sediments in the MSU, to net textured and disseminated sulphide mineralization hosted by the CGO in the SMSU; to a more predominantly disseminated sulphide mineralization, as well as layers of net textured sulphide mineralization, in the 138 Zone (Table 8.1). Mineralization in the 138 Zone, where interlayered disseminated and net textured mineralization occurs, is referred to as MZNO mineralization. All these mineralization types are typical of many magmatic sulphide deposits around the world. The current known mineralized zones of the Tamarack North Project (SMSU, MSU,138 Zone and the recently discovered CGO East and CGO West) that are the basis of this resource statement are referred to as the Tamarack Resource Area. Also located within the Tamarack North Project are four currently lesser defined mineral zones, namely the 480 Zone, the 221 Zone, and the 164 Zone, which have not been evaluated for this MRE.

Table 8.1: Key Geological and Mineralization Relationships of the Tamarack North Project

Area	Mineral Zone	Host Lithology	Project Specific Lithology	Mineralization Type
Tamarack Zone	SMSU	Feldspathic Peridotite	CGO	Net textured and disseminated sulphides
	MSU	Meta-Sediments/ Peridotite (basal FGO mineralization)	Sediments	Massive sulphides
	138 Zone	Peridotite and Feldspathic Peridotite	MZNO/FGO	Disseminated and net textured sulphides
	CGO East and West	Feldspathic Peridotite	CGO	Disseminated sulphides
		Peridotite FW (basal FGO and MZNO mineralization)	FGO/MZNO	Disseminated, Mixed and massive sulphides
Other	221 Zone	Feldspathic Peridotite	CGO	Disseminated sulphides with ripped up clasts of massive sulphides
	480 Zone	Peridotite	FGO	Disseminated sulphides
	164 Zone	Peridotite	FGO	Blebby sulphides, sulphides veins

9.0 EXPLORATION

9.1 Historical Investigations

The TIC was initially targeted from the Minnesota State airborne magnetic survey flown between 1972 and 1983 and the follow-up drill-testing by MGS in 1984 of two holes, with peridotite intersected in AB-6 which was drilled on an anomaly north of the town of Tamarack. Please see Item 6.0 for further historical exploration details.

9.2 Mineral Exploration

The TIC and associated mineralization were discovered as part of a regional program initiated by Kennecott in 2000. The focus on Ni and Cu sulphide mineralization was initiated in response to a 1999 model proposed by Dr. A.J. Naldrett, of the potential for smaller feeder conduits associated with continental rift volcanism and mafic intrusions to host Ni sulphide deposits similar to Norilsk and Voisey's Bay. This model (Dynamic Conduit Model) challenged previously held models that Ni sulphide deposits were only associated with large, layered complexes.

Exploration by Kennecott continued at Tamarack concurrently with their testing of other targets since 2014. Disseminated mineralization was first intersected at the Tamarack Project in 2002, and the first significant mineralization of massive and semi-massive sulphide was intersected in 2008.

9.3 Geophysics

The Tamarack Project was covered by the previously mentioned Minnesota government regional magnetic and gravity surveys. The magnetic data in particular is of good quality and played a key role in the recognition of the TIC and the targeting of the early drilling on the Tamarack Project.

A wide variety of airborne, ground, and borehole (BH) geophysical surveys have been conducted by Kennecott at the Tamarack Project since 2001 (Figure 9.1). AEM (Airborne Electromagnetic) and magnetic surveys have included airborne MEGATEM (2001) and AeroTEM (2007, 2008, 2009).

Ground EM surveys were conducted using the Geonics EM-37 (2002), Crone Pulse EM (2003, 2012, and 2016), Lamontagne UTEM-3 (2006), and the SJ Geophysics Volterra system (from 2019 to 2022).

In 2012, Kennecott conducted a survey collecting the same line of data with multiple surface electromagnetic (EM) systems by multiple geophysical contracting firms. The systems tested included the:

- UTEM-3 system;
- Crone system using a superconducting quantum interference device (SQUID) sensor;
- Crone system using a CRA95 coil sensor, and;
- Electromagnetic imaging technology (EMIT) SMARTEM system using a SQUID sensor.

In addition, different BHEM systems were evaluated. These included:

- Crone Geophysics with a fluxgate sensor and a coil sensor;
- UTEM-4, and;
- EMIT SMARTEM system with fluxgate sensor.

BHEM was first tested in 2003 and has been used since as an important tool for the detection and delineation of sulphide bodies in and near drill holes. Most holes since 2007 and all holes drilled between 2011 and early 2020 were surveyed with Crone BHEM.

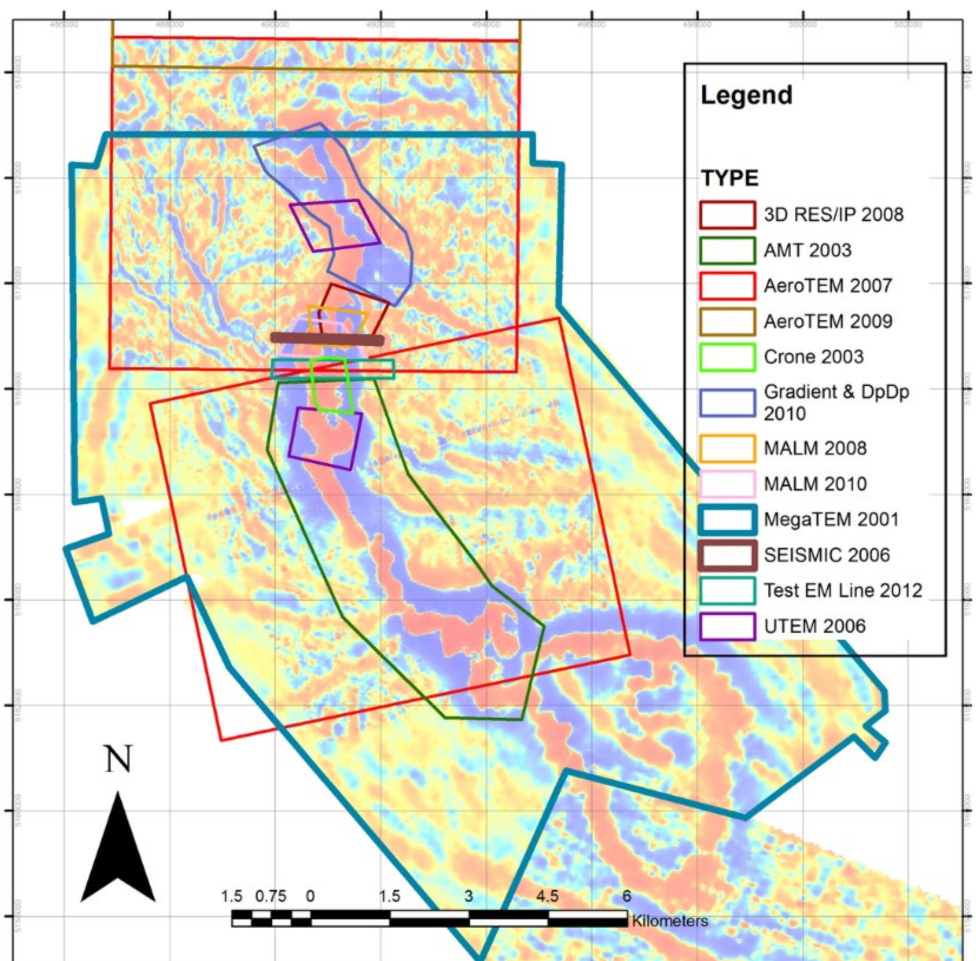
In the summer of 2020, Talon acquired several Volterra borehole and surface EM systems from SJV Geophysics. Since that time, Talon has acquired its own EM data.

In total, 204 BHEM surveys were completed by Crone Geophysics, while Talon's geophysical crew has conducted over 320 BHEM surveys to-date.

Other surface geophysical surveys conducted by Kennecott included: DC Resistivity/IP (2008), MALM (2008 and 2010), Gradient & Dipole IP/Resistivity (2010), and gravity (2001, 2002, 2011, 2015, and 2016).

Talon's approach of combining in house drilling with in-house geophysics has resulted in an Advanced Exploration System (AES) which has significantly expedited the exploration process.

Figure 9.1: Map Showing Localities of Various Geophysical Surveys Conducted by Kennecott Over the TIC (composite magnetic TMI image background) Modified from Kennecott Internal Report and Survey Data, 2013

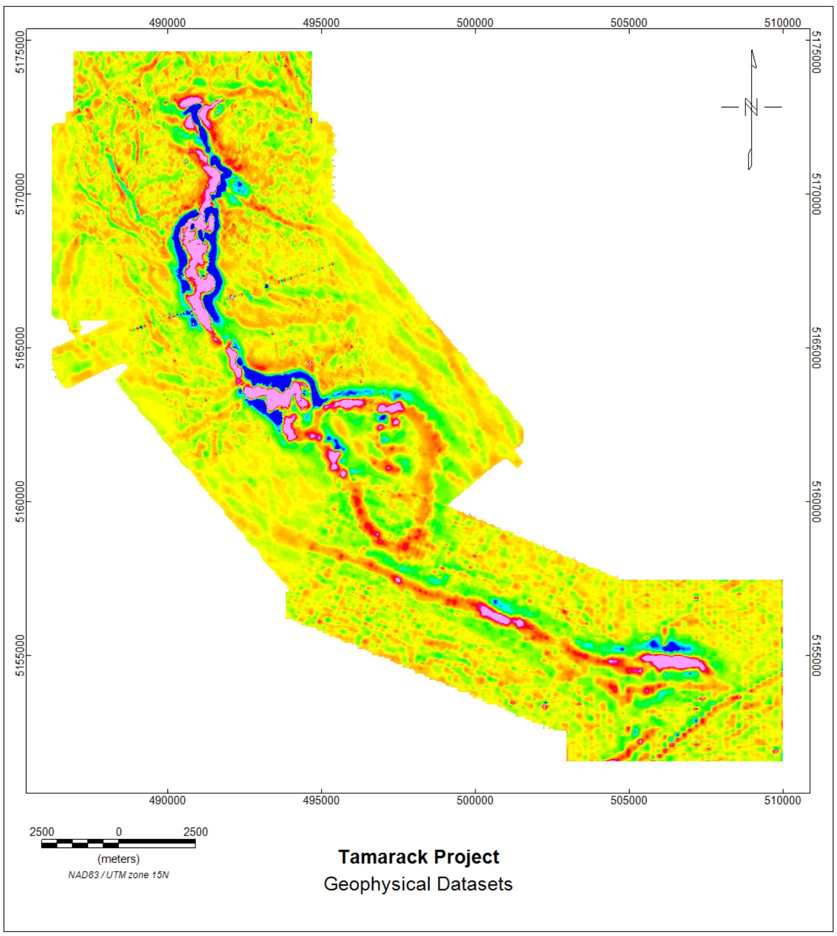


9.3.1 Airborne Surveys (Magnetic and AEM)

The MEGATEM survey in 2001 identified a conductive anomaly that led to the drilling of the first hole of the program conducted by Kennecott. The hole intersected disseminated mineralization hosted within a gabbro. The survey was strongly affected by the numerous power lines in the area. Subsequent AEM surveying was conducted using the AeroTEM system, which has a smaller footprint than the more powerful but extended MEGATEM system, and hence less sensitivity to nearby power lines (Figure 9.1).

The AeroTEM system operates at lower power and higher frequency than the MEGATEM system. As such, there is potentially less penetration through nuisance conductivity, however, due its smaller footprint it is less affected by power lines. The higher resolution (50 m line spacing vs 200 m line spacing for MEGATEM) AeroTEM surveys mapped with increased detail shallow conductivity within the FGO unit which, at the time, was thought to be spatially related to potentially deeper mineralization. Based on Kennecott's subsequent work, it appears that the response from both AEM systems over the known mineralization is mostly due to near-surface (top 300 m) conductivity within the FGO unit. Direct detection of economic mineralization from the air has yet to be confirmed at Tamarack.

Figure 9.2: A map of the Calculated Vertical Derivative of Magnetics (1VD) from the combined AeroTem and MegaTem Airborne Geophysical surveys conducted between 2001 and 2009.

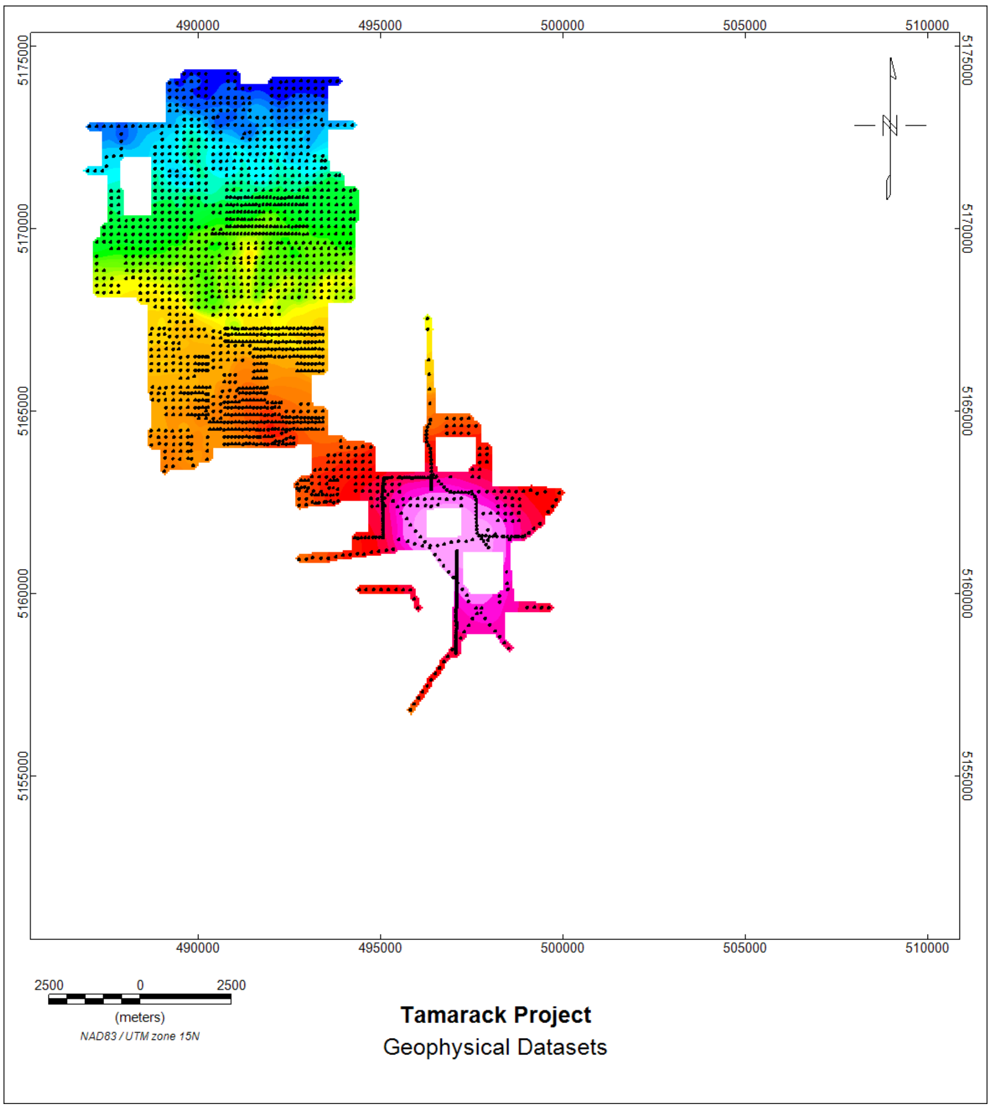


9.3.2 Ground Surveys

9.3.2.1 Gravity Surveys (2015 and 2016)

Gravity surveys conducted in 2015 and 2016 over the TIC have added considerable definition primarily to the Tamarack Project area (Figure 9.3). These surveys were conducted in several phases and have been integrated with the older surveys. The 2015 ground survey consisted of 453 stations at a 200 m spacing and was commissioned by Kennecott and conducted by Eastern Geophysics. The survey was initially targeted on the high density intrusive drilled in 15TK0221. The 2016 survey (Eastern Geophysics) with a total of 865 ground stations both expanded on and infilled gaps within the existing data. Survey data was integrated with previous data and unconstrained and constrained 3D VPmg inversions models were produced.

Figure 9.3: Bouguer (2.6 g/cc) Gravity Grid Combining 2011, 2015 and 2016 Surveys with Second Order Trend Removed

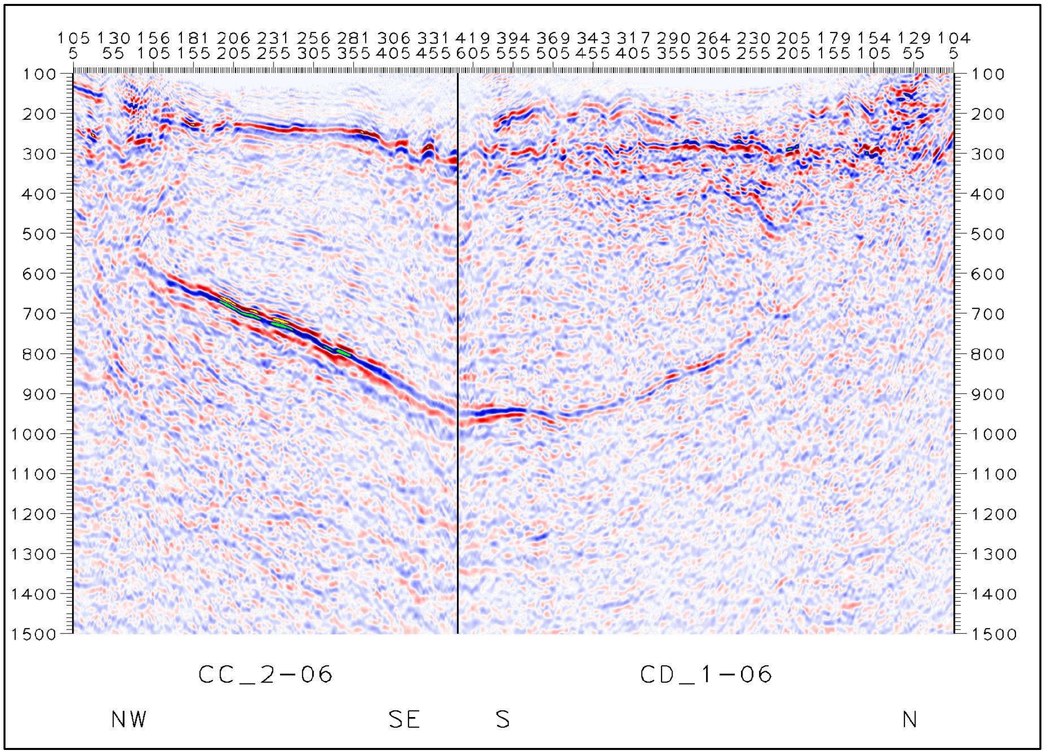


Note: Dots show locations of new data acquired in 2016 (Kennecott Gravity Survey, 2001, 2002, 2011, 2015 and 2016).

9.3.2.2 Seismic Reflection (2006) Survey

Seismic reflection surveys were carried out in 2006 on three lines, including across the Tamarack Resource area (Figure 9.4). The survey was conducted by Bay Geophysical in an attempt to better understand the deep structure of the TIC, and potentially delineate massive sulphide targets. There is some potential in these results, however they did not support the viability of conducting a surface 3D seismic survey in this terrain.

Figure 9.4: Depth Section Made from the Northwest End of the Two Seismic Lines Running Through the TIC



9.3.3 Surface Electrical and Electromagnetic Surveys

A wide variety of electrical and electromagnetic surveys have been conducted by both Kennecott and Talon on the Tamarack Project. The large variety of surveys conducted at the Tamarack Project has spanned and blurred the lines between traditional electrical and electromagnetics.

9.3.3.1 Kennecott Electrical Surveys

Multiple electrical surveys were conducted on the Tamarack Project to test their applicability to the Tamarack Project. DC Resistivity and Induced Polarization surveys (DCIP) were conducted in 2008 and 2010, however neither survey appeared to penetrate the near surface conductive material. A Mise a la Masse (MALM) surveys were also conducted in 2008 and 2010. The Mise a la Masse survey also produced spurious results, but these surveys formed a precursor to the Magnetometric Resistivity (MMR) surveys that were conducted later and helped make a much greater contribution to the interpretation of the complex Tamarack electromagnetic datasets.

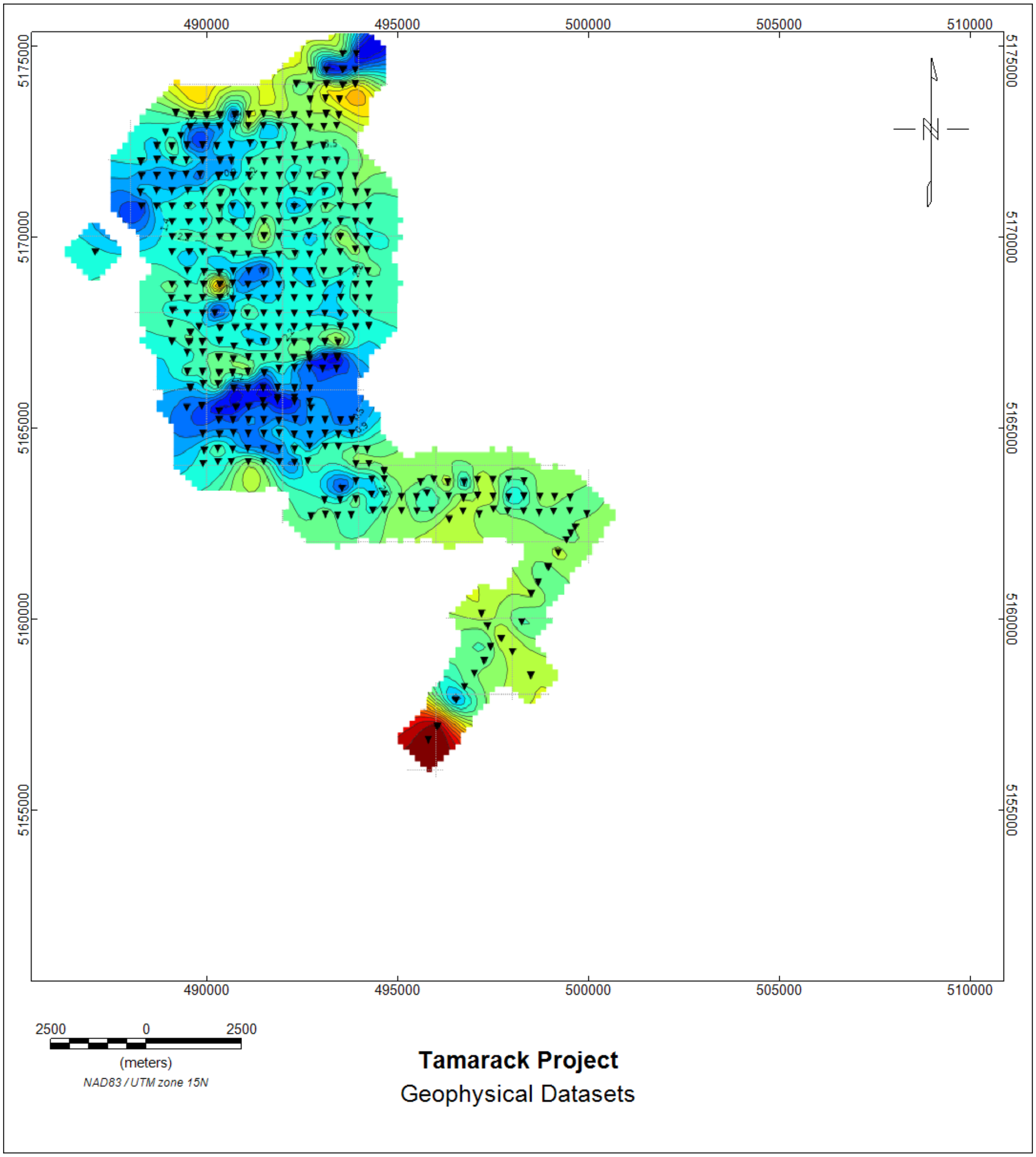
9.3.3.2 Kennecott Magnetotellurics (MT) Surveys

A variety of Magnetotelluric (MT) surveys were tested at Tamarack. These included a low bandwidth audio-frequency magnetotellurics (AMT) survey in 2003 and a Controlled source audio-frequency magnetotellurics (CSAMT) survey in 2006. These surveys lacked the quality and bandwidth required to provide useful information and was later replace with large bandwidth MT in 2016.

The first large bandwidth MT survey was completed over the Tamarack Project in 2016 by Quantec Geophysics, with 456 ground stations (including 52 repeats (Figure 9.5)). This data was collected with a station spacing of 400 metres in both the northing and easting directions. It was anticipated that the MT would provide an efficient way of extending known mineralization or identifying new large, deep conductive features. A 3D inversion was conducted on this dataset in 2016, but it did not appear to produce useful results. In 2020, a review was conducted of the Tamarack MT dataset for Talon by Bill Doerner of SourceOne Geophysical. This review of the data quality was positive, and three lines of data were inverted, yielding interesting results. Based on the positive results of this three line review, a full set of 2D inversions were generated in 2021 for the initial 400m station spacing dataset, identifying several known conductors of the TIC, and several previously unidentified targets.

While the data quality was acceptable, the station spacing was deemed to be potentially too sparse for the given target geometries. A recommended station spacing of 100 m over the deposit trend, which can be expanded to 400 m at the ends of each survey line was given in the study.

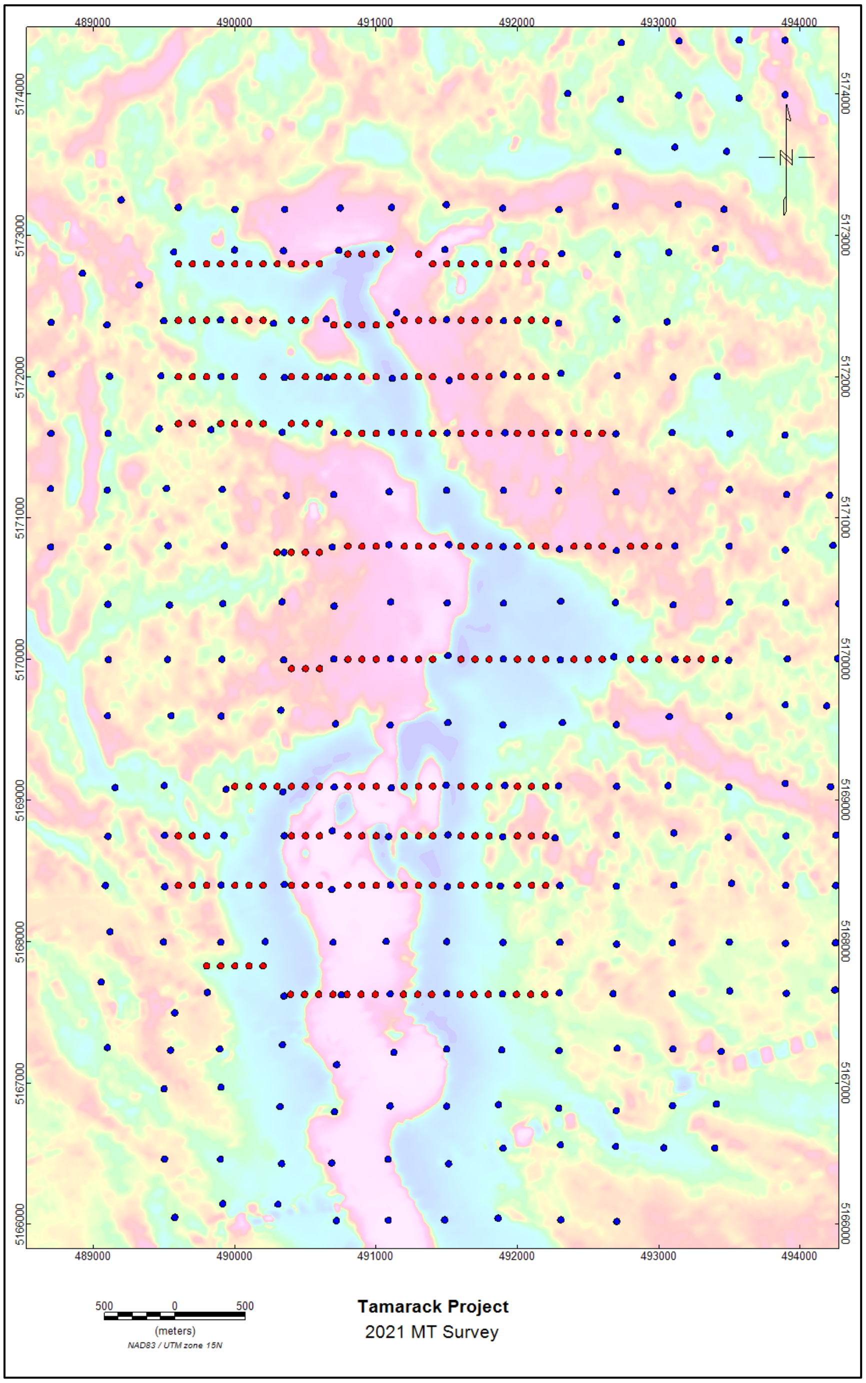
Figure 9.5:TE Phase and Station Locations from 2016 Kennecott MT Survey Over the Tamarack Project.



9.3.3.3 Talon Magnetotellurics (MT) Survey (2021)

An infill MT survey was completed in 2021 by Quantec Geophysics, adding another 189 ground stations to 9 separate lines from the Tamarack MT dataset (Figure 9.6). These stations were conducted as recommended at 100 metre intervals between the station locations from the original 2016 survey. This new higher special density data was added to the 9 lines from the original dataset re-interpreted with positive results.

Figure 9.6: Detailed view of the MT station locations from Talon's 2021 infill MT program (in red) and the original Kennecott 2016 MT survey (in blue).



Note: The data is plotted over the calculated vertical gradient composite map generated after the Tamarack airborne EM campaigns. The 2021 infill survey covered from the Tamarack Main Zone to the North end of the known intrusion.

9.3.3.4 Talon Magnetotellurics (MT) Survey (2022)

Given the positive results from the 2021 Quantec survey, Talon acquired enough 5 MTU-5c receivers from Phoenix Geophysics in the summer of 2022 and has been collecting and processing MT data with Talon geophysical personal consistently ever since.

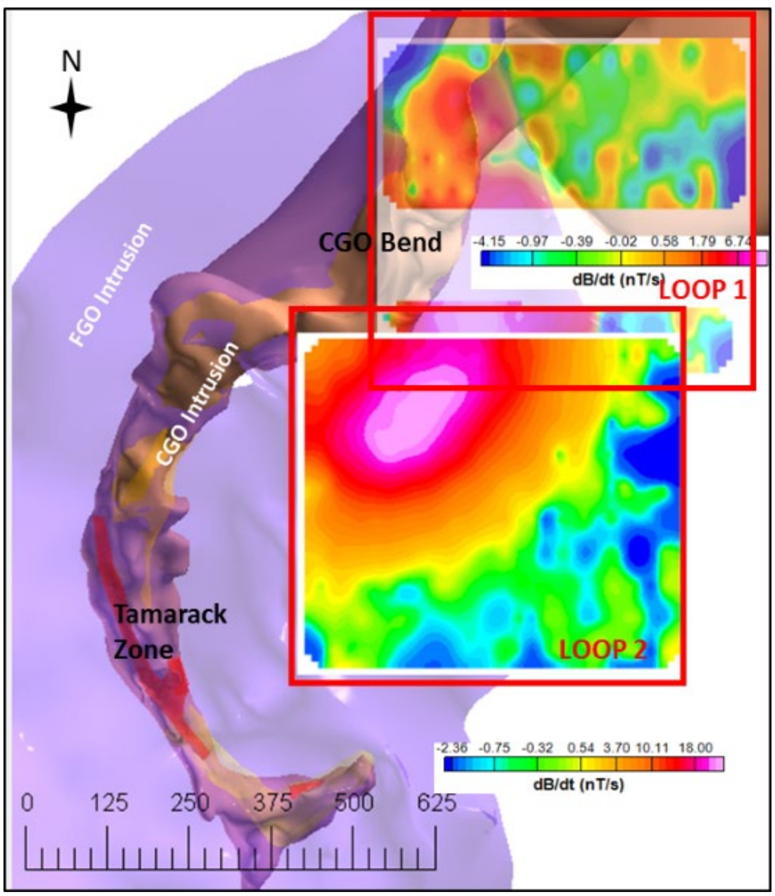
9.3.4 Historical Kennecott Surface Electromagnetic (EM) Surveys

A variety of surface EM survey equipment and methodologies have been tested on the property over the years. These survey systems have included the Geonics EM-37 (2002), Crone TDEM (2003 and 2016), the Lamontagne UTEM system (2006), and the EMIT SmartEM system (2012).

9.3.4.1 Kennecott Surface Electromagnetic (EM) Survey, September 2016

A high-power low-frequency TDEM was conducted along the eastern CGO Bend by Crone Geophysics in September 2016 (Figure 9.7). The fixed in-loop survey was testing potential thicker zones of base of FGO massive sulphide in the 40 m to 240 m depth range. The lower frequency data successfully penetrated through the nuisance conductivity and highlighted conductors at the base of the FGO that were confirmed from drill intersections to be sulphides. These conductors also correspond with modelled BHEM plates.

Figure 9.7: Colour Shaded Grids of Ch 20 Crone TEM Z Component for Loop 1 and 2 of TDEM Survey in CGO Bend Zone, Showing Anomalous Conductivity at Depth to the E of the CGO



9.3.4.2 Talon Surface Electromagnetic (EM) Survey, December 2019

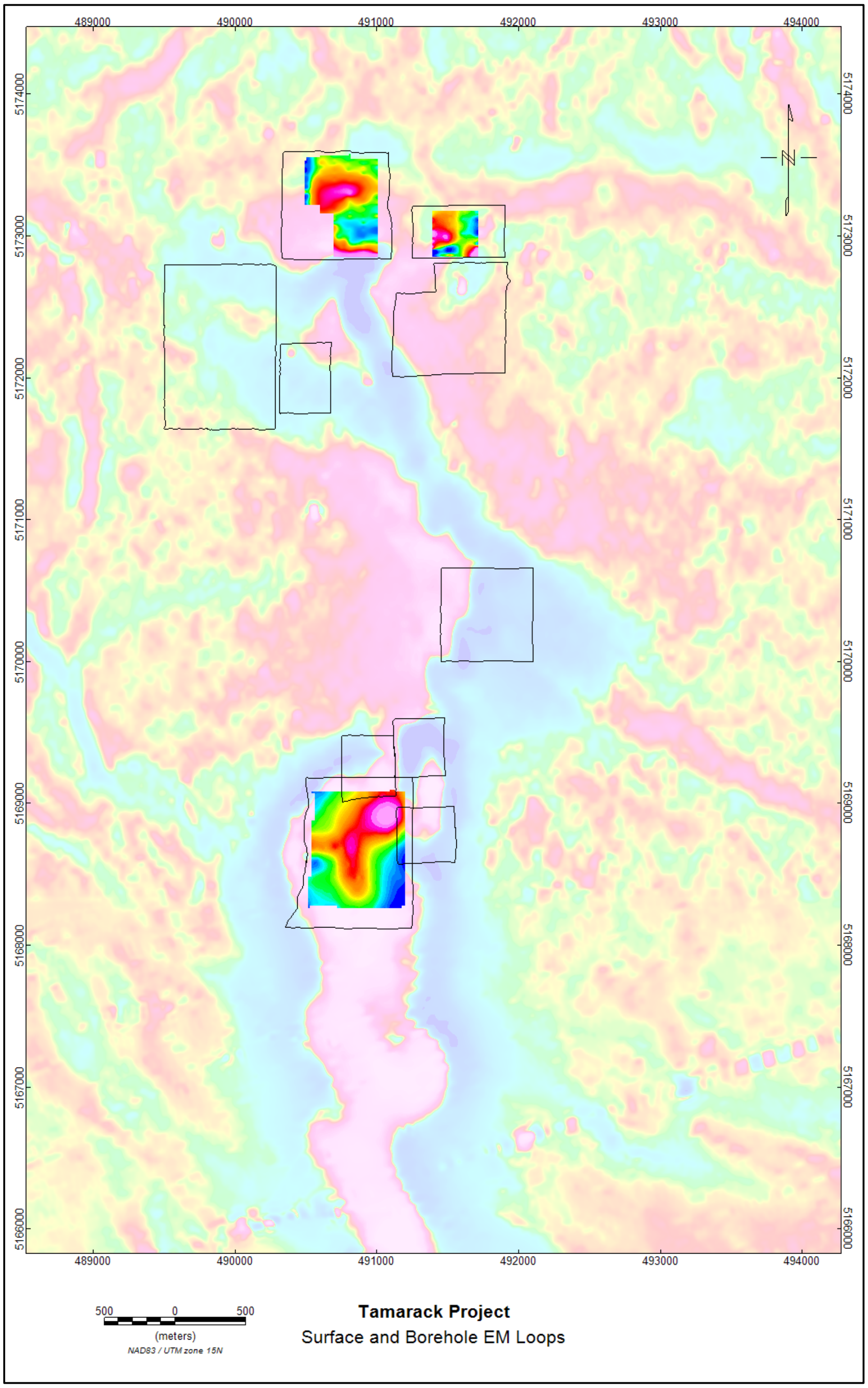
A high-power low-frequency large loop surface EM survey was conducted along the trend of the known mineralization in December of 2019. This survey was conducted by SJ Geophysics out of Vancouver, British Columbia, using their proprietary Volterrra EM system. A 1,500 by 2,000 m loop was deployed around the known mineralization and extending more than one km to the south as shown in Figure 9.8 and 12 line-km of data was collected using an inside-loop configuration.

This survey provided the cleanest surface EM data ever collected on the Tamarack North Project and identified a long linear current anomaly along the known mineralization that progressed much further south than expected. It is believed that the currents generated within the known mineralization are finding a path through the geology in the south to a distant ground.

9.3.4.3 Talon Surface Electromagnetics (EM) Surveys, 2020-2022

Given the success of the 2019 SJV survey, Talon acquired a full set of surface EM equipment from SJV Geophysics and has been collecting surface EM data using Talon geophysical personnel ever since. Currently, Talon collects, processes, models and interprets all of its own EM data with Talon personnel.

Figure 9.8: Plan view map of the surface and Borehole EM loops surveyed by Talon personnel in the first half of 2022



Note: The background image is the calculated vertical magnetic field from the compiled Tamarack airborne geophysical surveys.

9.3.5 Borehole Surveys

9.3.5.1 Borehole Electromagnetic (BHEM) Surveys

From 2003 to 2017, Kennecott contracted Crone Geophysics to conduct Borehole Electromagnetic (BHEM) surveys in 192 separate holes at the Tamarack North Project. The off-time data was delivered as a Pulse-EM (PEM) format, while the step response was given in the Crone Step (STP) format.

In 2018, Talon commissioned a large reinterpretation of this BHEM dataset. While the careful interpretation of the step response data has proven to be successful in detecting the MSU in the Tamarack Resource Area, the sample spacing down-hole was shown to be inadequate to accurately model the precise dip and strike of these sulphides.

In 2020, Talon contracted Crone Geophysics to resurvey 15 previous boreholes along with the 9 new boreholes that were drilled in the winter program. These surveys were conducted at a much tighter spacing around the potential target areas and allowed for much more accurate modelling of the massive sulphides. This survey proved to be invaluable in establishing the current BHEM methodologies that are used at the Tamarack North Project today.

Given the success of the 2020 BHEM program, Talon purchased a full set of BHEM survey equipment from SJV Geophysics in 2020 and has been acquiring all its own BHEM data since 2020. Talon acquires, processes and interprets all its own BHEM data internally with Talon geophysical personnel. The SJV BHEM probe has the advantage of being self contained and can be surveyed on the end of a drill string or hung underneath a lightweight Kevlar cable, while previous surveys required the data to be transmitted back to surface using a heavy multi-conductor cable. Therefore, the system is completely portable, allowing everything to be transported by hand, removing the need to build road access to individual boreholes. The SJV system also combines a 3-component fluxgate sensor with a highly sensitive inductive coil in the direction of the probe itself. The fluxgate yields directional information, while the higher sensitivity axial coil provides a much greater reach when it is further away from the target. This has proven to be a very effective combination for the Tamarack North Project.

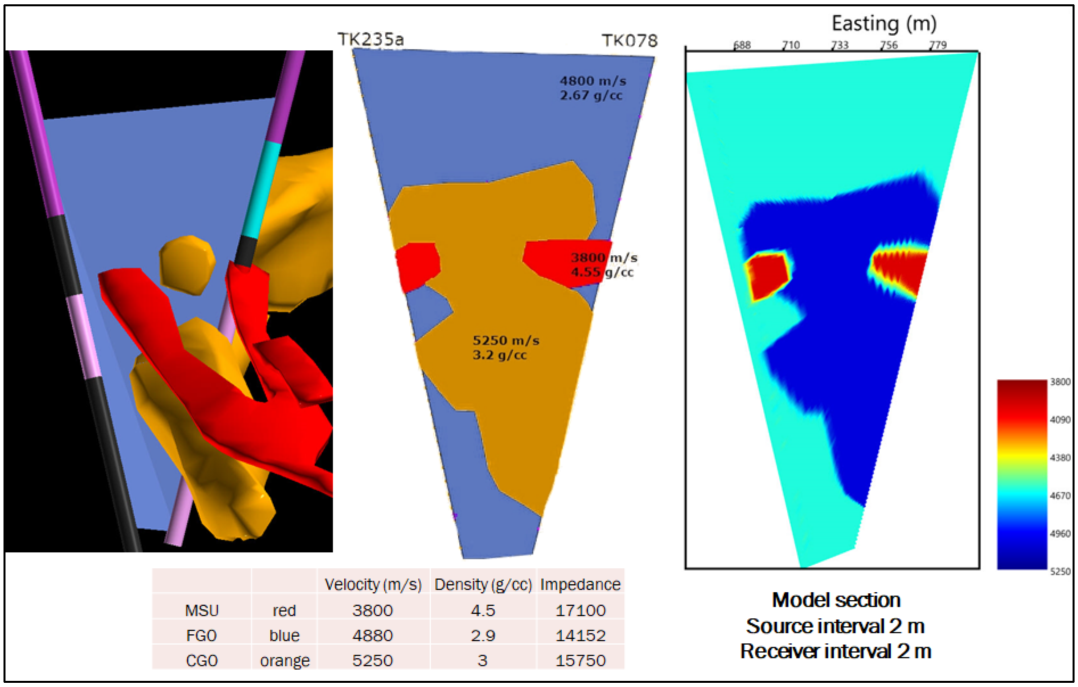
9.3.5.2 Talon Cross-hole Seismic Tomography (2021)

In 2018, Talon contracted Vibrometrics to conduct a forward modelling study to test the viability of cross-hole seismic tomography over the Tamarack Main Zone (Figure 9.9). Given the very positive results of this study, and a lack of commercial providers, Talon started to pursue an internal development program.

In 2021, Talon completed a successful pilot program of cross-hole seismic tomography. In this test program four individual panels were completed in the CGO West mineralization of the Tamarack North Project. (Figure 9.10) This data was collected using a prototype down-hole seismic source as a transmitter, and a commercially available hydrophone string.

The study indicated that the Tamarack North Project massive sulphides have sufficient volume, and a large enough velocity contrast with the host rocks, to be detectable using the proposed station spacing of 2 metres.

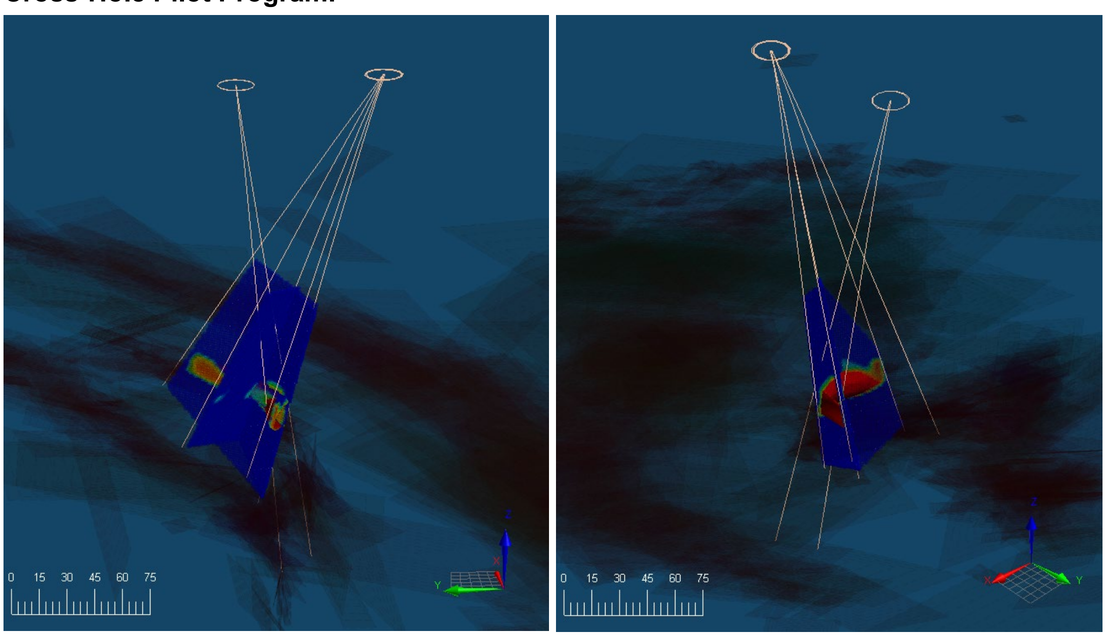
Figure 9.9: Forward Modelling Results from the 2018 Vibrometrics Study.



		Velocity (m/s)	Density (g/cc)	Impedance
MSU	red	3800	4.5	17100
FGO	blue	4880	2.9	14152
CGO	orange	5250	3	15750

Note: A 2-dimensional section through the geologic model was created (left and centre) and the resulting tomographic data was simulated through this model. This simulated data was then inverted, resulting in the image on the right. The MSU appears to resolve as a distinct slowing anomaly displayed here in red.

Figure 9.10: Two 3D Views of the Inverted Tomographic results from the 4 Panels of Talon's Initial 2021 Cross-Hole Pilot Program.

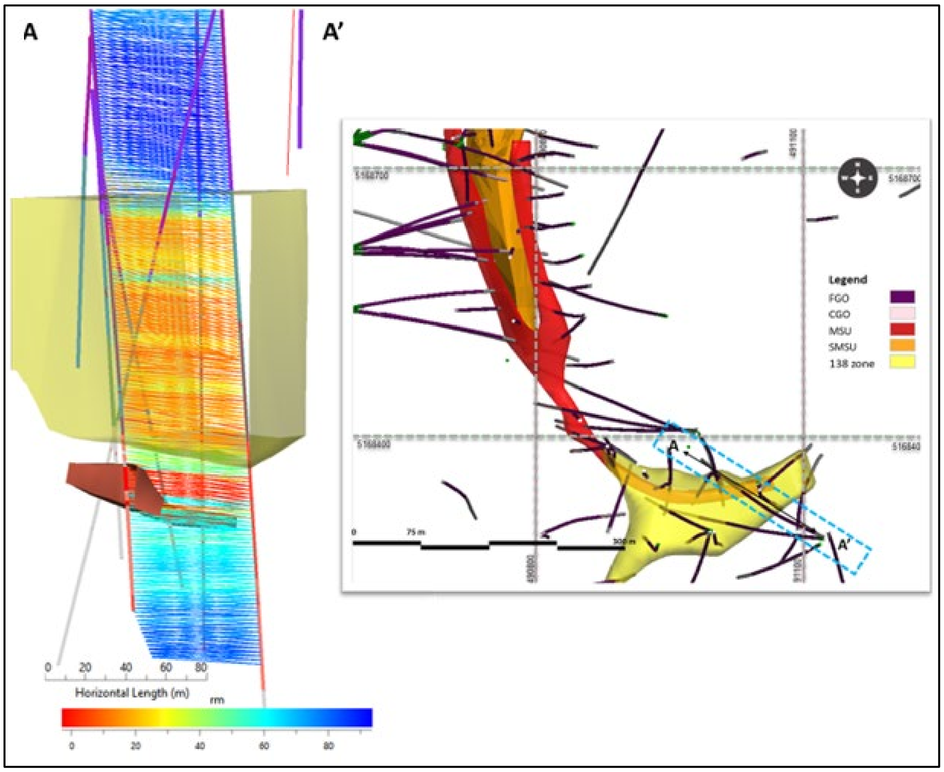


Note: The slowing anomalies, shown in red, correspond very well to the Massive Sulphides and modelled BHEM plates of the CGO West mineralization.

9.3.5.3 Talon Radio Imaging (RIM) Survey (2020)

In early 2020, Talon completed seven panels of Radio Imaging (RIM) Survey during the winter program. The panel, which comprises a section between holes 16TK0248 and 12TK0153, was completed and interpreted, highlighting the potential use of the technique on the Tamarack North Project. Drill hole 12TK0153 intersected two intervals of the MSU, 12.19 m and 2.5 m respectively, whereas hole 16TK0248 intersected disseminated sulphides but no massive sulphides. Figure 9.11 shows a cross-hole section between hole 16TK0248 and 12TK0153 and the signature of the MSU resource envelop. The RIM resolution quality can map the MSU within 1 m error. This is visible by the interval of 2 m with no sulphide in the MSU interval of hole 12TK0153. The data also demonstrates the nature of the disseminated sulphide mineralization of the 138 zone where moderate attenuation of the signal compares to the near-complete attenuation in the MSU.

Figure 9.11: CrossHole Interpretation of the RIM Between Holes 16TK0248 (left) and Hole 12TK0153 (right)



Note: Rays that exhibit maximum attenuation appear red on this image, while weaker attenuation appears as rays coloured from yellow to blue. Two intercepts of massive sulphide mineralization in hole 12TK0153 that are 12.2 m and 2.5 m in thickness appear clearly in this image as two distinct zones of maximum attenuation, while the known semi-massive sulphides of the 138 Zone appear as a cloud of yellow, partially attenuated rays.

9.4 Conclusions

Talon's use of a combination of Electromagnetics, Magnetotellurics, and Seismic Tomography has been productive to explore and delineate the TIC. The QP agrees with Talon's intention to continue using and refining these methodologies in the future. Talon is currently funding several research projects in both electromagnetic exploration and seismic tomography, and Talon is actively testing the results of this research at the Tamarack Project on an ongoing basis.

10.0 DRILLING

10.1 Talon Drilling Programs (2020 - Present)

In November 2019, Talon became the operator of the Tamarack Project and planned a winter drilling program targeting massive sulphides in the southern portion of massive sulphide body. These drill holes were planned utilizing open historical drill holes and directional drilling to optimize time and cost to hit the targets. A total of eight holes were drilled in and around the MSU in the 138 Zone to convert the southern portion of the MSU from Inferred into the Indicated resource category, by reducing the drill spacing down to approximately 25 m.

In August 2020, Talon commenced drilling the CGO East and CGO West geophysical anomalies, which resulted in two discoveries, both consisting of shallow massive and disseminated sulphide mineralization. The mineralization is an up-dip extension of the 2021 MRE, known as the Tamarack Resource Area. The up-dip extension exhibits a thin, metre-scale layer of MMS to MSU mineralization along the footwall, where the footwall depth varies from approximately 100 to 270 m.

Table 10.1: Breakdown of 2020 to 2022 Drilling Conducted by Talon, Ending on October 10, 2022

Year	Number of Holes	Meters	Targets
2020	21	8,962	Tamarack Zone 138 Zone MSU
2021	107	33,375	Tamarack Zone, CGO East and CGO West
2022	62	24,508	Tamarack Zone, CGO East and CGO West
TOTAL	**190**	**66,395**	

10.2 Resource Drill Holes

The total number of drill holes in the Tamarack North Project and the number of drill holes that were included in the MRE are different. Drill holes that had mineralized intercepts that were sufficient to meet the domain modelling cut-off and had sufficient continuity or were weakly- to non-mineralized that helped define the limits of mineralization were included in the MRE (see Item 14.0 for further details). The drill holes and the mineral intercepts that were used in the mineral resource are provided in Table 28.1. Some of the remaining drill holes, occurring outside of the current MRE (as defined in Item 14.0), include relevant mineralization that could be included in an updated MRE, depending on results of future exploration programs.

Provided in are the drill hole composited, mineralized intersections for the domains in the MRE provided in Item 14.0. The LSMSU, USMSU and MSU domains consist of mildly (~5° to 20°) plunging pipe-like mineralization domains, which do not have a tabular geometry and with variable strike directions. The CGO East and CGO West domains are more tabular with MMS/MSU at the footwall, overlain by disseminated sulphides with varying geometry.

The orientation of the drilling is mainly in the vertical to sub-vertical dip component, therefore there is some uncertainty regarding the relationship between drill hole intersection length and the true width of the deposit in some areas. Because of the general low dip of the majority of the mineral domain envelopes, combined with the variability of the footwall and hangingwall contacts, the estimated true width is close to vertical. There are some exceptions for some inflections in the geometry of the southern portion of the CGO West domain and the western side of the CGO East domain.

Due to the strictly vertical nature of the drill holes in the 138 Zone domain, there is a weak understanding of the plunge and plunge direction. Mineralization appears to be horizontal to sub-horizontal and therefore a flat orientation was used to estimate the true width of intersections.

The estimated true width may be subject to change with additional drilling oriented across the deposit as shown in Table 14.7. Each drill hole listed in Table 28.1Table 28. includes the entire composited length used in the MRE and may also include a selection of significant mineralization intervals within the composited length. If a drill hole intersection was composed entirely of significant mineralization, then the entire composited length was provided.

10.2.1 Drill Site Management

Drilling at the Tamarack North Project is challenged by the extensive wetlands. Drilling initially was restricted to winter months with frozen ground to minimize impacts to swamps and wetlands. In 2008, drilling was also initiated in the summer months using swamp mats for both access roads and drill platforms which have been very successful in minimizing the impact on the environment.

Kennecott and Talon have implemented and maintained strict environmental and safety protocols regarding drilling which include drilling contracts that ensure safety standards are not compromised.

Diamond drill diameters utilized at the Tamarack North Project have been primarily NQ and HQ sized.

- NQ – (outside diameter): 75.7 mm; core (inside diameter): 47.6 mm (NQ); and
- HQ – (outside diameter): 96 mm; core (inside diameter): 63.5 mm (HQ) wireline.

Most of the drilling completed under Kennecott and all of the drilling completed under Talon operatorship has been done using a triple tube system to minimize breakage and maximize recovery. Drill core recovery is logged on every drill hole and is generally very high (>95%).

Sonic drilling has historically been used to pre-collar holes through the overlying glacial sediments which are then completely cased off prior to commencing diamond core drilling. All casing depths and sizes are recorded in the acQuire® database.

Typical industry standard procedures are followed with all drilling and are outlined in the "Tamarack Core Processing Procedures Manual" including:

All statutory permits and approvals received by appropriate regulatory bodies prior to drilling. (http://www.dnr.state.mn.us/lands_minerals/metallic_nf/regulations.html)

Drill collars are initially located in the field using a handheld GPS unit with metre scale accuracy. Following completion of drilling, each collar is professionally surveyed with a differential GPS capable of decimeter accuracy. The collar location is permanently marked, upon cementing of the hole, with marker on cement cap. If permanent marker cannot be established because of ground conditions a certificate is issued by surveyor. Collar positions are subsequently checked against high resolution satellite imagery.

Closure of holes follows regulatory procedures as outlined by the MDH both for permanently abandoned holes, which are cemented from the base to surface with all casing removed when possible, and temporarily abandoned holes, which are temporarily sealed according to regulations if there is a possibility of the hole being deepened or the hole is awaiting a BHEM survey.

10.2.2 Geological Logging Procedures

Geological summary logging is completed immediately on receiving the core and is intended to provide an overview of the key lithologies and features with accurate estimates of mineralization. The main unit lithologies are recorded with the codes; SED, FGO, CGO, MZ, SMSU, MSU, MMS etc. The logs are entered into the acQuire® database and also prioritized for detailed logging.

Prioritization of core is determined during the "quick log”. High priority core is processed and logged as soon as possible. Lower priority core is retained and stored in boxes until it can be processed and logged. Core processing and logging procedures include:

- Reference orientation line marking (based on Reflex ACT);
- Measurement conversion and run depth marking (Imperial to Metric);
- Run recovery logging and marking (core loss record);
- Detailed geotechnical logging (logging interval based on geotechnical characteristics that are at least 25 cm long and up to 3.05 m at maximum). Standard logging and testing include:
  - Total core recovery (TCR) and Solid Core Recovery (SCR);
  - Rock Quality Designation (RQD or L10);
  - Natural fracture count;
  - Open vein count;
  - IRS Hardness (Rock strength estimation);
  - Weathering Index;
  - Alteration Index;
  - Rock structure and texture;
  - Joint set number (Jn);
  - Joint Roughness (Ja);
  - Joint Condition Rating (JCR);
  - Defect feature details and orientation;
  - Pont structure details and orientation;
  - Point load testing (axial and diametral every 6 m);
  - Laboratory sampling for uniaxial compressive strength (UCS), triaxial compressive strength (TCS) and Brazilian tensile strength (BTS) testing every 20 m and/or lithology;
  - Core photography in boxes;

Detailed geological logging is an important process for recording and understanding the geology and mineralization. Kennecott has adopted the system of logging into the acQuire® database with specific custom fields and drop-down lists to ensure consistency. The logging includes a:

- Lithology log,
- Alteration log,
- Mineralization log,
- Point structure log,
- Linear structure log (where structure orientations and dips are measured), and;
- Magnetic susceptibility log with a handheld magnetometer (discontinued temporarily in 2008 but subsequently resumed)

10.3 Surveying

All collars are professionally surveyed to sub-metre accuracy after completion of the drill hole. Down-hole deviation surveys are conducted on all holes at the Tamarack North Project and have used a multitude of tools over time including:

- A multi-shot survey with a magnetic tool (Flexit) provided by the drill contractor (survey shots conducted at least 10 m intervals);
- A multi-shot gyroscopic survey conducted by a down-hole survey contractor (survey shots conducted at a minimum of 20 m intervals);
- A multi-shot gyroscopic survey conducted by Talon staff.

The Flexit tool is susceptible to poor azimuth accuracy in the presence of strongly magnetic lithologies, such as those found at the Tamarack North Project. However, the dip readings are not affected by in hole magnetics and provide a reliable source of dip measurements as the hole progresses. Multi-shot gyroscopic surveys are not affected by magnetics and provide accurate downhole deviation.

Since 2019, Talon has been using a Reflex EZ Gyro or Sprint to collect high quality downhole gyroscopic surveys.

In order to accurately intersect the MSU in the deeper parts of the deposit, directional drilling services from Devico were used to steer the drill hole back on to target if the hole deviated off course. This steering is completed by frequent gyro surveys to understand the trajectory of the drill hole through the correction.

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Core Sampling and Chain of Custody

Figure 11.1: Photo of Talon Core Processing Facility Tamarack, Minnesota

Standardized core sampling procedures were introduced by Kennecott in January 2007 and have been incorporated for all the sampling at the Tamarack North Project, with only minor modifications made subsequently. The Tamarack North Project has adopted the use of split-tube coring as a means of minimizing core breakage and facilitating the recording of geotechnical and oriented core data (Kennecott Internal Doc, 2016). Core is sampled on a minimum of 0.5 m intervals to a maximum of 3 m, with 1.0 m or 1.5 m being the preferred sample length in mineralized zones. The following procedures are adhered to:

- Core is dropped off by Talon staff to the secure core logging facility in the town of Tamarack (Figure 11.1)
- Once at the core processing facility, the core is "quick-logged" for major lithological units and sulphide mineralization and entered directly into the acQuire® system database.
- Once the drill core has been selected for detailed logging, geologists start by converting run blocks from feet to metres.
- The core is then placed in the v-rails and oriented if the ACT Tool was used on the hole.
- After core orientation, metre marks are drawn on the core.

- Core recovery is then measured on a runblock-to-runblock basis and entered into the database.
- Lithology, alteration, and mineralization is then logged in addition to geotechnical data.
- Sample interval marking: Prior to being photographed the core is transferred to cardboard core boxes where the tags are stapled to the inside wall of the appropriate rows. Duplicate, blank, and standard sample tags are inserted and displayed on the core boxes for photographing;
- Core photography is conducted after the sample mark-up is completed
- Boxed core is photographed both wet and dry
- In holes that require geotechnical samples, a 5-19 cm sample is cut from the core for the purposes of Brazilian tensile strength (BTS), triaxial compressive strength (TCS), and uniaxial compressive strength (UCS) measurements approximately every 20 m or lithological unit. The UCS sample is labelled "UCS" with a unique sample tag associated with it, photographed (as part of the regular core photo process), placed in a core box until shipment, then placed in a sample bag with the unique tag, and finally despatched to an appropriate testing laboratory;
- A density measurement via the hydrostatic-gravimetric method is performed in the core shed every 20 m or lithological unit on an approximately 10 cm sample. Dry and wet weights for three density standards are recorded per use of the instrument setup. Note that these measurements have not been used for mineral resource modelling purposes, which rely on the pycnometer analysis completed at the ALS Minerals laboratory.
- Core sawing is conducted after core marking, sample tagging, and photography has occurred. Core is consistently cut in half 1 cm to the right of the orientation line and then that half is cut in half again if core size allows. The two quarters and half core are returned to the box;
- Sample packaging: quarter core or half-core samples (the half/quarter without the orientation line) are air dried and packed in individual plastic bags with the sample ticket inserted inside the bag and the sample number written in permanent marker on the outside. The remaining core is secured and stored locally, out of the elements, until it can be transported to the State core library in Hibbing, Minnesota;

The QC protocol is documented and has been followed at the Tamarack North Project since the start of the program (reportedly modified to the present procedure in early 2008). Current QC samples include:

- Blanks: inserted at the beginning of every batch, at every 30th sample, and specifically, after highly mineralized samples. Blanks used have included commercially derived Silica Sand; GABBRO-1 (unmineralized half core from hole 07L039); GABBRO-2 (unmineralized half core from 07L038 since July 2008); GABBRO-128 (unmineralized half core from hole 10TK0128); and GABBRO-18 (unmineralized half core from hole 04L018);
- Standards: a matrix-matched standard (corresponding to the sulphide content of the flanking samples) is inserted into the sample stream every 30 samples to monitor sample accuracy. A corresponding standard is also inserted at the beginning of significant changes in mineralization. The standards were prepared from coarse rejects of the Eagle Deposit (Michigan) (EA type) and Tamarack North Project (TAM type) drill holes

and are certified by an independent subject matter expert after Round Robin testing at accredited laboratories;

- Duplicates: Field, Coarse Reject, and Pulp duplicates are routinely used to monitor sampling and assay precision according to the following protocols:
- Field Duplicates include two quartered core lengths submitted consecutively every 30 samples and are offset from the standards by 10 samples;
- Coarse Reject Duplicates are splits from the coarse reject material that are inserted every 20 samples by the lab. See Figure 11.2 and Figure 11.3;
- Pulp Duplicates are randomly generated and assayed by ALS Minerals as an internal process at a rate of one every 30 samples. See Figure 11.4 and Figure 11.5;
- Check assays from a secondary laboratory were not utilized to confirm the quality of the ALS Minerals values. However, the quality of the ALS Minerals values is monitored using acQuire® protocols for evaluating standards and blanks.
- Sample batches are packed in collapsible plastic bins for shipping. Sample consignments are limited to 200 samples and are grouped in batches of the same rock types and using the same assay methods. A dispatch form is created, with one copy being sealed in the container and the other emailed to the lab. The container is sealed with randomly selected, security tags that are listed in the Chain of Custody Sheet. Access to the samples cannot occur without breaking a seal;
- Samples are shipped to the ALS Minerals lab in Thunder Bay, Ontario, Canada via Manitoulin Transport for sample preparation;
- The Chain of Custody Sheet is signed upon receipt at the lab in Thunder Bay, confirming that they are not damaged or tampered with. These forms are scanned and emailed to Talon;
- ALS Minerals is independent to Talon and is one of the world's largest and most diversified testing services providers, with over 120 laboratories and offices in it's Minerals Division. ALS Thunder Bay and Vancouver laboratories are accredited by the Canadian Association for Laboratory Accreditation and Standards Council of Canada (**http://www.alsglobal.com/**).

11.2 Sample Preparation and Assay Protocols

Sample preparation at ALS Minerals in Thunder Bay includes the following procedure:

- Samples are logged into the ALS Minerals database (LOG-21);
- Samples are weighed upon receipt then dried overnight (DRY-21);
- Entire sample is crushed to 70% -2 mm or better (CRU-31);
- 1000 g is split off using a rotary splitter or a Boyd crusher/rotary splitter combination (SPL-22);
- Entire 1000 g is pulverized to better than 85% passing 75 micron (µm) (PUL-32);

- Assay aliquots are taken from each sample and packaged for shipment to ALS Vancouver where the samples are digested and analyzed;
- Vacuum seal master pulp and all master pulp material is returned and stored at the Tamarack Project site;
- Crushers, splitters and pulverizers are washed with barren material at the start of each batch and as necessary within batches. Between-sample washes (WSH-21 and WSH-22) are used for high grade sample batches;
- Crushing QC tests are conducted every 20th to 40th sample (CRU-QC);
- Pulverizing QC tests are conducted every 20th to 40th sample (PUL-QC).

Sample analyses are conducted at the ALS Minerals Vancouver laboratory.

The methodology for mineralized material at the Tamarack North Project is reported as follows:

- Ni, Cu, and Co grades are first analyzed by a 4-acid digestion and inductively coupled plasma atomic emission spectroscopy (ICP-AES) and inductively coupled plasma mass spectroscopy (ICP-MS) (ME-MS61). Grades reporting greater than 0.25% Ni and/or 0.1% Cu, using ME-MS61, trigger a sodium peroxide fusion with ICP-AES finish (ME-ICP81);
- Pt, Pd and Au are initially analyzed by a 50 g fire assay with an ICP-MS finish (platinum group metal (PGM)-MS24). Any samples reporting greater than 1 g/t Pt or Pd trigger an over-limit analysis by ICP-AES finish (PGM-ICP27) and any samples reporting greater than 1 g/t Au trigger an over-limit analysis by AAS (Au-AA26);
- Total sulphur is analyzed by Leco Furnace (S-IR08).

The methodology for non-mineralized samples is reported as follows:

- Ni, Cu, and Co grades are first analyzed by a 4-acid digestion and mixed ICP-AES and ICP-MS (ME-MS61). Grades reporting greater than 0.25% Ni and/or 0.1% Cu, using ME-MS61, trigger a sodium peroxide fusion with ICP-AES finish (ICP81);
- Pt, Pd and Au are initially analyzed by a 50 g fire assay with an ICP-MS finish (PGM-MS24).

The methodology for litho-geochemical characterization of samples is reported as follows:

- ALS Minerals Code ME-ICP06 – Whole rock package for 13 oxides plus loss on ignition (ALS Minerals Code OA-GRA05) and total (ALS Minerals TOT-ICP06) – lithium (Li) metaborate or tetraborate fusion/ICP-AES finish;
- ALS Minerals Code ME-MS81 – Resistive trace 30 elements by Li meta-borate fusion and ICP-MS finish;
- ALS Minerals Code ME-4ACD81 – Eight base metals plus Li and Sc by 4-acid digestion with an ICP-AES finish (silver (Ag), cadmium (Cd), Co, Cu, molybdenum (Mo), Ni, Pb, and zinc (Zn));
- ALS Minerals Code ME-MS42 – Nine volatile trace elements by aqua regia digest with an ICP-MS finish (arsenic (As), bismuth (Bi), mercury (Hg), indium (In), rhenium (Re), antimony (Sb), selenium (Se), tellurium (Te), thallium (Tl));

- ALS Minerals Code ME-IR08 – Total sulphur and total carbon analyzed by combustion furnace.

The methodology for density measurements is reported as follows:

- ALS Minerals Code OA-GRA08b – SG is determined using a pycnometer by weighing a 3.0 gram pulp sample in air and in a solvent (methanol or acetone), and is reported as a ratio between the density of the sample and the density of water. See Item 14.4.3 for additional details of the SG process.

11.3 Assay Data Handling

After receiving assay results for each despatch, QA/QC standards, blanks and duplicate data are immediately processed in acQuire® to confirm that results are consistent with expected ranges and values. The values reported for ALS Minerals internal standards are also monitored. Talon utilizes an internal QA/QC analysis manual to determine variances that are acceptable vs those of exceedance. If established quality thresholds are exceeded, then the entire batch is logged as a “Fail” and an investigation is initiated. Re-analysis, sample switch checks, and other means of investigation are acted upon to resolve exceedances. All actions are tracked and logged (see an example in Table 11.1). Assay data is only considered final within the acQuire® system once they have passed all QA/QC checks.

Table 11.1: Example of Failures and Corrections Table

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	Project	Sample Type	Drillhole ID	Despatch #	Despatch Comments	Number of samples	Date samples despatched to lab	Despatched by	Lab	LabJobNo	# samples received by lab	Date Lab received samples	Date Assays Finalized	QC Status	Reassay (y/n)	Date Reassay Finalized	QC Final	Standard ID	Failed Sample ID	Element (s)	QAQC Performed by	QAQC Date	QAQC Comments	QC Comments
2	Tamarack	Drillcore	12TK0153A	T0001	153A mineralized	33	hand delivered	MG	ALS Thunder Bay	TB20031117	33	2/8/2020	2/27/2020	Pass	No		Pass	TAM26, TAM28, TAM-M			MG	4/13/2020	QAQC'd by MG, re-QAQC'd by BK/JD due to AcQ issues	
3	Tamarack	Drillcore	16TK0233C	T0002	233C mineralized	11	3/12/2020	MG, JD, BK	ALS Thunder Bay	TB20066201	11	3/20/2020	4/2/2020	Pass	No		Pass	TAM-M			JD, BK	4/13/2020		
4	Tamarack	Drillcore	16TK0233B, 16TK0233C	T0003	233B, 233C intrusive	124	3/12/2020	MG, JD, BK	ALS Thunder Bay	TB20066202	124	3/20/2020	4/8/2020	Fail	Yes	5/14/2020	Pass	TAM26, TAM29-B	101010, 101040	Cu, (Pd and Pt)	JD, BK	4/17/2020	Resubmitted standard #101040; STD was opened by customs; QAQC'd passed after re-assay; Cu on 101010 failed again no change in value;	
5	Tamarack	Drillcore	20TK0265	T0004	265 intrusive	65	3/20/2020	JD, BK	ALS Thunder Bay	TB20069188	65	3/24/2020	4/11/2020	Pass	No		Pass	TAM-28			JD, BK	4/13/2020	Co assays in sample 100540 were above 3SD; since values were provisional the QAQC still passed	
6	Tamarack	Drillcore	20TK0265	T0005	265 mineralized	16	3/20/2020	JD, BK	ALS Thunder Bay	TB20069187	16	3/24/2020	4/2/2020	Pass	No		Pass	TAM26			JD, BK	4/13/2020		
7	Tamarack	Drillcore	12TK0153C	T0006	153C intrusive	82	3/24/2020	JD, BK	ALS Thunder Bay	TB20070864	82	3/26/2020	4/19/2020	Pass	No		Pass	TAM28, TAM29-B			JD, BK	4/20/2020	Duplicate parent sample was erroneously entered as 100611 switched to 100609 to fix mistype	
8	Tamarack	Drillcore	12TK0153C	T0007	153C mineralized	12	3/24/2020	JD, BK	ALS Thunder Bay	TB20070861	12	3/26/2020	4/3/2020	Fail	Yes	4/29/2020	Pass	TAM-M	100660	Au, Pd, Pt	JD, BK	4/29/2020	Re-assay comments: Au is good, Pd is good, Pt is good after re-assay	
9	Tamarack	Drillcore	16TK0233E	T0008	233E mineralized	16	3/24/2020	JD, BK	ALS Thunder Bay	TB20070862	16	3/26/2020	4/3/2020	Pass	No		Pass	TAM-M			JD, BK	4/13/2020		
10	Tamarack	Drillcore	16TK0233D	T0009	233D intrusive	74	4/29/2020	JD, BK	ALS Thunder Bay	TB20097353	74	5/7/2020	5/20/2020	Pass	No		Pass	TAM28, TAM29-B			BK	5/20/2020	All values passed QC and were within 2 std dev	#101040 sta
11	Tamarack	Drillcore	12TK0153A	T0010	153A intrusive	81	4/29/2020	JD, BK	ALS Thunder Bay	TB20097354	81	5/7/2020	5/26/2020	Pass	No		Pass	TAM27, TAM-M, TAM29-B			JD, BK	5/26/2020	#101453 mistype standard as EA-M - actual TAM-M; #101440 Cu is at 2 SD line;	
12	Tamarack	Drillcore	16TK0233E	T0011	233E intrusive	68	5/18/2020	JD	ALS Thunder Bay	TB20107838	68	5/20/2020	6/8/2020	Pass	No			TAM28, TAM29-B			JD, BK	6/8/2020	#100790 was "outside" 3SD for Cu, but the SD values were off; sent to Paul to fix	

11.4 Quality Assurance and Quality Control (QA/QC)

QA/QC programs are intended to monitor the accuracy and precision of the sampling and analysis process in order to quantify the reliability and accuracy of assay data. Typical QA/QC programs consist of a routine insertion of QC materials to measure laboratory performance. QC materials generally consist of CRM including standards and blanks (materials containing no economic minerals) as well as duplicate samples (duplicates).

The Tamarack North Project has shown QA programs consistent with industry standards. Written procedures, acceptable industry software, database organization, and data presentation all contribute to confidence in the current program. QC at the Tamarack North Project has evolved over the life of the project. The initial phase of the project saw duplicates, blanks, and standards inserted at a rate of approximately 5% to 6%. With the maturity of the program and confidence in the laboratory the rate of insertion has been reduced to 3.5% to 4%. There is a consistent program of analyzing duplicates of pulps (lab), coarse rejects (lab), and core (field). Analysis of the coarse reject duplicate samples for Ni and Cu show a strong correlation and thus confirm proper sample splitting methodology carried out at the lab (see Figure 11.2 and Figure 11.3). Analysis of the pulp duplicate samples for Ni and Cu also show a strong correlation and thus confirm the lab pulverization and lab precision (see Figure 11.4 and Figure 11.5).

Figure 11.2: Comparison of Original vs Duplicate Coarse Reject Ni (%) Values for Tamarack North Drill Hole Samples Between 2002 and 2022

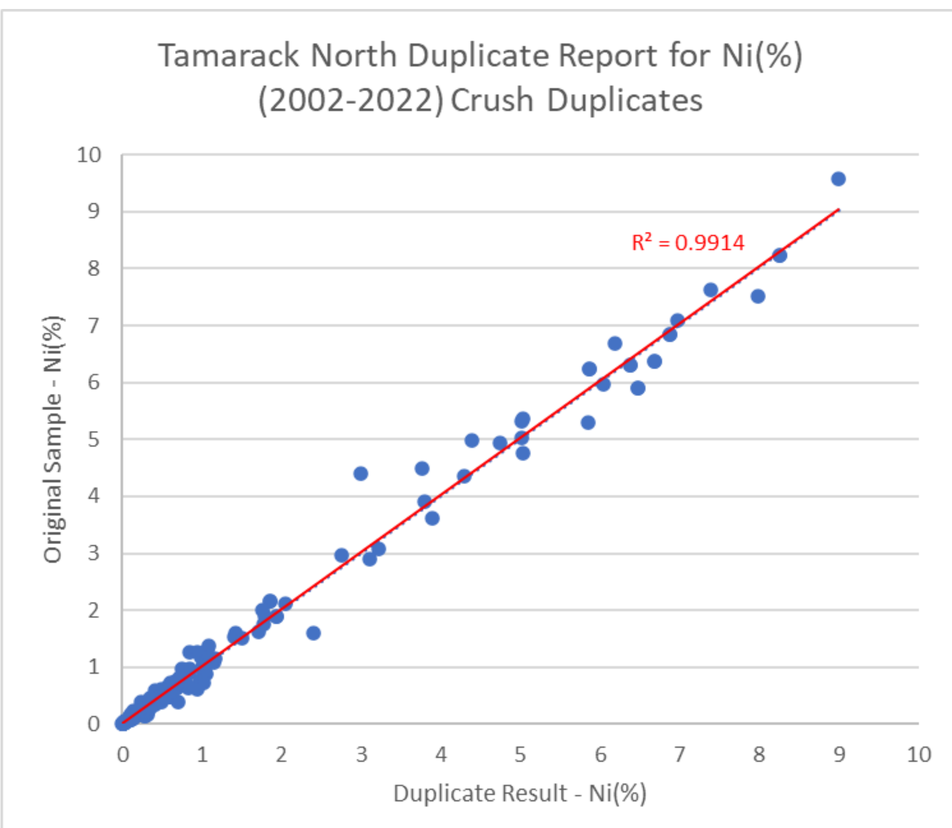


Figure 11.3: Comparison of Original vs Duplicate Coarse Reject Cu (%) Values for Tamarack North Drill Hole Samples Between 2002 and 2022

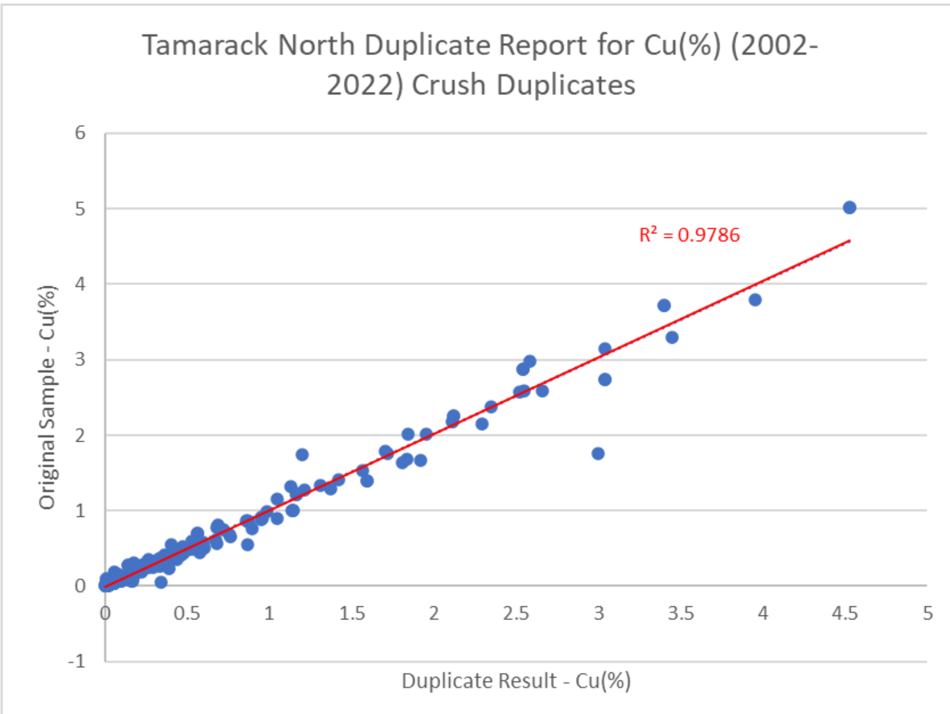


Figure 11.4: Comparison of Original vs Duplicate Pulps Ni (%) Values for Tamarack North Drill Hole Samples Between 2002 and 2022

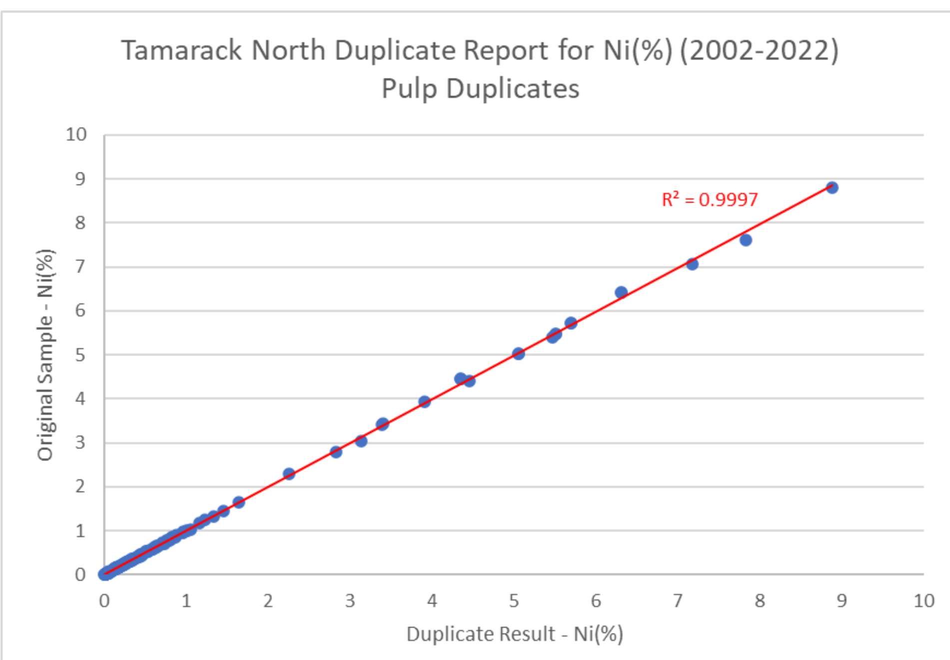
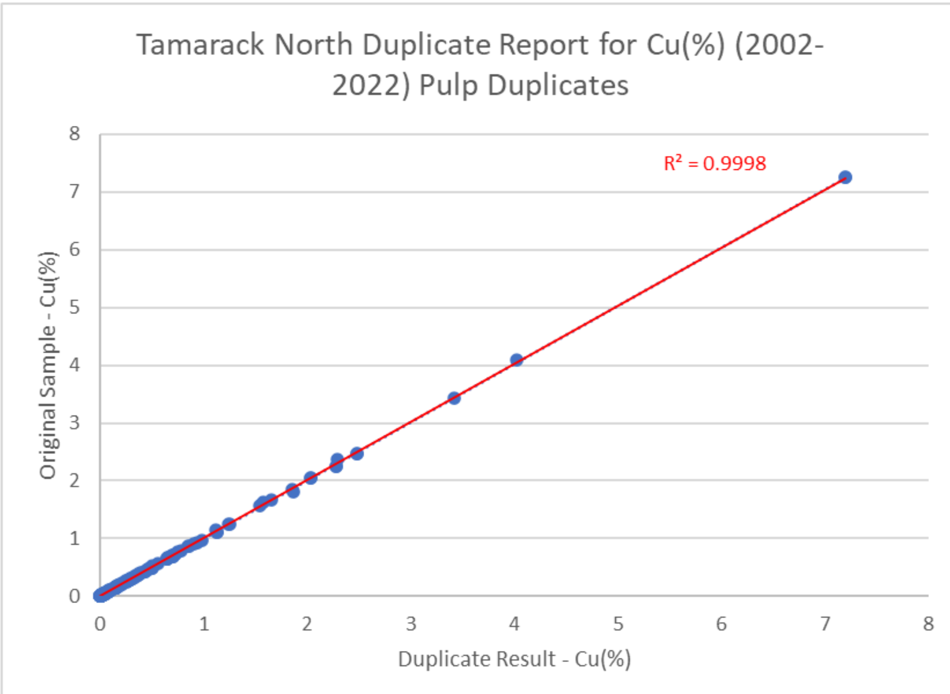


Figure 11.5: Comparison of Original vs Duplicate Pulps Cu (%) Values for Tamarack North Drill Hole Samples Between 2002 and 2022



It is the QP's opinion that the sampling process is representative of the mineralization at the Tamarack North Project and that the sample preparation and QA/QC procedures used, and the sample chain of custody were found to be consistent with CIM Mineral Exploration Best Practice Guidelines (November 2018).

12.0 DATA VERIFICATION

Roger Jackson, P.Geo, visited the site in May of 2022 to verify drill hole collar locations, logging procedures, sample chain of custody and collect independent samples for assay repeatability and verification. During the 2-day visit the QP observed recent drill hole intersections through the CGO East, CGO West and MSU Domains being logged and sampled by the Talon staff. All activities were performed to professional standards, and all procedures observed conform to industry best practices.

In addition to a review of the provided assay dataset against the original ALS certificates, several verifications were completed for the MRE outlined in Item 14.0

Data verification checks were also completed in 2014, 2017, and 2020 to support previous MREs for the Tamarack North Project. The verification work included a check of the drill hole database provided against original assay records (2014, 2017 and 2020) and site visit by the QP in 2014.

12.1 Resource Database Verification

Prior to 2022, 2,091 sample assays for %Ni, %Cu, %Co, Pt parts per million (ppm), Pd ppm, Au ppm, were compared from the supplied drill hole database to the original ALS Minerals certificates in the First Independent Technical Report on the Tamarack North Project with an effective date of August 29, 2014 (Table 12.1). For the updated MRE in 2017, the QP reviewed a further 533 samples from the supplied drill hole database (for holes drilled since the previous estimate) to the original ALS Minerals certificates. In 2020, an additional 157 samples having a Ni grade above 0.4%, representing 1,978 assays were checked identifying minor issues with three samples and eight Pt, Pd and Au assays. These issues were reviewed and found to be not material to the 2021 MRE and were recommended to be corrected in the assay database.

For the 2022 MRE a random selection of drill hole data from the 2021-2022 drill holes were validated against the original data, provided as ALS Minerals certificates. A total of 17 unique drill holes (154 samples x 6 elements per assay = 924 assays checked), representing 3.5% of the total available assay data, was reviewed. Of the 154 samples checked, the base metals (Ni (%), Cu (%) and Co (%)) had zero errors, and for precious metals (Pt (g/t), Pd (g/t) and Au (g/t)) there were 5 minor errors each. A summary of the sample verification results is provided in Table 12.2, and the failure rate for each assay type is stated in Table 12.3. The verified assays included holes from the MSU, LSMSU, USMSU, and the newly identified CGO West and CGO East domains, as illustrated in Figure 12.1, as these regions have been the focus of the recent exploration drilling. Note that several drill holes intersect both high grade (mixed massive sulphide) and low grade (disseminated) domains.

In early 2022, the QP recommended some modifications to the Talon database to allow for more efficient and accurate data exporting. An example of this was the removal of geotechnical and geometallurgical samples, some of which overlapped the geological or assay sample intersections.

The database encompasses the entire set of drill holes at the Tamarack North Project. Assay certificates were available for all samples. A summary of the data validation is listed in Table 12.1.

Table 12.1: Drill Hole Sample Data Validation

Years of Drill Program	# of Holes	# of Samples	# of Assays	# of Errors	Check Year
2008 - 2013	37	2,091	25,983	0	2014
2014 - 2018	19	533	3,198	0	2017
2019 - 2020	7	157	1,978	8	2020
2021 - 2022	17	154	924	15	2022

Figure 12.1: Location of Validation Assays Relative to the Tamarack North Project Mineral Domains, Drill Hole Numbers Annotated

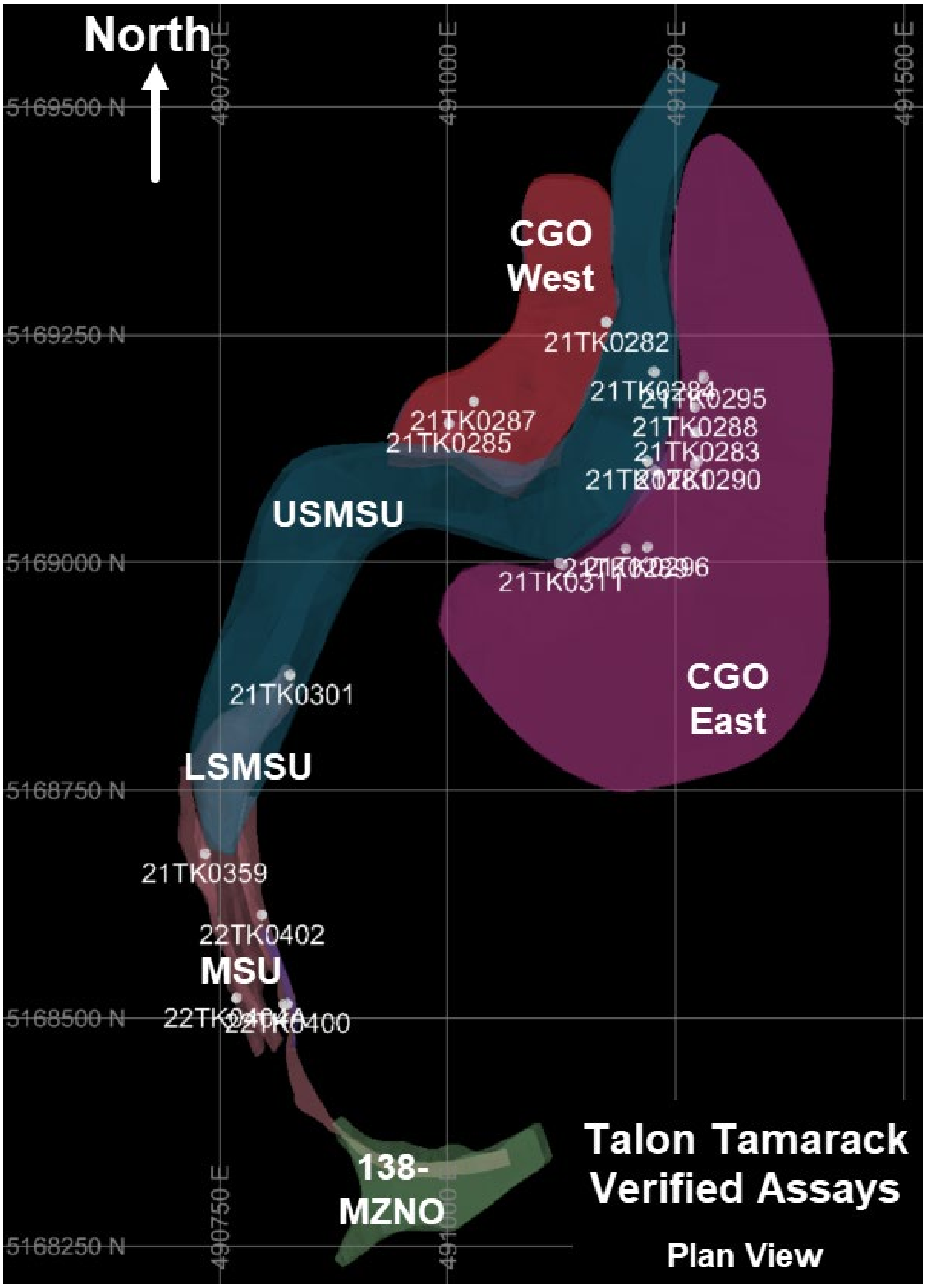


Table 12.2: Drill Holes and Assays Available, and Drill Holes and Assays Checked for Verification

Total Number of Holes	111
Number of Holes Checked	17
% Holes Checked	15
Total number of Samples (6 Primary Elements Only)	26,466
Number of Assays Checked	924
% Samples Checked	3.5

Table 12.3: Number of Errors in Verification Checks and Percentage of Failure Rate

Element	Number of Samples Checked	Number of Errors	% Failure Rate
Ni (%)	154	0	0
Cu (%)	154	0	0
Co (%)	154	0	0
Pt (g/t)	154	5	3.2
Pd (g/t)	154	5	3.2
Au (g/t)	154	5	3.2
Total	924	15	1.6

Note: Certain assay values in ppm were expressed as percentages rounded to three decimal places in the database. Values below the detection limit were set to half of the detection limit instead of a zero value.

12.2 Resource Site Visit

Roger Jackson, P. Geo., conducted a site visit to the Talon Tamarack North site on Monday and Tuesday, May 9 and 10, 2022. The purpose of the site visit included:

- Observe and review the drilling, drill core logging and sampling procedures;
- Select a representative suite of samples for replicate analytical comparison, and;
- Provide feedback to Talon for any opportunities to improve on any aspects of these activities.

All drilling, drill core logging and sampling activities were found to be consistent with the industry practices, as described in the CIM Mineral Exploration Best Practice Guidelines (2018). The QP noted the professionalism of the Talon employees and on-site management.

Fifteen partial-core samples, and two reference standards, were selected for analysis at SGS Natural Resources for comparison to the original assays determined by ALS Minerals.

Comparison of the 15 Talon original assays against the check assays showed good agreement for Ni, Cu, and Co as discussed in Item 12.2.4. There was a weaker correlation for the precious metals (Pt, Pd, and Au) especially in the high-grade sample S00441158, and this is attributed to the high Nugget effect.

12.2.1 Site Visit May 9 and 10, 2022 – Review of Activities

Initial contact at the Tamarack exploration project was with Mr. Brian Goldner, Talon's Chief Exploration and Operating Officer, who provided a tour of the core logging and sampling facility and made introductions to most of the geological and geophysical staff. Mr. Matthew Trembath, Talon Senior Geologist, accompanied the QP for the two days, providing site transportation and details of the drilling, logging and sampling procedures, and assisting with the replicate sample selection.

12.2.2 Site Visit – Drilling and Core Collection

A visit to three of the four operating diamond drill rigs provided an overview of the drilling and core handling procedures. The drill rigs appeared well maintained and showed ample lighting for night-time operations, heating units for the enclosed derricks, and large areas of rubber matting for environmental protection during equipment storage and material movement (Figure 12.2).

Figure 12.2: Talon Diamond Drill Rig Illustrating General Conditions, Heating, and Lighting Equipment Sitting on Rubber Mats

One of the four drill rigs was operated by a contractor, Cascade Drilling & Technical Services, and the rig team supervisor provided details of the drilling operations and core handling procedures. The Cascade rig had attached a thermal insulated trailer as a drill shack (Figure 12.3), and the three rigs visited had all appropriate guarding around the rotating equipment (Figure 12.4). All appropriate safety procedures were noted (fire extinguishers, first aid kits, personal protective equipment, etc.).

Figure 12.3: Exterior View of the Cascade Drill Rig

Figure 12.4: Cascade Drill Contractor Drilling Rig Interior Illustrating Safety Guarding Around Rotating Apparatus

The approximate collar locations of three drill holes (22TK0410, 22TK0411, and 22TK0412) were checked using a hand-held GPS against the frame of the drill rigs (Figure 12.5). All collar co-ordinates were found to closely match the Talon co-ordinates, generally within the accuracy of the GPS readings (±6 m to ±13 m).

Figure 12.5: Handheld GPS Proximal to Drill Rig (Drill hole 22TK0412 Illustrated, at Final Survey Coordinates 490,774 East, and 5,168,481 North)

The use of the down-hole survey instrument (Figure 12.6) was reviewed with the drill crew, and no issues were identified.

Figure 12.6: Downhole Survey Instrument

The directional drilling is performed by another contractor, Devico, and no issues were mentioned with the steering operations.

The drill crews use a bin-mounted camera with internal artificial lighting to photograph the core as soon as placed in the core boxes and the depth blocks inserted (Figure 12.7). These digital pictures are then transmitted to a Talon photograph database via commercial cellular network Figure 12.8) to allow the site geologist to remotely review the drill results shortly after the core arrives at surface and is an added step to ensure the integrity of the core handling.

Figure 12.7: Drill Crew Placing Drill Core in Boxes, and Placing Black Bin over Another Box for Digital Photography

Figure 12.8: Digital Photography of Core in Box Beneath the Black Bin Apparatus, with Drill Crew Sending Photograph via Commercial Cellular Network to a Talon Server.

The collection of the drill cuttings into weather sheltered bins (Figure 12.9), and the subsequent disposal of the cuttings, was discussed with the drill supervisor. The drill supervisor stated that the State of Minnesota had quite high standards for environmental protection, and the drilling activities had been routinely visited and reviewed by State regulators.

Figure 12.9: Drill Cuttings Are Captured into Bins for Later Disposal.

12.2.3 Site Visit – Core Shack and Geological and Geotechnical Logging, and Sampling Procedures

The core shack was spacious and well organized, with the core sawing room insulated from the remainder of the shack.

The geological and geotechnical logging of the core was reviewed with the geologists and the technicians, and all questions were answered in detail. The geological criteria for grouping the lithologies was explained by Mr. Goldner, with some discussion on the genesis of the sulphide mineralization, and the emplacement and variability of the different grade zones. Sulphide mineralogy was discussed (Figure 12.10), and the presence of the local loop-textures in massive sulphide.

Figure 12.10: Example of High-Grade Drill Core From the Base of the CGO West Mineral Domain.

The location of the standard and blank Certified Reference Material (CRM) was noted (Figure 12.11). The insertion of the CRM reference standards and blanks was described by Mr. Trembath as at semi-regular intervals, and also at any significant change in the sulphide content.

The Talon Tamarack "Assay QAQC Procedures" document was reviewed with Mr. Trembath, who demonstrated the data entry of the reference samples into the acQuire® core logging database.

Figure 12.11: Bins Holding the Certified Reference Material Standard Samples.

Coincident with the geotechnical logging the core is digitally photographed with a high-quality camera on a frame mount, with attached cm-scale and colour reference charts (Figure 12.12). The photographs of the core are tagged with the drill hole number and depth intervals and are uploaded to the Talon database for future reference.

Figure 12.12: Geotechnical Logging of The Drill Core and Bench Photography

Note: The cm-scale and colour chart attached to the left side of the frame apparatus.

The procedures for the selection of the samples into the collapsible plastic bins used as shipping containers was demonstrated by a logging geologist, with the actions captured electronically with bar scanners. The sealing of the bins with metal strapping was demonstrated by Mr. Trembath.

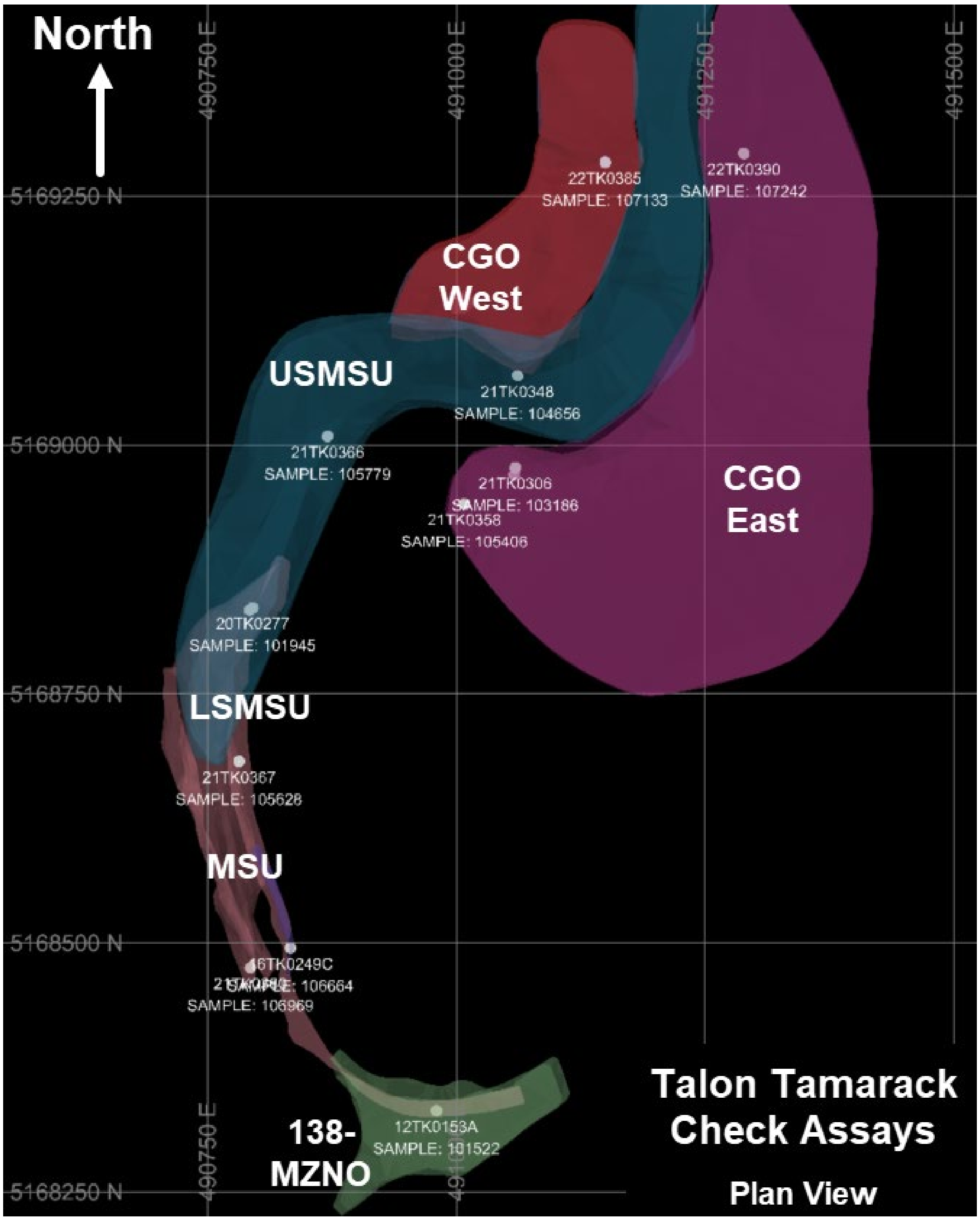
The procedures for the cross-border shipment of the samples to ALS Minerals in Thunder Bay, Canada, was reviewed, and some sample bins were checked for sample integrity (Figure 12.13). Please see Item 11.0 for additional details of the sample preparation and shipping protocols.

Figure 12.13: Core Sample Shipping Bins Secured with Metal Strapping and Labelled for Shipment to ALS Minerals in Thunder Bay, Canada

12.2.4 Site Visit – Replicate Sample Selection and Sampling

The objective of the check assay was to confirm the confidence of the Talon initial grades, across a spectrum of grade distributions and mineral domains. Fifteen samples from eleven drill holes were selected for the duplicate assays. See Figure 12.14 for the spatial distribution of the check assays selected.

Figure 12.14: Location of the Check Assays Relative to the Tamarack North Mineral Domains, with Drill Hole and Sample Numbers Annotated.



The newly built core storage building was spacious, well lit and well organized. Mr. Trembath explained how the core was retained at this shed temporarily, and then shipments of the core to another facility for long term storage.

The pre-selected core intervals selected by the QP had been laid out in advance on the floor of the building by Talon staff (Figure 12.15). Mr. Trembath assisted in the identification and selection of representative geological intervals with variable sulphide mineralization.

Figure 12.15: Pre-Selected Core Lengths Were Available for Viewing in the Storage Facility.

The selected intervals were either half- or quarter-sawn core (Figure 12.16) and were bagged with the SGS sample tags provided to Golder from the SGS office in Sudbury, Ontario.

Figure 12.16: Half- or Quarter-Sawn Core was Viewed and Representative Intervals Selected for Check Assays.

Sample tag numbers S00441151 to S00441165 were used for the selected drill core, and sample tags S00441166 was used for the TAM-M standard (used to represent 50-100% sulphide) and S00441167 was used for the TAM-27 reference standard (used to represent 7-20% sulphide). The sample bags were placed in pails for shipment by Talon staff and sent to SGS Canada Inc. (SGS) in Burnaby, British Columbia. SGS provided work order number BBM22-19633 on July 26, 2022.

SGS is an Accredited Laboratory under ISO/IEC 17025:2017, with most recent accreditation on July 21, 2022. SGS analysed the samples using sodium peroxide fusion with Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) finish for base metals (Ni, Cu, Co) and fire assay with ICP-AES finish for the precious metals (Pt, Pd, Au).

The check assay data was returned by SGS NAM Minerals Geochemistry on August 31, 2022.

Compilation of the Talon and Golder check assay values are indicated in Table 12.4 and are graphed in Figure 12.17 to Figure 12.22

The check assays indicate low variation for the base metals (Ni, Cu and Co), with slightly greater variation for Pd. There was generally weaker correlation for the precious metals (Pt, Pd and Au), especially in the high-grade sample S00441158, and this is attributed to the nugget effect. Sample S00441158 is from drill hole 21TK0348 located at the southern region of the CGO West mineralization, and nearby drill holes have very high base metal grades with highly variable precious metal grades.

Table 12.4: Golder Check Assays and Talon Original Assays.

Sample Number		Ni (%)		Cu (%)		Co (%)		Pt (g/t)		Pd (g/t)		Au (g/t)	
Golder	Talon	Golder	Talon	Golder	Talon	Golder	Talon	Golder	Talon	Golder	Talon	Golder	Talon
S00441151	106969	5.58	4.76	2.55	2.66	0.12	0.10	0.77	0.70	0.43	0.37	0.24	0.18
S00441152	107242	5.16	4.76	1.37	1.22	0.16	0.15	0.35	0.34	0.22	0.21	0.24	0.46
S00441153	107133	0.69	0.66	0.51	0.47	0.02	0.02	0.24	0.20	0.15	0.14	0.11	0.10
S00441154	105779	1.09	1.03	0.56	0.55	0.03	0.03	0.07	0.06	0.05	0.05	0.07	0.05
S00441155	105628	0.18	0.21	0.15	0.14	0.01	0.01	0.11	0.09	0.05	0.04	0.06	0.04
S00441156	105634	4.57	4.59	2.51	2.23	0.09	0.09	0.30	0.31	0.20	0.21	0.11	0.09
S00441157	105406	0.23	0.21	0.09	0.08	0.01	0.01	0.04	0.03	0.01	0.01	0.03	0.03
S00441158	104714	7.71	8.93	9.11	10.30	0.06	0.08	8.52	9.61	4.26	6.37	3.13	8.63
S00441159	104656	0.45	0.40	0.24	0.22	0.02	0.02	0.40	0.39	0.24	0.23	0.08	0.15
S00441160	103360	3.29	3.31	0.69	0.94	0.12	0.12	0.27	0.27	0.19	0.19	0.20	0.20
S00441161	103186	0.39	0.42	0.22	0.24	0.02	0.02	0.08	0.08	0.04	0.04	0.06	0.07
S00441162	101964	3.91	3.61	1.58	1.54	0.10	0.09	0.17	0.16	0.15	0.18	0.07	0.09
S00441163	101945	1.44	1.48	0.84	0.91	0.04	0.04	0.15	0.15	0.08	0.08	0.24	0.19
S00441164	106664	1.80	2.32	0.60	0.70	0.04	0.05	1.72	0.70	0.29	0.36	0.27	0.59
S00441165	101522	7.58	7.61	3.29	3.52	0.14	0.14	0.42	0.44	0.50	0.54	0.04	0.15
S00441166	**TAM-M**	6.32	5.99	2.63	2.62	0.14	0.14	0.65	0.59	0.52	0.47	0.27	0.25
S00441167	**TAM-27**	1.83	1.72	1.14	1.11	0.05	0.40	0.64	0.65	0.35	0.36	0.28	0.33

Figure 12.17: Golder Check Assay for Ni (%) Versus Original Talon Assays (Blue), TAM-M (Red) and TAM-27 (Green)

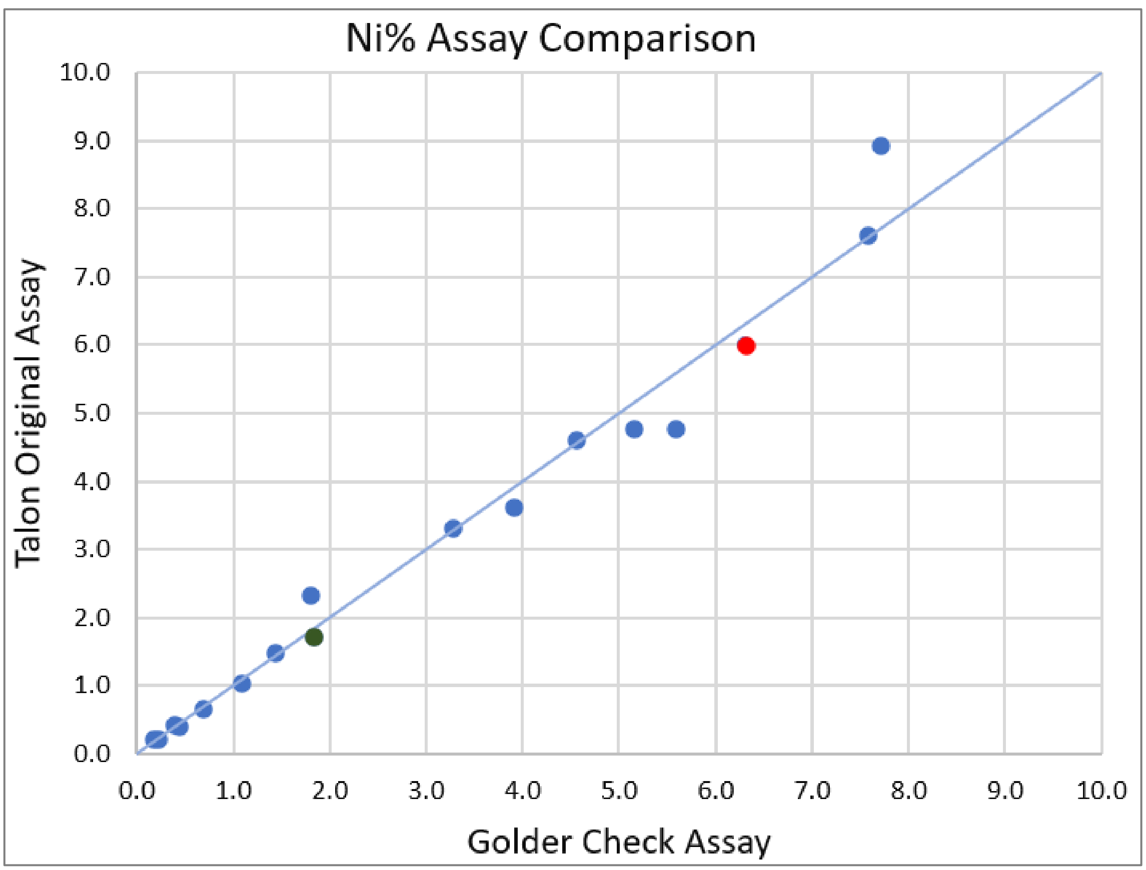


Figure 12.18: Golder Check Assay for Cu (%) Versus Original Talon Assays (Blue), TAM-M (Red) and TAM-27 (Green)

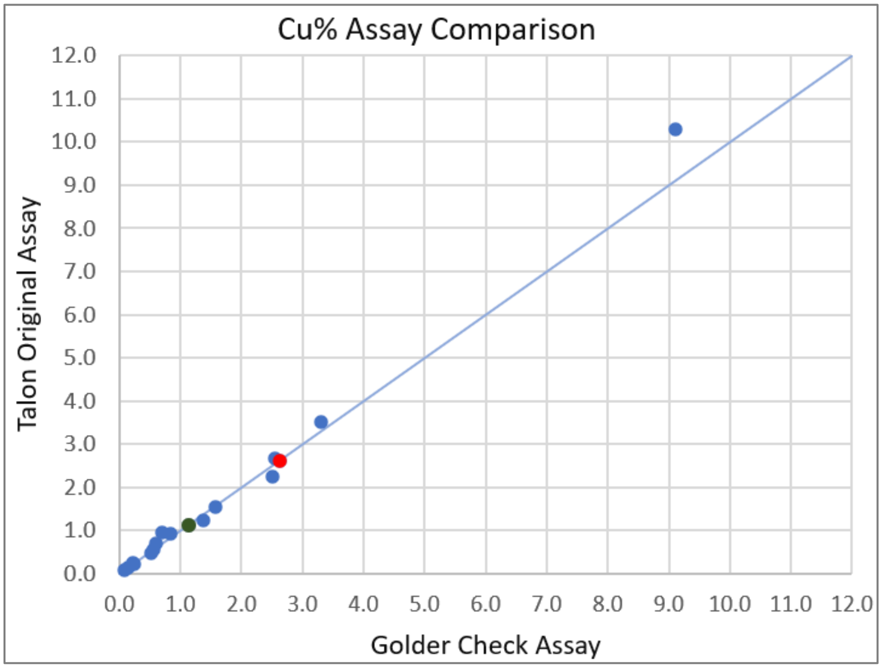


Figure 12.19: Golder Check Assay for Co (%) Versus Original Talon Assays (Blue), TAM-M (Red) and TAM-27 (Green)

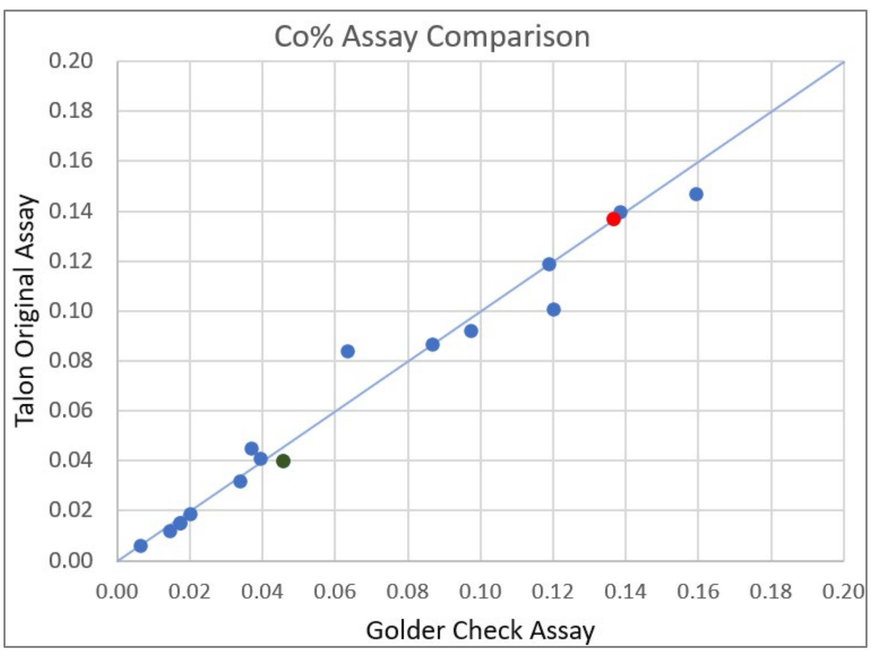


Figure 12.20: Golder Check Assay for Pt (g/t) Versus Original Talon Assays (Blue), TAM-M (Red) and TAM-27 (Green)

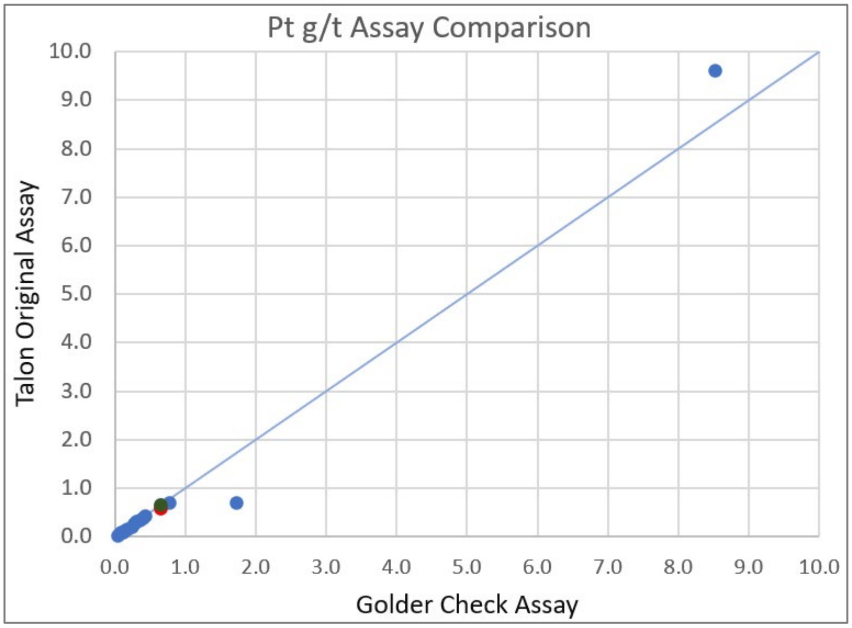


Figure 12.21: Golder Check Assay for Pd (g/t) Versus Original Talon Assays (Blue), TAM-M (Red) and TAM-27 (Green)

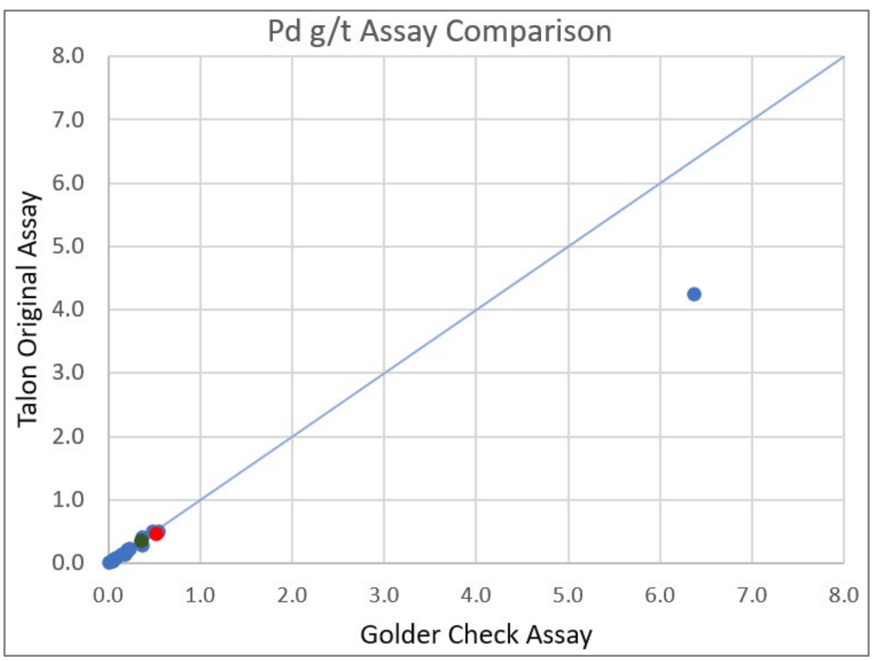
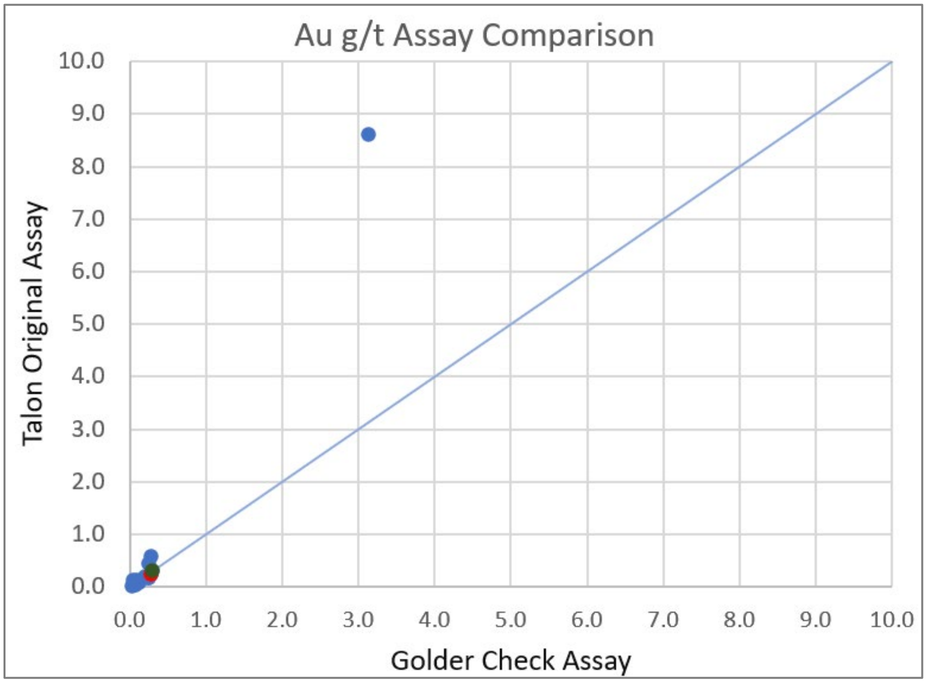


Figure 12.22: Golder Check Assay for Au (g/t) Versus Original Talon Assays (Blue), TAM-M (Red) and TAM-27 (Green)



12.2.5 Site Visit Summary

The QP observed the drilling, geological logging and sampling procedures at the Tamarack North Project site and considers the Talon procedures to be consistent with industry best practices as described in the CIM Mineral Exploration Best Practices Guidelines (November 23, 2018) and suitable for supporting the MRE stated in Item 14.0 of this Technical Report.

There were no recommendations made to Talon on any aspects of the drilling, geological logging, or data integrity. There is a recommendation to perform more Specific Gravity measurements in all geological domains using the ALS Minerals pycnometer method.

12.3 Metallurgical Data Verification

The assay results used to generate metallurgical mass balances were generated by SGS Lakefield in Ontario. The analytical lab is ISO/IEC 17025 certified, which is the international reference for testing and calibration laboratories wanting to demonstrate their capacity to deliver reliable results.

The QA/QC protocol includes the addition of 20% blanks and standards and at least one duplicate analysis for every 20 samples.

The validity of the mass balances is verified by comparing the direct head assay of a sample with the reconstituted head assay from the individual flotation products.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

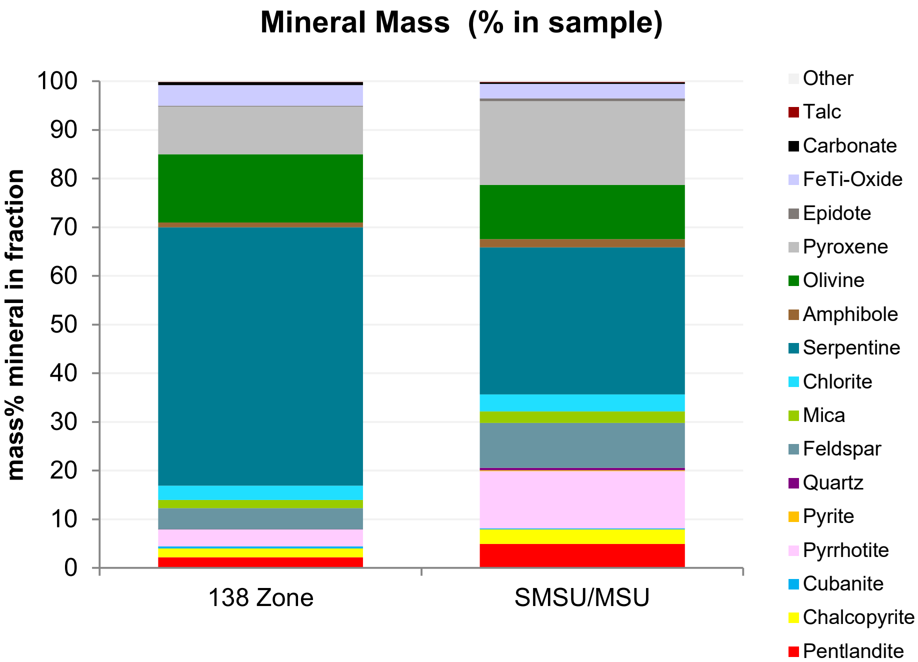
A total of almost 50 composites were evaluated in metallurgical test programs between 2006 and 2022. The test programs were completed at the facilities of SGS Minerals Services in Lakefield, Ontario, Canada, XPS in Sudbury, Ontario, Canada, and Blue Coast Research in Nanaimo, British Columbia, Canada. The head grades of the composites ranged between 0.30 and 6.39% Ni, 0.20 and 2.80% Cu, and included samples from the CGO East, CGO West, MSU, SMSU, CGO, FGO, MZNO, 138 Zone, and 238 Zone.

13.1 Historical Metallurgical and Mineralogical Data

A flowsheet optimization program was carried out at XPS in Sudbury, Ontario and SGS in Lakefield, Ontario using a composite that attempted to replicate the combined SMSU, MSU, and 138 Zone. The objective of the metallurgical program was to develop a flowsheet and suitable conditions to produce a Ni concentrate that could be marketed to smelters, converted into Ni powder, or treated in a downstream hydrometallurgical processing facility. The minimum grade target for the Ni concentrate was established at 10.5% Ni to ensure good marketability for the pyrometallurgical option. Further, the process development aimed to produce a saleable Cu concentrate grading at least 25% Cu.

At the beginning of the optimization program, two composites were generated for mineralogical characterization. One composite attempted to be representative of the combined SMSU and MSU mineralization and the second composite aimed to represent only the 138 Zone mineralization. The two composites were subjected to mineralogical characterization by QEMSCAN. The modal mineralogy of the two composites is presented in Figure 13.1. Total sulphides accounted for 7.94% and 20.1% of the total sample mass in the 138 Zone and SMSU/MSU composites, respectively. Pn was the only Ni mineral, while Cpy and cubanite were identified as the Cu minerals. No electron probe analysis was performed on the two composites to quantify the deportment of Ni into Po, but it was assumed to be in line with the mineralogical analysis of the domain composites.

Figure 13.1: Modal Mineralogy of 138 Zone and SMSU/MSU Composites



The average mineral grain size of Pn was 25 µm in the 138 Zone composite and 42 µm in the SMSU/MSU composite. The average Cpy grain size was smaller at 15 µm and 37 µm in the 138 Zone composite and SMSU/MSU composite, respectively. The average mineral grain sizes of Po was comparable with Cpy.

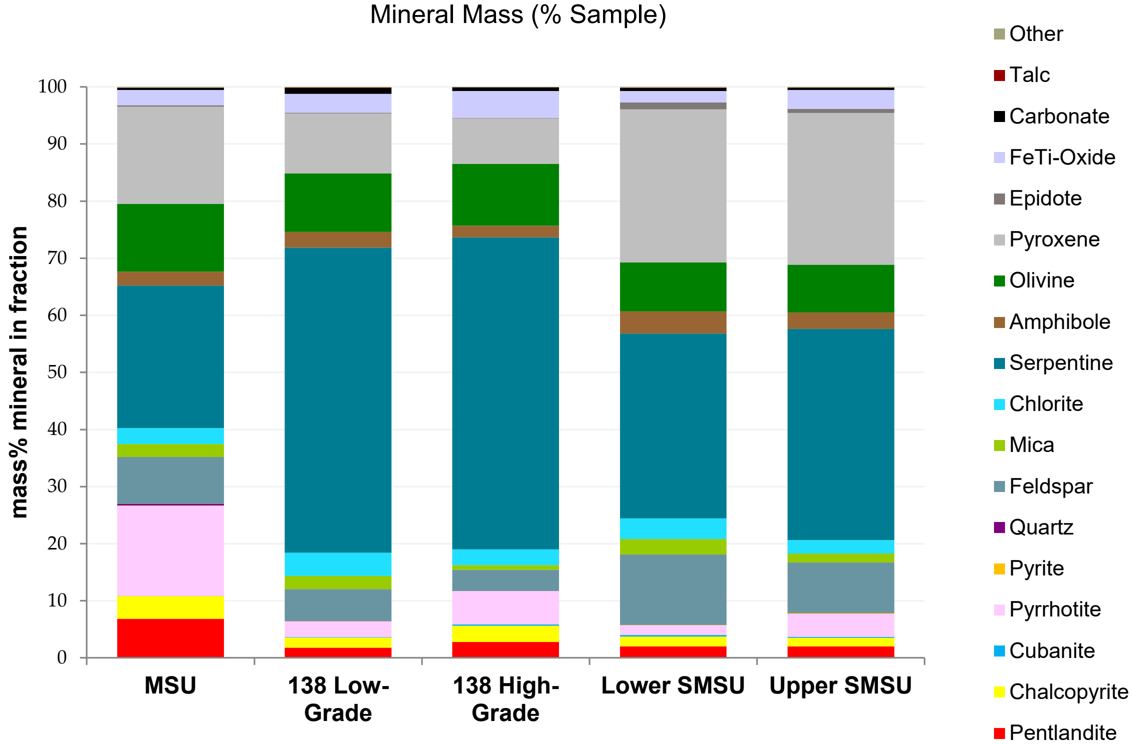
To determine the mineralogical differences of material making up the two composites, the mineralization was further broken down into a high-grade and low-grade composite for the 138 Zone, MSU, as well as an Upper SMSU and Lower SMSU composite for the SMSU/MSU mineralization. The modal mineralogy of the five composites is depicted in Figure 13.2.

The total sulphide content in the MSU composite was 26.7% compared to 4.29% and 6.82% in the Lower and Upper SMSU composites, respectively. The main difference between the Lower and Upper SMSU composites was the higher Po content of 4.03% in the Upper SMSU compared to only 1.74% in the Lower SMSU. The concentration of Pn was identical in both composites at 2.00%. The two SMSU composites yielded higher cubanite concentrations of 0.25% and 0.18% in the Lower and Upper SMSU, respectively, compared to only 0.08% in the MSU composite. Cubanite is frequently linked to decreased Cu recoveries and lower Cu concentrate grades.

The two 138 Zone composites yielded serpentine concentrations of 53.4% to 54.7%, which may affect the selectivity of the flotation process.

Talc concentrations were low in all five composites at 0.02% to 0.06%.

Figure 13.2: Modal Mineralogy of SMSU, MSU, and 138 Zone Composites



Prior to determining the composite recipe, it was necessary to establish if the inclusion of the 138 Zone mineralization in a composite results in metallurgical challenges that would potentially prevent the ability to produce acceptable concentrates. Hence, one MSU/SMSU composite representing 5.32 Mt of the Tamarack mineralization and one MSU/SMSU/138 Zone composite representing the entire 8.02 Mt of the Tamarack mineralized material were generated and subjected to flotation testing. It should be noted that these tonnage numbers reflect the March 2020 PEA resources. At the beginning of the metallurgical optimization program, the mineralized material of 8.02 Mt was the most current information.

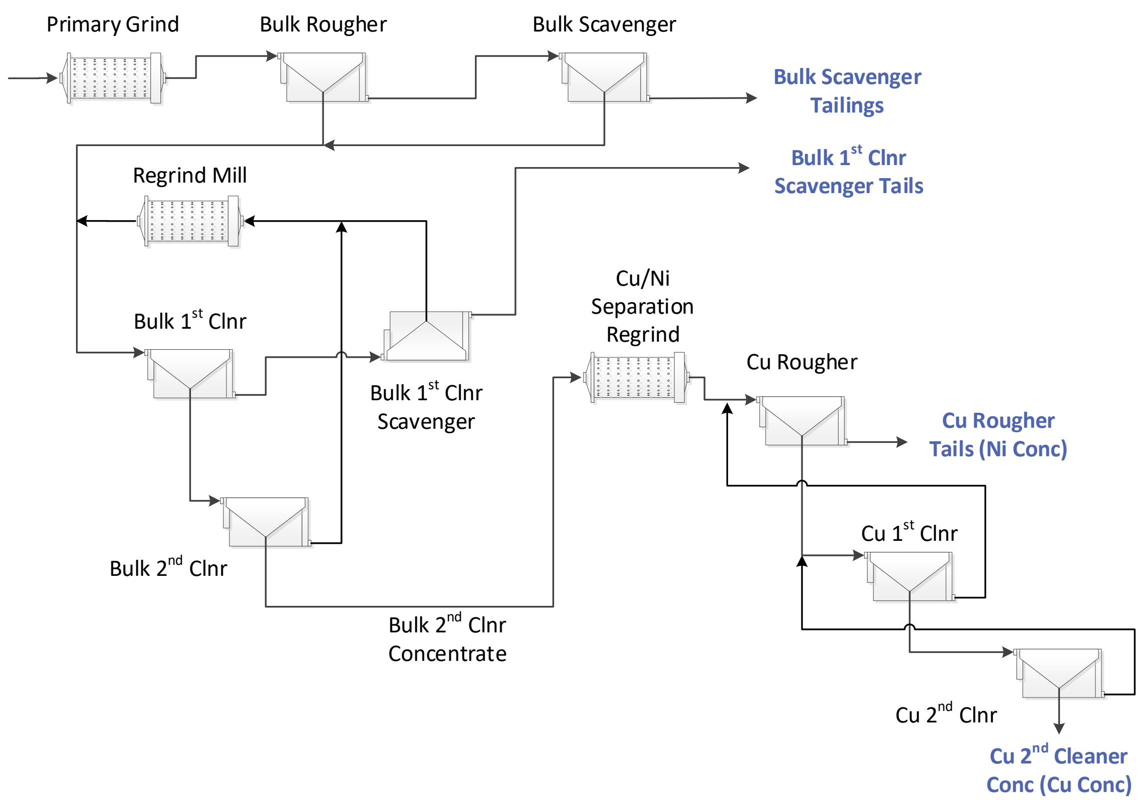
In order to determine the impact of the 138 Zone on the metallurgical performance, a total of 10 rougher kinetics tests were carried out on the two composites. Side-by-side tests on the two composites were completed on the with and without the 138 Zone composites to investigate the impact of primary grind size, flotation time, reagent dosage, and reagent addition points. The results revealed that despite a more challenging mineralogy, the flotation selectivity in the rougher was not negatively impacted by the 138 Zone mineralization. One baseline cleaner test performed on each of the two composites confirmed a consistent selectivity in the cleaner stages and, therefore, a decision was made to include the 138 Zone mineralization in the composite.

Seven batch cleaner flotation tests were carried out on the composite with 138 Zone to establish suitable cleaner flotation conditions that maximize the Ni, Cu, and Co recovery into a 2nd cleaner concentrate while minimizing the entrainment of gangue minerals.

Due to scheduling conflicts a decision was made to perform the remaining tests at SGS in Lakefield, Ontario. A total of two rougher and eight batch cleaner tests were carried out by SGS to replicate the initial work performed by XPS and to develop suitable conditions for the Cu/Ni separation circuit.

At the end of the test program, a LCT was carried out on the composite with 138 Zone to simulate a continuous operation of the circuit. The flowsheet that was used in the LCT is depicted in Figure 13.3. The mineralized material was ground to a size of P_{80} = 100 µm and then subjected to bulk rougher and bulk scavenger flotation. The combined product was upgraded in two stages of bulk cleaning. The bulk 1st cleaner tailings were subjected to a scavenger stage to minimize metal loses to the cleaner tailings. The bulk 1st cleaner scavenger concentrate and the bulk 2nd cleaner tailings were reground in a ball mill to improve mineral liberation before being combined with the bulk rougher and bulk scavenger concentrate of the next cycle. The bulk 2nd cleaner concentrate constituted the Cu/Ni separation circuit feed and was reground to P_{80} ~ 25 µm to improve liberation of the Ni and Cu minerals. This target grind size was established based on the results of the QEMSCAN analysis. The Cu/Ni separation circuit consisted of a standard Cu rougher and two stages of cleaning. Lime was added to maintain a pH of 12.0 and no further depressants or collectors were required.

Figure 13.3: Flowsheet of LCT



The results of the LCT are presented in Table 13.1. A total of 83.2% of the Ni and 15.9% of the Cu were recovered into a Ni concentrate grading 10.7% Ni and 1.22% Cu. The Cu concentrate contained 71.6% of the Cu at a grade of 29.9% Cu. Less than 2% of the Ni reported to the Cu concentrate at a grade of 1.13% Ni. Mineralogical analysis of the Cu concentrate revealed that almost 50% of the Pn reporting to this product was free or liberated. This suggests that 50% of the Ni units were recovered to the Cu concentrate through entrainment, which is difficult to control in small laboratory scale tests. It is postulated that the Ni recovery into the Cu concentrate will be substantially lower in a commercial scale continuous operation due to better control of entrainment.

The Tamarack mineralization hosts a range of Mg bearing minerals and recovery into the Ni concentrate must be minimized. The proposed process conditions include depressants for the Mg minerals in the cleaning stage but carry over of Mg minerals into the Ni concentrate was still significant for the disseminated domains. The MgO concentration in the Ni concentrate of the composite with 138 Zone was 4.66% MgO and, therefore, just below the typical smelter penalty threshold value of 5.0% MgO. Non-sulphide gangue rejection optimization is planned for future test programs to further reduce the gangue content in the Ni concentrate.

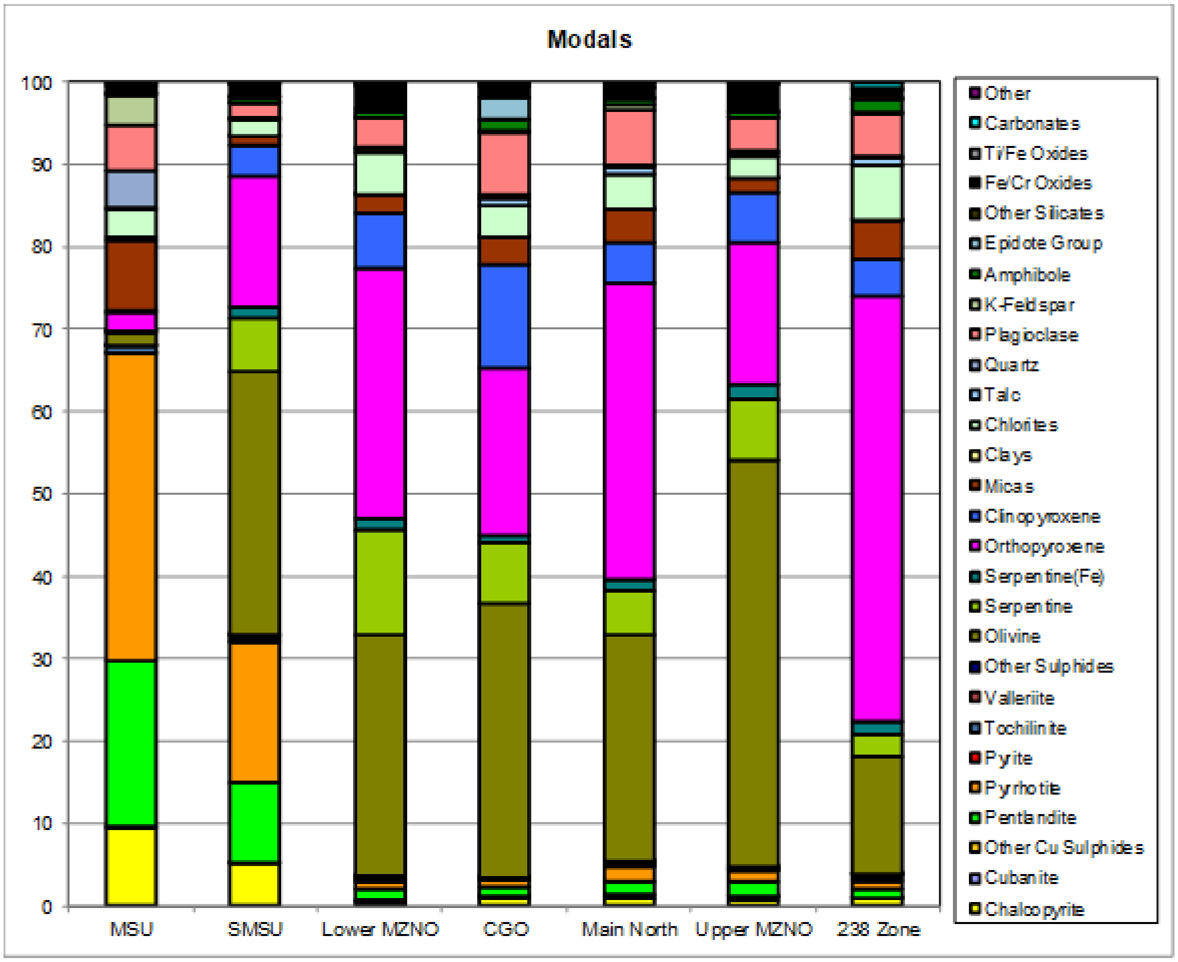
Table 13.1: Process Mass Balance

Product	Weight	Assays, %					% Distribution				
	%	Cu	Ni	S	Fe	MgO	Cu	Ni	S	Fe	MgO
Cu Conc	2.2	29.9	1.13	32.5	32.5	0.80	71.6	1.6	12.9	4.8	0.1
Ni Conc	11.9	1.22	10.7	28.6	40.6	4.66	15.9	83.2	61.8	32.8	2.4
Bulk 1st Clnr Scav Tails	9.3	0.40	0.74	6.42	17.5	22.7	4.0	4.5	10.8	11.0	9.0
Bulk Scavenger Tails	76.6	0.10	0.21	1.05	10.0	27.1	8.5	10.7	14.6	51.4	88.6
Combined	100.0	0.92	1.53	5.54	14.8	23.4	100.0	100.0	100.0	100.0	100.0

A chemical and mineralogical characterization was completed in 2016/2017 on the seven composites representing the lithologies identified in the Tamarack resource estimate.

The mineral abundance of the seven composites is depicted in Figure 13.4 Chalcopyrite (Cpy), pentlandite (Pn), and pyrrhotite (Po) represent almost 70% of the mass in the MSU composite and this value decreases to slightly over 30% in the SMSU composite. Olivine and pyroxenes were the most abundant non-sulphide gangue minerals in the SMSU and disseminated composites. Serpentine made up between 0.11% in the MSU composite and 7.3% in the CGO composite. The concentrations of talc were low in all composites and ranged between 0.14% in the SMSU and 0.91% in the CGO composite.

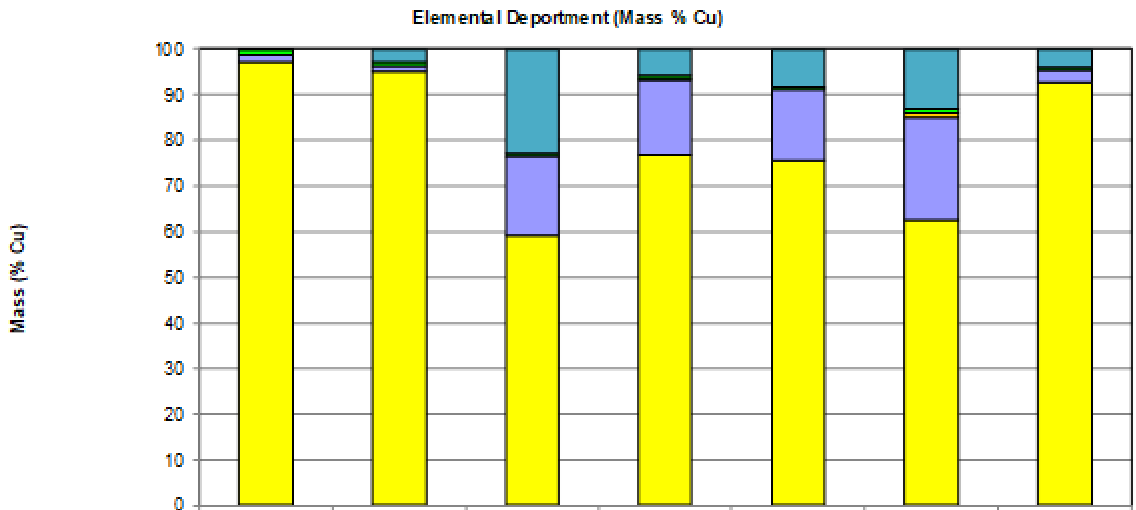
Figure 13.4: Modals of Tamarack Composites



The Cu deportment into the different Cu-bearing minerals is presented in Figure 13.5 In the MSU and SMSU composites almost all Cu units in the sample were associated with Cpy at 97.2% and 95.2%, respectively. Cubanite as the second most abundant Cu-sulphide mineral contained between 1.4% and 1.0% of the Cu in the MSU and SMSU composites, respectively. Only 1.3% of the Cu reported to Pn and valleriite in the MSU composite, while this number increased to 3.8% in the SMSU composite.

In the CGO and Main North disseminated composites, the Cu deportment into Cpy was only 75.6% to 77.0%. Between 15.5% and 16.3% of the Cu was associated with cubanite and 5.9% to 8.2% with valleriite. Cubanite has a Cu content of only 23.4% compared to 34.6% in Cpy and, therefore, has negative implications on the Cu concentrate grade that can be achieved with this material. The deportment of Cu into valleriite will result in an overall lower recoverable percentage of Cu since the valleriite proves difficult to recover in the flotation process.

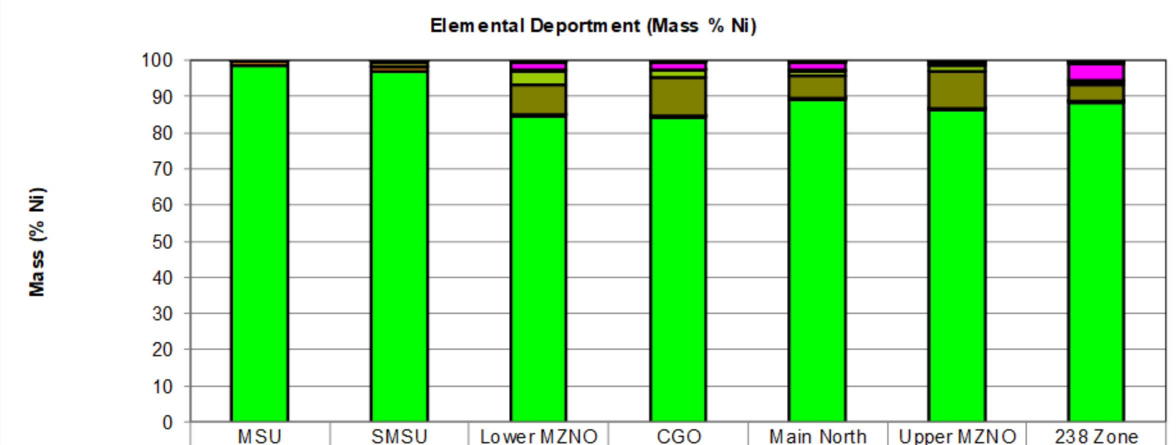
Figure 13.5: Elemental Deportment of Cu



	MSU	SMSU	Lower MZNO	CGO	Main North	Upper MZNO	238 Zone
Valleriite	0.1	2.8	22.7	5.9	8.2	13.0	4.0
Pentlandite	1.2	1.0	0.8	0.7	0.8	0.9	0.7
Other Cu Sulphides	0.0	0.0	0.0	0.2	0.0	0.8	0.0
Cubanite	1.4	1.0	17.2	16.3	15.5	22.5	2.6
Chalcopyrite	97.2	95.2	59.3	77.0	75.6	62.7	92.7

Further the elemental deportment of Ni as determined by microprobe and Quantitative Evaluation of Materials by Scanning Electron Microscope (QEMSCAN) analyses is presented in Figure 13.6 While 98.1% and 96.0% of the Ni was associated with Pn in the MSU and SMSU composites respectively, the values decreased to 84.3% in the CGO composites. Up to 10.4% of the Ni units in the CGO composite were associated with olivine, which renders them unrecoverable by means of sulphide flotation. The increased deportment of Ni into non-sulphide gangue minerals is the primary reason for the sharp decrease in Ni rougher recovery for the lower grade samples. While mineralogical analysis was conducted on very few samples, Ni sulphide chemical analysis identified a consistent 0.1% Ni head grade associated with non-sulphide gangue minerals in low grade composites, which is not recoverable by means of sulphide flotation. In a sample with a 0.5% Ni head grade, the Ni content in non-sulphide gangue minerals represents approximately 20% of the entire Ni values in the sample.

Figure 13.6: Elemental Deportment of Ni



	MSU	SMSU	Lower MZNO	CGO	Main North	Upper MZNO	238 Zone
Amphibole	0.00	0.01	0.07	0.15	0.07	0.04	0.19
Amphibole	0.00	0.01	0.07	0.15	0.07	0.04	0.19
Micas	0.11	0.03	0.36	0.57	0.49	0.19	0.81
Clinopyroxene	0.00	0.00	0.02	0.05	0.02	0.02	0.03
Orthopyroxene	0.01	0.19	2.35	1.71	2.20	0.97	4.57
Serpentine(Fe)	0.00	0.02	0.17	0.12	0.14	0.14	0.23
Serpentine	0.00	0.30	3.70	2.28	1.20	1.59	0.86
Olivine	0.04	1.44	8.49	10.44	6.38	10.43	4.74
Pyrite	0.00	0.00	0.00	0.00	0.01	0.00	0.02
Pyrrhotite	1.21	1.13	0.38	0.40	0.58	0.40	0.37
Pentlandite	98.62	96.89	84.47	84.27	88.91	86.22	88.18

Electron microprobe analysis was conducted on the seven composites to determine the chemical composition of specific minerals and to quantify the deportment of Ni into sulphide and non-sulphide gangue minerals. The concentrations of pertinent elements in Cpy, Pn, and Po are presented in Table 13.2.

Table 13.2: Concentrations of Pertinent Elements in Sulphide Minerals

Element	MSU	SMSU	Lower MNZO	CGO	Main North	Upper MZNO	238
%Cu in Cpy	32.8	33.7	28.2	29.2	29.2	32.4	33.5
%Ni in Po	0.26	0.25	0.29	0.10	0.14	0.10	0.43
%Ni in Pn	33.9	34.8	32.3	31.3	31.8	25.9	32.9
%S in Cpy	34.7	34.9	35.0	34.5	34.8	34.5	34.7
%S in Po	39.2	39.2	38.5	39.1	39.0	38.7	38.6
%S in Pn	33.4	33.2	33.2	33.0	33.4	29.5	35.5

Note: Cpy = chalcopyrite, Pn = pentlandite, Po = pyrrhotite

At a primary grind size of P80 ~ 100 µm (microns) free and liberated Cu-sulphides accounted for 85.8% in the MSU composite and 78.3% in the SMSU composite. These values decreased to 66.0% and 72.7% in the CGO and Main North composites.

Free and liberated Pn accounted for 87.2% in the MSU composite and 83.9% in the SMSU composite. Again, the degree of liberation was reduced in the CGO and Main North composites with values of 58.1% and 69.5%, respectively. This technical report focuses on the likely three phases of a mine plan, namely CGO E/W, MSU/SMSU, and SMSU.

13.2 Mineralogical Characterization

Samples of the 2022 flowsheet optimization program composites were submitted for mineral characterization using a Mineral Liberation Analyzer (MLA). The simplified modals of the head samples are presented in Figure 13.7. These composites represented blends of lithologies that are expected to be extracted during the first seven years of mining operation (CGO East, CGO West, MSU/SMSU, and SMSU).

The modals of the three composites are presented in Figure 13.7. Pentlandite and chalcopyrite were the primary Ni and Cu minerals with similar amounts in the CGO East, CGO West and MSU/SMSU composites and lower concentrations in the SMSU composite, which in line with the head grades that are presented in Table 13.3 Cpy and Pn accounted for 10.2% and 13.1% of the total composite mass.

Table 13.3: Head Assays of 2022 Optimization Composites

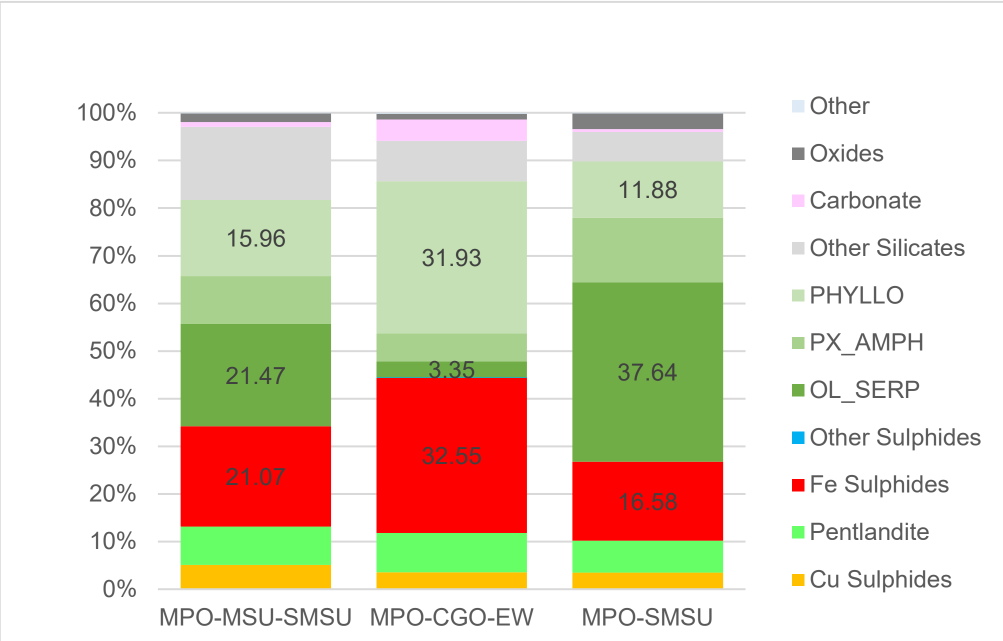
Sample ID	Assays, %						Assays, g/t		
	Cu	Ni	S	Fe	MgO	Si	Au	Pt	Pd
MPO-CGOE/W #1	1.34	3.26	18.3	30.4	4.54	8.86	0.15	0.28	0.20
MPO-MSU/SMSU #1	1.45	3.05	12.4	27.5	13.3	11.5	0.04	0.42	0.23
MPO-SMSU #1	1.22	2.20	9.31	19.1	11.7	12.4	0.12	0.29	0.21

The concentration of Fe sulphides varied between 16.6% in the SMSU composite and 32.6% in the CGO East and CGO West. The Po:Pn ratio in the CGO E/W composite was almost 4:1 compared to approximately 2.5:1 in the other two composites.

Nickel deportment to pentlandite was consistent in all three samples at 93-94%. The balance of the Ni was mainly associated with Po (2.4-3.2%), serpentine (0.1-1.5%), and olivine (0.2 – 1.2%).

At a grind size of P_{80} ~ 100 microns, 80-85% of the pentlandite was liberated and another 6.5 – 7.6% associated with Cpy and Po.

Figure 13.7: Modal Mineralogy – Simplified Mineralogy Feed Samples



13.3 Metallurgical Testing

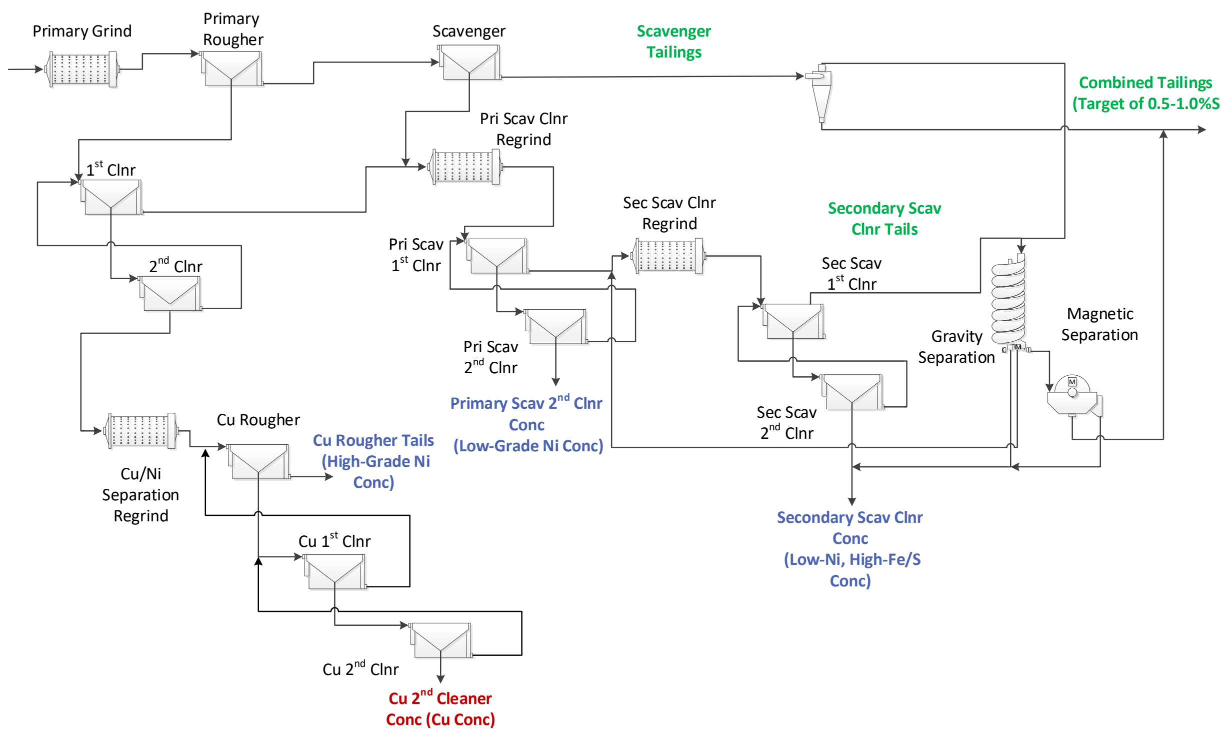
The metallurgical process optimization program built upon the existing understanding of the metallurgical response of the Tamarack mineralization. Under the terms of the Tesla Supply Agreement, Fe in Sulphides % may constitute a payable by-product for use in lithium iron phosphate batteries. Hence, the process objective shifted from maximizing only Ni recovery towards incorporating the flexibility to recover most iron sulphides into flotation concentrates while minimizing gangue entrainment. The development work culminated in the flowsheet that is depicted in Figure 13.8

The front end of the circuit remains identical to the PEA #3 flowsheet. The scavenger concentrate and the 1st cleaner tailings are subjected to a separate cleaning circuit with two regrind and cleaning stages. This approach was chosen to minimize the risk of sulphide slimes generation, which generally leads to elevated losses to tailings. The primary scavenger cleaning circuit produces a low-grade Ni concentrate that is combined with the primary Ni concentrate from the Cu/Ni separation circuit. The sulphides in the secondary scavenger cleaner concentrate are mostly Fe sulphides with only small quantities of Cpy and Pn. This concentrate can be combined with the Ni concentrate or subjected to a standalone downstream process. This approach provides the maximum process flexibility to adjust the plant output to maximize revenues.

To further increase sulphide recovery into concentrates, the backend of the circuit will employ a combination of gravity and magnetic separation circuit. Very small sulphide particles are recovered from the scavenger tailings stream in a desliming cyclone. These fines are then treated together with the secondary scavenger cleaner tailings to extract the sulphide particles.

The final configuration of this circuit is still under development. Optimization of the flotation process is ongoing and will be completed in the next 3 to 6 months. Current focus is on adjusting the reagent regime and dosages to maximize sulphide recovery into the flotation concentrates while minimizing gangue entrainment.

Figure 13.8: Optimized Flowsheet



13.4 Metallurgical Analysis

For PEA #3, a thorough analysis of all current and historical flotation tests was carried out to develop regression models for the flotation performance as a function of the Ni and Cu head grades.

The process variables of over 240 rougher, batch cleaner, and locked cycle flotation tests were reviewed, and tests with suitable conditions such as grind size and reagent regime were selected to develop refined grade and recovery projections. Further, samples well below the cut-off grade were not included in the analysis. Of the over 240 flotation tests, the rougher flotation conditions of approximately 60 tests were deemed suitable for the Tamarack mineralization in terms of primary grind size, reagent suite and dosages, as well as flotation time.

The bulk rougher flotation test results suggest that a natural pH and a primary grind size P_{80} of 100 to 130 µm should be targeted to achieve high Ni and Cu recoveries into a bulk rougher concentrate. Sufficient flotation time and collector addition is instrumental in achieving high Pn recovery into the bulk rougher concentrate.

Additional reagent evaluation was completed after PEA #3, which culminated in a suite of depressants and dispersants that reduces Ni losses to tailings. This was achieved by altering the surface charges of serpentine to reduce bonding with pentlandite.

13.4.1 Rougher Flotation Performance

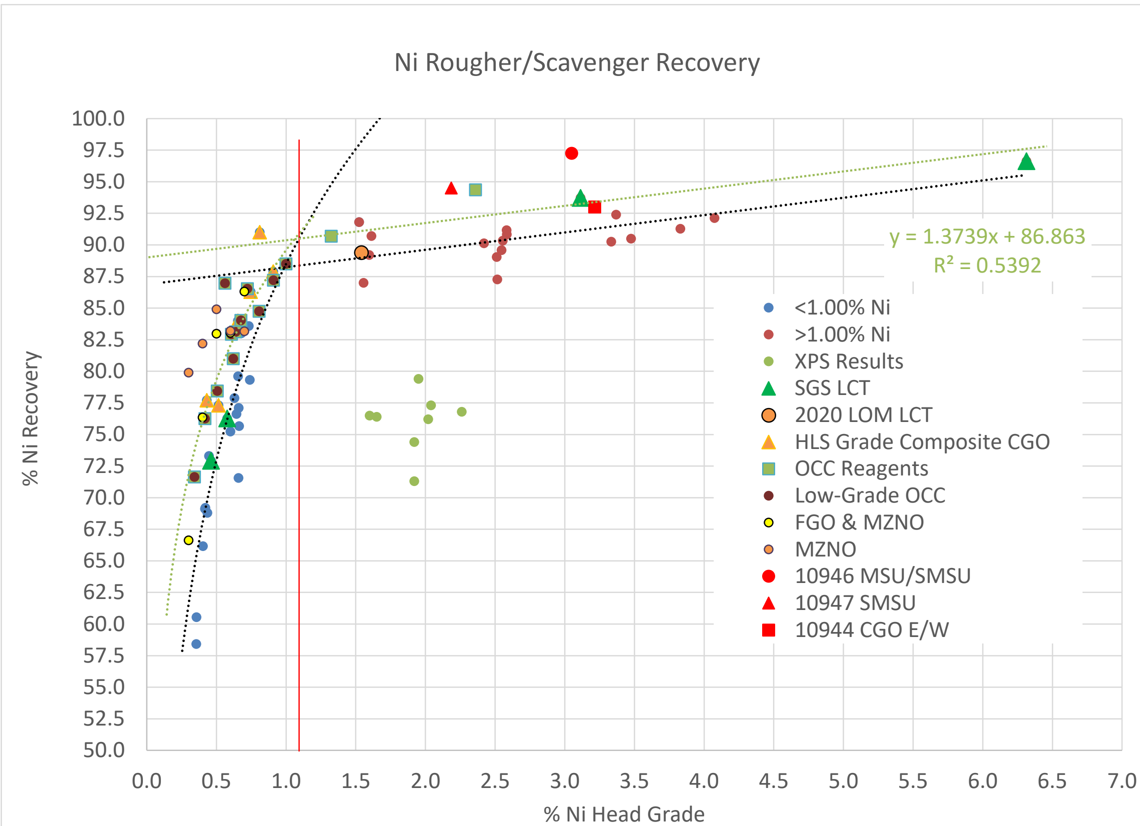
The Ni rougher recoveries are plotted against the Ni head grade in Figure 13.9 The black and green trendline curves represent the metallurgical performance before and after the introduction of the new reagent suite.

The rougher performance for the three 2022 optimization composites representing the expected first seven years of operation are displayed with the three red markers. The performance of the CGO East and West composite was in line with the trendline curve while the other two composites exceeded the projection noticeably.

The Ni rougher recovery model employs two different regression curves for head grades above and below 1.0% Ni:

- < 1.0% Ni Ni Rec = 14.783*ln (Ni Head) + 89.584
- > 1.0% Ni Ni Rec = 1.3936*Ni Head + 89.0

Figure 13.9: Ni Rougher Recovery vs Ni Head Grade



The Cu rougher recovery vs Cu head grade results are depicted in Figure 13.10. While the inclusion of the 138 Zone did not have a fundamental impact on the flotation selectivity or Ni recovery, the Cu flotation performance is negatively impacted by the 138 Zone mineralization. This inferior flotation performance was expected based on the mineralogical characterization of this domain and previous laboratory scale results.

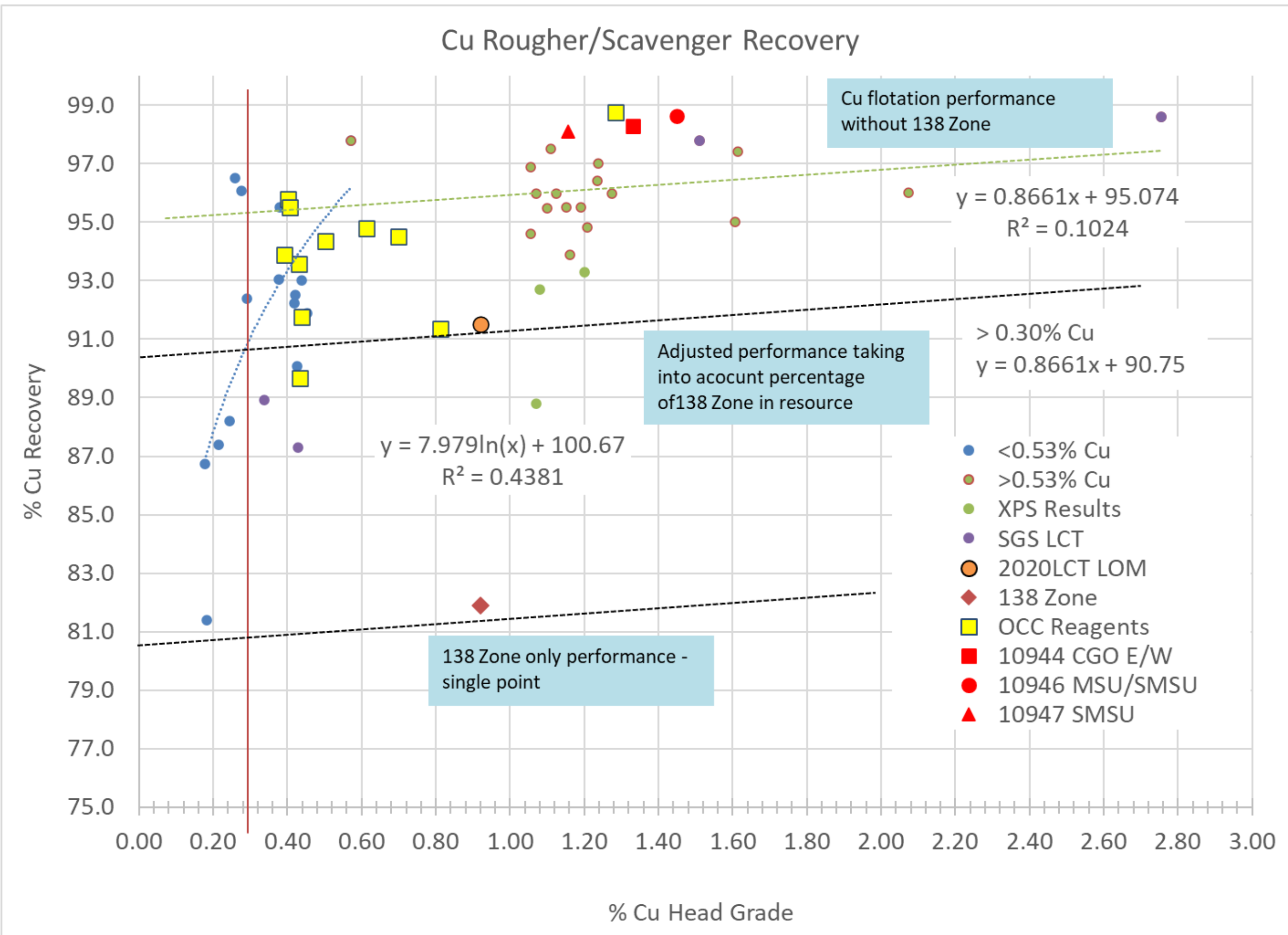
Cu displays more variation compared to Ni but follows the same overall trend. At higher Cu head grades the variation in Cu recoveries was relatively small for a given head grade but increased noticeably at lower head grades. It is postulated that varying valleriite contents in the composites that were included in the development of the regression curve for Cu may be a primary reason for the increased variation in results. A complete Cu deportment study would be required for each composite to determine if more accurate projections could be made when taking into account the different Cu mineral species.

The three 2022 optimization composites responded very well and achieved copper rougher recoveries of over 98%. Hence, the existing regression curves for copper remain valid and are conservative for the optimized process flowsheet.

The applicable Cu rougher recovery regression curves for the composite with 138 Zone are as follows:

- < 0.30% Cu Cu Rec = 7.979*ln (Cu Head) +100.67
- > 0.30% Cu Cu Rec = 0.8661* Cu Head + 90.75

Figure 13.10: Cu Rougher Recovery vs Cu Head Grade



13.4.2 Cleaner Flotation Performance

Bulk cleaner concentrates of over 20% combined Cu and Ni were achieved for most composites with a single stage of cleaning. Regrinding of the bulk rougher concentrate resulted in elevated Ni losses, but conditions were not optimized.

Open circuit cleaner tests underestimate the overall metal recovery since intermediate concentrates and tailings are treated as final tailings. In a commercial operation, these intermediate products are cycled within the circuit, and the majority of the contained metal units eventually report to a final concentrate. On a laboratory scale, LCTs simulate the operation of a commercial plant by circulating all intermediate streams from one cycle to the next. LCTs are the only laboratory scale tests that provides a good assessment of the closed-circuit performance that is to be expected during continuous operation. Only seven LCTs were carried out to-date. The closed-circuit stage recoveries for Ni and Cu are presented in Figure 13.11 and Figure 13.12, respectively.

The three data points highlighted in blue were derived from LCTs on the SMSU, MSU, and composite with 138 Zone. The red data points were recent open circuit tests on six low grade composites with modelled closed-circuit performance. The cleaner Ni stage-recovery gradually decreased with lower head grades. However, owing to the simplicity of the flowsheet, stage-recoveries remain over 90% even for low grade samples.

The cleaner Cu stage-recovery followed a similar trend, but with increased data scatter at the lower head grades.

No LCT has been carried out on the new flowsheet as cleaner optimization is ongoing. However, the scavenger circuit includes two regrind stages followed by cleaner flotation allows for a more selective flotation to maximize sulphide recovery. Hence, closed circuit performance of the new flowsheet is expected to match or exceed the original model.

Figure 13.11: Closed Circuit Ni Stage-Recovery as a Function of Ni Head Grade

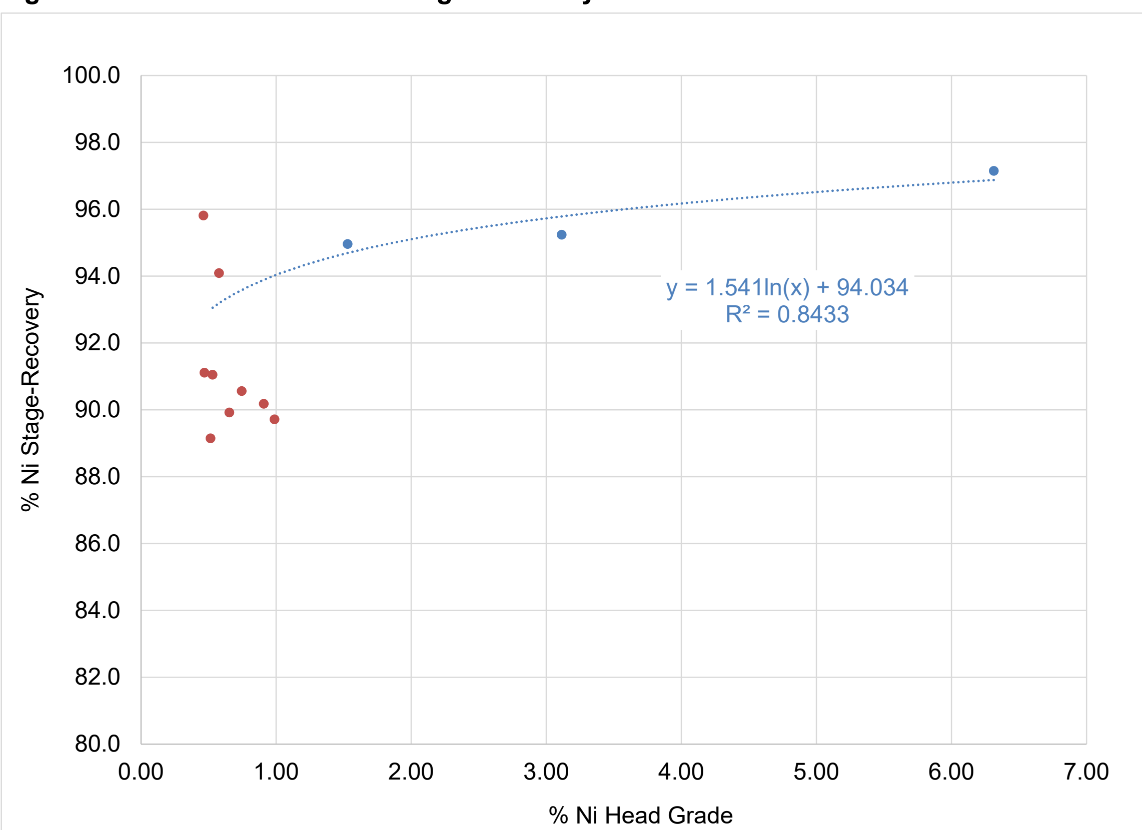
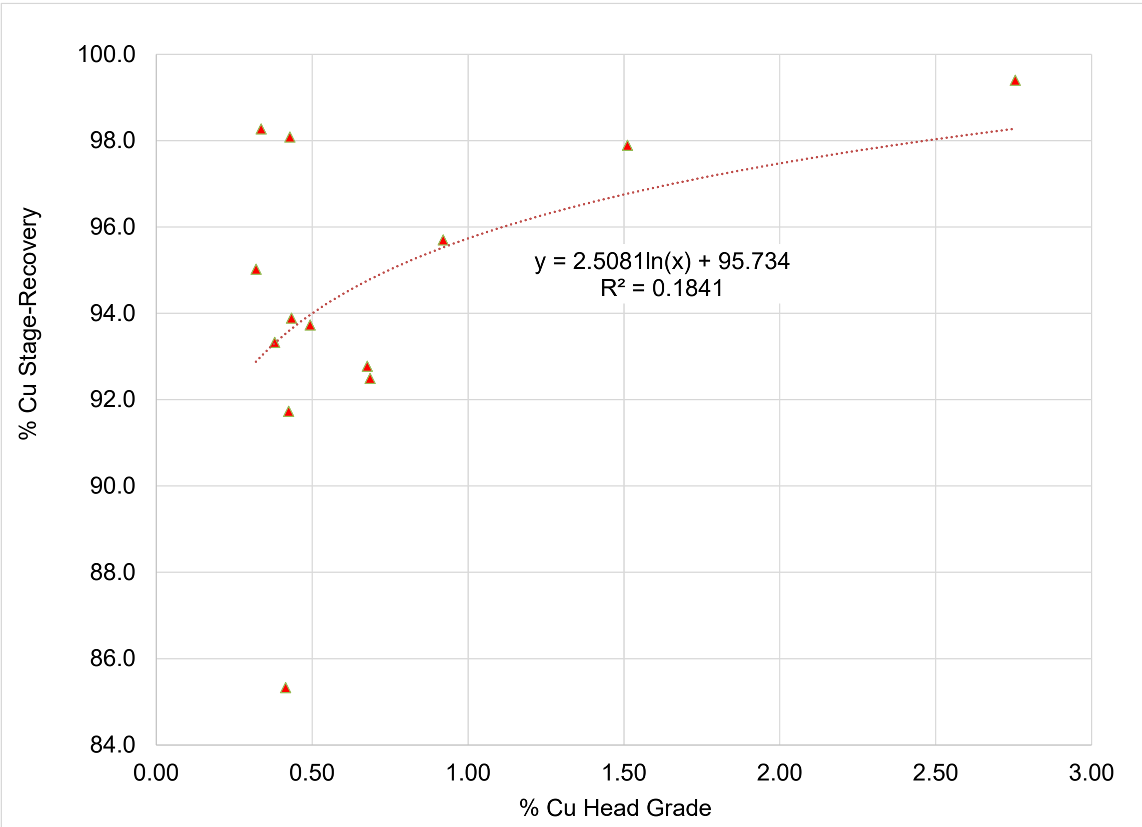


Figure 13.12: Closed Circuit Cu Stage-Recovery as a Function of Cu Head Grade



While several cleaner flotation tests employed Cu/Ni separation stages, they were also operated in open circuit. The only closed-circuit tests were the LCTs performed in 2016/2017 and the LCT on the composite with 138 Zone in 2020. Hence, these results were chosen to project the deportment of Ni and Cu into the two concentrates. The Ni and Cu concentrate grades as a function of their respective head grades are depicted in Figure 13.13 and Figure 13.14, respectively.

Given that a minimum Ni concentrate grade of 10% Ni is currently envisioned for commercial operation, recovery projections are conservative since the circuit would be pulled harder for the high-grade composites to maintain a consistent 10% Ni concentrate grade, which will result in additional metal recoveries. The design of the new flowsheet includes the flexibility to produce a higher-grade Ni concentrate in the Cu/Ni separation circuit and then produce a secondary lower-grade Ni concentrate in the scavenger circuit. The mass recovery into the secondary concentrate would be controlled to maintain a steady Ni grade in the combined high and low grade Ni concentrate.

Figure 13.13: Ni Concentrate Grade vs Ni Head Grade

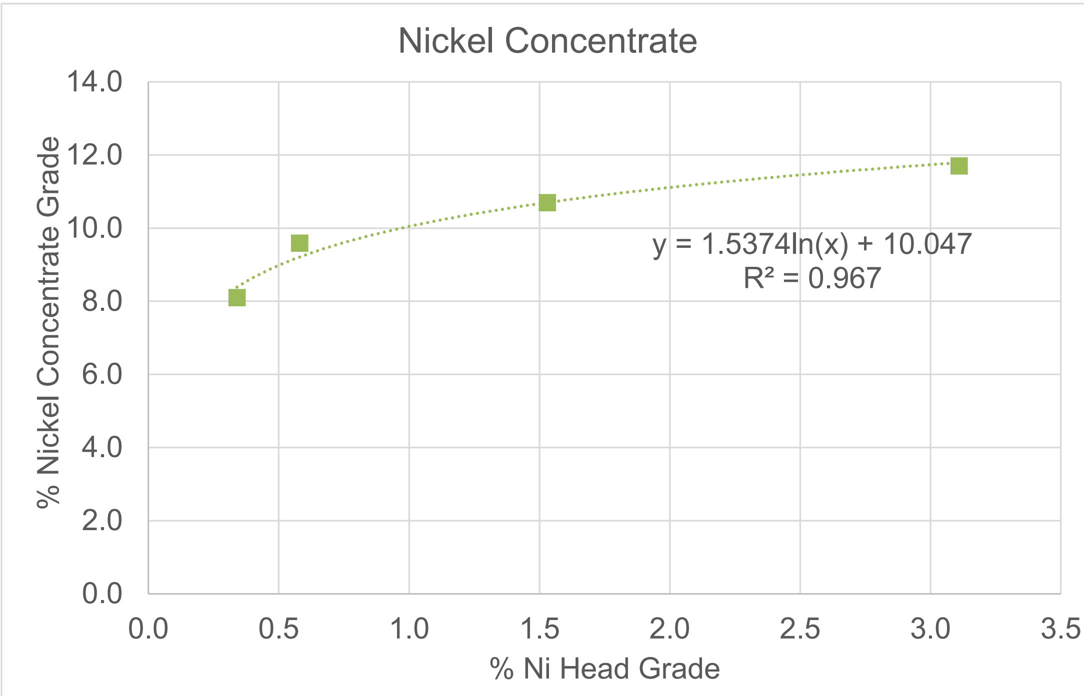
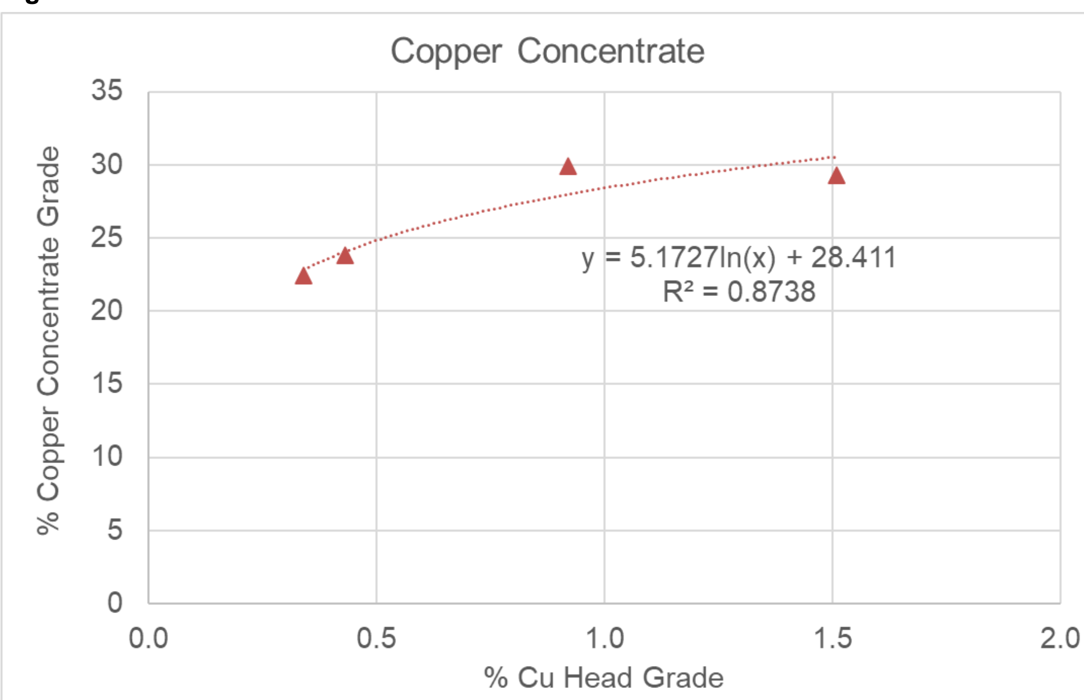


Figure 13.14: Cu Concentrate Grade vs Cu Head Grade



13.5 Concentrate Characterization

The final Cu and Ni concentrates of the composite with 138 Zone LCT were submitted for chemical analysis to identify potential credit and penalty elements.

Credit elements in the two concentrates are presented in Table 13.4: The Cu concentrate contained 5.88 g/t Au, which will be payable above a deduction of typically 1 g/t. The platinum grade of 2.42 g/t in the Ni concentrate is likely another payable element.

Table 13.4: Composite with 138 Zone and Cu Concentrate

Sample ID	Mass	Assys (%)					Assays (g/t)		
		Cu	Ni	S	Fe	Co	Pt	Pd	Au
Ni Concentrate	11.9	1.22	10.7	28.6	40.6	0.24	2.42	1.26	0.28
Cu Concentrate	2.2	29.9	1.13	32.5	35.5	0.02	1.31	1.14	5.88

The analysis of the individual products of the LCT produced an average MgO content in the Cu and Ni concentrate of 0.80% MgO and 4.66% MgO, respectively. The complete results of the detailed concentrate analysis are presented in Table 13.5. Both concentrates reveal low levels of deleterious elements for Cu and Ni smelters and no penalty payments are expected.

Table 13.5: Composite with 138 Zone Cu and Cu Concentrate – Minor Elements

Sample ID	Assays (g/t)														
	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Cl	Cr	F	Hg	K	Li	Mn
Ni Concentrate	13	3,410	14	37.4	0.06	5.1	4,270	< 2	170	325	9	< 0.3	474	< 8	258
Cu Concentrate	35	439	< 10	4.5	< 0.03	5.7	1,020	12	41	18	5	< 0.3	< 70	< 8	57.1
Sample ID	**Mo**	**Na**	**P**	**Pb**	**Sb**	**Se**	**Si**	**Sn**	**Sr**	**Ti**	**Tl**	**U**	**V**	**Y**	**Zn**
Ni Concentrate	12.4	932	< 200	55.7	2.1	93	32,200	< 2	9.45	399	< 0.4	< 0.4	20	< 1	192
Cu Concentrate	2.5	194	< 200	185	1.3	97	4,100	12	1.5	36.8	< 0.4	< 0.4	4	< 1	555

The 10 kg bulk flotation test was carried out on a composite of the newly discovered CGO East and CGO West to produce Ni concentrate for downstream evaluation. The results of the chemical analysis of the concentrate for credit elements and minor elements are presented in Table 13.6 and Table 13.7, respectively.

Table 13.6: CGO East and CGO West Ni Concentrate

Assays (%)					Assays (g/t)		
Ni	Cu	Co	Fe	S	Pt	Pd	Au
10.7	1.35	0.22	42.2	31.0	1.04	0.81	0.47

Table 13.7: GCO E/W Ni Concentrate – Minor Elements

Assays (g/t)								
Ag	Al	As	Ba	Be	Bi	Ca	Cd	Cr
10	2,940	34	18	0.13	< 20	8,730	< 4	299
Hg	K	Li	Mg	Mn	Mo	Na	P	Pb
<0.3	586	< 20	4,820	255	< 20	590	< 200	< 100
Sb	Se	Sn	Sr	Ti	Tl	V	Y	Zn
< 40	95	< 20	9	240	< 30	17	< 0.5	137

13.6 Mass Balance of Traditional Flowsheet

The findings of the metallurgical analysis were used to develop of the mass balance for a head grade of 1.28% Ni, 0.74% Cu, and 5.07% S.

The results of the LCT on the composite with 138 Zone and the regression curves were employed to develop a high-level mass balance. This manual mass balance was used as a starting point to generate a full circuit mass balance using the Outotec HSC modelling software. The HSC mass balance is presented in Table 13.8.The mass balance was developed for the original flowsheet since insufficient data is presently available to model the cleaning circuit with the primary and secondary scavenger cleaning circuits as well as the revised reagent regime. However, based on initial results, metal recoveries are expected to increase by 2-3 % with the updated flowsheet. Hence, the mass balance provided in this report is considered conservative.

The anticipated Ni concentrate grade is 10.0% Ni at 81.4% Ni recovery. A total of 14.8% of the Cu units in the mill feed is also expected to report to the Ni concentrate. The Cu concentrate is projected to contain 69.2% of the total Cu units at a grade of 31.1% Cu and 1.27% Ni.

Table 13.8: Process Mass Balance

Stream	Mass, %	Grade, %			Recovery, %		
		Ni	Cu	S	Ni	Cu	S
Bulk Rougher Feed	100.0	1.28	0.74	5.07	100.0	100.0	100.0
Bulk Rougher Conc	21.3	5.20	3.09	19.9	86.7	89.1	83.6
Bulk Rougher Tails	78.7	0.22	0.10	1.06	13.3	10.9	16.4
Bulk Cleaner 1 Conc	17.9	6.96	3.86	27.7	97.5	93.6	97.8
Bulk Cleaner 1 Tails	23.0	1.30	0.54	10.0	23.4	16.9	45.6
Bulk Cleaner 2 Conc	12.0	8.80	5.17	30.3	82.7	84.0	71.9
Bulk Cleaner 2 Tails	5.90	3.21	1.20	22.3	14.8	9.55	25.9
Bulk Cleaner Scav Conc	13.7	1.81	0.64	12.6	19.3	11.8	33.9
Bulk Cleaner Scav Tails	9.32	0.56	0.40	6.34	4.06	5.08	11.7
Clnr Scav Regrind MIll Discharge	13.7	1.81	0.64	12.6	19.3	11.8	33.9
Cu-Ni Sep Regrind Mill Discharge	12.0	8.80	5.17	30.3	82.7	84.0	71.9
Ni Concentrate	10.4	10.0	1.05	30.0	81.4	14.8	61.3
Cu Rougher Conc	2.69	3.71	21.9	31.3	7.79	79.5	16.6
Cu Cleaner Conc	2.57	2.44	22.6	31.5	4.89	78.4	15.9
Cu Cleaner Tails	1.04	7.99	7.24	29.4	6.51	10.2	6.05
Cu Reclnr Tails	0.92	5.02	7.37	29.4	3.61	9.16	5.34
Cu Reclnr Conc (Cu Conc)	1.65	0.99	31.1	32.6	1.27	69.2	10.6

13.7 Analysis and Recommendations

A comprehensive review of the current and historical test results formed the basis for updated overall Ni and Cu recovery projections. The equations to determine the Ni and Cu recovery into the two concentrates as a function of the head grade are presented below:

Ni in Ni Concentrate

- >1.0% Ni — % Ni Recovery = (1.3936x+89.0)*(1.541ln(x) +94.034)/100*0.98
- 0.40 – 1.0% Ni — % Ni Recovery = (14.783ln(x)+89.584)*(1.541ln(x) +94.034)/100*0.98

Ni in Cu Concentrate

- >1.0% Ni — % Ni Recovery = (1.3936x+89.0)*(1.541ln(x) +94.034)/100*0.02
- 0.40 – 1.0% Ni — % Ni Recovery = 14.783ln(x)+89.584)*(1.541ln(x) +94.034)/100*0.02

Cu in Cu Concentrate

- >0.30% Cu — % Cu Recovery = (0.8661y+90.75)*(2.5081ln(x)+95.734)/100*0.85
- <0.30% Cu — % Cu Recovery = ((7.979ln(x)+100.67) *(2.5081ln(x)+95.734)/100*0.85

Cu in Ni Concentrate

- >0.30% Cu — % Cu Recovery = (0.8661y+90.75)*(2.5081ln(x)+95.734)/100*0.15
- <0.30% Cu — % Cu Recovery = ((7.979ln(x)+100.67) *(2.5081ln(x)+95.734)/100*0.15

The new reagent regime that was developed in 2021 benefitted Ni recovery by reducing the losses of small pentlandite particles attached to serpentine. Initial results for the revised flowsheet suggest a further Ni recovery gain of at least 3%. Since the process optimization has not been completed, these incremental gains have not been considered in the metallurgical projections. Process optimization for the new flowsheet is expected to be completed over the next 3 months followed by variability flotation. This data will be utilized to refine the regression curves and to develop a geometallurgical model.

14.0 MINERAL RESOURCE ESTIMATES

14.1 Introduction

The updated MRE for the Tamarack North Project was completed by Roger Jackson, P.Geo., Senior Resource Geologist with Golder Associates Limited (Golder) under the supervision of Brian Thomas, P.Geo., Principal Resource Geologist with Golder. This estimate follows the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (MRMR Best Practice Guidelines), issued November 29, 2019.

The estimate is based on assay data from drill programs completed by Kennecott and Talon between 2002 and 2022. The Tamarack North Project consists of eight identified and modelled geological domains (Figure 14.1 and Figure 14.2), defined as Zones 1, 2, 3 (including sub-domain 3.1), 4, 6, 6.1, 7, 7.1. An encompassing Low-Grade Halo Domain, Zone 10, (Figure 14.4) is mostly below cut-off grade and therefore does not contribute to the MRE and was modelled for engineering purposes. For details of the mineralization styles and drilling history please see Item 7.0 of this Technical Report.

- Zone 1 – USMSU: Upper Semi-Massive Sulphide Unit. Modelled as a single entity, this domain was divided into a higher grade, Zone 1 representing the semi-massive sulphide mineralization, and a disseminated sulphide volume, Zone 5, designated as the CGO Domain.
- Zone 2 – LSMSU: Lower Semi-Massive Sulphide Unit.
- Zone 3 – MSU: Massive Sulphide Unit, including a narrow “bridge” sub-unit (Zone 3.1) on the upper-east lobe of the MSU.
- Zone 4 – 138 MZNO: 138 Mixed Zone. Generally, a lower grade disseminated volume, at the southern end of the identified sulphide mineralization.
- Zone 6 – CGO West MMS/MSU: Coarse Grained West Mixed Massive Sulphide - Massive Sulphide Unit. High grade basal layer located to the northwest of the main CGO domain. There is an interpreted very low-grade inclusion on the southern portion of the CGO West Domains, and this volume is grade estimated as part of the Low Grade Halo Domain (Zone 10).
- Zone 6.1 – CGO West Disseminated: Coarse Grained West Disseminated unit. Lower grade disseminated sulphide unit sitting above the CGO West MMS/MSU domain. There is an interpreted very low-grade inclusion on the southern portion of the CGO West Domains, and this volume is grade estimated as part of the Low Grade Halo Domain (Zone 10).
- Zone 7 – CGO East MMS-MSU: Coarse Grained East basal Mixed Massive Sulphide - Massive Sulphide Unit.
- Zone 7.1 – CGO East Disseminated: Coarse Grained East Disseminated unit. Lower grade disseminated sulphide unit siting above the CGO East MMS/MSU domain.
- Zone 10 – Low Grade Halo: Large envelope of weak and variable sulphide mineralization, modelled to provide information of volumes surrounding the interpreted mineral domains. Generally, the estimated metal grades are less than the 0.5% Ni grade cut-off, and this domain does not meet the criteria to be considered a mineral resource. It is primarily modelled to be used for mine design purposes (development grade ore cut-off, sulphide content in waste rock, dilution metal content).

It must be noted that these eight domains are not necessarily distinct mineral units, and may merge and/or interfinger with each other, forming “soft boundaries”.

Grade variables evaluated in this update include Ni, Cu, Co, Pt, Pd, Au and S. DENSITY for each block cell was estimated, or had a value assigned based on regression formulas.

Due to the Tesla Supply Agreement, the Fe in Sulphides % concentration is included in this resource estimate and represents the calculated estimation of the Fe% observed in Pentlandite and Pyrrhotite that is expected to report to the nickel concentrate. For further details of this process, see Item 14.6.5.

The software used for the updated MRE in this mineral resource update was Datamine Studio RM®, release 1.10.69.0 (Datamine).

14.2 Drill Hole Data

A total of 456 diamond drill holes were provided by Talon containing 44,346 base metal (Ni (%), Cu (%), Co (%), S (%)) and 44,212 precious metal (Pt (g/t), Pd (g/t) and Au (g/t) assay intervals, having a total length of 182,908 m. Of those 456 drill holes, 430 drill holes are represented in the Tamarack North project, for a total length of 168,259 meters. All drill hole data was provided as of July 19, 2022.

Examination of the drill hole files provided indicated there were four drill holes in progress (22TK0419, 22TK0420, 22TK0421 and 22TK0422), with lithology and grade data pending. Drillholes with pending data were imported into the primary drillhole table, with nulls in the data fields where there was missing lithology or assay data. Where lithology data was available it was used for the definition of the mineral domain envelopes (“wireframes”). Where estimated Ni and Cu grades were available from the geological logging, the Datamine RM® data import script flagged these as missing data and they were not used for the purposes of data analysis and grade estimation.

The drill hole data was imported into Datamine RM® from electronic .csv files and no interval errors were encountered during the process. During the data selection process for each mineral domain the Specific Gravity (SG) was converted into a new field DENSITY, as described in Item 14.4.2.

In discussion with Talon, it was determined that certain non-geological samples provided in the database were not representative of the mineralization, as the samples had non-standard geochemical analysis (for example geomechanical or geometallurgical analysis). Through the data import process certain data records were removed, and not used for grade estimation purposes. The data records removed represent geometallurgical, geotechnical and/or environmental drill holes.

The drill hole file was reviewed in plan and section to validate the accuracy of the collar locations, hole orientations and downhole traces, and the assay data was analyzed for out-of-range values. A total of 381 drill holes were used for the MRE, exclusive of the encompassing Low-Grade Halo Domain.

Non-assayed intervals were assumed to be waste and assigned a metal value of one-half the detection limit for each metal as listed in Table 14.1.

Table 14.1: Default Grades for Absent Data

Metal	Default Value	# Records Set to Default
Ni	0.001%	174
Cu	0.001%	333
Co	0.001%	281
Pt	0.001 g/t	5,308
Pd	0.001 g/t	1,024
Au	0.001 g/t	1,279
S	0.001%	205

It is the QP's opinion that the drill hole database is of suitable quality to support the MRE stated in this Technical Report.

14.3 Geological Interpretation

14.3.1 Mineralization

Mineral domain models were interpreted from drill hole grade and lithology data for all zones, except the Low-Grade Halo, using an approximate 0.3% Ni to 0.4% Ni cut-off as a guide. No new drilling was available in the 138 domain and no modifications were made to the resource envelope for that volume. Figure 14.1 and Figure 14.2 provide an overview of the spatial distribution of the updated 2022 mineral domain models and drill hole support.

Figure 14.1: Tamarack North Project Mineral Domains Modelled for the Tamarack North Project, with Drill Hole Traces in White; Plan View

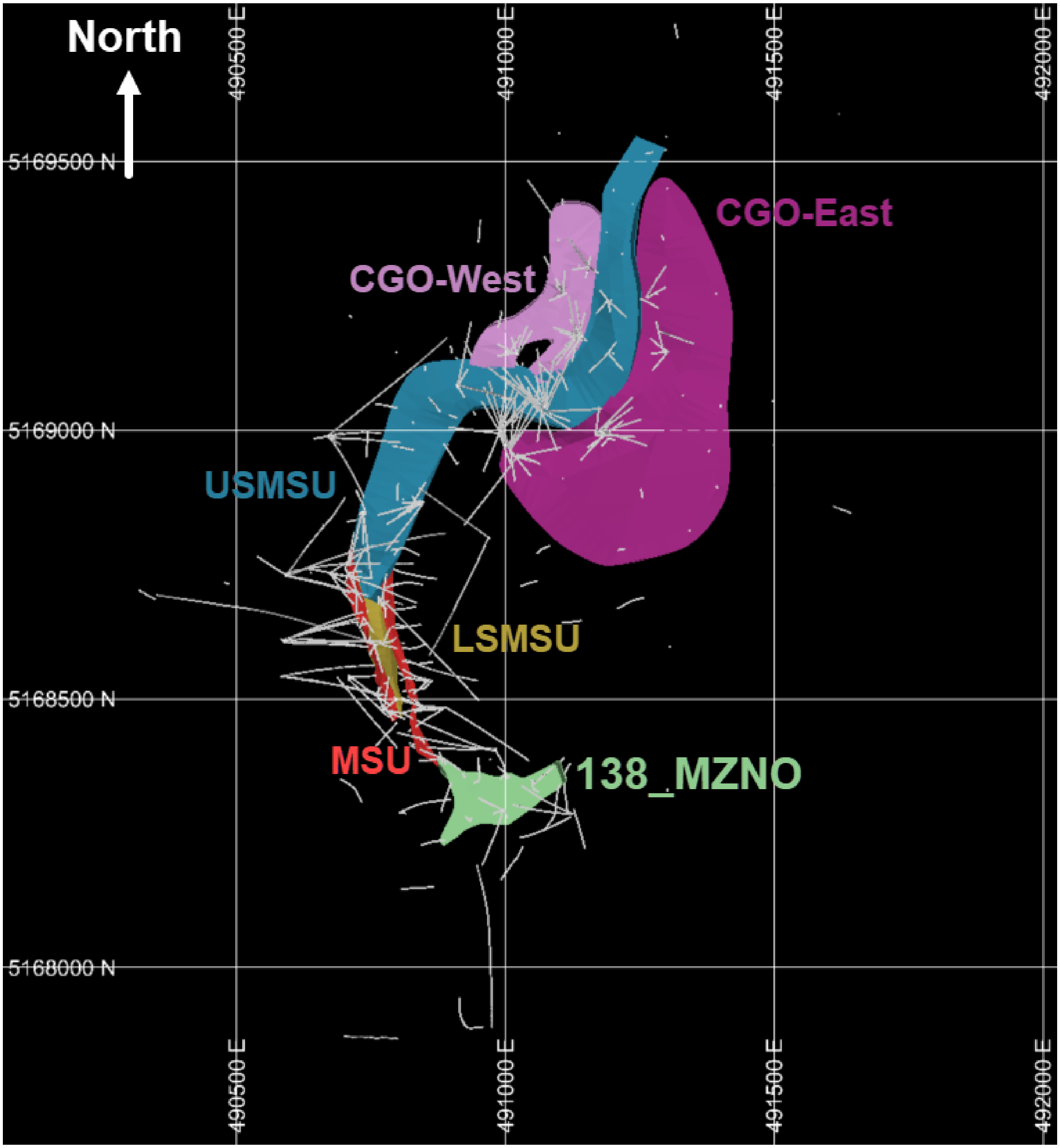
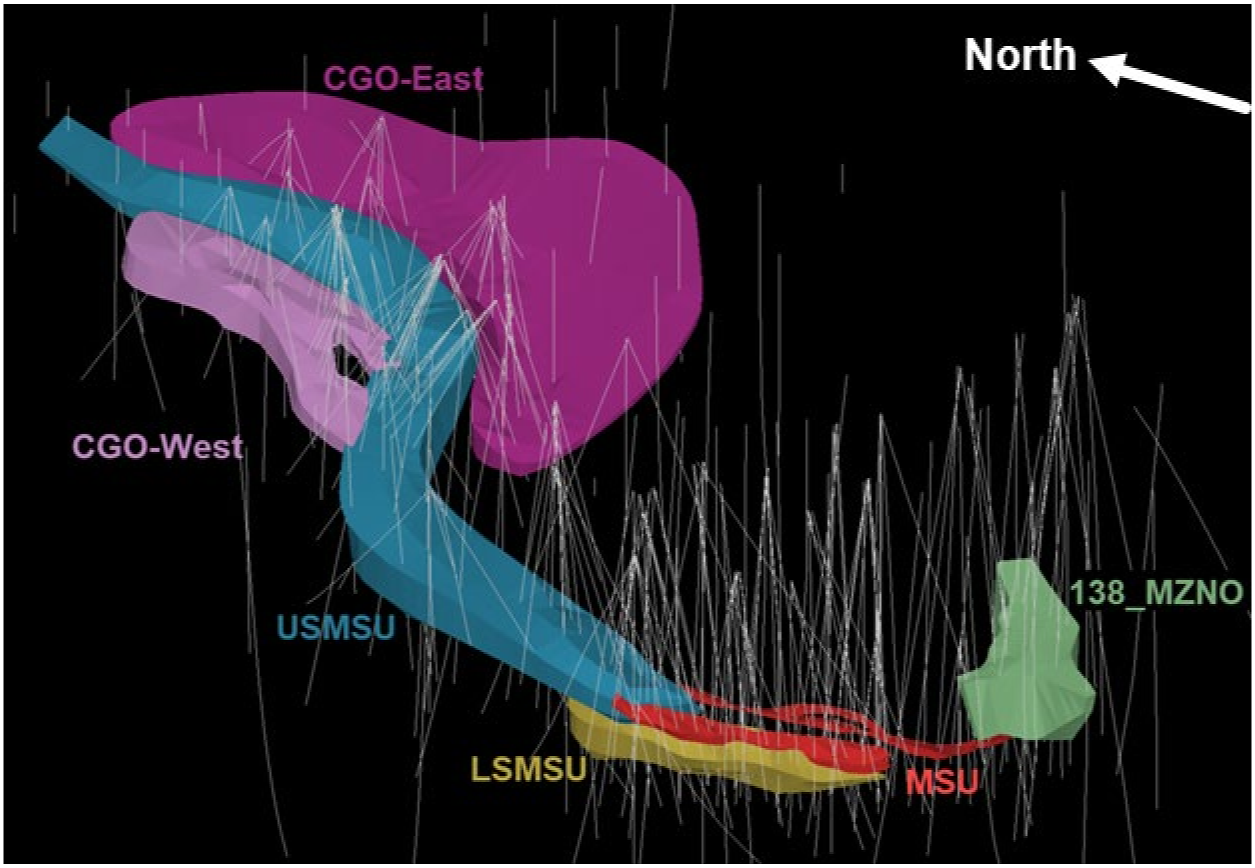
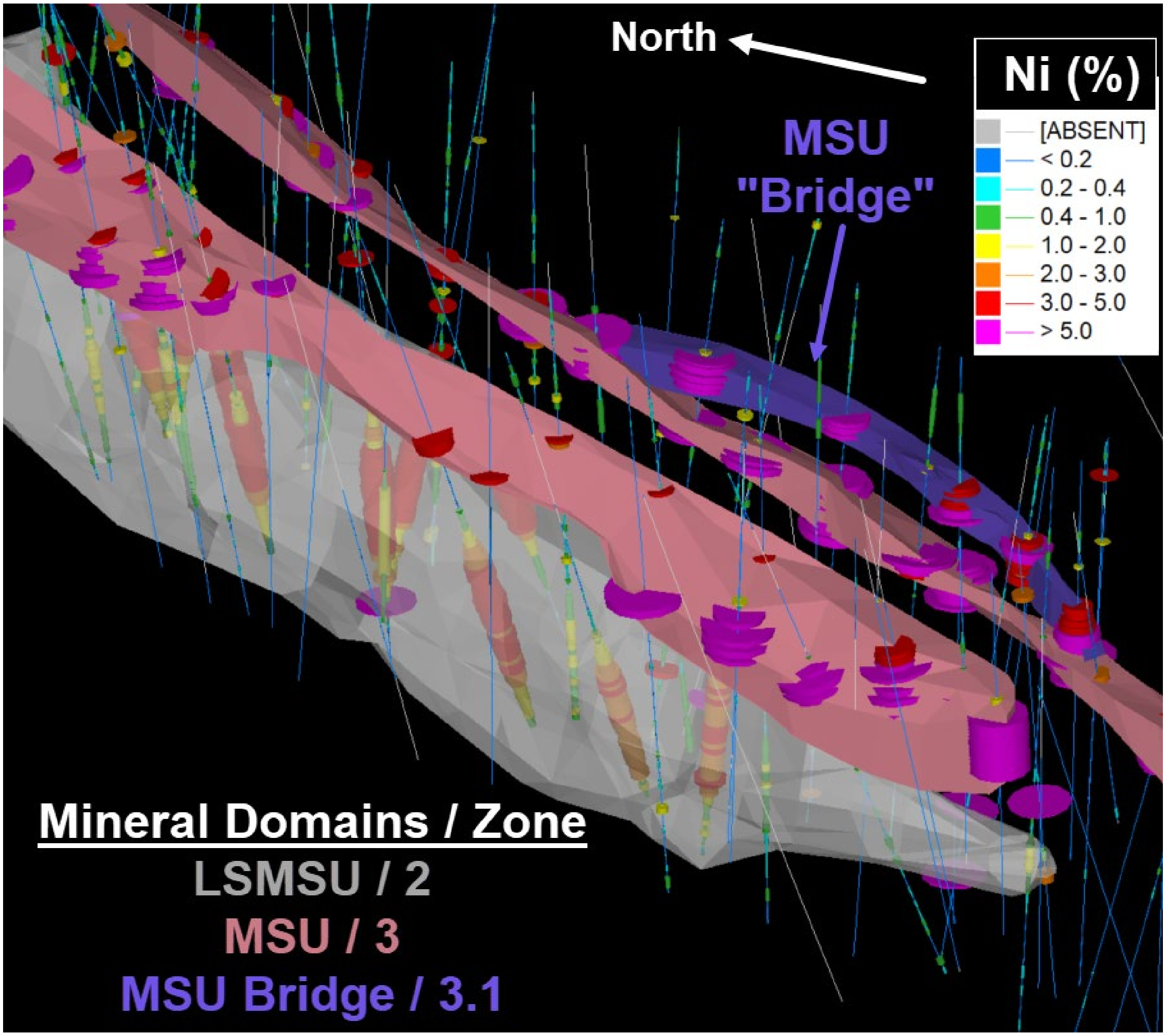


Figure 14.2: Tamarack North Project Mineral Domains, with Drill Hole Traces in White; Oblique View Looking Northeast



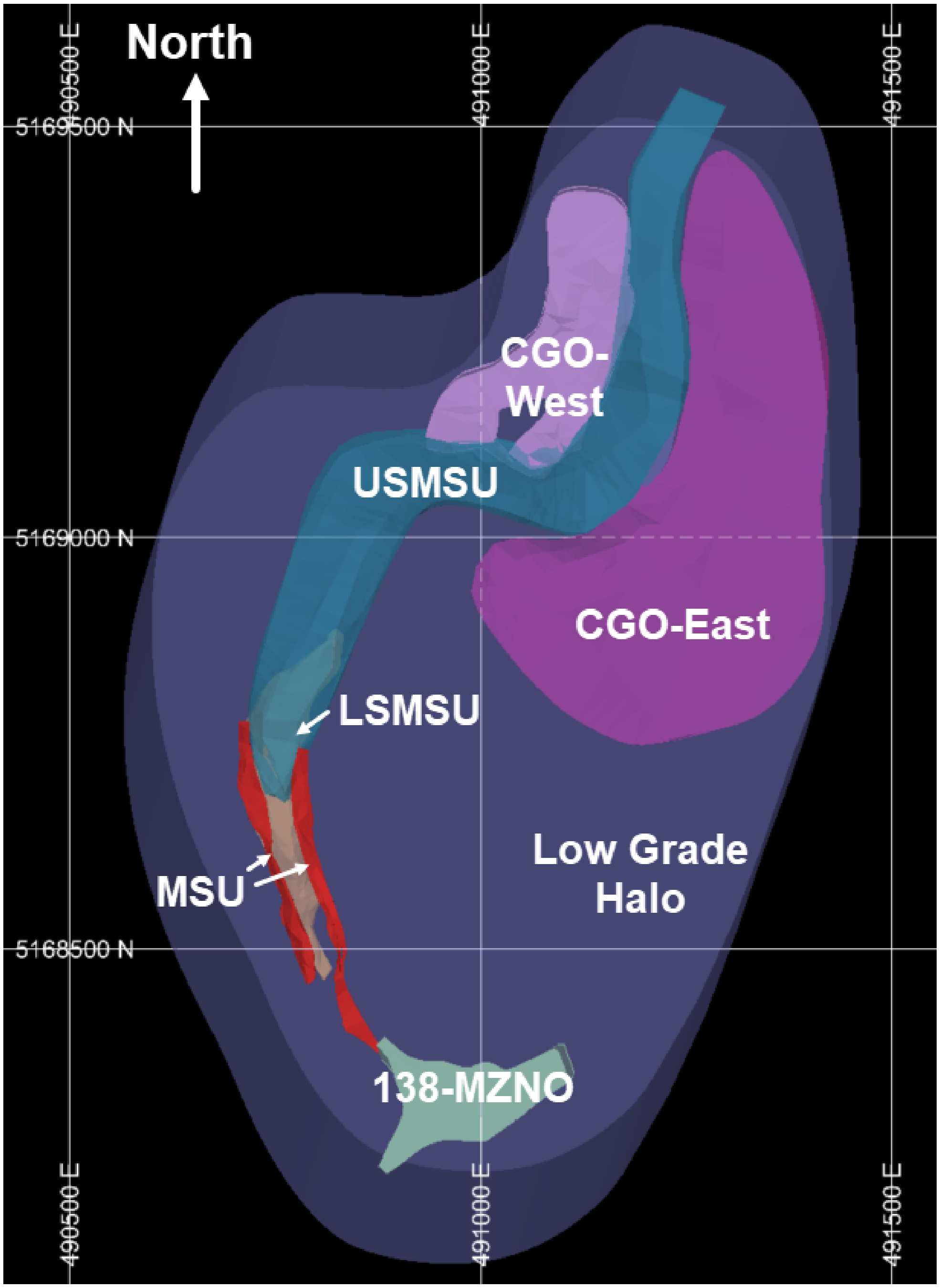
There is a bifurcation of the massive sulphide mineralization on the eastern lobe of the MSU Domain, referred to as the “Bridge” sub-domain (Figure 14.3) designated as Zone 3.1. This feature has similar metal grades and ratios to the underlying main MSU but, due to the small volume this sub-domain, it was not unfolded and instead used the ID^2 method for grade estimation. This mineralization is grouped with the MSU for resource reporting purposes.

Figure 14.3: Location and Geometry of the MSU "Bridge" Sub-Domain, Relative to the MSU Lobes (Pink) and LSMSU (Gray) Domains; Oblique View Looking Northeast



A low grade mineral envelope (Low Grade Halo Domain, Zone 10) was interpreted to account for minor discontinuous mineralization outside of the main mineral domains, as shown in blue in Figure 14.4.

Figure 14.4: Plan View of the Low Grade Halo Domain (Shown in Blue)



All mineral domain wireframe volumes were constructed by snapping points to the drill holes on the Hangingwall (HW) and Footwall (FW) contacts, using the lithology and a 0.3% - 0.4% Ni cut-off as a guide. These points, along with boundary strings, were used to construct HW and FW surfaces, which were then linked to create 3D solid volumes. The LSMSU zone was further modified to join the HW and FW strings, creating single strings which encircled the mineralization, which were then linked in series to create the 3D solids.

Raw sample intervals were selected inside each mineral domain wireframe and verified visually to confirm the accuracy of the domain assignment process. Table 14.2 provides the sample break down by domain. It is noted that several holes intersect multiple domains, and some samples were captured within 2 domain wireframes, if considered appropriate for the grade estimation purposes. Both the LSMSU and 138 Zone had a single sample pending assays, and for grade estimation purposes these were treated as missing data.

Table 14.2: Summary of Selected Samples by Mineral Domain

Domain	Number of Samples
USMSU	2,732
LSMSU	1,277
MSU	438
138-MZNO	1,538
CGO West MMS/MSU	240
CGO West Disseminated	837
CGO East MMS/MSU	130
CGO East Disseminated	748
Low Grade Halo	17,298
Total	25,238

14.4 Exploratory Data Analysis (EDA)

Descriptive statistics combined with a series of histograms and X-Y scatter plots were used to analyze the grade distribution of each sample population and to determine the presence of outliers and correlations between metals for each mineral domain.

14.4.1 Descriptive Statistics

Table 14.3 provides a summary of the descriptive statistics for the raw sample populations captured from within each mineral domain.

Table 14.3: Descriptive Statistics of the Tamarack North Project Sample Population

Domain	Element	No. of Assays	Minimum	Maximum	Mean	Standard Deviation	Skewness	Coefficient of Variation
USMSU	AU (g/t)	2720	0.00	1.50	0.09	0.09	3.34	1.08
	CO (%)	2732	0.00	0.18	0.02	0.02	2.99	0.85
	CU (%)	2732	0.00	3.82	0.41	0.45	2.44	1.11
	NI (%)	**2732**	**0.02**	**7.00**	**0.70**	**0.79**	**2.79**	**1.12**
	PD (g/t)	2721	0.00	0.88	0.09	0.11	2.22	1.12
	PT (g/t)	2721	0.00	1.35	0.16	0.18	2.31	1.16
	S (%)	2732	0.01	32.90	2.58	3.53	2.94	1.37
LSMSU	AU (g/t)	1227	0.00	3.02	0.26	0.19	3.52	0.70

Domain	Element	No. of Assays	Minimum	Maximum	Mean	Standard Deviation	Skewness	Coefficient of Variation
	CO (%)	1276	0.01	0.13	0.04	0.03	0.89	0.73
	CU (%)	1276	0.00	3.59	0.89	0.55	0.85	0.62
	NI (%)	**1276**	**0.12**	**7.12**	**1.59**	**1.23**	**0.88**	**0.77**
	PD (g/t)	1227	0.00	1.46	0.35	0.18	1.13	0.53
	PT (g/t)	1227	0.01	5.41	0.60	0.47	4.18	0.78
	S (%)	1276	0.07	21.30	6.17	5.56	0.87	0.90
MSU	AU (g/t)	438	0.00	5.03	0.30	0.45	7.09	1.52
	CO (%)	438	0.00	0.22	0.11	0.05	-0.30	0.45
	CU (%)	438	0.01	6.26	2.37	1.05	-0.04	0.44
	NI (%)	**438**	**0.03**	**10.15**	**5.38**	**2.38**	**-0.42**	**0.44**
	PD (g/t)	438	0.00	1.18	0.47	0.23	0.20	0.49
	PT (g/t)	438	0.01	4.65	0.65	0.55	2.50	0.84
	S (%)	438	0.20	37.70	21.39	9.27	-0.51	0.43
138 MZNO	AU (g/t)	1537	0.00	23.00	0.12	0.59	37.21	5.03
	CO (%)	1537	0.01	0.20	0.02	0.02	5.73	0.77
	CU (%)	1537	0.00	7.56	0.50	0.69	4.67	1.38
	NI (%)	**1537**	**0.12**	**10.05**	**0.74**	**1.00**	**5.44**	**1.34**
	PD (g/t)	1537	0.00	4.88	0.11	0.21	16.69	1.83
	PT (g/t)	1537	0.00	112.00	0.32	4.04	27.55	12.43
	S (%)	1537	0.06	34.80	2.32	3.40	4.91	1.46
CGO West MMS/MSU	AU (g/t)	240	0.01	7.63	0.22	0.59	10.08	2.71
	CO (%)	240	0.00	0.21	0.11	0.06	-0.30	0.57
	CU (%)	240	0.04	16.50	1.80	1.91	5.36	1.06
	PD (g/t)	240	0.01	5.00	0.31	0.48	6.37	1.56
	NI (%)	**240**	**0.032**	**12.10**	**3.92**	**2.38**	**0.08**	**0.67**
	PT (g/t)	240	0.01	6.85	0.41	0.61	6.84	1.50
	S (%)	240	0.29	38.00	19.65	11.34	-0.39	0.58
CGO West Disseminated	AU (g/t)	837	0.00	0.59	0.05	0.05	3.34	0.96
	CO (%)	837	0.00	0.15	0.02	0.01	5.43	0.65
	CU (%)	837	0.01	6.76	0.32	0.42	9.20	1.31
	NI (%)	**837**	**0.04**	**5.75**	**0.49**	**0.47**	**5.57**	**0.96**
	PD (g/t)	837	0.00	0.55	0.04	0.05	3.71	1.23
	PT (g/t)	837	0.00	0.69	0.07	0.09	3.00	1.19
	S (%)	837	0.02	23.70	1.87	2.24	4.70	1.20
CGO East MMS/MSU	AU (g/t)	130	0.01	0.73	0.18	0.16	1.44	0.89
	CO (%)	130	0.00	0.19	0.07	0.06	0.50	0.77
	CU (%)	130	0.02	7.20	1.07	0.90	2.71	0.85
	NI (%)	**130**	**0.08**	**6.94**	**2.27**	**1.84**	**0.73**	**0.81**

Domain	Element	No. of Assays	Minimum	Maximum	Mean	Standard Deviation	Skewness	Coefficient of Variation
	PD (g/t)	130	0.00	2.00	0.17	0.20	5.71	1.23
	PT (g/t)	130	0.00	4.53	0.27	0.44	7.05	1.63
	S (%)	130	0.21	33.60	13.29	10.62	0.40	0.80
CGO East Disseminated	AU (g/t)	748	0.00	0.81	0.09	0.09	2.93	0.92
	CO (%)	748	0.01	0.11	0.02	0.01	5.13	0.40
	CU (%)	748	0.02	1.64	0.33	0.22	1.70	0.67
	NI (%)	**748**	**0.07**	**3.74**	**0.51**	**0.31**	**3.50**	**0.59**
	PD (g/t)	748	0.00	0.48	0.08	0.07	1.65	0.86
	PT (g/t)	748	0.00	1.16	0.15	0.14	2.31	0.90
	S (%)	748	0.12	20.60	1.69	1.31	6.02	0.78

Figure 14.5 to Figure 14.8 provide examples of the frequency distribution of the Ni or Cu sample populations for representative domains. The metal populations were found to be bi-modal and/or high skewness in the CGO West, CGO East, USMSU and LSMSU domains, normal in the MSU and positively skewed in the 138 Zone.

Figure 14.5: Histogram of %Ni for the CGO West Domain (Combined Zone 6.0 and Zone 6.1)

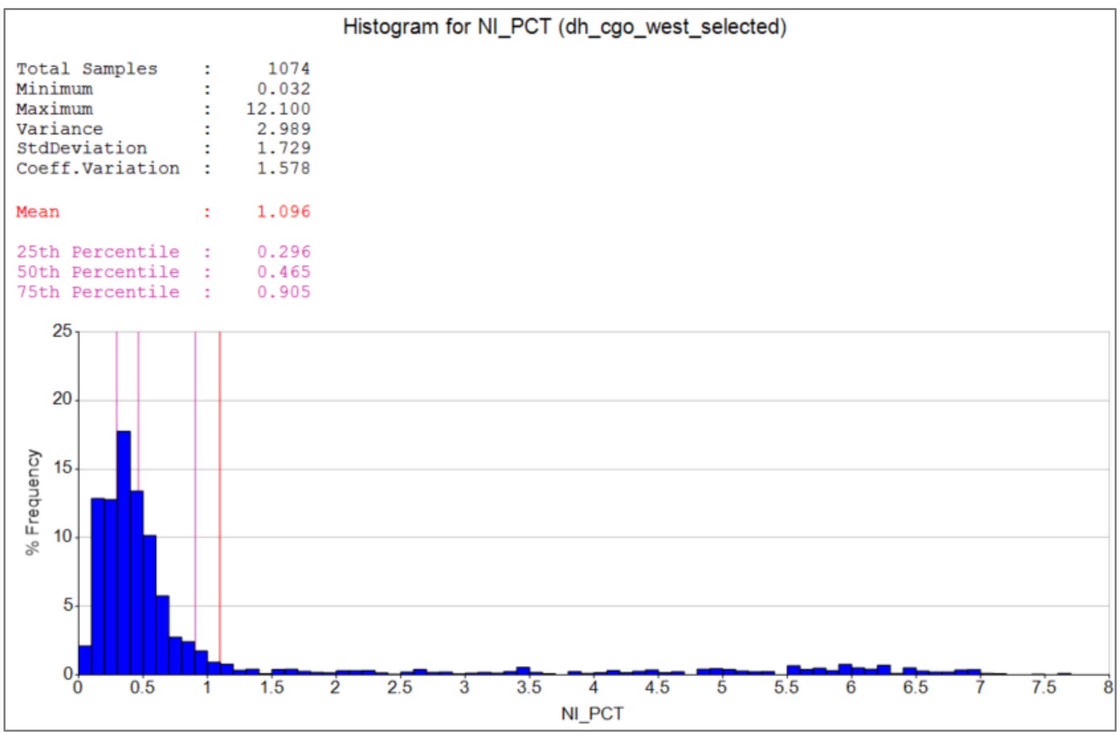


Figure 14.6: Histogram of %Ni for the CGO East Domain (Combined Zone 7.0 and Zone 7.1)

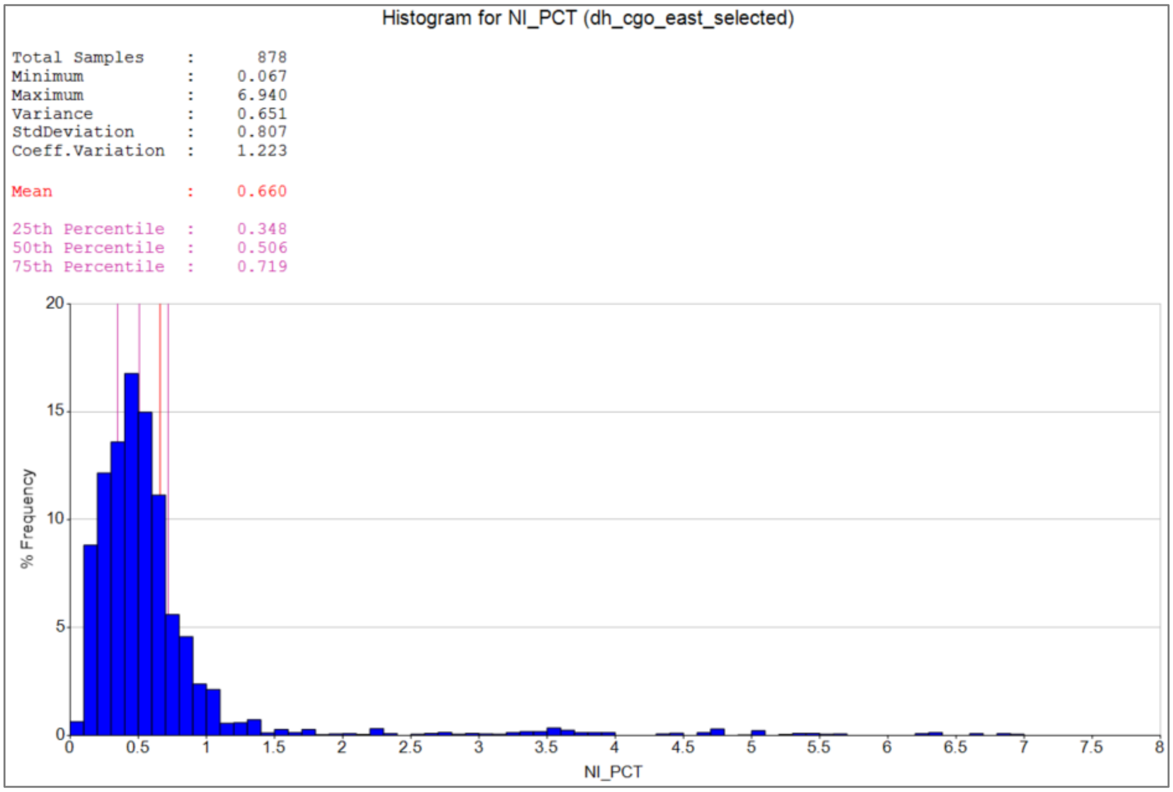


Figure 14.7: Histogram of %Ni for the LSMSU Domain (Zone 2)

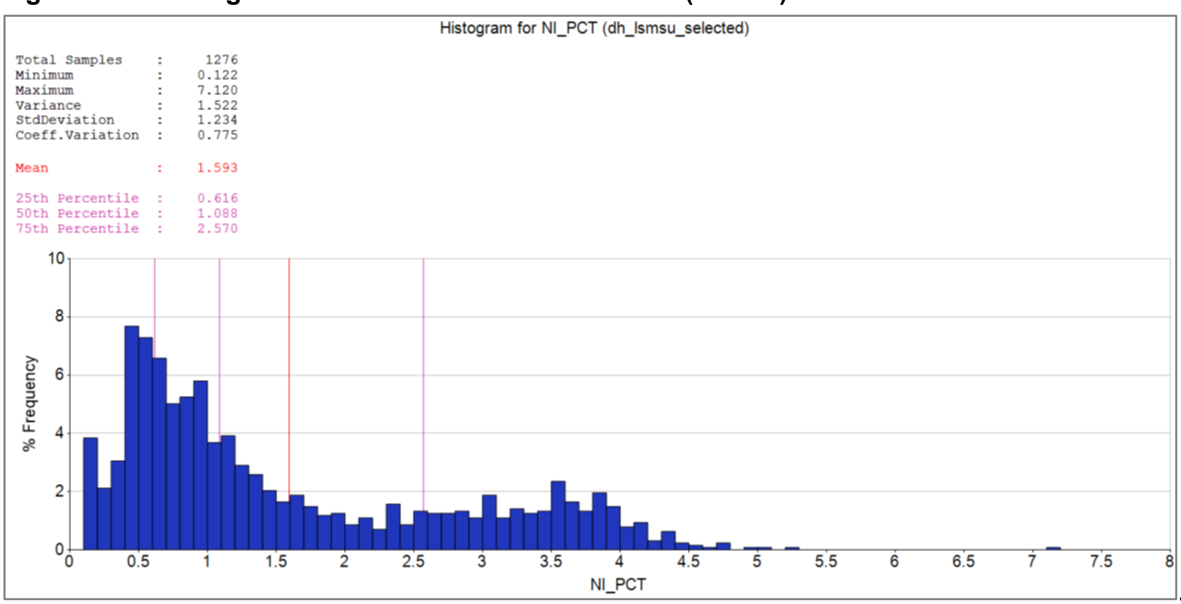
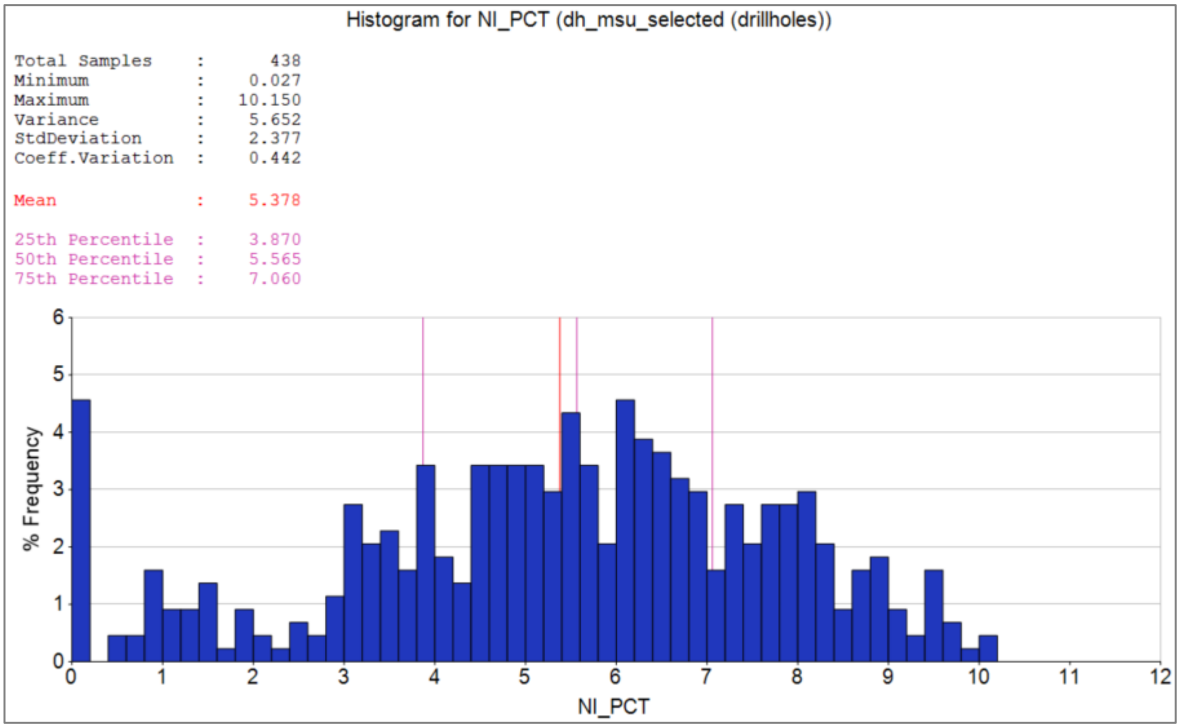


Figure 14.8: Histogram of %Ni for the MSU Domain (Zones 3 and 3.1)



14.4.2 Correlations

A correlation matrix was generated for each domain to determine the relationship between all metals and Density values, as presented for the LSMSU domain in Table 14.4

Table 14.4: Correlation Matrix of the Lower SMSU Domain

	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	S (%)	DENSITY
Ni (%)	1.00							
Cu (%)	0.89	1.00						
Co (%)	0.99	0.85	1.00					
Pt (g/t)	-0.07	0.13	-0.13	1.00				
Pd (g/t)	0.10	0.26	0.03	0.86	1.00			
Au (g/t)	-0.06	0.18	-0.14	0.76	0.74	1.00		
S (%)	0.99	0.86	1.00	-0.12	0.04	-0.13	1.00	
DENSITY	0.91	0.79	0.92	-0.11	0.04	-0.12	0.92	1.00

Ni demonstrated a variable strength correlation with Cu, Co, and S and a good correlation with measured Specific Gravity (SG) values. Ni did not demonstrate a correlation with the platinum group elements (PGE). The correlation between S and SG was used as the basis to calculate SG for absent intervals in the MSU, CGO West and CGO East Domains, while the correlation against Ni was used for the LSMSU and 138 Zone domains. Also due to this strong correlation between S and DENSITY, the S experimental variography was commonly used where the DENSITY variography was erratic and considered low confidence.

14.4.3 Specific Gravity (SG)

SG data from lab measurements (ALS Minerals: Code OA-GRA08b – Specific gravity for mineralized and sedimentary samples using pycnometer) obtained from sample pulps was the source of the data values from the supplied database. The OA-GRA08b gravimetric methodology consists of preparing a sample (3.0 g) which is then weighed into an empty pycnometer. The pycnometer is then filled with a solvent (either methanol or acetone) and then weighed. From the weight of the sample and the weight of the solvent displaced by the sample, the specific gravity is calculated according to the equation below:

$$\text{Specific Gravity} = \frac{\text{Weight of sample (g)}}{\text{Weight in Air (g) - Weight in Solvent (g)}} \text{ x Specific Gravity of Solvent}$$

Calculated SG values were substituted where no lab measured data was available, based on polynomial regression formulas defined for specific mineral domains, with a minimum calculated value of 2.60 and a maximum value capped at 4.20.

The SG was assigned to absent drill hole intervals by polynomial regression for the LSMSU, MSU, 138 Zone, CGO West and CGO East Domains, based on moderate to good correlations with Ni and/or S.

Poor correlations were determined for the USMSU and Low-Grade Halo Domains, and calculated SG values were not applied to those sample composites, and the density was estimated using Ordinary Kriging (OK) with the available lab measured data.

No lab measured SG data was available for the 138 Zone Domain, thus a SG was calculated for based on a regression formula derived from the LSMSU domain, within a similar Ni and Cu grade range. The regression formulas used for each domain are listed below:

- SG (USMSU Domain) = None applied
- SG (LSMSU Domain) = 2.72 + Ni (%) x 0.174
- SG (MSU Domain) = 2.66 + S (%) x 0.0482
- SG (138 Zone Domain) = 2.768 + Ni (%) x 0.092
- SG (CGO West) = 2.62 + S (%) x 0.042
- SG (CGO East) = 2.63 + S (%) x 0.040
- SG (Low Grade Halo) = None applied

For the LSMSU and MSU, new grade fields QNI, QCU, and QCO were created during the compositing process by multiplying the metal grade by measured SG, where available, and calculated DENSITY in the absence of measured data. Grades in the USMSU, 138 Zone, CGO West, CGO East, and Low-Grade Halo Domains were not weighted by SG.

Scatter plots of the Measured SG versus S%, Cu% and Ni% for the CGO West and CGO East Domains are shown in Figure 14.9 and Figure 14.10.

Figure 14.9: Scatter Plot of %S vs SG in the CGO West Domains

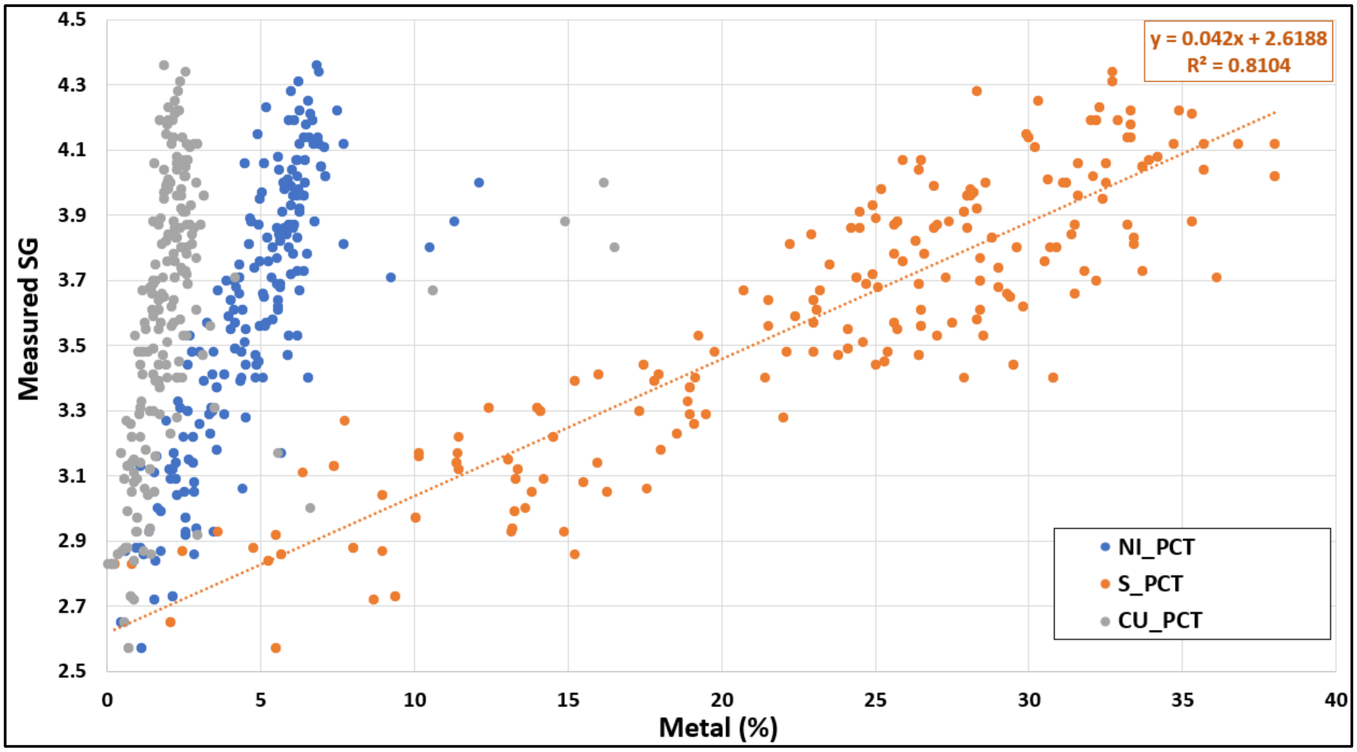
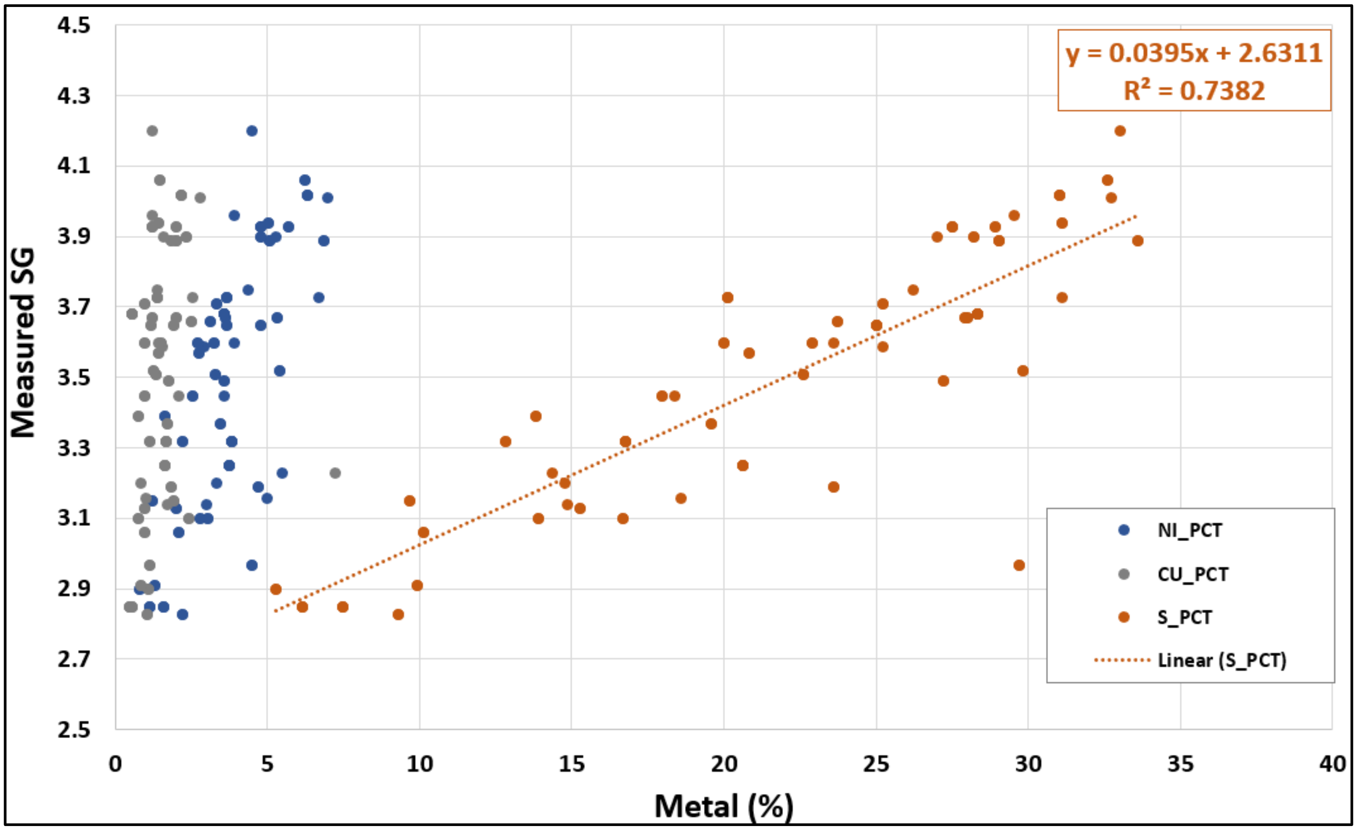


Figure 14.10: Scatter Plot of %S vs SG in the CGO East Domains



The calculated values supplemented the available SG values in the drillhole samples as the DENSITY field.

14.4.4 Outliers

High-grade outlier data has the potential to bias local block model grades if they are not handled by top cutting or, otherwise, restricting their influence through other estimation criteria. X-Y scatter plots were generated to assess the sample population for outlier values, with examples of Au in the MSU Domain (in Figure 14.11) and Ni and Cu in the CGO West MMS/MSU Domain (Figure 14.12).

A number of high-grade outliers were identified in the Cu, Pt, Pd, and Au populations of some domains and were top-cut to the representative populations, as summarized in Table 14.5. Generally, the Ni grades were not top cut, however minor top cuts were performed on some Ni grades in the 138 and Low-Grade Halo domains (Table 14.6), based on the interpreted geology of those domains.

Figure 14.11: AU (g/t) Grade Versus Sample Length for the MSU Domain, Indicating 3 Significant Outliers Identified

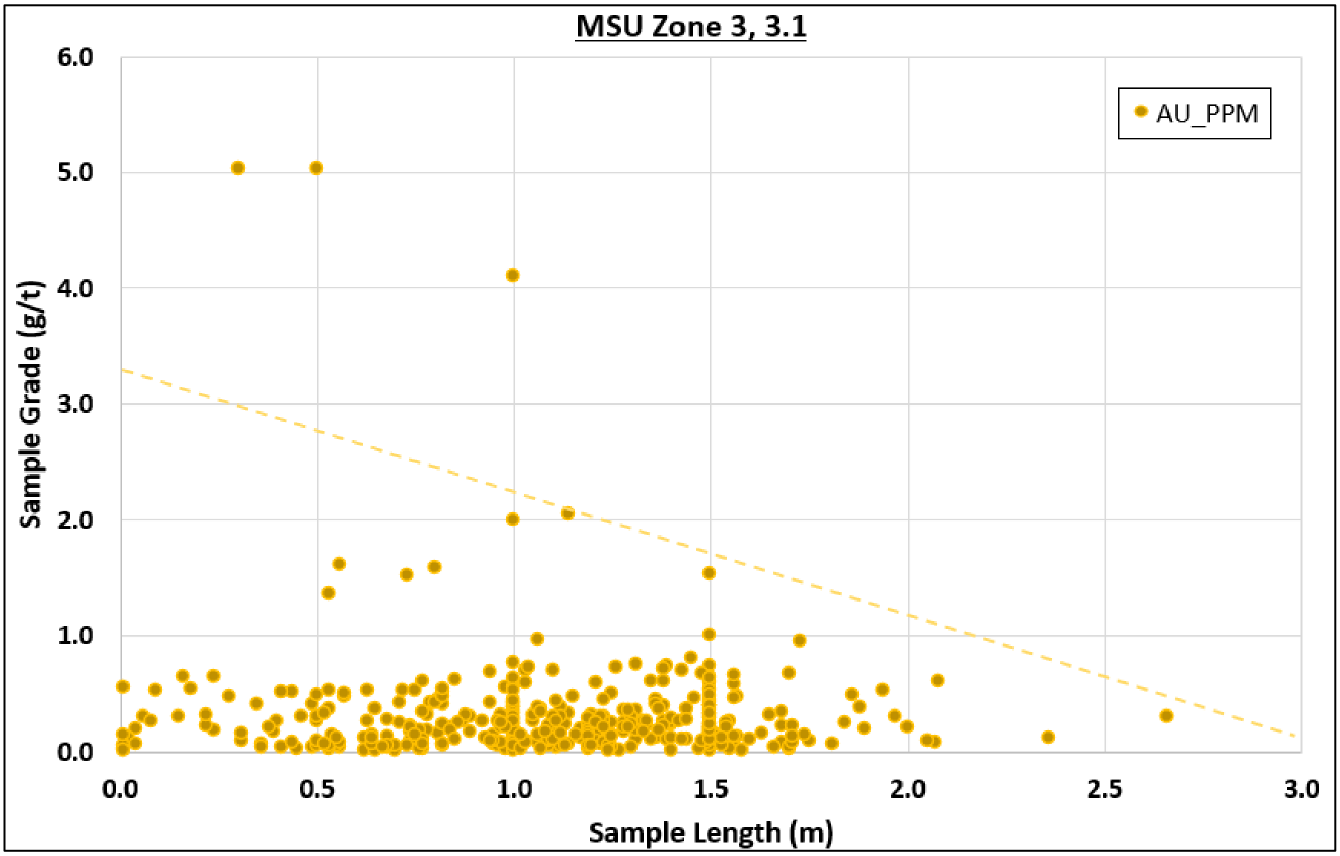


Figure 14.12: Ni (%) and Cu (%) Grade Versus Sample Length for the CGO West MMS/MSU Domain, Indicating 4 Significant Cu Outliers Identified

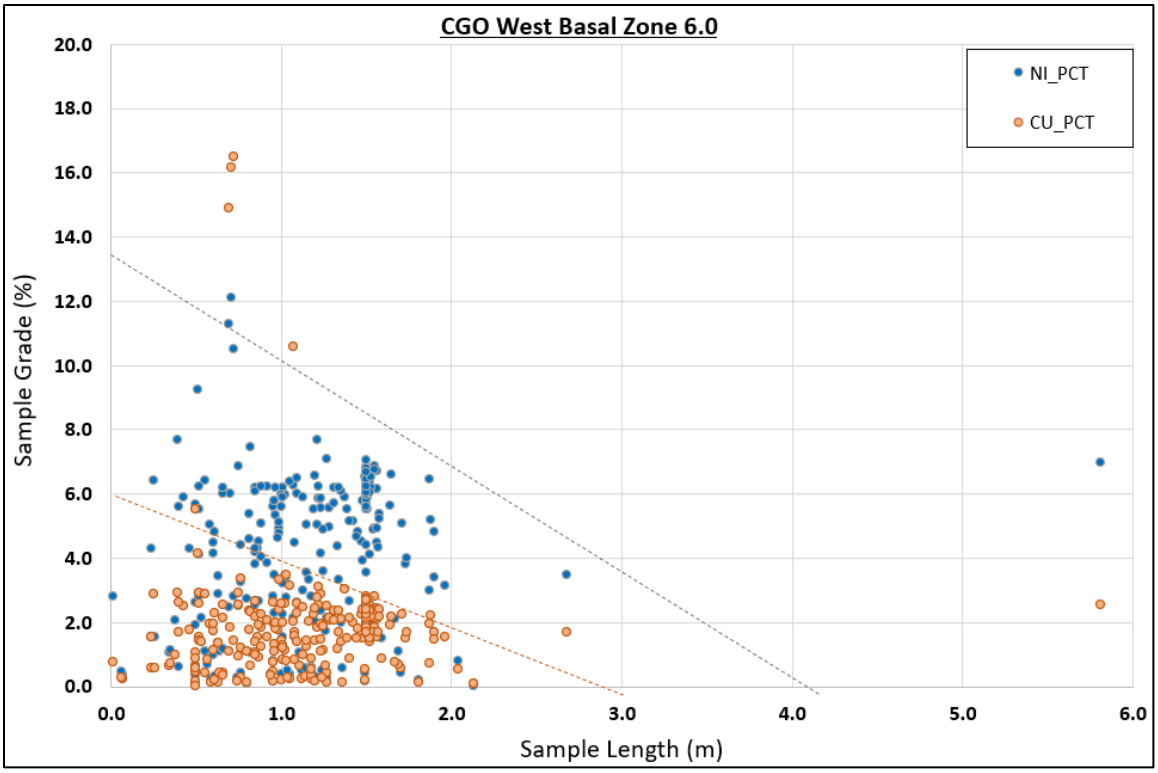


Table 14.5: Summary of Top Cuts

Domain	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)
USMSU	-	-	-	2.0	2.0	2.0
LSMSU	-	-	-	2.0	1.0	0.8
MSU	-	7.0	-	5.0	1.6	3.5
138-MZNO	5.0	4.0	0.12	1.0	0.8	0.7
CGO West MMS/MSU	-	5.0	-	4.0	4.0	4.0
CGO West Disseminated	-	5.0	-	4.0	4.0	4.0
CGO East MMS/MSU	-	5.0	-	2.0	2.0	2.0
CGO West Disseminated	-	5.0	-	2.0	2.0	2.0
Low Grade Halo	4.0	3.0	0.12	1.0	0.6	0.4

Table 14.6: Summary of Number of Top Cuts per Domain

Domain	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)
USMSU	-	-	-	-	-	-
LSMSU	-	-	-	11	5	17
MSU	-	-	-	-	-	3
138-MZNO	18	12	14	10	4	12
CGO West MMS/MSU	-	5	-	2	1	2
CGO West Disseminated	-	2	-	-	-	-
CGO East MMS/MSU	-	-	-	-	-	-
CGO West Disseminated	-	-	-	-	-	-
Low Grade Halo	16	18	12	52	44	59
Total	**34**	**37**	**26**	**75**	**54**	**93**

A comparison of capped and uncapped mean grades and coefficient of variations (CVs) are summarized in Table 14.7.

Table 14.7: Comparison of Length-weighted Mean Grades and Coefficient of Variation (CV) for the Pre-Topcut Versus Topcut Grades

Domain	Element	Mean Uncapped	Mean Capped	Uncapped CV	Capped CV
LSMSU	Au (g/t)	0.257	0.254	0.707	0.626
LSMSU	Pd (g/t)	0.340	0.340	0.522	0.516
LSMSU	Pt (g/t)	0.578	0.571	0.722	0.638
MSU	Au (g/t)	0.282	0.279	1.289	1.155
138-MZNO	Au (g/t)	0.106	0.092	5.384	0.928
138-MZNO	Co (%)	0.019	0.019	0.564	0.493
138-MZNO	Cu (%)	0.391	0.387	1.215	1.113
138-MZNO	Ni (%)	0.571	0.561	1.073	0.884
138-MZNO	Pd (g/t)	0.093	0.091	1.293	0.885
138-MZNO	Pt (g/t)	0.181	0.154	9.129	0.831
CGO West MMS/MSU	Au (g/t)	0.199	0.188	2.449	1.787
CGO West MMS/MSU	Cu (%)	1.808	1.697	0.899	0.540
CGO West MMS/MSU	Pd (g/t)	0.300	0.297	1.316	1.230
CGO West MMS/MSU	Pt (g/t)	0.401	0.392	1.287	1.079
CGO West Disseminated	Cu (%)	0.290	0.288	1.040	0.957

14.5 Compositing

Compositing samples is a technique used to give each sample a relatively equal length weighting to reduce the potential for bias due to uneven sample lengths. Histograms of raw sample length were generated for each domain to determine the most common (modal) sample length used at the Tamarack North Project which was the basis used to determine the composite length.

Samples captured within the USMSU-CGO, LSMSU and the Low-Grade Halo domains were composited to an average length of 1.5 m, while the samples in the MSU, CGO West and CGO East domains were composited to an average length of 1.0 m. The Datamine® option to use a variable composite length was chosen for all domains to prevent the loss of sample information and the creation of short composites that are generally formed along the contacts when using a fixed length.

Composite samples were validated visually in plan and section and a histogram of composite length was generated to confirm compositing was completed as expected. The histograms displayed a normal distribution around the chosen composite lengths and the total length of the sample data remained unchanged (Table 14.8). The mean composite grades were found to be unchanged from the cut composite grades and except for a very minor change for the Low-Grade Halo Domain, there was no loss of sample length during the process, as summarized in Table 14.8.

Table 14.8: Comparison of Composite vs Raw Sample Lengths (in metres)

Domain	Number of Samples	Total Raw Sample Length	Number of Composites	Total Composite Sample Length	Mean Composite Length
USMSU-CGO	2,732	4,057.7	2,707	4,057.7	1.50
LSMSU	1,277	1,869.4	1,248	1,869.4	1.50
MSU	389	430.0	430	430.0	1.00
13- MZNO	1,538	2,327.1	1,553	2,327.1	1.50
CGO West MMS/MSU	240	263.9	261	263.9	1.01
CGO West Disseminated	837	1,250.8	1,249	1,250.8	1.00
CGO East MMS/MSU	130	111.8	111	111.8	1.01
CGO East Disseminated	748	1,138.0	1,140	1,138.0	1.00
Low Grade Halo	17,298	33,295.5	22,204	33,295.1	1.50

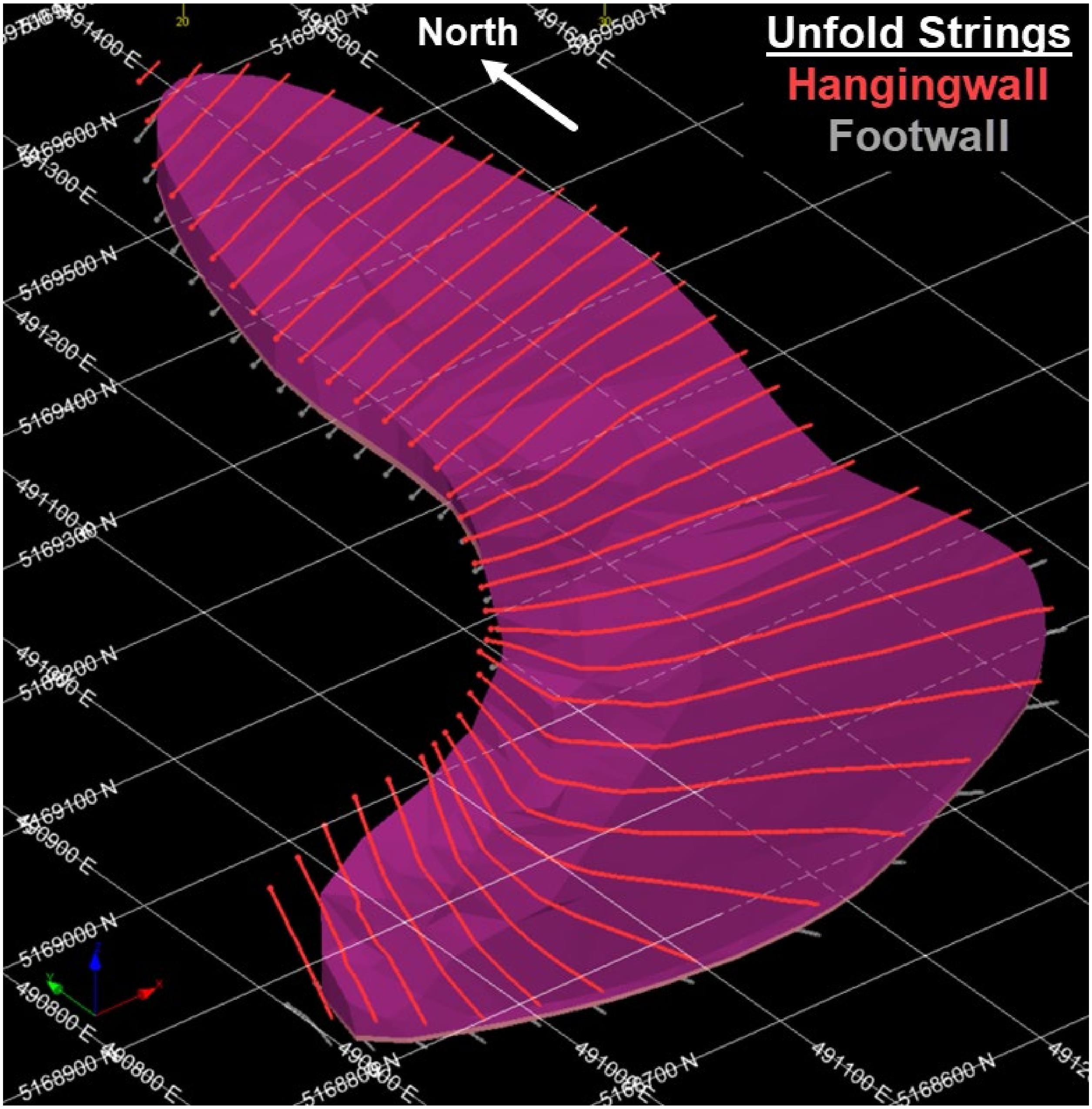
14.6 Resource Estimation

14.6.1 Unfolding

All mineral domains, with the exception of the Low Grade Halo domain and a small portion of the MSU “bridge sub-domain,” were unfolded for the purpose of grade estimation. The “Unfold” process within Datamine® was used to transform the composite sample data from Cartesian coordinates into an Unfolded Coordinate System (UCS), as defined by the geometry of the Footwall (FW) and Hangingwall (HW) contacts of each mineral domain model. This transformation essentially removes bends, pinches, and swells, allowing for more robust variogram calculations and grade estimation. This was considered an appropriate process to employ, given the variable orientations of each mineral wireframe.

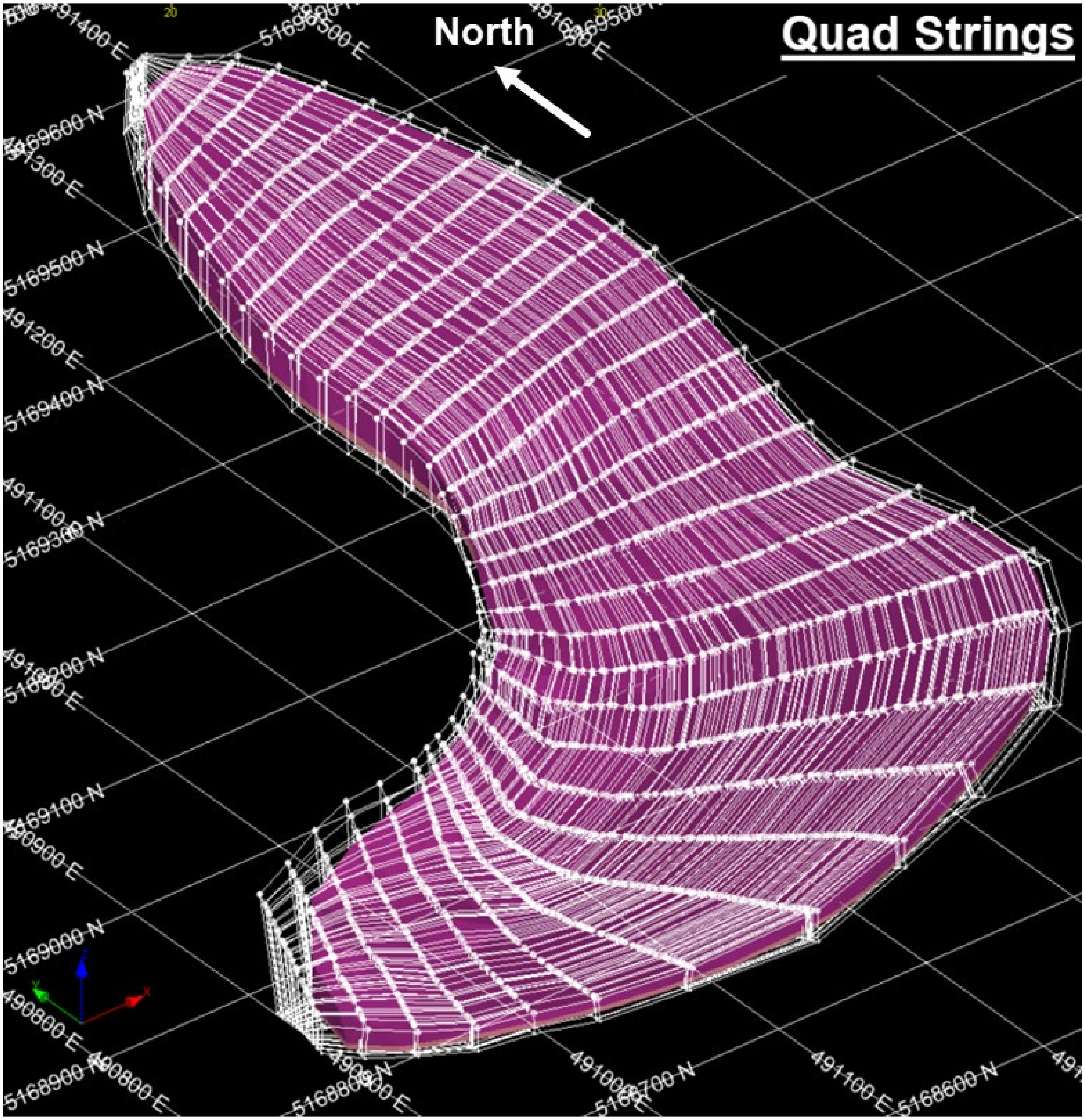
Strings paralleling the FW (gray) and HW (red) contacts of each mineral domain were constructed and tagged in cross-section view, as shown in the CGO East example in Figure 14.13 These strings were then used to transform the composite samples into the UCS. The same unfold strings are used in the grade estimation process to unfold the blocks into the transformed system as the composite samples. The process unfolds discretization points from the prototype model and estimates the grades for each in the UCS. The process then assigns the estimated grades back to the corresponding cell in the Cartesian model. In the UCS, the X-axis is assigned to UCSA, which represents the across strike thickness of the zone (FW to HW), the Y-axis is assigned to UCSB representing the down-dip of the zone and the Z-axis is assigned to UCSC representing the along strike direction of the zone.

Figure 14.13: Example of Unfold Strings for the CGO East Domains; Oblique View Looking Northeast.



The unfolded samples were validated visually in unfold space for each zone. Quadrilateral strings created during the process were inspected to confirm that unfolding had performed as expected, as shown in Figure 14.14.

Figure 14.14: Example of Quadrilateral Strings for the CGO East Domains. Oblique View Looking Northeast



Visual inspection of the Nearest Neighbor (NN) models confirmed that the unfolding process had worked as expected for all zones and all the samples were confirmed to be properly unfolded and used during the estimation process.

14.6.2 Grade Variography

Experimental grade variograms were generated from the unfolded composite data for all model variables to assess the spatial variability for the purpose of assigning Kriging weights to the composite samples. Samples situated in the directions of preferred geological continuity receive higher Kriging weights resulting in a greater influence on the block estimate.

Pairwise relative experimental grade variograms were generated based on the parameters outlined in Table 14.9. Variograms were not generated for the Low-Grade Halo Domain as grades were estimated using Inverse Distance Squared (ID^2) methodology.

Table 14.9: Grade Variogram Parameters

Domain	Rotations	Lag Distance (m)	Number of Lags	Sub-Lag Distance (m)	Number of Lags to be Sub-Lagged	Regularization Angle (degrees)	Number of Azimuths	Cylindrical Search Radius (m)
USMSU	0	20	15	10	2	30	2	30
LSMSU	0	10	15	5	2	30	2	30
MSU	0	10	20	2	10	30	2	30
138-MZON	0	30	15	15	4	22	2	30
CGO-West MMS/MSU	0	20	15	10	2	30	2	30
CGO-West Disseminated	0	20	15	10	2	30	2	30
CGO-East MMS/MSU	0	20	15	10	2	30	2	30
CGO-East Disseminated	0	20	15	10	2	30	2	30

A set of two structure spherical variogram models were fitted to the variogram data. An example of the variogram model for Ni in the CGO West Disseminated Domain (Zone 6.1) is provided in Figure 14.15.

Figure 14.15: CGO West Disseminated %Ni Variogram Model, with Number of Sample Pairs for Each Lag Indicated

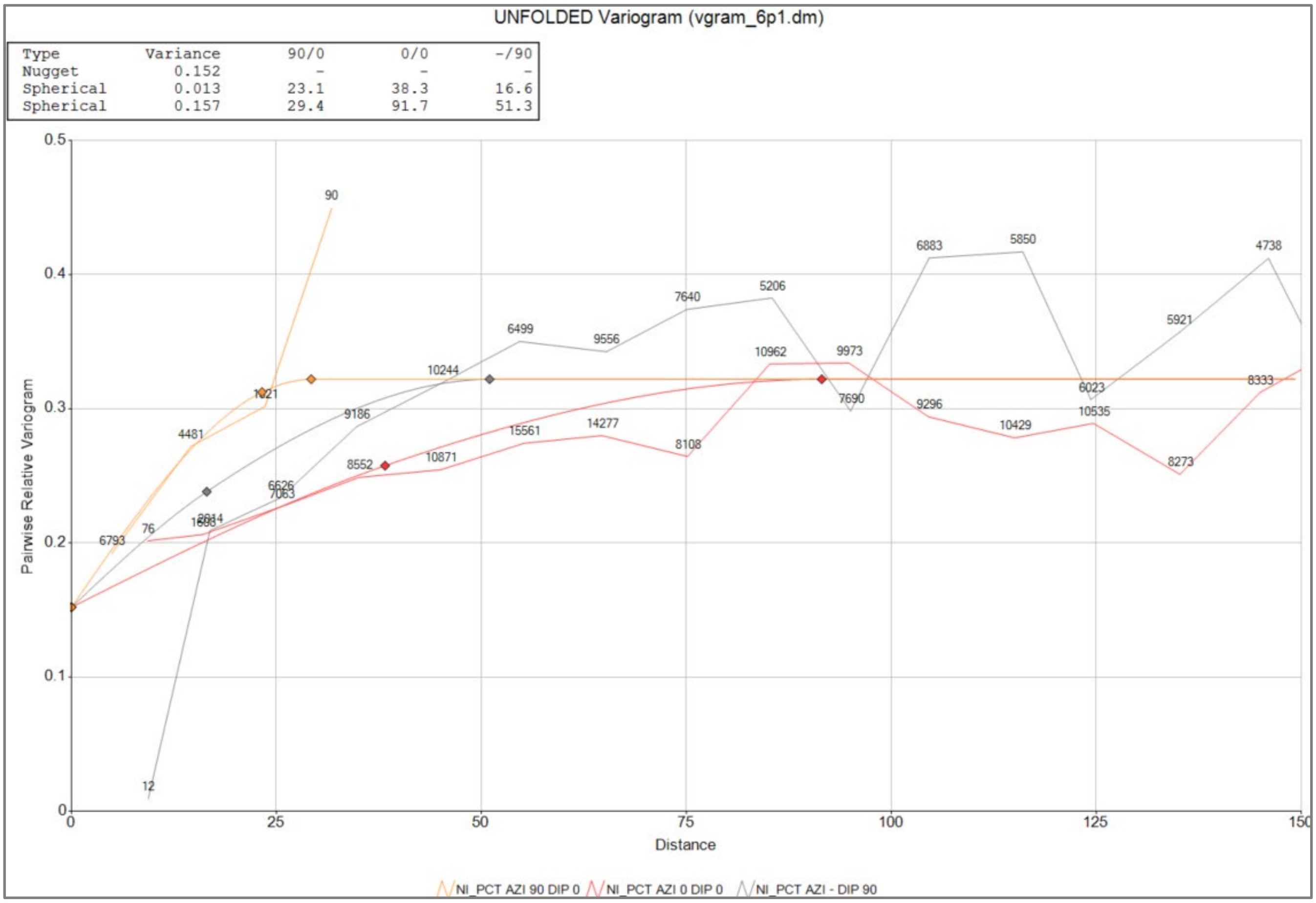


Table 14.10: Tamarack Grade Variogram Models (Unfolded, ranges in metres)

Mineral Domain	Element	Nugget	1st Structure				2nd Structure				Sill
			X-Range	Y-Range	Z-Range	Variance	X-Range	Y-Range	Z-Range	Variance	
USMSU	NI	0.049	23.1	16.1	36.4	0.248	87.1	64.2	90.4	0.262	0.559
	CU	0.137	12.0	20.1	20.8	0.226	56.3	61.3	102.3	0.571	0.934
	CO	0.020	25.9	16.5	28.8	0.052	81.3	58.6	63.5	0.250	0.322
	PT	0.102	8.8	22.5	8.4	0.227	60.4	87.4	144.4	0.576	0.905
	PD	0.102	8.8	22.5	12.1	0.220	60.4	72.1	140.0	0.498	0.820
	AU	0.187	8.8	22.5	11.5	0.248	43.0	72.1	140.0	0.498	0.933
	S	0.117	14.4	15.3	16.1	0.291	47.5	49.5	80.5	0.406	0.814
	DENSITY	0.000	4.4	45.9	18.7	0.003	50.6	48.2	82.7	0.005	0.008
@LSMSU	NI	0.061	21.3	15.7	35.5	0.281	27.3	23.6	69.8	0.152	0.494
	CU	0.036	12.7	16.4	26.3	0.165	35.6	29.4	86.1	0.223	0.424
	CO	0.036	15.6	12.0	19.8	0.141	27.8	18.5	67.5	0.220	0.397
	PT	0.071	12.6	15.6	17.5	0.192	24.6	22.8	49.8	0.079	0.342
	PD	0.056	8.2	14.4	15.8	0.071	27.5	21.1	58.2	0.178	0.305
	AU	0.115	13.7	13.4	19.1	0.172	34.9	35.4	58.7	0.090	0.377
	S	0.066	16.1	12.5	20.1	0.332	23.5	21.0	91.5	0.228	0.626
MSU	NI	0.041	6.3	36.0	16.7	0.024	13.9	51.8	123.0	0.365	0.430
	CU	0.026	5.0	23.8	36.6	0.138	19.1	31.4	73.2	0.118	0.282
	CO	0.030	8.6	24.3	38.5	0.020	14.4	34.3	74.1	0.236	0.286
	PT	0.116	7.2	25.1	44.6	0.117	22.8	37.1	67.3	0.198	0.431
	PD	0.013	4.2	18.0	24.8	0.102	15.1	35.9	90.0	0.222	0.337
	AU	0.092	5.4	13.8	22.1	0.080	11.6	21.3	54.0	0.359	0.531
	S	0.027	5.2	34.9	25.8	0.036	15.5	42.3	88.8	0.275	0.338
138 - MZNO	NI	0.129	8.4	18.6	34.6	0.141	30.6	60.1	119.4	0.025	0.295
	CU	0.129	9.4	19.6	33.0	0.288	30.1	60.0	119.7	0.185	0.602
	PT	0.129	19.3	18.6	34.1	0.125	29.7	60.1	119.4	0.041	0.295
	PD	0.129	19.3	18.6	35.9	0.155	29.7	59.4	120.7	0.040	0.324
	AU	0.129	19.3	18.6	29.5	0.196	30.2	60.1	119.4	0.121	0.446
CGO West MMS-MSU	NI	0.223	4.4	22.5	36.4	0.012	15.3	91.9	114.3	0.287	0.522
	CU	0.178	4.4	15.1	28.0	0.010	10.1	88.7	101.1	0.244	0.432
	CO	0.189	3.7	23.6	28.8	0.018	10.2	90.3	78.9	0.222	0.429
	PT	0.197	5.0	34.5	29.6	0.021	10.6	71.8	74.4	0.206	0.424
	PD	0.218	3.9	31.0	38.1	0.019	10.3	73.9	73.5	0.177	0.414
	AU	0.145	3.4	37.3	21.2	0.015	10.2	63.1	78.7	0.207	0.367
	S	0.239	3.6	52.2	34.4	0.023	10.4	84.2	77.1	0.199	0.461
CGO West Disseminated	NI	0.152	23.1	38.3	16.6	0.013	29.4	91.7	51.3	0.157	0.322
	CU	0.153	20.2	19.5	16.8	0.106	35.9	77.4	57.6	0.221	0.480
	CO	0.061	24.7	40.7	16.7	0.010	30.0	110.5	62.8	0.088	0.159
	PT	0.042	12.5	24.2	35.6	0.324	17.9	94.0	54.3	0.208	0.574

Mineral Domain	Element	Nugget	1st Structure				2nd Structure				Sill
			X-Range	Y-Range	Z-Range	Variance	X-Range	Y-Range	Z-Range	Variance	
	PD	0.058	13.4	28.2	35.5	0.281	22.5	66.4	50.6	0.270	0.609
	AU	0.055	19.8	24.6	34.3	0.306	34.8	99.2	56.7	0.134	0.495
	S	0.209	10.2	24.9	23.0	0.073	28.9	100.8	82.0	0.202	0.484
CGO East MMS-MSU	NI	0.212	6.5	33.1	16.7	0.024	10.7	51.8	68.3	0.384	0.620
	CU	0.207	4.3	36.5	24.4	0.002	10.5	78.4	87.0	0.402	0.611
	CO	0.250	4.6	14.4	21.0	0.310	10.7	71.7	74.9	0.257	0.817
	PT	0.218	5.9	38.5	22.2	0.020	9.8	80.6	83.8	0.392	0.630
	PD	0.218	4.2	31.0	24.8	0.031	10.1	61.8	91.7	0.309	0.558
	AU	0.145	5.4	31.0	25.5	0.025	10.0	62.6	85.9	0.237	0.407
	S	0.336	5.2	34.6	24.3	0.042	10.4	74.7	95.1	0.370	0.748
CGO East Disseminated	NI	0.054	14.9	52.2	19.0	0.111	35.8	77.9	79.6	0.114	0.279
	CU	0.127	15.7	28.7	15.9	0.005	24.8	52.8	57.9	0.288	0.420
	CO	0.020	15.5	31.8	23.1	0.030	29.7	73.7	74.3	0.038	0.088
	PT	0.166	13.5	31.0	23.9	0.155	33.1	69.6	76.0	0.245	0.566
	PD	0.166	13.5	31.0	23.9	0.155	33.1	69.6	76.0	0.245	0.566
	AU	0.145	13.0	31.0	21.3	0.043	28.4	62.5	62.8	0.362	0.550
	S	0.109	13.8	34.6	24.0	0.056	17.3	69.2	67.4	0.118	0.283

Notes: In the Unfold UCS, X (vertical) is across the mineralization, Y is down-dip, and Z is along strike.

The down-dip (Y-Range) and along strike (Z-Range) directions of the mineralization were determined to be the directions of greatest grade continuity. The second structure range of each axis was used as the basis to define the search ellipse dimensions used for interpolating grades into the mineral resource block model.

14.6.3 Block Model Definition

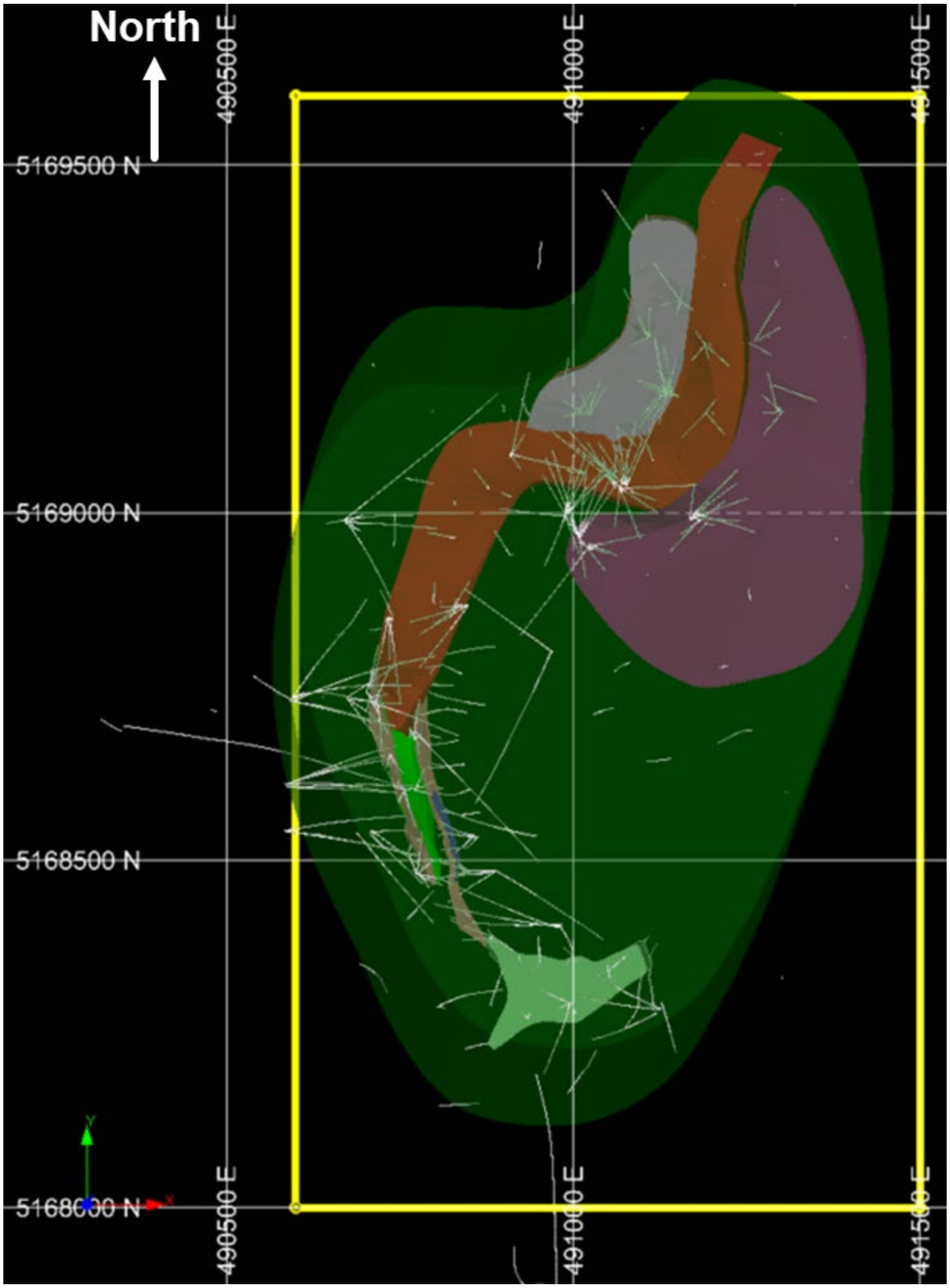
A 3D block model was defined for each of the mineral domains with the appropriate prototype size, depending on the geometry and size of the mineral domains. The two basic block sizes are summarized in Table 14.11 displays the maximum spatial extents of the model outlined in yellow.

Table 14.11: Block Model Definition

Domains	Direction	Minimum (m)	Maximin (m)	Range (m)	Block Size (m)	No. of Blocks
MSU, CGO West, CGO East	Easting (X)	490,600	491,500	900	2.5	360
	Northing (Y)	5,168,000	5,169,600	1,600	2.5	640
	Elevation (Z)	-400	400	800	2.5	320
USMSU, LSMSU, 138 Zone, Low Grade Halo	Easting (X)	490,600	491,500	900	5.0	180
	Northing (Y)	5,168,000	5,169,600	1,600	5.0	320
	Elevation (Z)	-400	400	800	5.0	160

All mineral domain solids were filled with blocks using the parameters described in Table 14.11. Cell splitting (2X) was used for improved definition of boundaries. All domain volumes were then compared to the filled model volumes to confirm there were no errors during the process.

Figure 14.16: Block Model Limits (Yellow Outline) Relative to the Drill Hole and Mineral Domain Wireframes; Plan view



14.6.4 Estimation Methodology

Ordinary Kriging (OK) was the interpolation method chosen to estimate grades for all Domains except the Low-Grade Halo domain and a portion of the MSU "bridge" sub-domain, both of which had the ID^2 interpolation method applied.

The OK method assigns weights to the samples based on the modelled spatial continuity of the sample data. The ID^2 method assigns weights to samples based on the distance from the block centroid, with closer samples having a higher weighting, and the grade estimates are also weighted by the 3D direction of the Unfolded samples. Most domains utilized a three-pass nested search strategy, along with unfolding and top-cutting as summarized in Table 14.12.

Inverse Distance Squared (ID^2) and Nearest Neighbour (NN) interpolations were also used to estimate each domain for model validation purposes. NN estimates use the sample grade closest to the centroid of the block and represent de-clustered sample grades for use in block model validation.

Table 14.12: Summary of Estimation Methodology

Geological Domain	Interpolation Methods	SG Weighting of Base Metals	Nested Search	Unfolding	Top Cutting
USMSU	OK, ID^2, NN	No	Yes	Yes	Yes
LSMSU	OK, ID^2, NN	Yes	Yes	Yes	Yes
MSU	OK, ID^2, NN	Yes	Yes	Yes	Yes
MSU "Bridge"	ID^2, NN	Yes	Yes	No	Yes
138-MZNO	OK, ID^2, NN	No	Yes	Yes	Yes
CGO West MMS - MSU	OK, ID^2, NN	No	Yes	Yes	Yes
CGO West Disseminated	OK, ID^2, NN	No	Yes	Yes	Yes
CGO East MMS - MSU	OK, ID^2, NN	No	Yes	Yes	Yes
CGO East Disseminated	OK, ID^2, NN	No	Yes	Yes	Yes
LG	ID^2	No	Yes	No	Yes

Nested, anisotropic searches were performed for all domains using the modelled second structure variogram ranges for each element as the approximate search distances for each of the three axes, orthogonal to the unfolded plane of the deposit. The search parameters for all elements are summarized in Table 14.13. It is noted that, as with the variogram ranges, these search parameters are used in unfolded space during the interpolation process, where X is across the deposit (from FW to HW), Y is down-dip, and Z is in the strike direction. The search radius of the first search was restricted to approximately one-half the variogram range, with the second search being the full variogram range, and the third search being twice the variogram range. For the MSU domain, the search ellipse was influenced by the twin parallel-lobe geometry for much of the mineralization.

Search strategies for each domain used an elliptical search with a minimum of four samples and a maximum of 12 samples, utilizing a sample restriction with a maximum of six samples per hole. Rare un-estimated blocks around the margins of some domains were later overprinted with grade estimates from the Low Grade Halo Domain.

Table 14.13: Summary of Search Parameters (Unfolded, Ranges in Metres)

Domain	Rotation Angle (Degrees)	Rotation Angle (Dip)	1st Search					2nd Search			3rd Search			All
			X-Range	Y-Range	Z-Range	Minimum Samples	Maximum Samples	SVOL Factor 2	Minimum Samples	Maximum Samples	SVOL Factor 3	Minimum Samples	Maximum Samples	Maximum per hole
USMSU	0	0	15	32	45	4	12	2	4	12	4	4	12	6
LSMSU	0	0	15	15	60	4	12	2	4	12	4	4	12	6
MSU	0	0	4	25	60	4	12	2	4	12	4	4	12	4
MSU-Bridge	0	0	4	20	60	4	12	2	4	12	4	4	12	4
138 Zone	0	0	15	30	60	4	12	2	4	12	4	4	12	6
CGO West MMS - MSU	0	0	4	45	30	6	12	2	6	12	5	4	12	4
CGO West Disseminated	0	0	4	42	27	6	12	2	6	12	4	4	12	4
CGO East MMS - MSU	0	0	4	30	40	6	12	2	6	12	5	4	12	4
CGO East Disseminated	0	0	4	33	34	6	12	2	6	12	4	4	12	4
Low Grade Halo	30	-20	40	80	20	4	12	1.5	4	12	2	4	12	6

14.6.5 Fe in Sulphides % Estimation

As described in Item 13.0, Talon entered into the Tesla Supply Agreement for the sale of iron in a sulphide concentrate (Pyrrhotite and Pentlandite) as a by-product. The QP has therefore included an estimate of the approximate amount of Fe in Sulphides % which are available from the current Ni-Cu-Co-PGE resource. Talon estimates a potential sales price of approximately $1.50/lb for refined iron powders as per Tesla's Battery Day, September 22, 2020, presentation.

The percent of iron sulfides was calculated for each mineral domain and represents a predominately Pyrrhotite-Pentlandite concentrate resulting from the proposed metallurgical flowsheet described in Item 13.3 and charted in Figure 13.8. This Fe in Sulphides % was calculated from the sulphide mineral composition based on the Ordinary Kriged estimates of Ni%, Cu% and S% for each block in the resource model.

The assay results for Fe could not be used for this estimation as there is a significant amount of Fe within the matrix of the host silicate minerals which will be mostly rejected during the flotation process. Metallurgical test work, including Electron Microprobe Analysis (EMPA) and Quantitative Evaluation of Materials by Scanning Electron Microscopy (QEMSCAN) analysis, has indicated an average of 15.5% FeO in olivine and 10.4% FeO in orthopyroxene.

The Fe in Sulphides % estimation is based on the assumptions that:

- All grade estimated Ni% is contained in Pentlandite (Pn), which therefore also contains a proportional amount of Fe and S.
- All grade estimated Cu% is contained in Chalcopyrite (Cpy), which therefore also contains a proportional amount of Fe and S.
- The remaining amount of grade estimated S, after the S represented by Cpy and Pn is removed from the grade estimated S%, is present as Pyrrhotite (Po), which therefore also contains a proportional amount of Fe.

The amount of proportional Fe contained in the Pn and Po is the amount of Fe which could report to the Po-Pn concentrate in the proposed metallurgical flowsheet. Some cautionary notes on the reporting of Fe in Sulphides % for a Ni-Cu-Co sulphide deposit with associated PGEs and Au include:

- With minor exceptions, the sulphide mineralogy for the Tamarack North Project deposits is dominated by Chalcopyrite, Pentlandite and Pyrrhotite. Mineralogical test work has indicated the presence of minor amounts of Cubanite ($CuFe_2S_3$) and valleriite ($4(Fe,Cu)S \cdot 3(Mg,Al)(OH)$) but may represent less than 1% of sulphide minerals by mass.
- No metallurgical recoveries of either Pn or Po to concentrate are included in this approximation, nor the effect of Cpy or silicate dilution on the concentrate.

Metallurgical test work has shown there are non-ideal mineralogical compositions to the primary sulphide minerals, i.e., there is minor substitution of additional elements into the mineralogical structures of the primary sulphide minerals. Table 14.14 lists the average of seven EMPA determinations of composition of the three main sulphide phases in the Tamarack North deposits.

Table 14.14: Average Compositions of Tamarack North Sulphide Minerals from EMPA

Sulphide Mineral	Fe %	Cu %	S %	Ni %
Pyrrhotite	60.2	0.06	38.9	0.19
Pentlandite	32.8	0.60	32.6	31.6
Chalcopyrite	32.7	30.9	34.7	0.31

Note: The QP has fully relied on Talon for details regarding the Tesla Supply Agreement and the economic potential of the Fe in Sulphides % as a by-product. The QP is not aware of any metallurgical test work completed to determine the recovery of iron from concentrate.

Due to the fact the approximation of Fe in Sulphides % is based on geostatistically derived values, there is less certainty of the precision, thus the “Fe% in Sulphides” values listed in the MRE (Table 14-20) have limited significant digits.

The Fe in Sulphides % is included in this resource update due to the increased demand for Lithium-Iron-Phosphate batteries (LFP). The Tesla Supply Agreement provides that Fe could be a payable by-product.

14.7 Mineral Resource Classification

Mineral Resource categories were assigned to broad regions of the block model based on the confidence of the estimates as they related to the geological understanding, continuity of mineralization relative to the style of mineralization, data quality, and drill hole density. A combination of drill hole density and the search volume used to estimate the grade of the block was used as an additional guide for outlining classification regions. No Measured Mineral Resources were outlined from the block model, as it is the QP’s opinion that the drill spacing and orientation of drilling was insufficient to adequately define the volume and extent of mineralization to meet the definition of the Measured Mineral Resource category.

Figure 14.17 to Figure 14.20 outline the Mineral Resource categories assigned to each mineral domain, where green areas are Indicated Mineral Resources and orange areas are Inferred Mineral Resources. The red coloured volumes were classified entirely as “Potential” exploration target and were excluded from the 2022 MRE.

Figure 14.17: USMSU Resource Classification, with Supporting Drill Hole Composited Samples as Gray Traces; Plan View

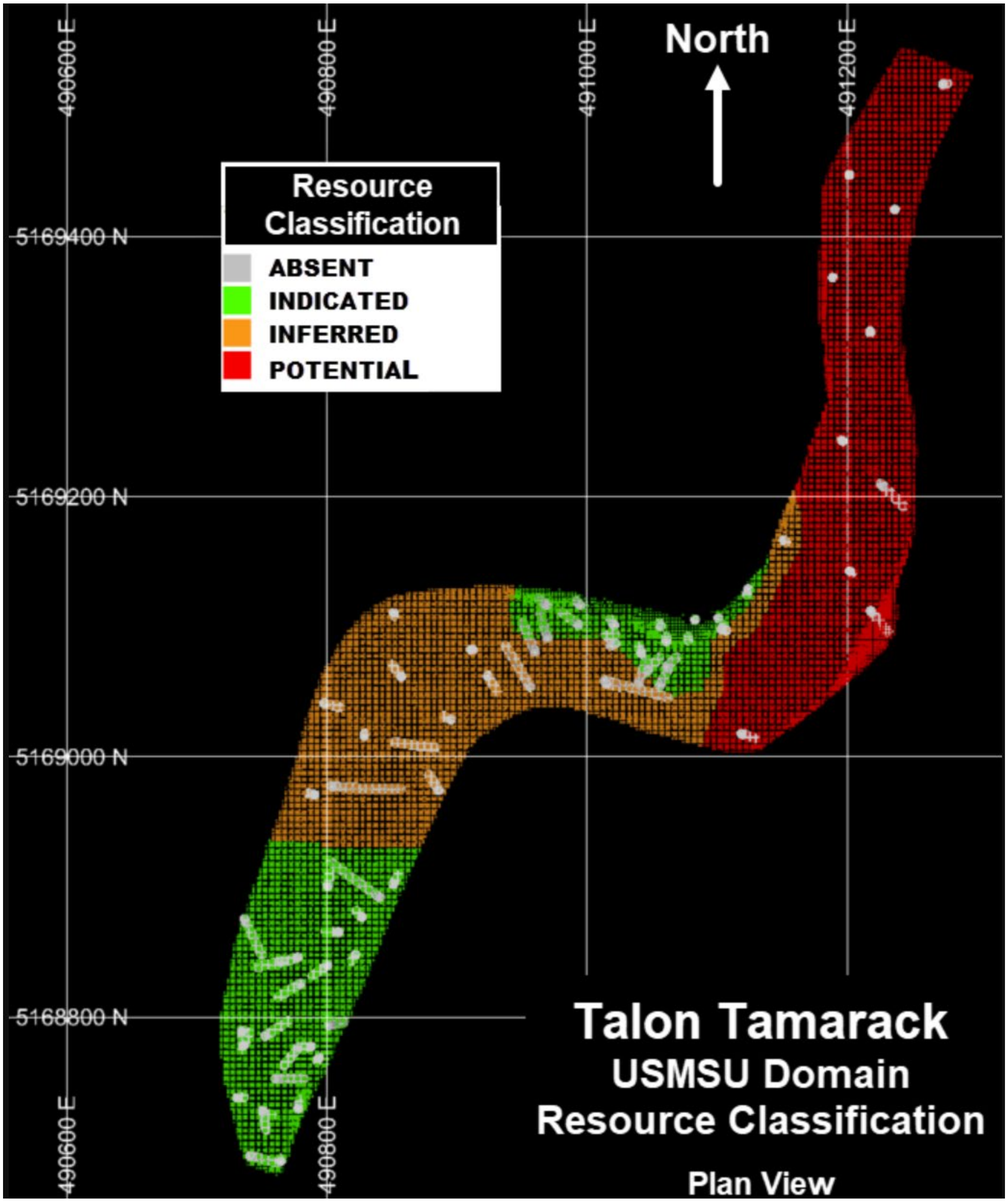


Figure 14.18: LSMSU Resource Classification, with Supporting Drill Hole Composited Samples as Gray Traces; Plan View

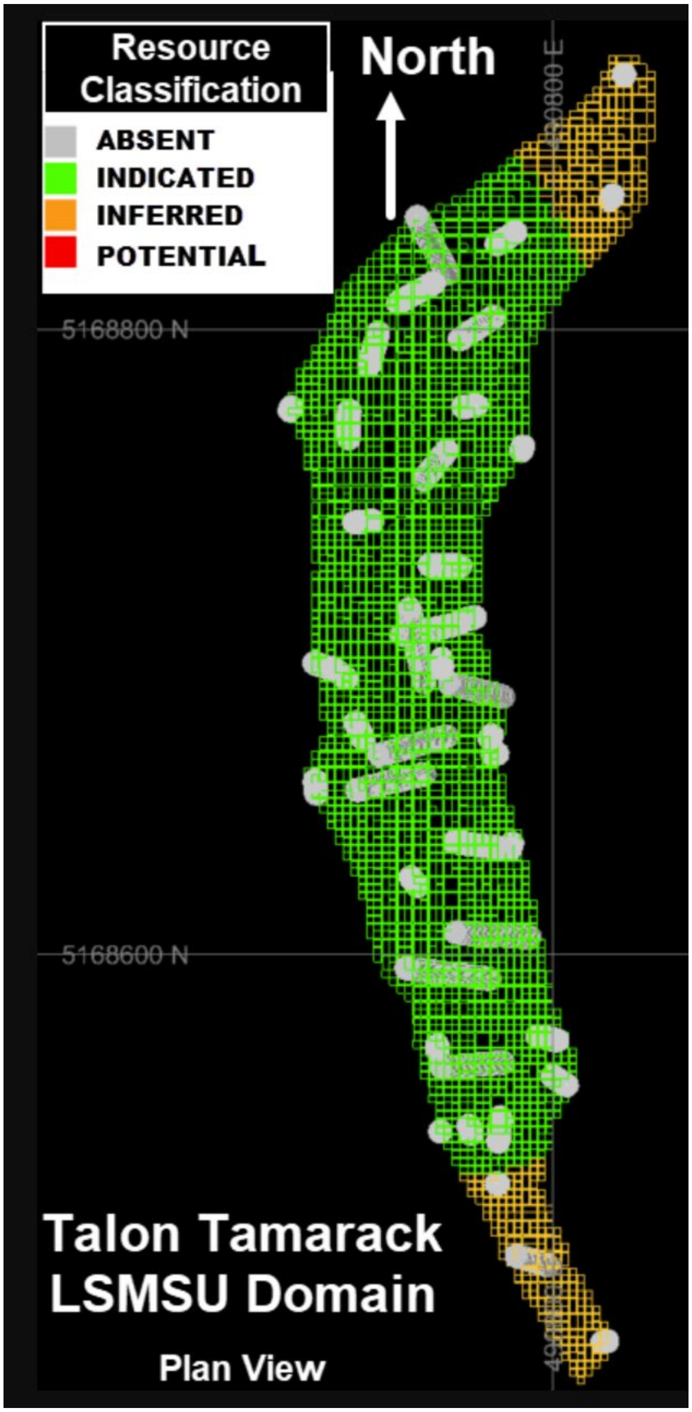


Figure 14.19: MSU Resource Classification, with Supporting Drill Hole Composited Samples as Gray Traces; Plan View

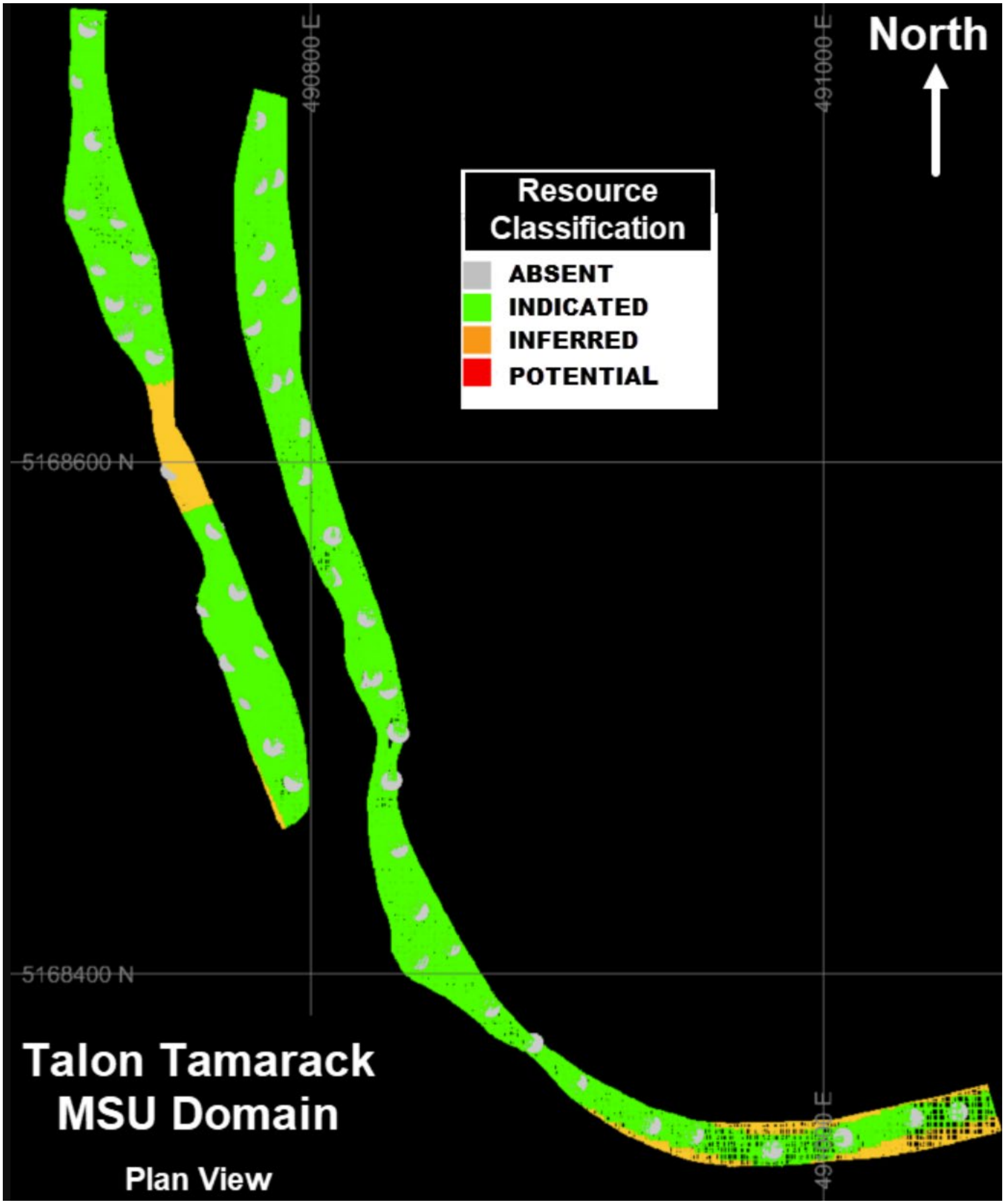


Figure 14.20: 138 Zone Resource Classification, with Supporting Drill Hole Composited Samples as Gray Traces; Plan View

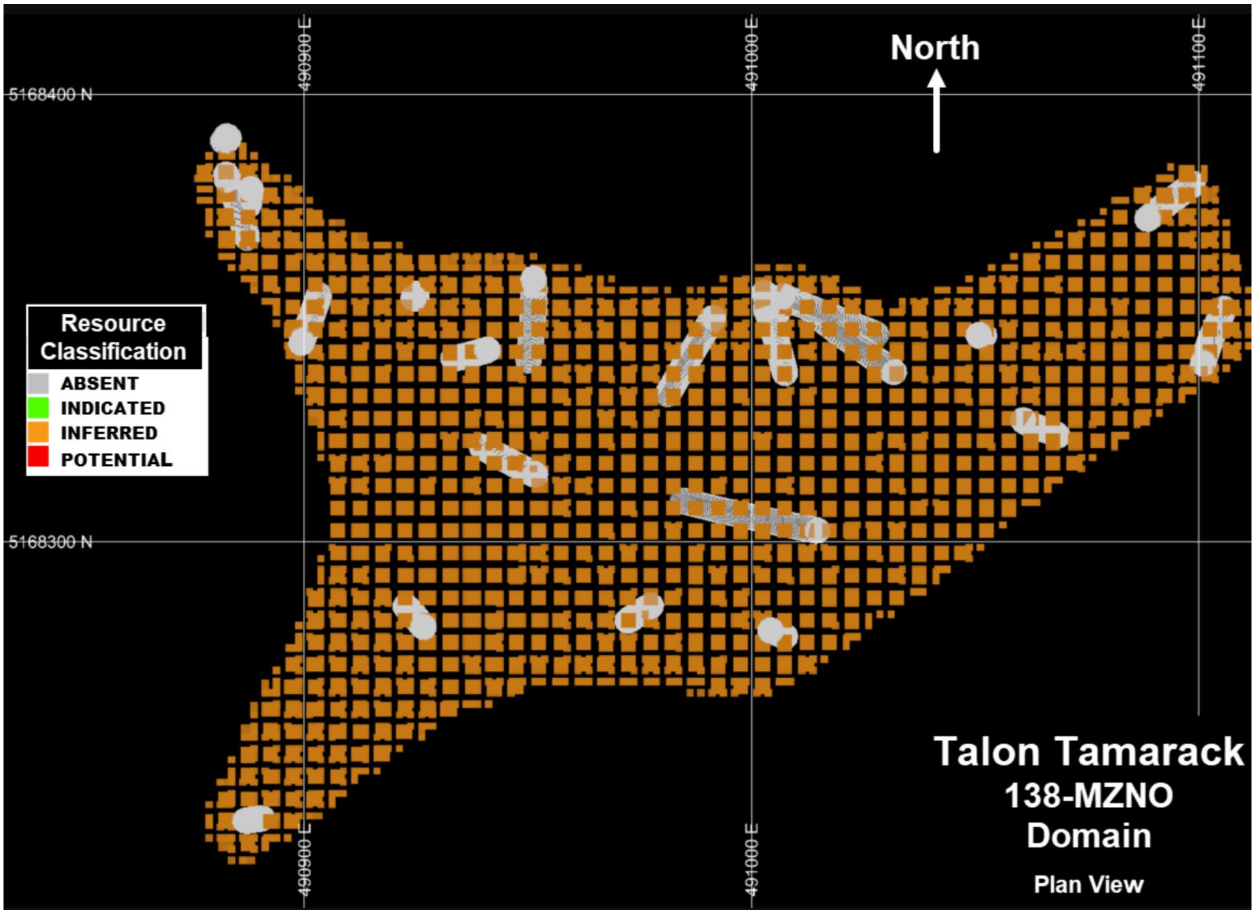


Figure 14.21: CGO West MMS-MSU Domain Resource Classification, with Supporting Drill Hole Composited Samples as Gray Traces; Plan View.

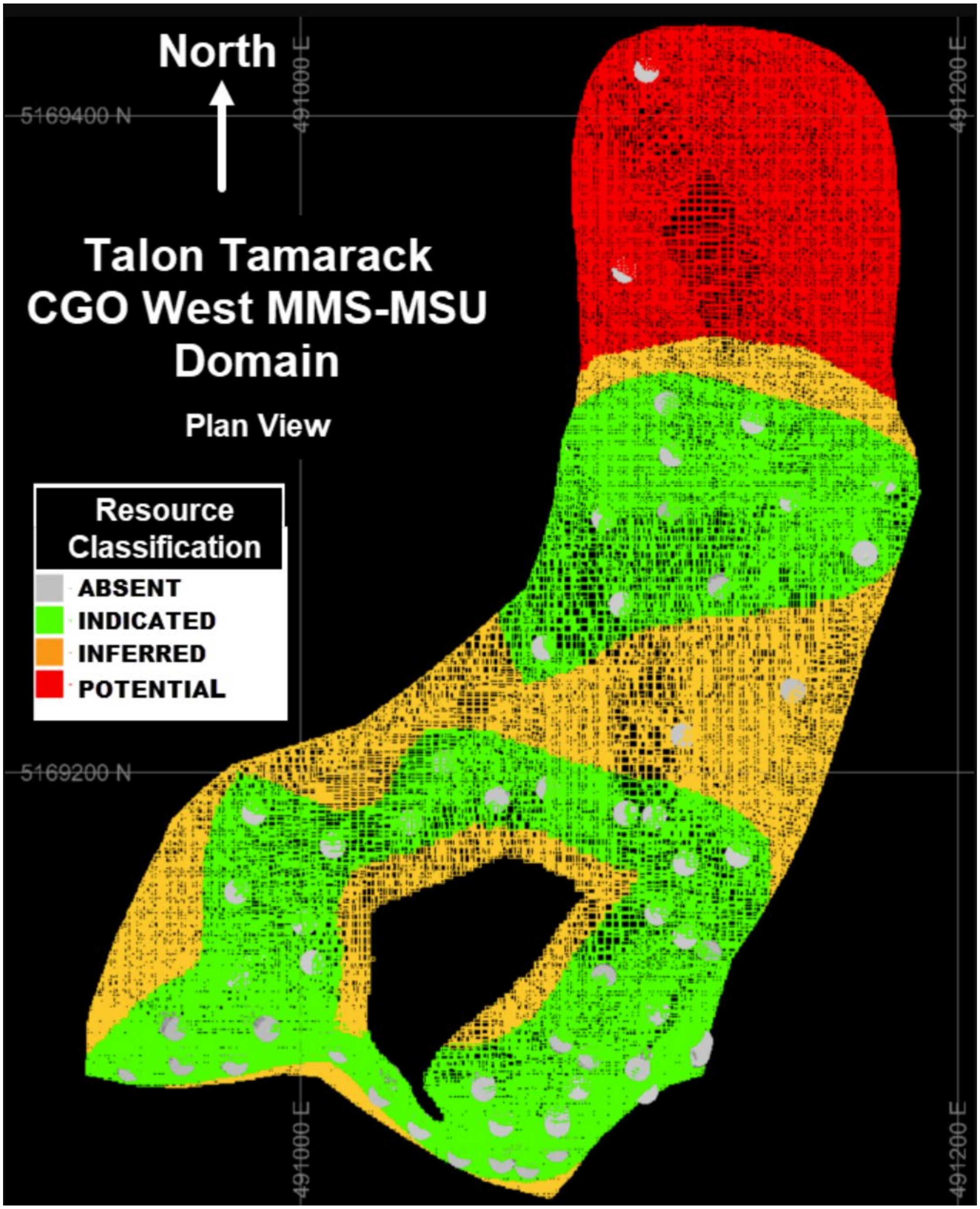


Figure 14.22: CGO West Disseminated Domain Resource Classification, With Supporting Drill Hole Composited Samples as Gray Traces; Plan View

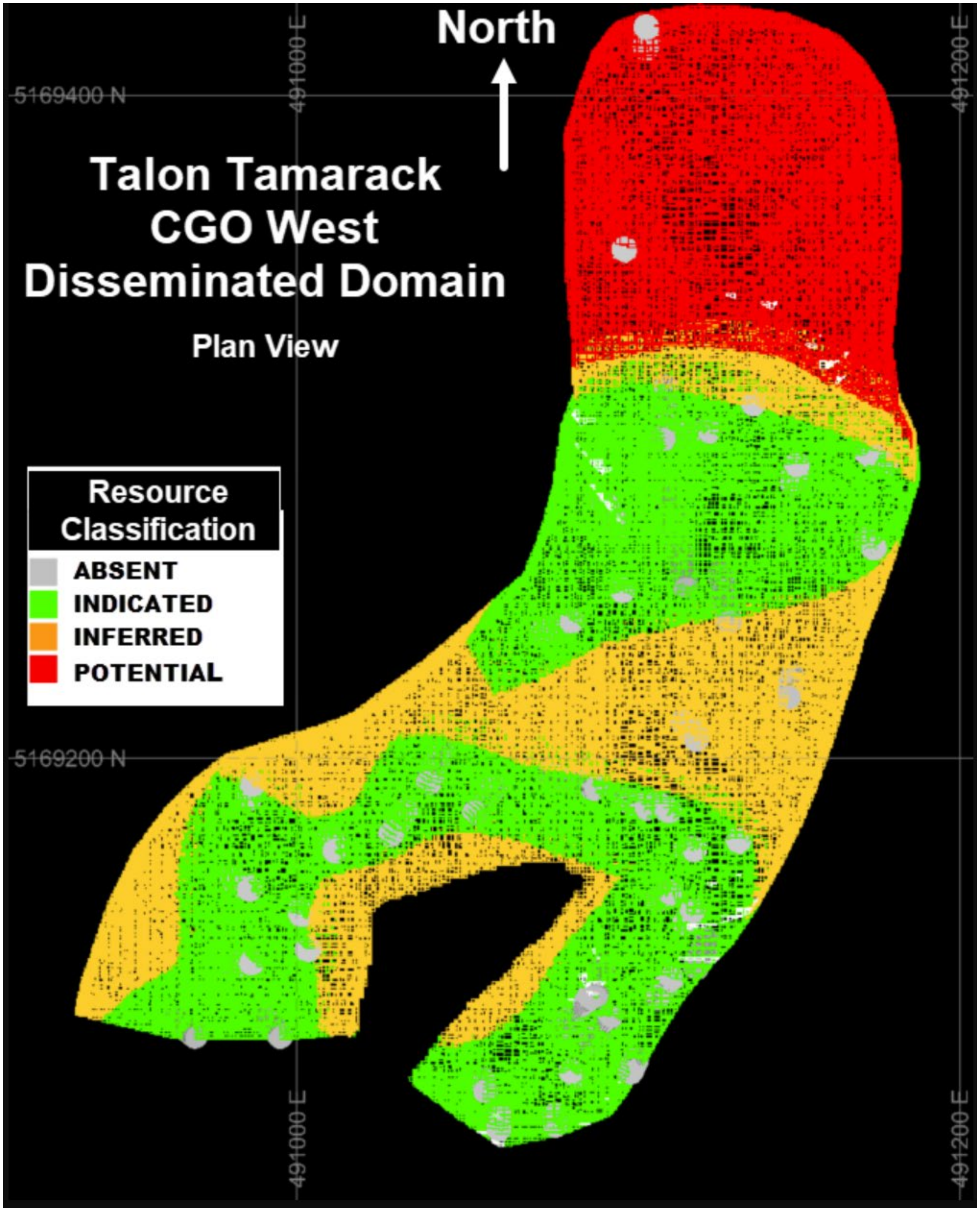


Figure 14.23: CGO East MMS-MSU Domain Resource Classification, with Supporting Drill Hole Composited Samples as Gray Traces; Plan View

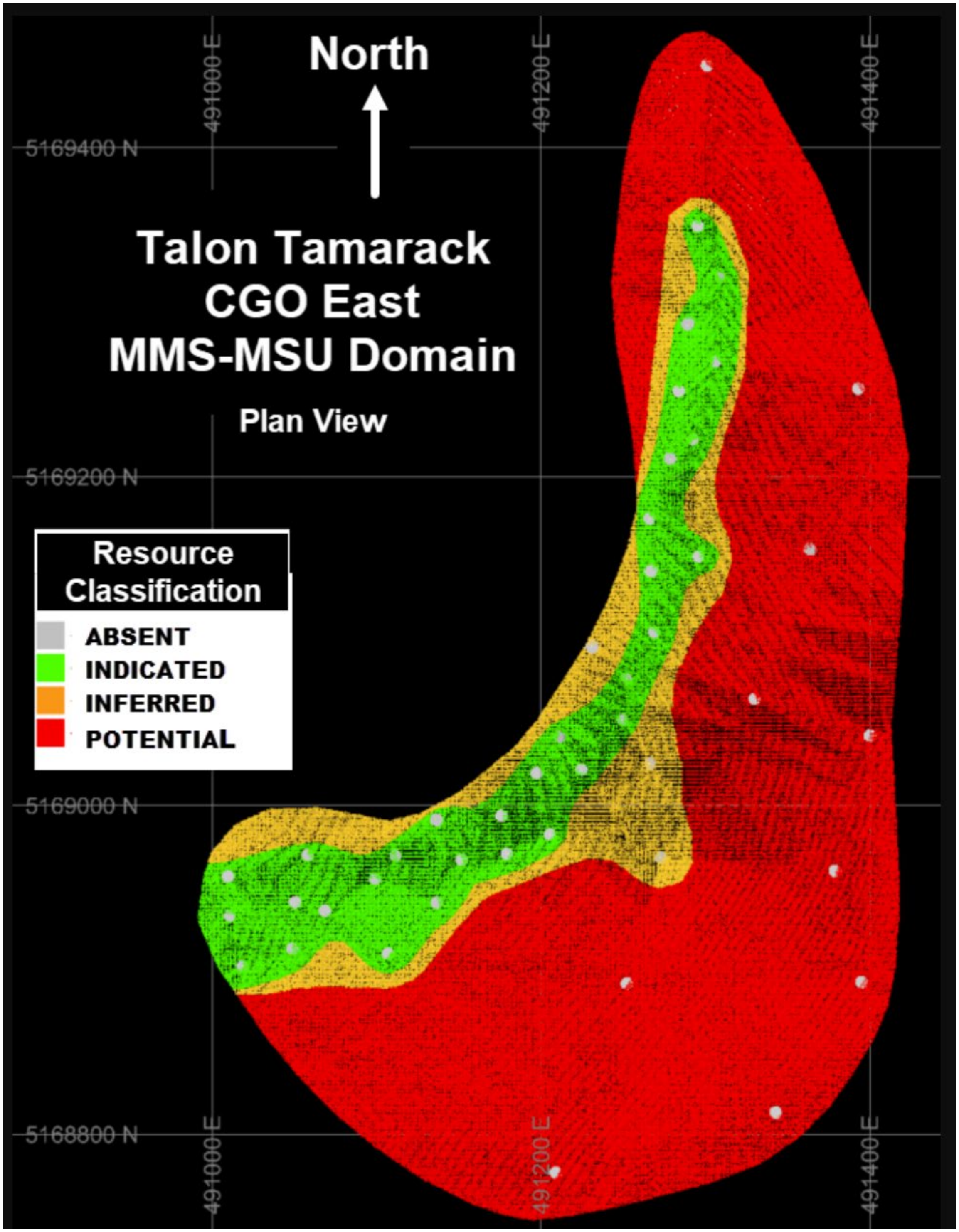
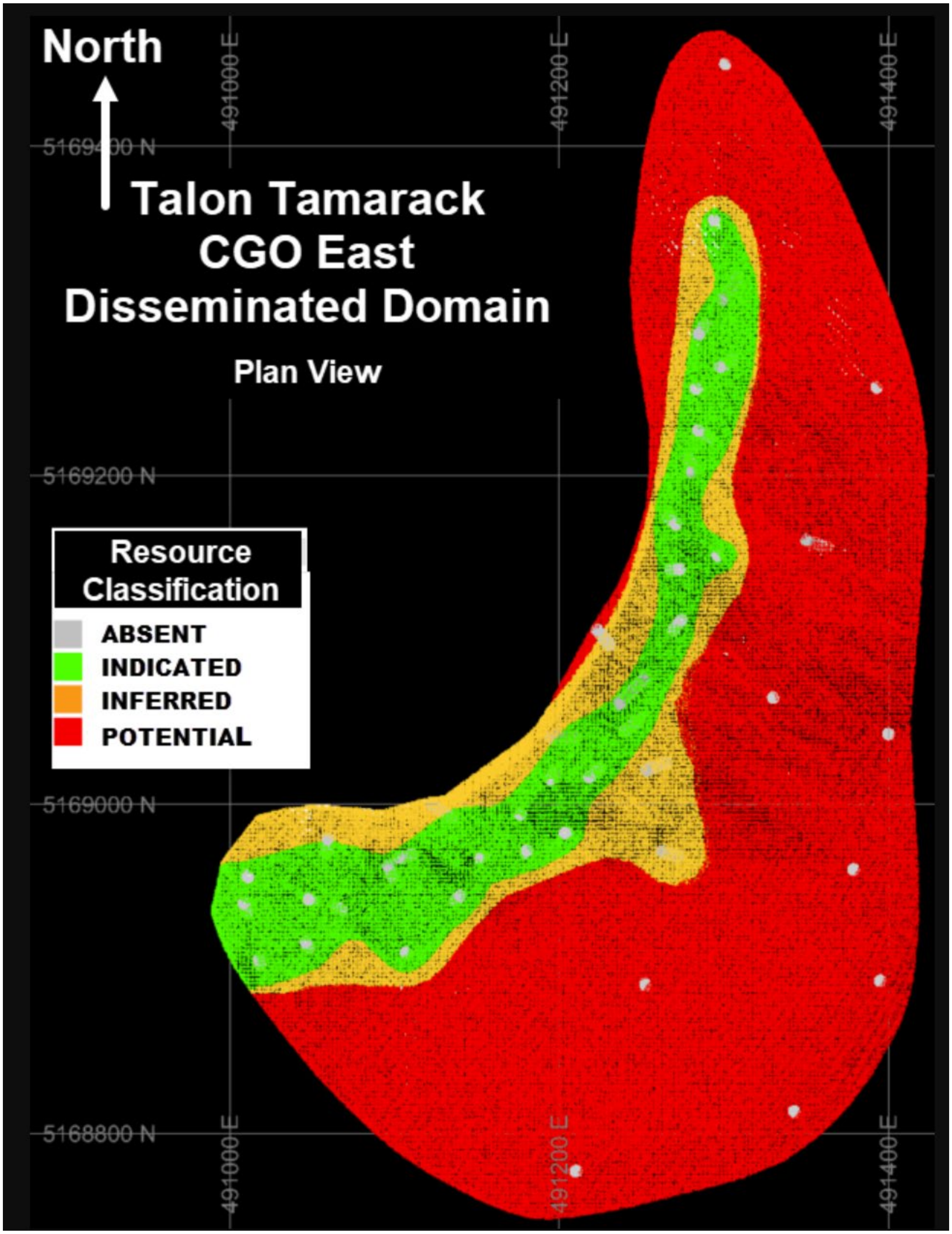


Figure 14.24: CGO East Disseminated Domain Resource Classification, with Supporting Drill Hole Composited Samples as Gray Traces; Plan View



.

The number of blocks estimated in each of the search volumes was reviewed to ensure that the proportion of cells estimated for each was relatively consistent with the spacing of the drill hole data and supported the categories assigned to the model. With the exception of the CGO East domains, the majority of blocks were estimated within the first search volume, as listed in Table 14.15.

Table 14.15: Proportion of Model Tonnes by Search Volume

Domain	% 1st	% 2nd
USMSU	96.1%	3.9%
LSMSU	99.8%	0.2%
MSU	98.1%	1.9%
138-MZO	98.7%	1.3%
CGO	86.3%	13.7%
CGO West MMS/MSU	65.1%	30.4%
CGO West Disseminated	64.9%	29.0%
CGO East MMS/MSU	7.3%	35.2%
CGO East Disseminated	19.7%	50.1%

14.8 Block Model Validation

The model validation process included a visual comparison of block model and composite grades in plan and section, along with a global comparison of mean grades and an evaluation of smoothing ratios. Block grades were visually compared to the drill hole composite data in all domains to ensure agreement and no material grade bias issues were identified, as demonstrated in Figure 14.25 to Figure 14.28.

Figure 14.25: Comparison of Block Grades and Composite Samples for Ni (%) in the CGO West; View looking North at 5169130 N

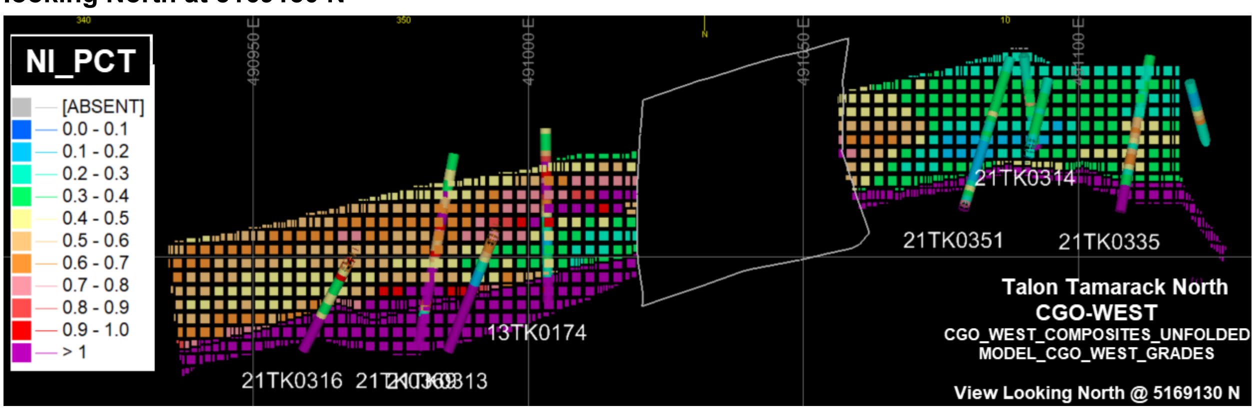


Figure 14.26: Comparison of Block Grades and Composite Samples For Ni (%) in the CGO East, With the Hangingwall Unfold Strings (Red) and Footwall Unfold Strings (White) Illustrated; Oblique View Looking Northeast

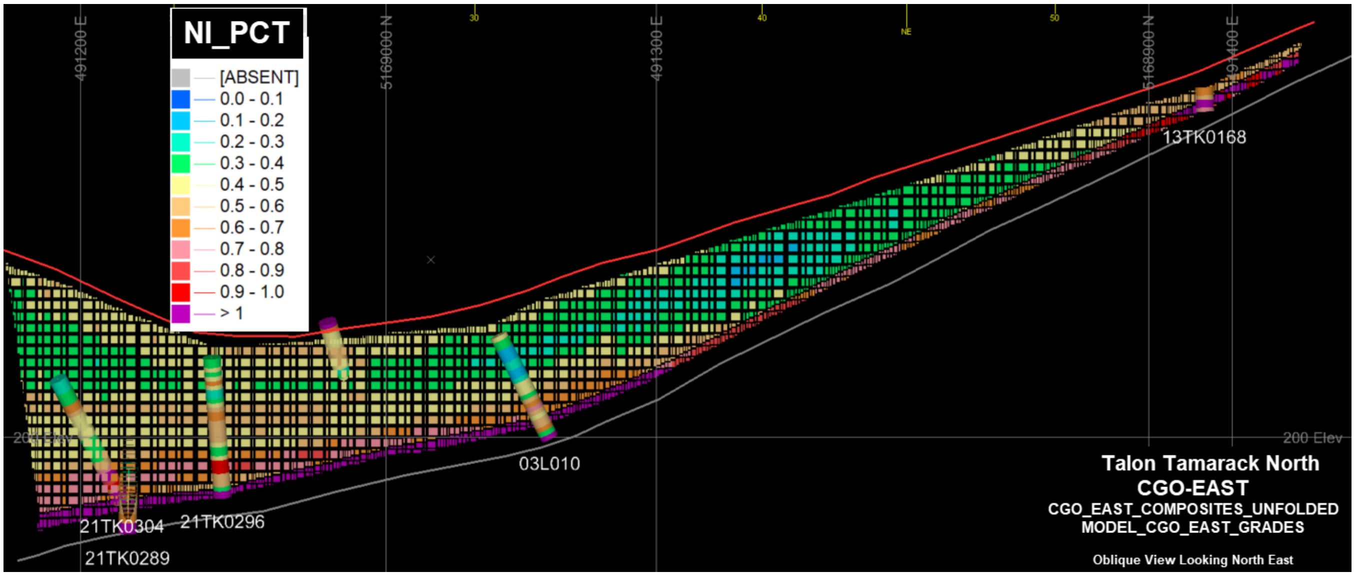


Figure 14.27: Comparison of Block Grades and Composite Samples for Pt (g/t) in The LSMSU Domain; Composite View Looking East

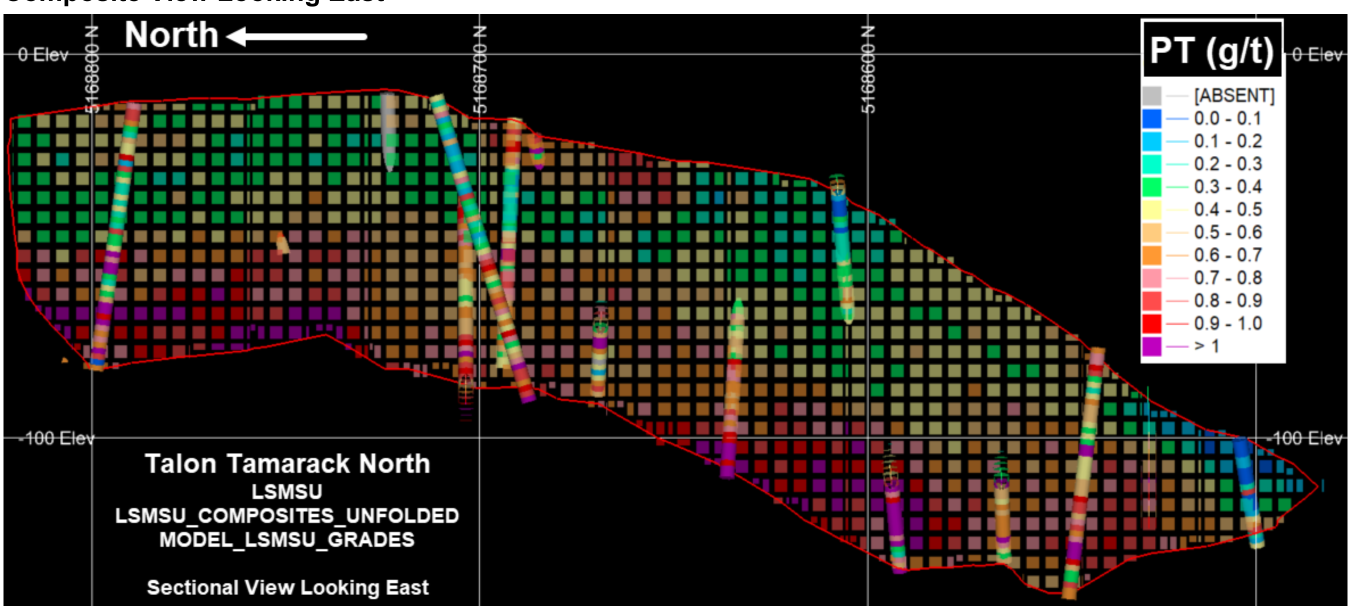
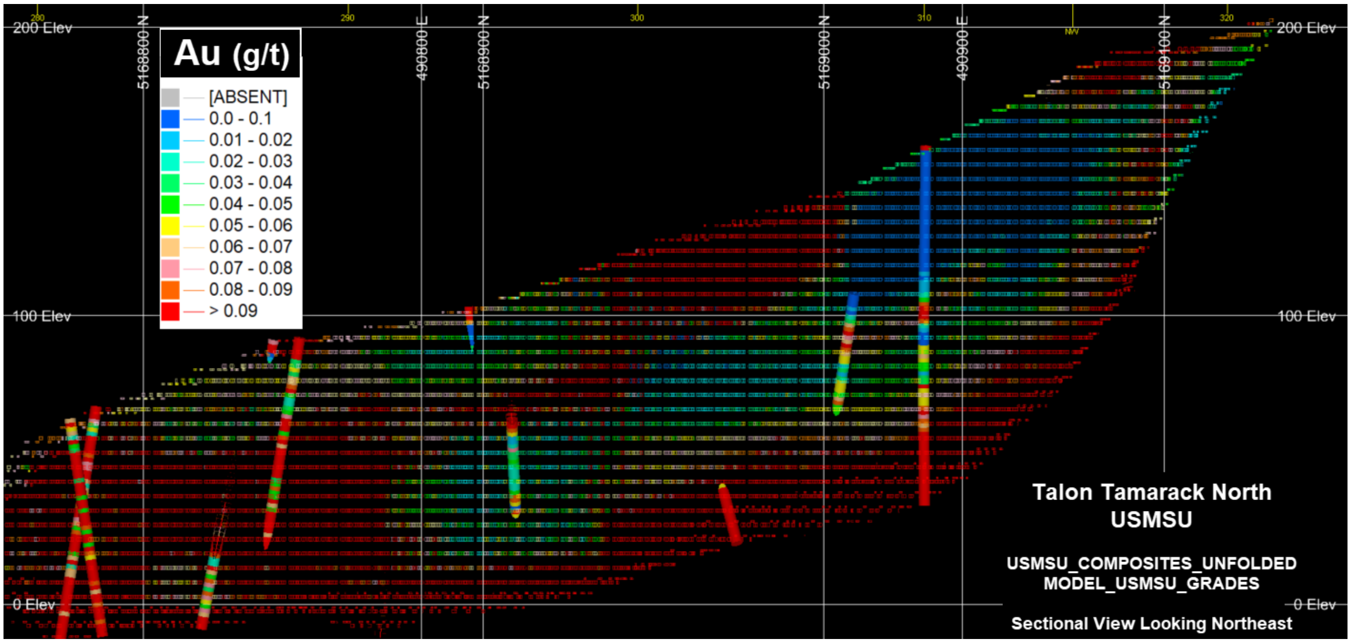


Figure 14.28: Comparison of Block Grades and Composite Samples for Au (g/t) in the USMSU Domain; 3D Sectional View Looking Northwest



Global statistical comparisons were made between the composite samples, NN estimates and the final estimates (OK or ID^2) for each metal to assess global bias, with the NN model estimates representing declustered composite data. Clustering of the drill hole data can result in differences between the global means of the composites and NN estimates. The results summarized in Table 14.6 indicate that no significant global grade bias was found in the grade estimated block models.

Table 14.16: Validation Comparison of Global Mean Grades

Element	Source	USMSU	LSMSU	MSO	MSU "Bridge"	138-MZNO	CGO West MMS/MSU	CGO West Diss.	CGO East MMS/MSU	CGO East Diss.	Low Grade Halo
Ni (%)	Composites	0.66	1.56	5.38	5.29	0.56	4.15	0.45	2.29	0.50	0.17
	NN Model	0.57	1.84	5.66	4.17	0.69	3.85	0.45	1.50	0.47	0.13
	ID Model	0.56	1.84	5.69	5.36	0.69	3.86	0.45	1.67	0.48	0.13
	OK Model	0.56	1.82	5.64	-	0.69	3.80	0.45	1.71	0.48	-
Cu (%)	Composites	0.38	0.87	2.42	2.15	0.39	1.70	0.29	1.01	0.32	0.06
	NN Model	0.32	1.00	2.46	1.68	0.51	1.60	0.29	0.81	0.30	0.04
	ID Model	0.31	1.00	2.48	2.11	0.51	1.59	0.29	0.84	0.30	0.05
	OK Model	0.31	0.99	2.47	-	0.51	1.58	0.29	0.84	0.30	-
Co (%)	Composites	0.020	0.040	0.111	0.119	0.019	0.114	0.017	0.072	0.017	0.011
	NN Model	0.019	0.047	0.118	0.095	0.022	0.108	0.017	0.048	0.017	0.009
	ID Model	0.018	0.047	0.118	0.123	0.022	0.109	0.017	0.054	0.017	0.009
	OK Model	0.019	0.047	0.117	-	0.022	0.107	0.017	0.055	0.017	-
Pt (g/t)	Composites	0.151	0.571	0.660	0.727	0.154	0.392	0.068	0.252	0.145	0.040
	NN Model	0.152	0.544	0.661	0.687	0.186	0.352	0.066	0.200	0.117	0.023
	ID Model	0.152	0.551	0.666	0.684	0.185	0.349	0.066	0.194	0.121	0.024
	OK Model	0.153	0.553	0.665	-	0.185	0.352	0.066	0.196	0.123	-
Pd (g/t)	Composites	0.089	0.340	0.466	0.442	0.091	0.297	0.041	0.162	0.077	0.023
	NN Model	0.087	0.330	0.469	0.348	0.110	0.264	0.040	0.129	0.064	0.014
	ID Model	0.087	0.333	0.466	0.413	0.109	0.258	0.040	0.124	0.066	0.014
	OK Model	0.088	0.333	0.465	-	0.109	0.260	0.040	0.128	0.067	-
Au (g/t)	Composites	0.082	0.254	0.284	0.237	0.092	0.188	0.049	0.176	0.092	0.019
	NN Model	0.076	0.243	0.267	0.187	0.119	0.179	0.048	0.147	0.072	0.012
	ID Model	0.076	0.249	0.270	0.168	0.117	0.178	0.048	0.146	0.075	0.012
	OK Model	0.076	0.249	0.268	-	0.117	0.182	0.048	0.147	0.076	-

Smoothing (i.e., spreading, blending, averaging) of estimated grades can occur due to processes such as compositing samples, linear interpolation methods such as OK and ID, along with various other estimation parameters, including search distances and the number of samples used in the estimate. A certain degree of smoothing is expected due to the change of support size from core sized samples to large mining blocks, for example a mining development round volume of 125 m^3. It is common to see higher smoothing than expected, which is an issue when reporting resources above a mining cut-off, as the overly smoothed distribution potentially results in resource tonnages being overestimated, with grades being underestimated.

Smoothing ratios are based on the ratio between the theoretical model variance sourced from the NN model, and OK model variance. The theoretical variance is calculated based on the sum of the variance inside the block and variance between blocks using parameters, based on the variogram model, block size, and F-Function.

A smoothing ratio of 1 represents the ideal scenario where the expected variance equals the model variance, and ratios between 0.8 to 1.2 are within acceptable tolerances and would not require any corrective actions. Ratios less than 0.8 are considered “under-smoothed” (low tonnes and high grade) and over 1.2 are considered “over-smoothed” (high tonnes and low grade). Smoothing ratios generally greater than 2 need to be reviewed for any potential issues such as biased drill hole support and could require corrective actions as the proportion of tonnes and grade above the selective mining cut-off may not be representative of the deposit. Corrective actions would include options such as adjusting various estimation parameters or conducting a variance correction. Smoothing ratios were not calculated for the Low Grade Halo as variograms were not modelled.

Smoothing ratios were calculated for OK estimated model grades for all domains, except the ID^2 estimated small MSU "Bridge" sub-domain (Zone 3.1) and the encompassing Low-Grade Halo (Zone 10).

Review of the calculated Smoothing Ratios, as shown in Table 14.17 indicates an acceptable range of smoothing. The higher ratios calculated for the MSU domain are acceptable as the entire zone is very high grade, above the expected mining cut-off grade. The higher ratios calculated for the CGO West and CGO East disseminated domains are a result of the significant influence of widely spaced drill hole around some of the margins of the mineral envelope. No variance corrections were applied to the mineral resource block models.

Table 14.17: Summary of Smoothing Ratios by Domain

Mineral Domain	Domain Smoothing Ratios						
	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	S (%)
USMSU	1.17	1.13	1.28	1.46	1.56	1.65	1.11
LSMSU	1.07	1.23	1.08	1.42	1.29	1.41	1.07
MSU	1.84	1.75	1.65	1.53	1.39	1.92	1.73
138-MZNO	1.02	1.48	0.98	0.99	1.16	1.59	1.09
CGO West MMS/MSU	0.97	0.93	1.03	0.93	0.92	1.03	0.95
CGO West Disseminated	1.41	1.82	1.68	1.52	1.53	1.86	1.54
CGO East MMS/MSU	1.01	1.61	0.98	1.67	1.78	1.65	0.88
CGO East Disseminated	2.00	1.46	2.06	1.17	1.13	1.19	1.71

14.9 Cut-off Grade (COG)

The break-even reporting COG determined by Talon for this MRE was 0.5% Ni. The nickel equivalent (NiEq) was calculated for each block cell estimated using long term metal price assumptions provided by Talon (Table 14.19) and is tabulated for information purposes only. The NiEq was not used to help define the cut-off grade provided by Talon.

Table 14.18 lists the metallurgical recovery assumptions used for the Ni cut-off calculation, provided to Golder by Talon (Oliver Peters) on October 6, 2022.

Table 14.19 lists the long-term metal price assumptions provided to Golder by Talon (Conte, et al, 2022) on October 3, 2022. Talon excluded Co, Pt, Pd, Au and Fe as payable metals for the purpose of calculating the COG.

Table 14.18: Summary of Modelled Metallurgical Recovery Formulas Provided By Talon on October 6, 2022.

Metal to Concentrate	Grade Range	Recovery Formulas \ Factors
Ni in Ni Concentrate	0.40 – 1.0% Ni	% Ni Recovery = (14.783ln(Ni%)+89.584)*(1.541ln(Ni%) +94.034)/100*0.98
	>1.0% Ni	% Ni Recovery = (1.3936x+89.0)*(1.541ln(Ni%) +94.034)/100*0.98
Cu in Cu Concentrate	<0.30% Cu	% Cu Recovery = ((7.979ln(Cu%)+100.67) *(2.5081ln(Cu%)+95.734)/100*0.85
	>0.30% Cu	% Cu Recovery = (0.8661y+90.75)*(2.5081ln(Cu%)+95.734)/100*0.85
Cu in Ni Concentrate	<0.30% Cu	% Cu Recovery = ((7.979ln(Cu%)+100.67) *(2.5081ln(Cu%)+95.734)/100*0.15
	>0.30% Cu	% Cu Recovery = (0.8661y+90.75)*(2.5081ln(Cu%)+95.734)/100*0.15

Table 14.19: List of the Long Term Metal Price Assumptions Provided by Talon on October 3, 2022

Metal	Price ($US)
Ni	$9.50 / lb
Cu	$3.75 / lb
Co	$25.00 / lb
Pt	$1,000 / oz
Pd	$1,000 / oz
Au	$1,400 / oz

Operating costs (OPEX), provided to Golder on October 3, 2022, were based on PEA #3, estimated for bulk underground mining as summarized in Table 14.20. The escalated costs appear to be within industry norms.

Table 14.20: Summary of Mining Cost Assumptions Provided by Talon on October 3, 2022

OPEX	(US$/tonne)
Mining	$35.12
Processing	$22.05
Tailings	4.73
G&A	$4.74
TOTAL	**$66.63**

14.10 Assessment of Mining Continuity

The block models were filtered to above 0.5% Ni grade and reviewed in 3D to evaluate mining continuity for the Indicated and Inferred mineral resource volumes. The reviews demonstrated good continuity at the break-even COG, with examples of the CGO West and CGO East domains illustrated in Figure 14.29: and Figure 14.3. The grade shells outline blocks above the COG and do not consider any mining constraints or modifying factors and were not used to constrain the MRE.

Figure 14.29: Nickel Grades of the CGO West (Left) and CGO East (Right) MMS-MSU Basal Layers Showing Grade Continuity

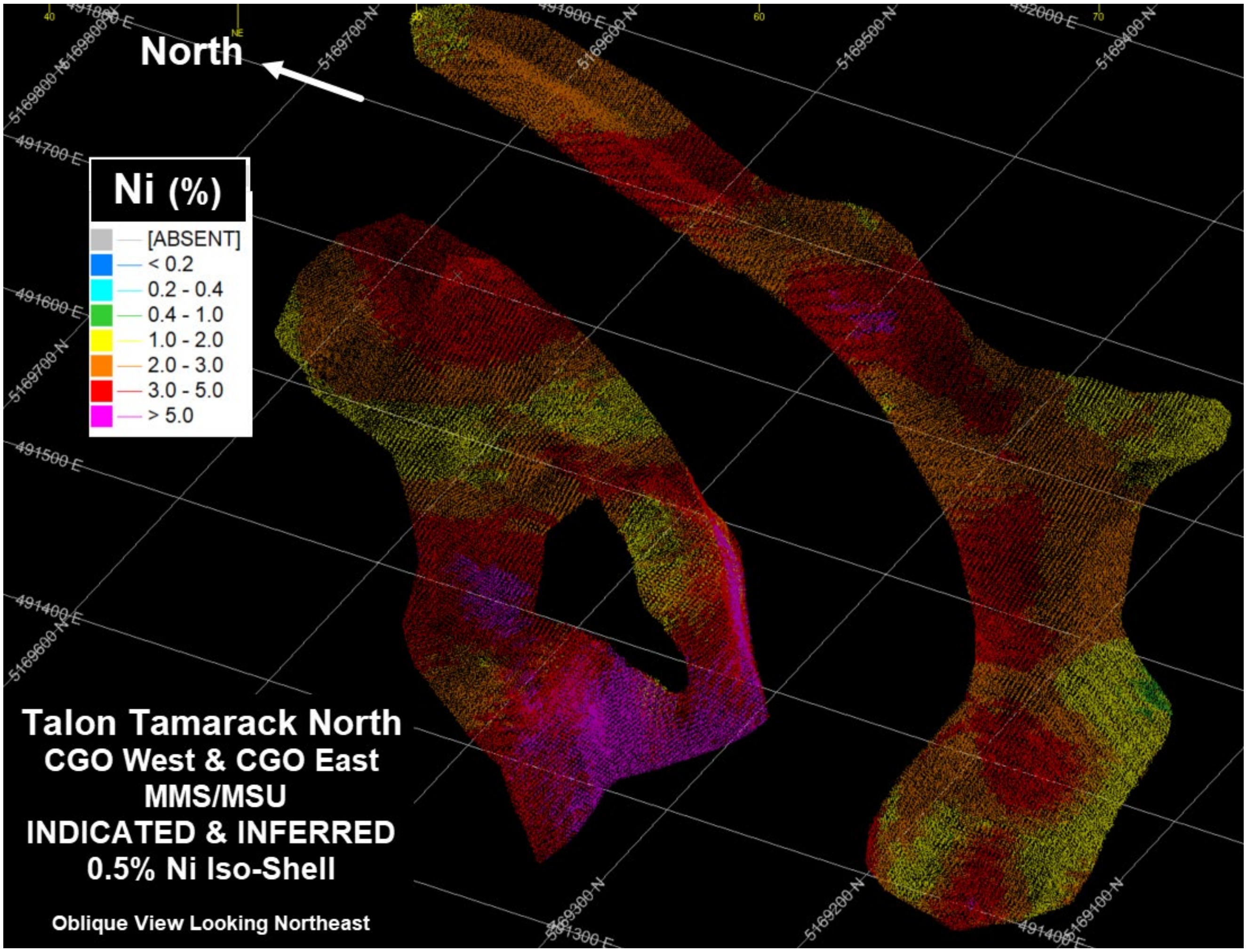
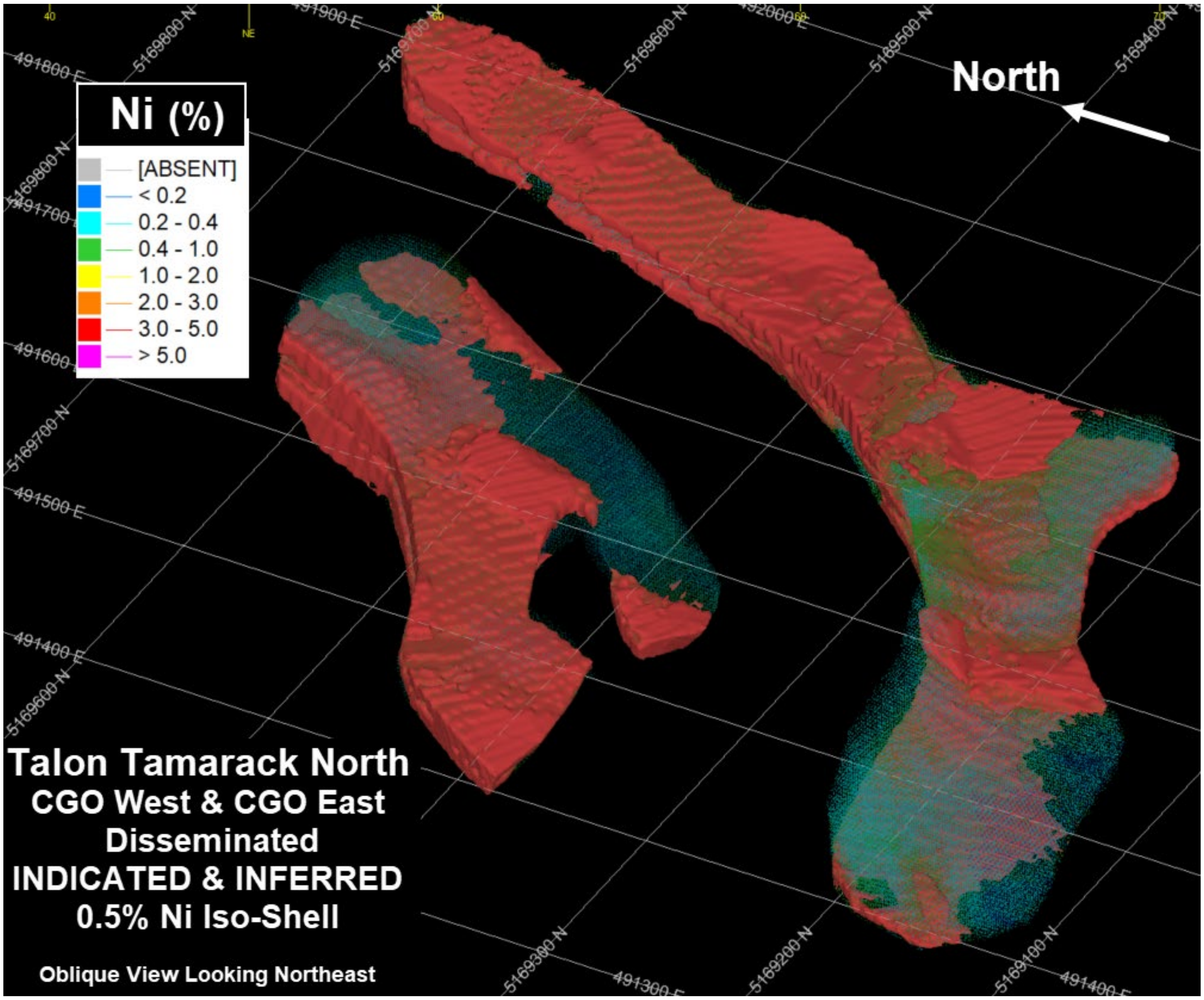


Figure 14.30: Nickel Grades of the CGO West (Left) and CGO East (Right) Disseminated Mineralization, Within the 0.5% Ni Envelope (Red Wireframe)



14.11 Resource Statements

***Caution to readers**: In this Item, all estimates and descriptions related to mineral resource estimates are forward-looking information. There are many material factors that could cause actual results to differ materially from the conclusions, forecasts or projections set out in this item. Some of the material factors include differences from the assumptions regarding the following: estimates of Cut-off Grade (COG) and geological continuity at the selected cut-off, metallurgical recovery, commodity prices or product value, mining and processing methods, and G&A costs. The material factors or assumptions that were applied in drawing the conclusions, forecasts and projections set forth in this Item are summarized in other Items of this report.*

The MRE for the Tamarack North Project has been estimated in conformity with November 2019 CIM “Estimation of Mineral Resource and Mineral Reserves Best Practice” guidelines.

Mineral Resources are not Mineral Reserves and do not necessarily demonstrate economic viability. There is no certainty that all or any part of this Mineral Resource will be converted into Mineral Reserve.

Inferred Mineral Resources are too speculative geologically to have economic considerations applied to them to enable them to be categorized as Mineral Reserves.

This MRE was completed by Roger Jackson, P. Geo., under the supervision of Brian Thomas, P.Geo., an independent QP, as defined in NI 43-101. The effective date is 10 October, 2022.

The Mineral Resources estimate is reported at a 0.5% Ni cut-off, as summarized in Table 14.21.

Table 14.21: MRE for the Tamarack North Project, Effective Date 10 October, 2022

Domain	Classification	%Ni Cut-off	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	Fe in Sulphides (%)	NiEq (%)
CGO East MMS/MSU	Indicated Resource	0.5	228	2.84	1.19	0.09	0.31	0.20	0.21	21	3.66
CGO East Disseminated	Indicated Resource	0.5	1,083	0.64	0.44	0.02	0.21	0.11	0.13	2	0.94
CGO West MMS/MSU	Indicated Resource	0.5	330	4.11	1.68	0.11	0.37	0.28	0.19	27	5.22
CGO West Disseminated	Indicated Resource	0.5	586	0.67	0.46	0.02	0.11	0.07	0.07	2	0.96
MSU	Indicated Resource	0.5	490	5.60	2.44	0.12	0.68	0.46	0.26	26	7.10
USMSU	Indicated Resource	0.5	3,338	1.24	0.74	0.03	0.20	0.12	0.12	5	1.70
LSMSU	Indicated Resource	0.5	2,506	1.94	1.05	0.05	0.57	0.34	0.26	8	2.68
Total Indicated	**Indicated Resource**	**0.5**	**8,564**	**1.73**	**0.92**	**0.05**	**0.34**	**0.21**	**0.17**	**8**	**2.34**
CGO East MMS/MSU	Inferred Resource	0.5	158	2.53	1.09	0.08	0.28	0.18	0.19	19	3.29
CGO East Disseminated	Inferred Resource	0.5	823	0.62	0.42	0.02	0.20	0.11	0.12	2	0.91
CGO West MMS/MSU	Inferred Resource	0.5	107	3.51	1.45	0.10	0.31	0.22	0.17	25	4.48
CGO West Disseminated	Inferred Resource	0.5	320	0.66	0.44	0.02	0.10	0.06	0.07	2	0.92
MSU	Inferred Resource	0.5	39	5.94	2.53	0.11	0.54	0.45	0.23	25	7.45
LSMSU	Inferred Resource	0.5	121	0.84	0.60	0.02	0.50	0.28	0.23	2	1.31
USMSU	Inferred Resource	0.5	2,932	0.67	0.41	0.02	0.25	0.14	0.12	2	0.96
138 - MZNO	Inferred Resource	0.5	3,957	0.82	0.63	0.02	0.21	0.12	0.14	2	1.21
Total Inferred	**Inferred Resource**	**0.5**	**8,461**	**0.83**	**0.55**	**0.02**	**0.23**	**0.13**	**0.13**	**3**	**1.19**

Notes:

Mineral Resources are in situ and reported at a 0.50% Ni cut-off.

Tonnage estimates are rounded down to the nearest 1,000 tonnes.

Fe in Sulphides % is based on sulphur concentration associated with sulphide minerals and a calculation of stoichiometric Fe concentration in Pentlandite and Pyrrhotite.

Mining recovery and dilution factors have not been applied to the estimates.

NiEq grade based on metal prices in U.S. dollars of $9.50/lb Ni, $3.75/lb Cu, $25.00/lb Co, $1,000/oz Pt, $1,000/oz Pd and $1,400/oz Au using the following formula: NiEq% = Ni%+ Cu% x $3.75/$9.50 + Co% x $25.00/$9.50 + Pt[g/t]/31.103 x $1,000/$9.50/22.04 + Pd[g/t]/31.103 x $1,000/$9.50/22.04 + Au[g/t]/31.103 x $1,400/$9.50/22.04. Fe is not included in the NiEq calculation.

No adjustments were made for recovery or payability.

Table 14.22 summarizes the changes from the 2021 reported MRE as stated in PEA #3 for Tonnage, Ni% and Cu%.

Table 14.22: Comparison of 2021 and 2022 MREs

Domain	Classification	2021			2022			Difference		
		Tonnes (000)	Ni (%)	Cu (%)	Tonnes (000)	Ni (%)	Cu (%)	Tonnes (000)	Ni (%)	Cu (%)
Total	Indicated	3,926	1.91	1.02	8,564	1.73	0.92	4,638	-0.18	-0.10
Total	Inferred	7,163	1.11	0.68	8,461	0.83	0.55	1,298	-0.28	-0.13

The differences between the MRE from 2021 to 2022 largely reflects the addition of the newly defined CGO West and CGO East mineral domains, and the conversion of other resources due to increased drill hole support from infill drilling. Indicated resources increased due to the conversion of some of the USMSU and MSU from Inferred to Indicated mineral resources as a result of the ongoing drill hole program that provided increased confidence in the down-plunge region.

The USMSU domain had additional infill drilling on the south-western portion which allowed conversion of some previous Inferred to Indicated classification and extended the Inferred volume towards the north-east. The LSMSU Domain had additional infill drilling which added support to the existing Indicated Classification, however there were only minor changes to the interpreted mineral envelope.

The MSU domain had infill drilling which changed the interpretation of mineralization and provided sufficient drill hole support to convert the majority of the resource to Indicated. The 138 Zone did not have any additional drilling since the 2021 MRE.

The CGO West and CGO East domains are newly defined, and both had clusters of drilling to support significant tonnages of Indicated and Inferred resources. The basal MMS/MSU domains are generally high-grade, however the marginal extensions are not yet well delineated.

14.12 Risk Assessment

The QP is unaware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or any other potential factors that could materially impact the Tamarack North Project resource estimate provided in this Technical Report. Portions of the resource are located 200 m to 600 m below designated wetlands, but this is not expected to affect future permitting.

The MRE may be materially impacted by the following:

- Changes in the break-even COG, as a result of changes in mining costs, processing recoveries, or metal prices. The sensitivity of the Resource to Ni % Cut-Off is indicated in Table 14.23.
- Changes in geological knowledge/interpretation, as a result of new exploration data.
- The calculation of the Fe in Sulphides %, as listed in the MRE (Table 14.21 and Table 14.23) is based on some basic assumptions of the sulphide mineralogy in the Tamarack North Project deposits, as described in Item 14.6.5. Additional mineralogical test work can provide a more robust estimate of the Fe in Sulphides %, by metal grade group and geological domain.
- The Fe in Sulphides % values are calculated for in situ resources and are not factored by mining or metallurgical processing recoveries.
- The Fe in Sulphides % as a material asset is largely based on the acceptance of Pyrrhotite (Po) as a beneficial feedstock to downstream metallurgical processing. With some notable exceptions (Boldt, p.p. 315-336), historically Po has generally been considered a waste product. Recent technological improvements in processing, in particular related to electric vehicle (EV) battery requirements, may provide increased economic benefit as a source of by-product. If significant economic value can be provided from Fe in Sulphides % the effective Ni% cut-off could decrease. At the time of this Technical Report, the net value of Fe in Sulphides % as a saleable by-product has not yet been demonstrated.

Table 14.23: Tamarack North Project Updated 2022 MRE Sensitivities with Tonnages and Grades at Various Ni (%) Cut-Offs

Cut-Off (Ni %)	Mineral Resource Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	Fe in Sulphides (%)	NiEq (%)
0.4	Indicated	9,891	1.56	0.84	0.04	0.31	0.19	0.16	7	2.11
	Inferred	11,079	0.74	0.49	0.02	0.21	0.12	0.12	2	1.07
0.5	**Indicated**	**8,564**	**1.73**	**0.92**	**0.05**	**0.34**	**0.21**	**0.17**	**8**	**2.34**
	Inferred	**8,461**	**0.83**	**0.55**	**0.02**	**0.23**	**0.13**	**0.13**	**3**	**1.19**
0.6	Indicated	7,215	1.96	1.03	0.05	0.36	0.23	0.18	9	2.62
	Inferred	5,824	0.96	0.64	0.03	0.25	0.15	0.15	3	1.37
0.7	Indicated	6,114	2.19	1.13	0.06	0.38	0.24	0.19	10	2.92
	Inferred	3,888	1.11	0.74	0.03	0.26	0.16	0.16	4	1.58
0.8	Indicated	5,377	2.39	1.21	0.06	0.39	0.25	0.20	12	3.17
	Inferred	2,590	1.29	0.85	0.04	0.26	0.16	0.17	5	1.82
0.9	Indicated	4,853	2.56	1.28	0.06	0.41	0.26	0.20	13	3.38
	Inferred	1,795	1.49	0.94	0.04	0.27	0.17	0.18	7	2.08
1.0	Indicated	4,423	2.71	1.34	0.07	0.41	0.27	0.21	13	3.57
	Inferred	1,238	1.74	1.05	0.05	0.30	0.19	0.19	8	2.39
1.1	Indicated	4,121	2.84	1.39	0.07	0.42	0.27	0.21	14	3.72
	Inferred	896	2.00	1.13	0.05	0.31	0.20	0.19	10	2.71

Notes:
Mineral Resources are *in situ* and reported at a 0.50% Ni cut-off and highlighted in bold.
Tonnage estimates are rounded down to the nearest 1,000 tonnes.
Fe in Sulphides % is based on sulphur concentration associated with sulphide minerals and a calculation of stoichiometric Fe concentration in Pentlandite and Pyrrhotite.
Mining recovery and dilution factors have not been applied to the estimates.
NiEq grade based on metal prices in U.S. dollars of $9.50/lb Ni, $3.75/lb Cu, $25.00/lb Co, $1,000/oz Pt, $1,000/oz Pd and $1,400/oz Au using the following formula: NiEq% = Ni%+ Cu% x $3.75/$9.50 + Co% x $25.00/$9.50 + Pt[g/t]/31.103 x $1,000/$9.50/22.04 + Pd[g/t]/31.103 x $1,000/$9.50/22.04 + Au[g/t]/31.103 x $1,400/$9.50/22.04. Fe is not included in the NiEq calculation.
No adjustments were made for recovery or payability.
Resource estimate sensitivities stated below 0.5% Ni cut-off may not have reasonable prospects for economic extraction.

14.13 Recommendations

The updated MRE provides a valid representation of the in situ mineral resources. Recommendations to improve future estimations and to potentially increase mineral resources include:

- Collecting more laboratory SG measurements, in particular for the disseminated mineralization (CGO West, CGO East, 138 Zone).
- Perform infill drilling in the currently interpreted rock inclusion zone of the CGO West volume to better define the geometry of the low-grade volume.
- Drill into the currently classified Potential margins of the CGO East and CGO West, to expand the mineralized footprint.
- Continue drilling current exploration targets to try to increase the mineral resource.
- Change the collar location of future drilling into the MSU and LSMSU Domains to provide different intersection angles through the mineralization. This would provide better information on the lateral extents of the mineralization.
- Conduct new geometallurgical test work on the Tamarack North mineralization to confirm the precious metal recoveries in the current flowsheet.
- Conduct additional electron micro-probe test work on the Tamarack North mineral domains to better define the elemental composition of the sulphide minerals. Additional test results could better support the approximation of the Fe in Sulphides % algorithm.
- Document the results of metallurgical test work related to Fe in Sulphides % recovery.

15.0 MINERAL RESERVE ESTIMATES

Not applicable to this Technical Report.

16.0 MINING METHODS

Not applicable to this Technical Report.

17.0 RECOVERY METHODS

Not applicable to this Technical Report.

18.0 PROJECT INFRASTRUCTURE

Not applicable to this Technical Report.

19.0 MARKET STUDIES AND CONTRACTS

Not applicable to this Technical Report.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Baseline Work

Kennecott initiated baseline studies in 2006, consisting of 23 surface water locations and 12 groundwater wells to support future environmental review and permitting of a potential mine at the Tamarack North Project.

As of 2014, Kennecott conducted quarterly monitoring (water quality and level) of 19 surface water monitoring locations (18 streams / ditches and one lake) and 12 groundwater monitoring wells. Kennecott also completed a limited amount (14 samples from six rock units) of static short-term acid-base accounting and leaching tests on various rock types.

Since taking over as operator of the Tamarack North Project in 2019, Talon has expanded the environmental baseline program initiated by Kennecott. Work to date has included hydrogeologic studies, surface water hydrology studies, surface water and groundwater monitoring; wetland studies; materials characterization, biological studies (including wild rice surveys), and cultural resources studies. Completed and on-going environmental baseline studies are described in the following subsections. Results from these studies will be provided in the reports listed in Item 26.4.2, which will include details on data collected, methods, data quality assurance and quality control, and interpretations.

20.1.1 Hydrogeologic Studies

Hydrogeologic studies have been conducted in the Quaternary deposits and bedrock. Item 7.0 provides details on the geology, which are not repeated here.

20.1.1.1 Quaternary Investigation Activities

Hydrogeologic studies of the Quaternary deposits include monitoring well installation, water level elevation logging, pumping tests, slug tests, and vibrating wire piezometer (VWP) installations.

- The monitoring well network has 27 monitoring wells in Quaternary deposits. Fifteen of these wells were added in 2021 and 2022. Quaternary monitoring well locations are shown on Figure 20.4 and Figure 20.5. The Quaternary monitoring wells range in depth from 15 to 226 feet below the ground surface. Table 20.1 provides monitoring well location and construction information. Groundwater elevation data is recorded hourly by water level loggers Talon installed in the Quaternary monitoring wells. Talon plans to continue logging groundwater elevation data in Quaternary monitoring wells through environmental review and permitting. Further monitoring will be determined as part of permitting.
- Pumping tests have been conducted to evaluate aquifer properties of the Quaternary deposits, including hydraulic conductivity, storage, yield and drawdown response to pumping. A pumping test consists of pumping water out of a well for a period of time and measuring the change in groundwater water level.
  - In 2007, well 07TKW001 (depth of approximately 125 ft) was pumped for 48 hours while groundwater elevations were monitored at two monitoring wells (07TKW002 and 07TKW003).
  - In 2022, a step-drawdown pumping test and a constant rate pumping test were conducted at well 21TKW0013. The constant rate pumping test was conducted for approximately ten days. Response to

the pumping, and recovery after pumping, were monitored using continuous water level elevation data from Quaternary and bedrock monitoring installations proximal to the pumping well.

- Slug tests were conducted in 19 monitoring wells in 2022 to assess the hydraulic conductivity of the Quaternary deposits. In addition, slug tests at nine Quaternary wells were performed in 2008. Slug test information from the 2022 tests is presented in Table 20.2.
  - Slug testing consists of displacing known volume of water by means of introducing or removing a slug from the well. During this displacement the rate of recovery to the static water table is measured. This data is analyzed to assess the hydraulic conductivity of the screened interval.

Figure 20.1:Talon Conducting a Slug Test at Tamarack

- Vibrating wire piezometers (VWP) are used to measure pore water pressure in the subsurface. A VWP is made up of a diaphragm connected to a high tensile strength, magnetic, stretched wire. Changes in pore pressure are proportional to the deflection in the diaphragm, which in turn affects the tension in the wire. A coil magnet plucks the wire and resonates at a frequency proportional to the tension. The frequency is converted to an alternating current by the coil magnet and is logged by a data logger at the surface, providing the user with in-situ pore pressure data at the depth of VWP deployment. These sensors have the advantage of being very sensitive to small pressure changes. Sensors are set at various depths in boreholes to assess responses to aquifer testing, responses to recharge events and vertical and lateral hydraulic gradients.
    - Talon installed 9 vibrating wire piezometers in Quaternary deposits at the three locations shown on Figure 20.5. These vibrating wire piezometers record pore water pressure at 1-hour intervals. Talon plans to continue logging pore water pressure data through environmental review and permitting. Further monitoring will be determined as part of permitting.

Figure 20.2: Diagram of Model 4500S Vibrating Wire Piezometer (Geokon, 2021)

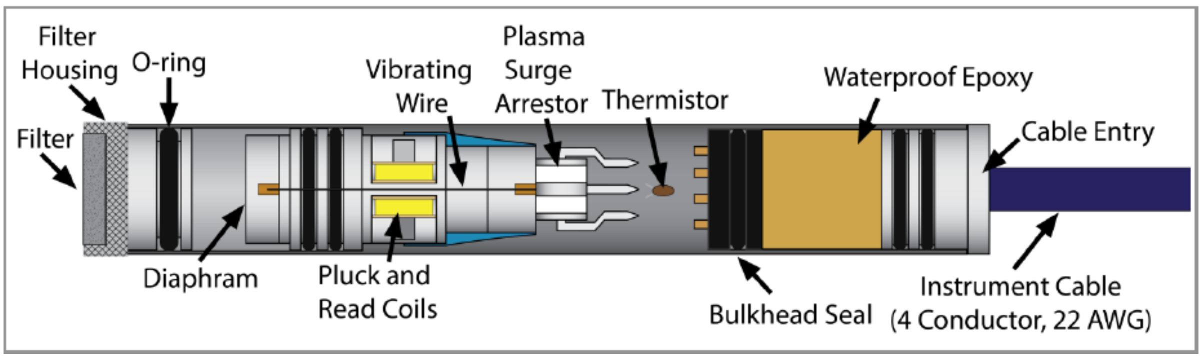


Figure 20.3: Talon installing a Vibrating Wire Piezometer in the Quaternary Deposits at Tamarack

Table 20.1: Monitoring Well Construction Information

Well ID	Year Installed	MDH Unique Well ID	Easting (UTM NAD83)	Northing (UTM NAD83)	Top of Riser Elevation (ft amsl)	Geologic Target	Screened Interval Lithology (1)	Well Type	Well Screen Diameter (inches)	Total Borehole Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)
07TKW001	2007	748205	491159.49	5169338.23	1277.49	Quaternary	SP, SM	Pumping	4”	125.0	105.0	125.0	20
07TKW002	2007	748206	491160.91	5169344.81	1277.10	Quaternary	SP	Monitoring	2”	117.5	112.5	117.5	5
07TKW003	2007	748207	491162.5	5169337.86	1276.74	Quaternary	SP	Monitoring	2”	117.5	112.5	117.5	5
08TKW004	2008	763392	494529.06	5167024.53	1291.93	Quaternary	GP, ML	Monitoring	2”	56.0	51.0	56.0	5
08TKW005	2008	763395	492194.86	5169437.62	1287.76	Quaternary	SP	Monitoring	2”	87.0	82.0	87.0	5
08TKW006	2008	763393	490350.87	5170398.54	1274.25	Quaternary	ML, CL	Monitoring	2”	39.0	29.0	39.0	10
08TKW007	2008	763398	492173.25	5172421.27	1285.01	Quaternary	SP, SM	Monitoring	2”	37.0	25.0	30.0	5
08TKW008	2008	763375	489056.76	5167674.04	1275.30	Quaternary	MH, SP-SM, SM	Monitoring	2”	162.0	148.0	156.0	8
08TKW009	2008	763394	487494.28	5168968.00	1269.69	Quaternary	SP-SM, MH	Monitoring	2”	97.0	92.0	97.0	5
08TKW010	2008	763397	490696.64	5168725.92	1284.88	Quaternary	GM, SP	Monitoring	2”	87.0	72.0	77.0	5
08TKW011	2008	763399	490696.7	5168722.06	1285.24	Quaternary	CH, SC, SP, ML	Monitoring	2”	15.0	5.0	15.0	10
08TKW012	2008	763400	490496.33	5169606.26	1279.95	Quaternary	SW	Monitoring	2”	77.0	72.0	77.0	5
21TKW0013	2021	853144	490706.92	5168722.97	1285.50	Quaternary	SP, SP-SM	Pumping	6”	93.6	69.6	92.6	23
21TKW0014	2021	864177	491082.88	5169031.84	1277.03	Shallow Bedrock	FGO	Monitoring	2”	247.0	190.0	240.0	50
21TKW0015	2021	853150	491091.37	5169032.01	1277.53	Quaternary	ML, SP-SM	Monitoring	2”	30.0	18.0	23.0	5

Well ID	Year Installed	MDH Unique Well ID	Easting (UTM NAD83)	Northing (UTM NAD83)	Top of Riser Elevation (ft amsl)	Geologic Target	Screened Interval Lithology (1)	Well Type	Well Screen Diameter (inches)	Total Borehole Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)
21TKW0016	2021	853149	491085.97	5169022.66	1277.10	Quaternary	SW, CL, SM	Monitoring	2”	92.0	79.5	89.5	10
21TKW0017	2021	864176	491078.97	5169028.99	1276.94	Shallow Bedrock	FGO	Monitoring	2”	172.7	135.0	165.0	30
21TKW0019	2021	853143	490498.64	5169611.93	1279.82	Shallow Bedrock	SED	Monitoring	2”	331.0	289.0	329.0	40
21TKW0020	2021	853142	490500.52	5169619.28	1279.66	Quaternary	SP, SP-SM	Monitoring	2”	210.0	200.0	210.0	10
21TKW0021	2021	853141	490502.30	5169625.23	1279.86	Quaternary	SP-SM	Monitoring	2”	26.0	19.0	24.0	5
21TKW0022	2021	864183	492183.43	5169435.8	1287.01	Shallow Bedrock	SED	Monitoring	2”	297.0	253.0	293.0	40
21TKW0023	2021	864182	492188.73	5169428.00	1285.99	Quaternary	SP-SM	Monitoring	2”	226.0	216.0	226.0	10
21TKW0024	2021	864181	492192.55	5169422.52	1286.35	Quaternary	SP-SM	Monitoring	2”	36.0	22.0	32.0	10
22TKW0025	2022	853146	490700.37	5168733.23	1284.71	Deep Bedrock	FGO	Monitoring	2”	256.0	186.0	246.0	60
22TKW0026	2022	864179	491153.41	5169347.82	1276.97	Shallow Bedrock	FGO	Monitoring	2”	231.0	190.0	230.0	40
22TKW0027	2022	864178	491154.22	5169345.26	1277.07	Quaternary	SP-SM	Monitoring	2”	30.0	22.0	27.0	5
22TKW0029	2022	864180	491156.28	5169340.03	1277.03	Shallow Bedrock	FGO	Monitoring	2”	355.0	304.0	354.0	50
22TKW0031	2022	853145	490706.12	5168737.48	1283.86	Shallow Bedrock	FGO	Monitoring	2”	156.0	115.0	155.0	40
22TKW0032	2022	853147	494525.39	5167026.38	1292.52	Shallow Bedrock	SED	Monitoring	2”	387.0	350.0	381.0	31
22TKW0033	2022	853148	494523.09	5167028.04	1292.81	Quaternary	SP-SC	Monitoring	2”	170.0	147.0	167.0	20
22TKW0058	2022	876498	490150.32	5168919.27	1275.07	Quaternary	SP-SM, SM, CL, ML	Monitoring	2”	22.0	11.0	21.0	10

Well ID	Year Installed	MDH Unique Well ID	Easting (UTM NAD83)	Northing (UTM NAD83)	Top of Riser Elevation (ft amsl)	Geologic Target	Screened Interval Lithology (1)	Well Type	Well Screen Diameter (inches)	Total Borehole Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)
22TKW0059	2022	876499	490534.33	5168426.39	1281.20	Quaternary	SC	Monitoring	2”	36.0	22.0	32.0	10
22TKW0060	2022	876494	490614.26	5167008.32	1273.13	Quaternary	SC	Monitoring	2”	45.0	40.0	45.0	5
22TKW0061	2022	876495	490701.70	5166550.98	1269.88	Quaternary	CL, SP, ML, SP-SC	Monitoring	2”	36.0	25.0	35.0	10
22TKW0062	2022	876497	491157.88	5166541.42	1280.09	Quaternary	SP-SC	Monitoring	2”	33.0	22.0	27.0	5
22TKW0063	2022	876496	491046.94	5166643.84	1285.37	Quaternary	SM	Monitoring	2”	26.0	18.0	23.0	5

Notes: (1)Refer to the Unified Soil Classification System for screened intervals completed in Quaternary deposits

Table 20.2: 2022 Slug Test Information

Borehole ID	Test Type (Rising / falling head)	Date Test Completed	Transducer Type	Slug length (ft)	Slug diameter (inches)	Transducer cable diameter (inches)	Slug rope diameter (inches)	Depth to Water before test (ft TOC)
08TKW012	Falling	3/23/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.83
08TKW012	Rising	3/23/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.83
08TKW012	Falling	3/23/2022	Level Troll 700	2.50	1.25	0.25	0.1875	6.83
08TKW012	Rising	3/23/2022	Level Troll 700	2.50	1.25	0.25	0.1875	6.83
08TKW012	Falling	3/23/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.83
08TKW012	Rising	3/23/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.83
21TKW0013	Falling	3/17/2022	Level Troll 700	5.08	3.00	0.25	0.1875	13.05
21TKW0013	Falling	3/17/2022	Level Troll 700	5.08	3.00	0.25	0.1875	13.05
21TKW0013	Rising	3/17/2022	Level Troll 700	5.08	3.00	0.25	0.1875	13.05
21TKW0013	Falling	3/17/2022	Level Troll 700	3.04	3.00	0.25	0.1875	13.05
21TKW0013	Rising	3/17/2022	Level Troll 700	3.04	3.00	0.25	0.1875	13.05
21TKW0013	Falling	3/17/2022	Level Troll 700	5.08	3.00	0.25	0.1875	13.05
21TKW0013	Rising	3/17/2022	Level Troll 700	5.08	3.00	0.25	0.1875	13.05
21TKW0014	Falling	5/24/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.63
21TKW0014	Rising	5/24/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.57
21TKW0015	Falling	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.80
21TKW0015	Rising	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.80
21TKW0015	Falling	5/20/2022	Level Troll 700	2.50	1.00	0.25	0.1875	2.80
21TKW0015	Rising	5/20/2022	Level Troll 700	2.50	1.00	0.25	0.1875	2.81
21TKW0015	Falling	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.81
21TKW0015	Rising	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.80
21TKW0016	Falling	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.56
21TKW0016	Rising	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.56
21TKW0016	Falling	5/20/2022	Level Troll 700	2.50	1.00	0.25	0.1875	2.56
21TKW0016	Rising	5/20/2022	Level Troll 700	2.50	1.00	0.25	0.1875	2.56
21TKW0016	Falling	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.56
21TKW0016	Rising	5/20/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.56
21TKW0017	Falling	5/25/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.45
21TKW0017	Rising	5/25/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.48
21TKW0019	Falling	5/25/2022	Level Troll 700	8.06	1.63	0.25	0.1875	5.92
21TKW0019	Rising	5/26/2022	Level Troll 700	8.06	1.63	0.25	0.1875	5.37
21TKW0020	Falling	3/22/2022	Level Troll 700	5.00	1.00	0.25	0.1875	6.60

Borehole ID	Test Type (Rising / falling head)	Date Test Completed	Transducer Type	Slug length (ft)	Slug diameter (inches)	Transducer cable diameter (inches)	Slug rope diameter (inches)	Depth to Water before test (ft TOC)
21TKW0020	Rising	3/22/2022	Level Troll 700	5.00	1.00	0.25	0.1875	6.60
21TKW0020	Falling	3/22/2022	Level Troll 700	2.50	1.00	0.25	0.1875	6.60
21TKW0020	Rising	3/22/2022	Level Troll 700	2.50	1.00	0.25	0.1875	6.60
21TKW0020	Falling	3/22/2022	Level Troll 700	5.00	1.00	0.25	0.1875	6.60
21TKW0020	Rising	3/22/2022	Level Troll 700	5.00	1.00	0.25	0.1875	6.60
21TKW0021	Falling	3/17/2022	Level Troll 700	5.00	1.50	0.25	0.1875	8.08
21TKW0021	Falling	3/17/2022	Level Troll 700	2.50	1.50	0.25	0.1875	8.04
21TKW0021	Rising	3/17/2022	Level Troll 700	2.50	1.50	0.25	0.1875	8.04
21TKW0021	Falling	3/21/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.77
21TKW0021	Rising	3/21/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.77
21TKW0021	Falling	3/21/2022	Level Troll 700	2.47	1.25	0.25	0.1875	6.77
21TKW0021	Rising	3/21/2022	Level Troll 700	2.47	1.25	0.25	0.1875	6.77
21TKW0021	Falling	3/21/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.74
21TKW0021	Rising	3/21/2022	Level Troll 700	5.00	1.25	0.25	0.1875	6.72
21TKW0022	Falling	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	10.55
21TKW0022	Rising	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	10.53
21TKW0022	Falling	5/24/2022	Level Troll 700	5.01	1.50	0.25	0.1875	10.53
21TKW0022	Rising	5/24/2022	Level Troll 700	5.01	1.50	0.25	0.1875	10.52
21TKW0022	Falling	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	10.53
21TKW0022	Rising	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	10.52
21TKW0023	Falling	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	9.60
21TKW0023	Rising	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	9.60
21TKW0023	Falling	5/24/2022	Level Troll 700	5.01	1.50	0.25	0.1875	9.60
21TKW0023	Rising	5/24/2022	Level Troll 700	5.01	1.50	0.25	0.1875	9.60
21TKW0023	Falling	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	9.60
21TKW0023	Rising	5/24/2022	Level Troll 700	8.08	1.63	0.25	0.1875	9.60
21TKW0023	Falling	5/25/2022	Level Troll 700	7.99	1.63	0.25	0.1875	9.60
21TKW0023	Rising	5/25/2022	Level Troll 700	7.99	1.63	0.25	0.1875	9.59
21TKW0024	Falling	5/25/2022	Level Troll 700	8.08	1.65	0.25	0.1875	9.93
21TKW0024	Rising	5/25/2022	Level Troll 700	8.08	1.65	0.25	0.1875	9.93
21TKW0024	Falling	5/25/2022	Level Troll 700	5.01	1.50	0.25	0.1875	9.93
21TKW0024	Rising	5/25/2022	Level Troll 700	5.01	1.50	0.25	0.1875	9.93
21TKW0024	Falling	5/25/2022	Level Troll 700	8.08	1.65	0.25	0.1875	9.93

Borehole ID	Test Type (Rising / falling head)	Date Test Completed	Transducer Type	Slug length (ft)	Slug diameter (inches)	Transducer cable diameter (inches)	Slug rope diameter (inches)	Depth to Water before test (ft TOC)
21TKW0024	Rising	5/25/2022	Level Troll 700	8.08	1.65	0.25	0.1875	9.93
22TKW0025	Falling	5/27/2022	Level Troll 700	8.06	1.63	0.25	0.1875	43.15
22TKW0025	Rising	6/1/2022	Level Troll 700	8.06	1.63	0.25	0.1875	31.31
22TKW0026	Falling	6/1/2022	Level Troll 700	5.01	0.75	0.25	0.1875	38.10
22TKW0026	Rising	6/1/2022	Level Troll 700	5.01	0.75	0.25	0.1875	34.74
22TKW0027	Falling	5/25/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.56
22TKW0027	Rising	5/25/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.55
22TKW0027	Falling	5/25/2022	Level Troll 700	2.50	1.00	0.25	0.1875	2.56
22TKW0027	Rising	5/25/2022	Level Troll 700	2.50	1.00	0.25	0.1875	2.56
22TKW0027	Falling	5/25/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.56
22TKW0027	Rising	5/25/2022	Level Troll 700	5.00	1.00	0.25	0.1875	2.56
22TKW0029	Falling	5/26/2022	Level Troll 700	2.50	1.25	0.25	0.1875	2.79
22TKW0029	Rising	5/31/2022	Level Troll 700	2.50	1.25	0.25	0.1875	2.20
22TKW0031	Falling	5/26/2022	Level Troll 700	8.06	1.63	0.25	0.1875	9.35
22TKW0031	Rising	5/26/2022	Level Troll 700	8.06	1.63	0.25	0.1875	9.05
22TKW0032	Falling	5/27/2022	Level Troll 700	5.00	1.25	0.25	0.1875	7.93
22TKW0032	Rising	6/1/2022	Level Troll 700	5.00	1.25	0.25	0.1875	7.95
22TKW0033	Falling	5/18/2022	Level Troll 500	5.00	1.25	0.25	0.1875	7.70
22TKW0033	Rising	5/18/2022	Level Troll 500	5.00	1.25	0.25	0.1875	7.70

Figure 20.4: Tamarack Project Monitoring Well Network

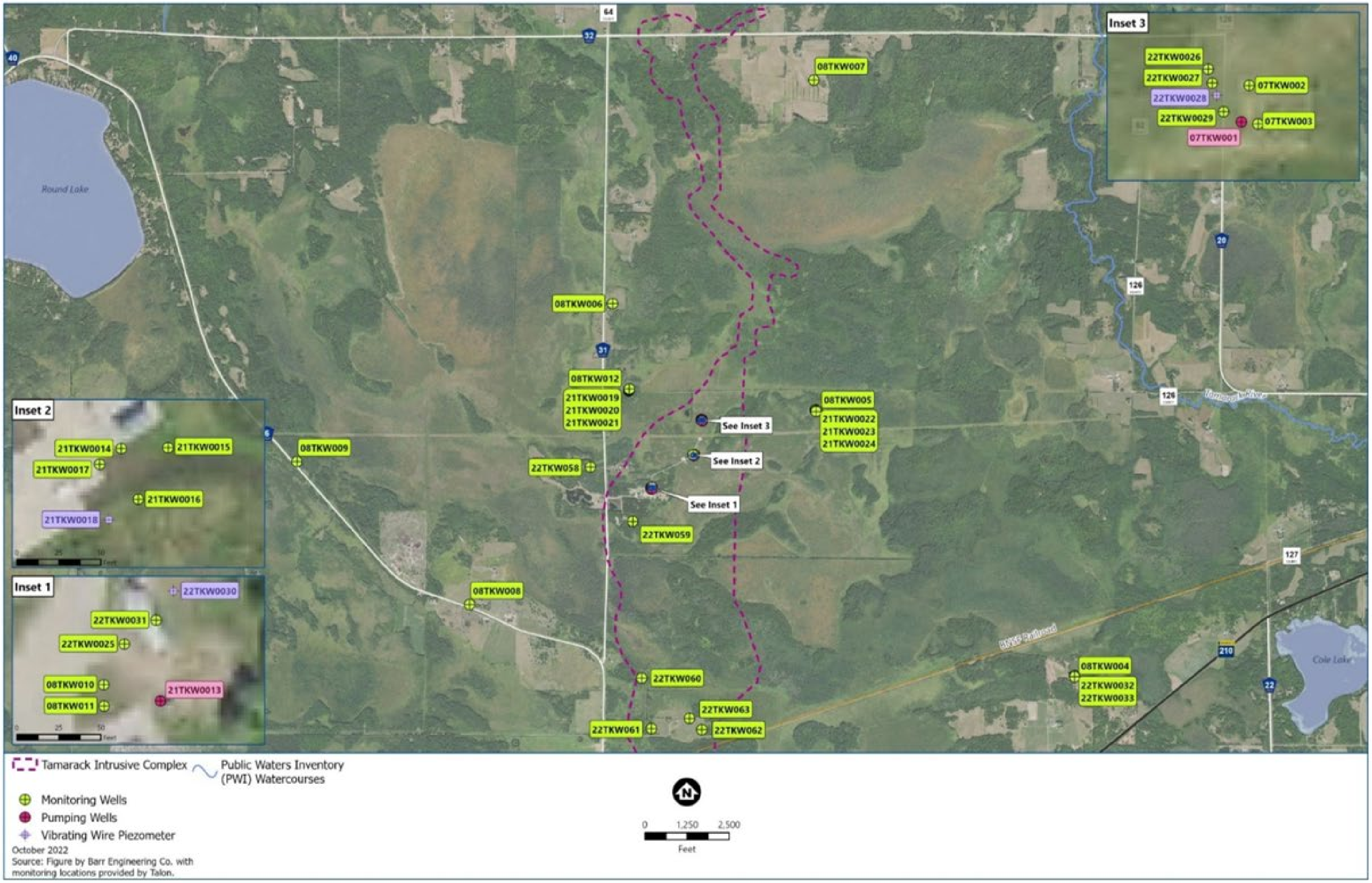
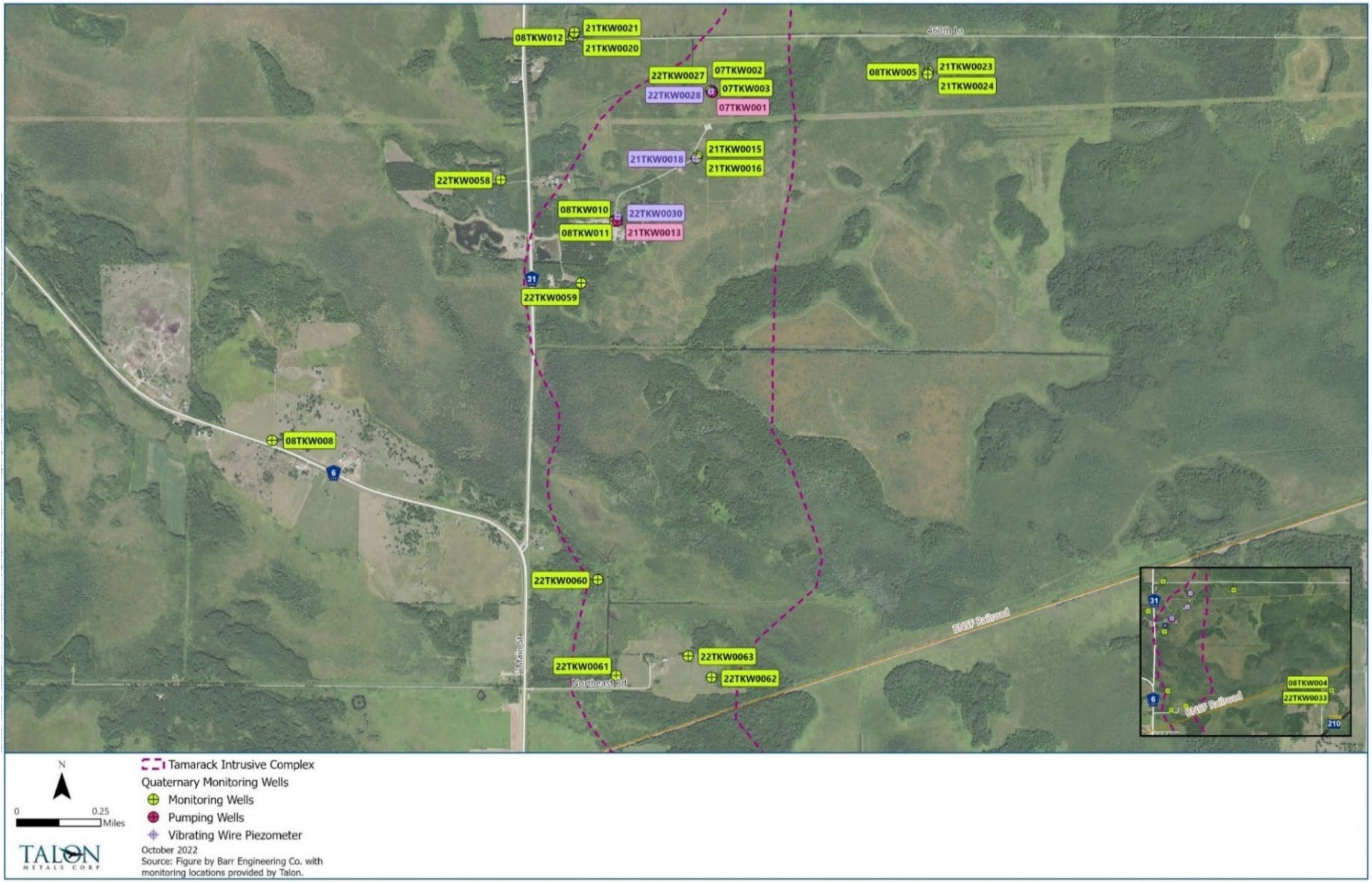


Figure 20.5: Quaternary Monitoring Wells and Vibrating Wire Piezometer Installations



20.1.1.2 Bedrock Investigation Activities in Monitoring Wells

Hydrogeologic studies of the bedrock include monitoring well installation, water level elevation logging, geophysical and hydrophysical logging, slug tests, pumping tests, and water quality sampling.

- In 2021 and 2022, Talon installed eight monitoring wells in the Shallow Bedrock (upper 150 feet of bedrock), at the locations shown on Figure 20.7 and one well in the Deep Bedrock (> 150 feet from the top of bedrock). These wells range from 156 to 387 feet deep and extend from 38 to 218 feet into the bedrock. Table 20.1 provides monitoring well construction information. These are the first monitoring wells installed into the bedrock for the Tamarack Project.
- Acoustic televiewer (ATV) and hydrophysical logging (HpL) tests were performed in five of the Shallow Bedrock boreholes prior to monitoring well installation, to assist in the identification of potential water bearing zones. During ATV logging, an ultrasonic probe focuses an acoustic beam onto the borehole wall, producing high-resolution images that show structural geological features such as fractures, foliation, and bedding planes. HpL uses a temperature and fluid electrical conductivity probe to identify zones of inflow.
- Groundwater elevation data is recorded every hour by water level loggers Talon has installed in the bedrock monitoring wells. Talon plans to continue logging groundwater elevation data in bedrock monitoring wells through environmental review and permitting. Further monitoring will be determined as part of permitting.
- Slug tests were conducted in nine bedrock monitoring wells to assess the bedrock hydraulic conductivity.
- Pumping tests were conducted at four bedrock monitoring wells to evaluate hydraulic properties of the bedrock. Tests lasted between 3 and 5 hours.

20.1.1.3 Bedrock Investigation Activities in Exploration Boreholes

Hydrogeologic studies of the Shallow and Deep Bedrock using exploration boreholes include geophysical and hydrophysical logging, hydraulic conductivity testing, vibrating wire piezometer installation, and water quality sampling. Bedrock investigations have been conducted in 19 boreholes ranging from approximately 550 to 3,000 feet deep. Bedrock investigation locations in exploration boreholes are shown on Figure 20.8.

- In 2008, hydrogeological tests were conducted in 4 exploration boreholes.
- From 2020 through 2022, Talon conducted 15 additional hydrogeological tests in exploration boreholes.
- Hydrogeological investigations in exploration boreholes are summarized in Table 20.3, and included the following:
  - Acoustic televiewer (ATV) logging was used to identify bedrock geological structures for hydraulic conductivity testing.
  - Hydrophysical logging (HpL) was used to identify groundwater flow zones in the bedrock. HpL uses a temperature and fluid electrical conductivity probe to identify zones of inflow.
  - Packer testing was conducted to obtain hydraulic properties over the flow zone (as identified by HpL) for boreholes where conditions allowed. In addition to the identified flow zones other zones of interest (e.g., some mineralized zones) were tested to confirm zero inflow. Packer testing was conducted with a wireline straddle-packer assembly. Several methods were used to test the permeability of the subject

intervals depending on the anticipated yield of the zone from the HpL data and the depth of the interval. The methods used were airlift slug out, pumping slug out, constant rate injection, and constant rate extraction.

- A Deep Bedrock pumping test was conducted in borehole 21TK0282.The borehole was pumped for 72 hours. To measure hydrologic response in the vicinity of the 72-hour constant rate pumping test, water levels were monitored in the pumping hole, nearby wells, exploration boreholes, and via vibrating wire piezometers. Monitoring was performed in both the Bedrock and the overlying Quaternary deposits.
- Vibrating wire piezometers were installed in 11 boreholes, as listed in Table 20.3. Each borehole installation has multiple transducers set at various depths to assess responses to aquifer testing, responses to recharge events as well as vertical and lateral hydraulic gradients. Table 20.4 summarizes exploration boreholes with vibrating wire piezometers installed and depths. Vibrating wire piezometers record pore water pressure at 1-hour intervals. Talon plans to continue logging pore water pressure data from vibrating wire piezometers through environmental review and permitting. Further monitoring will be determined as part of permitting.
- Groundwater quality samples were collected from six exploration boreholes, as described in Item 20.1.3.

Figure 20.6: Talon Installing Vibrating Wire Piezometers in Exploration Boreholes

Table 20.3: Hydrogeological Investigation Activities in Exploration Boreholes

Hole ID	Area	MDH Unique Boring ID	Hole Length (ft)	Hole Bend Depth (ft) (1)	Casing Length (ft bgs)	Collar Azimuth (compass degrees)	Collar Dip (degrees from horizontal)	Hole Diameter	ATV Length (ft)	HpL Completed (year)	Packer Testing Completed (year)	VWP Installed (year)	Water Quality Sample Collected (year)
12TK0153C	138 Zone	32091	2028	2003	120	164	-82	NQ	502.0	2022	2022	2022	N/A
12TK0158	138 Zone/Main Zone	30447	1951	1951	100	58	-89	NQ	1542.0	2022	2022	2022	N/A
16TK0235A	Main Zone	31249	1768	1730	130	281	-82	HQ	1171.3	2022	2022	N/A	N/A
16TK0241	Main Zone	31260	1576	1568	120	269	-84	HQ	1562.6	2022	2022	2022	2022
20TK0265	138 Zone	32086	1916	1904	170	174	-84	NQ	1888.1	2022	2022	2022	2022
21TK0282	CGO West	32132	546	533	190	319	-76	HQ	544.3	2022	2022	2022	2022
21TK0294	CGO East	32209	988	951	150	22	-73	HQ	967.5	2022	2022	2022	2022
21TK0308	CGO East	32220	809	685	160	43	-56	HQ	804.9	2022	2022	2022	N/A
21TK0310	CGO East	32223	818	781	160	6	-70	HQ	813.0	2022	2022	2022	N/A
21TK0334	CGO West	32282	1066	978	160	326	-65	HQ	982.4	2022	2022	2022	N/A
21TK0335	CGO West	32276	720	683	220	216	-70	HQ	656.2	2022	2022	2022	2022
21TK0376	Main Zone	32323	1758	1741	110	286	-83	HQ	1745.4	2022	2022	2022	N/A
22TK0381	138 Zone	32320	2147	2061	120	120	-74	NQ	2112.8	2022	N/A	N/A	N/A
22TK0387	CGO West	32303	820	780	190	333	-72	HQ	794.0	2022	N/A	N/A	N/A
08TK0048	Main Zone	24370	2979	2931	109	33	-79	HQ	2181.1	2008	2008	2020	2008
08TK0049	Main Zone	24371	1816	1789	104	183	-80	HQ	1564.0	2008	2008	N/A	N/A
08TK0050	Main Zone	24372	1773	1715	104	108	-77	HQ	1736.0	2008	N/A	N/A	N/A
08TK0054	Main Zone	24353	1631	1606	110	292	-81	HQ	1614.2	2008	N/A	N/A	N/A
08TK0074	Main Zone	24254	1745	1702	130	250	-77	NQ	1240.0	2020	N/A	N/A	N/A

Notes: (1) Hole bend depth is the actual depth below ground surface and takes into account collar dip angle and deviations in bend of the hole.

Table 20.4: Vibrating Wire Piezometer Summary

Talon Unique Borehole ID	MDH Borehole ID	VWP ID	Installation Date	Area	Main Geologic unit (1)	VWP final setting depth(2) (ft)
21TKW0018	853137	21TKW0018-3	10/29/2021	CGO West	SM	21.0
21TKW0018	853137	21TKW0018-2	10/29/2021	CGO West	SM	63.0
21TKW0018	853137	21TKW0018-1	10/29/2021	CGO West	SM	79.0
21TKW0028	853138	21TKW0028-3	1/28/2022	CGO West	SP-SM	24.0
21TKW0028	853138	21TKW0028-2	1/28/2022	CGO West	SW-SM	70.0
21TKW0028	853138	21TKW0028-1	1/28/2022	CGO West	ML	124.0
22TKW0030	853136	22TKW0030-3	2/12/2022	Main Zone	SP-SM	20.0
22TKW0030	853136	22TKW0030-2	2/12/2022	Main Zone	SP-SM	37.0
22TKW0030	853136	22TKW0030-1	2/12/2022	Main Zone	GP-GM	82.0
08TK0048	24370	08TK0048-2	12/29/2020	Main Zone	FGO	111.4
08TK0048	24370	08TK0048-1	12/29/2020	Main Zone	FGO	152.5
12TK0153C	32091	12TK0153C-5	3/2/2022	138 Zone	FGO	269.0
12TK0153C	32091	12TK0153C-4	3/2/2022	138 Zone	FGO	345.0
12TK0153C	32091	12TK0153C-3	3/2/2022	138 Zone	FGO	509.0
12TK0153C	32091	12TK0153C-2	3/2/2022	138 Zone	MZNO	616.0
12TK0153C	32091	12TK0153C-1	3/2/2022	138 Zone	MZNO	644.0
12TK0158	30447	12TK0158-6	2/28/2022	138 Zone/Main Zone	FGO	129.0
12TK0158	30447	12TK0158-5	2/28/2022	138 Zone/Main Zone	FGO / MZNO	1232.0
12TK0158	30447	12TK0158-4	2/28/2022	138 Zone/Main Zone	CGO/SED	1327.0
12TK0158	30447	12TK0158-3	2/28/2022	138 Zone/Main Zone	MZNO	1360.0
12TK0158	30447	12TK0158-2	2/28/2022	138 Zone/Main Zone	MZNO	1530.0
12TK0158	30447	12TK0158-1	2/28/2022	138 Zone/Main Zone	MMS	1572.0
20TK0265	32086	20TK0265-6	3/3/2022	138 Zone	FGO	303.0
20TK0265	32086	20TK0265-5	3/3/2022	138 Zone	FGO	1455.0
20TK0265	32086	20TK0265-4	3/3/2022	138 Zone	FGO	1547.0
20TK0265	32086	20TK0265-3	3/3/2022	138 Zone	FGO	1618.0
20TK0265	32086	20TK0265-2	3/3/2022	138 Zone	MZNO	1671.0

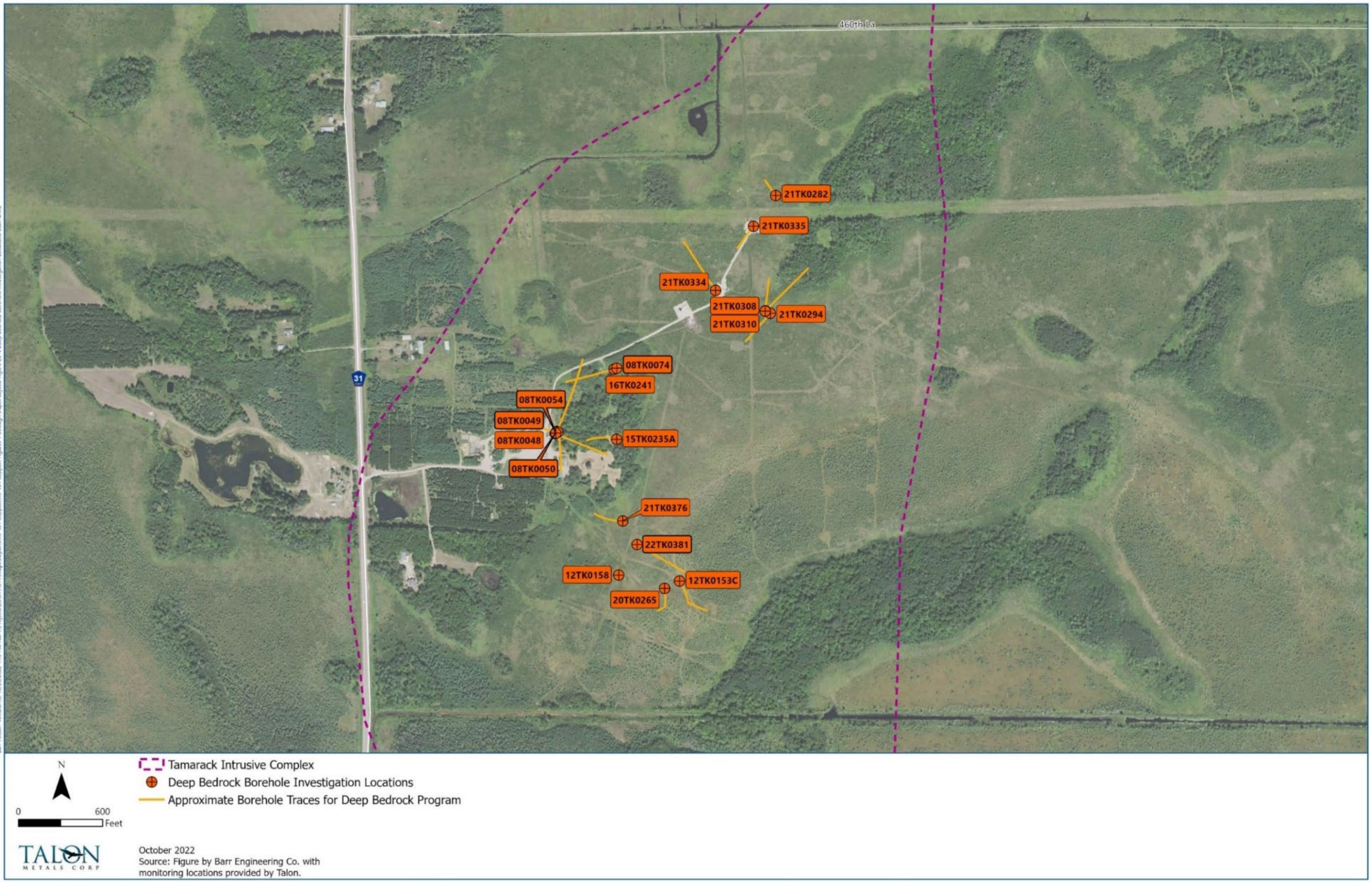
Talon Unique Borehole ID	MDH Borehole ID	VWP ID	Installation Date	Area	Main Geologic unit (1)	VWP final setting depth(2) (ft)
20TK0265	32086	20TK0265-1	3/3/2022	138 Zone	SED	1743.0
21TK0310	32223	21TK0310-3	1/15/2022	CGO East	FGO	254.9
21TK0310	32223	21TK0310-2	1/15/2022	CGO East	MZNO	531.4
21TK0310	32223	21TK0310-1	1/15/2022	CGO East	CGO	589.6
21TK0308	32220	21TK0308-4	1/18/2022	CGO East	FGO	175.5
21TK0308	32220	21TK0308-3	1/18/2022	CGO East	FGO	371.8
21TK0308	32220	21TK0308-2	1/18/2022	CGO East	MZNO	713.9
21TK0308	32220	21TK0308-1	1/18/2022	CGO East	SED	755.0
21TK0294	32209	21TK0294-6	1/21/2022	CGO East	FGO	161.1
21TK0294	32209	21TK0294-5	1/21/2022	CGO East	FGO	344.8
21TK0294	32209	21TK0294-4	1/21/2022	CGO East	MZNO	696.4
21TK0294	32209	21TK0294-3	1/21/2022	CGO East	SED	773.3
21TK0294	32209	21TK0294-2	1/21/2022	CGO East	SED	799.2
21TK0294	32209	21TK0294-1	1/21/2022	CGO East	SED	849.2
21TK0334	32282	21TK0334-5	2/24/2022	CGO West	FGO	648.0
21TK0334	32282	21TK0334-4	2/24/2022	CGO West	CGO	725.0
21TK0334	32282	21TK0334-3	2/24/2022	CGO West	CGO	761.0
21TK0334	32282	21TK0334-2	2/24/2022	CGO West	SED	810.0
21TK0334	32282	21TK0334-1	2/24/2022	CGO West	SED	892.0
21TK0335	32276	21TK0335-4	1/25/2022	CGO West	FGO	244.0
21TK0335	32276	21TK0335-3	1/25/2022	CGO West	MZNO	557.0
21TK0335	32276	21TK0335-2	1/25/2022	CGO West	MZNO	596.0
21TK0335	32276	21TK0335-1	1/25/2022	CGO West	SED	642.0
21TK0282	32132	21TK0282-6	2/26/2022	CGO West	FGO	304.0
21TK0282	32132	21TK0282-5	2/26/2022	CGO West	MZNO	408.0
21TK0282	32132	21TK0282-4	2/26/2022	CGO West	CGO	420.0
21TK0282	32132	21TK0282-3	2/26/2022	CGO West	MMS	453.0
21TK0282	32132	21TK0282-2	2/26/2022	CGO West	SED	510.0

Talon Unique Borehole ID	MDH Borehole ID	VWP ID	Installation Date	Area	Main Geologic unit (1)	VWP final setting depth(2) (ft)
21TK0282	32132	21TK0282-1	2/26/2022	CGO West	SED	535.0
16TK0241	31260	16TK0241-7	2/16/2022	Main Zone	FGO	259.0
16TK0241	31260	16TK0241-6	2/16/2022	Main Zone	FGO	964.0
16TK0241	31260	16TK0241-5	2/16/2022	Main Zone	MZNO	1059.0
16TK0241	31260	16TK0241-4	2/16/2022	Main Zone	CGO	1131.0
16TK0241	31260	16TK0241-3	2/16/2022	Main Zone	SMSU	1230.0
16TK0241	31260	16TK0241-2	2/16/2022	Main Zone	CGO	1363.0
16TK0241	31260	16TK0241-1	2/16/2022	Main Zone	SED	1457.0
21TK0376	32323	21TK0376-4	2/20/2022	Main Zone	FGO	148.0
21TK0376	32323	21TK0376-3	2/20/2022	Main Zone	FGO	341.0
21TK0376	32323	21TK0376-2	2/20/2022	Main Zone	MSU/MMS	1445.0
21TK0376	32323	21TK0376-1	2/20/2022	Main Zone	CGO	1588.0

Notes: (1) Refer to the Unified Soil Classification System for screened intervals completed in Quaternary deposits.
(2) Depth along borehole.

Figure 20.7: Bedrock Monitoring Wells

Figure 20.8: Deep Bedrock Borehole Investigation Locations



20.1.2 Surface Water Hydrology Studies

The Tamarack North Project is within the Big Sandy Lake Watershed and covers two minor watersheds, the Headwaters of Big Sandy Lake and Big Sandy Lake Outlet, which both drain into the Mississippi River. The Tamarack North Project is located primarily within the Big Sandy Lake Outlet watershed with the northern section extending into the headwaters of the Big Sandy Lake watershed. Watershed boundaries are shown on Figure 20.9.

- Flow data has been collected at 22 monitoring stations on ditches, streams, and rivers near the Tamarack North Project. Table 20.5 documents the period of record and measurement frequency at each flow monitoring station. Locations of flow monitoring stations are shown on Figure 20.10.
- In 2022, Talon conducted a hydrologic study of ditch networks flowing north and south from the Mine Site. The study used LiDAR data to delineate the ditches' watersheds and identify locations of potential channel restrictions. Field surveys measured ditch cross sections at multiple locations. Field data was used to estimate bankfull flow and full culvert flow. Results inform evaluation of potential discharge locations.

Table 20.5: Flow Monitoring Summary

Monitoring Station	Flow monitoring period	Monitoring type
LV-002	2006-ongoing	Continuous during non-frozen conditions
LV-003	2006-ongoing	Continuous during non-frozen conditions
LV-005	2006-ongoing	Manual
LV-006	2007-ongoing	Manual
LV-007	2007-ongoing	Manual
LV-008	2007-ongoing	Manual
LV-009	2007-ongoing	Continuous during non-frozen conditions
LV-010	2007-ongoing	Manual
LV-011	2007-ongoing	Manual
LV-012	2007-ongoing	Manual
LV-013	2007-2014	Manual
LV-015	2007-2014	Manual
LV-016	2007-ongoing	Manual
LV-016-R	2018-2022	Manual
LV-017	2007-ongoing	Manual
LV-018	2007-ongoing	Continuous during non-frozen conditions
LV-019	2007-2022	Manual
LV-020	2007-2014	Manual
LV-021	2007-ongoing	Manual
LV-022	2014-ongoing	Manual
LV-023	2021-ongoing	Manual

Notes: The frequency of manual flow measurements has varied. Generally they have been collected quarterly. Since 2021, Talon has recorded flow measurements approximately every two months during non-frozen conditions.

Figure 20.9: Surface Water Setting

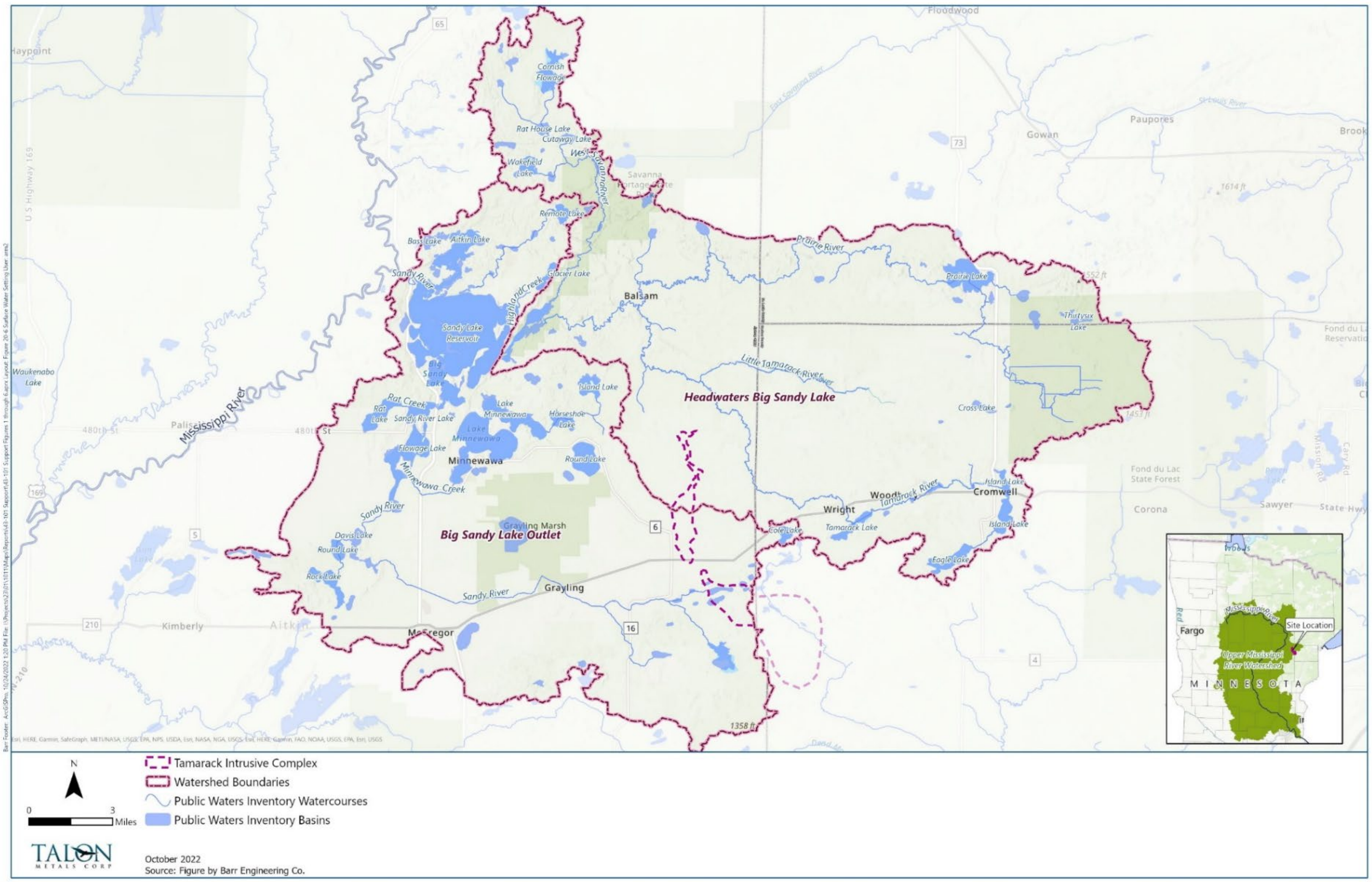
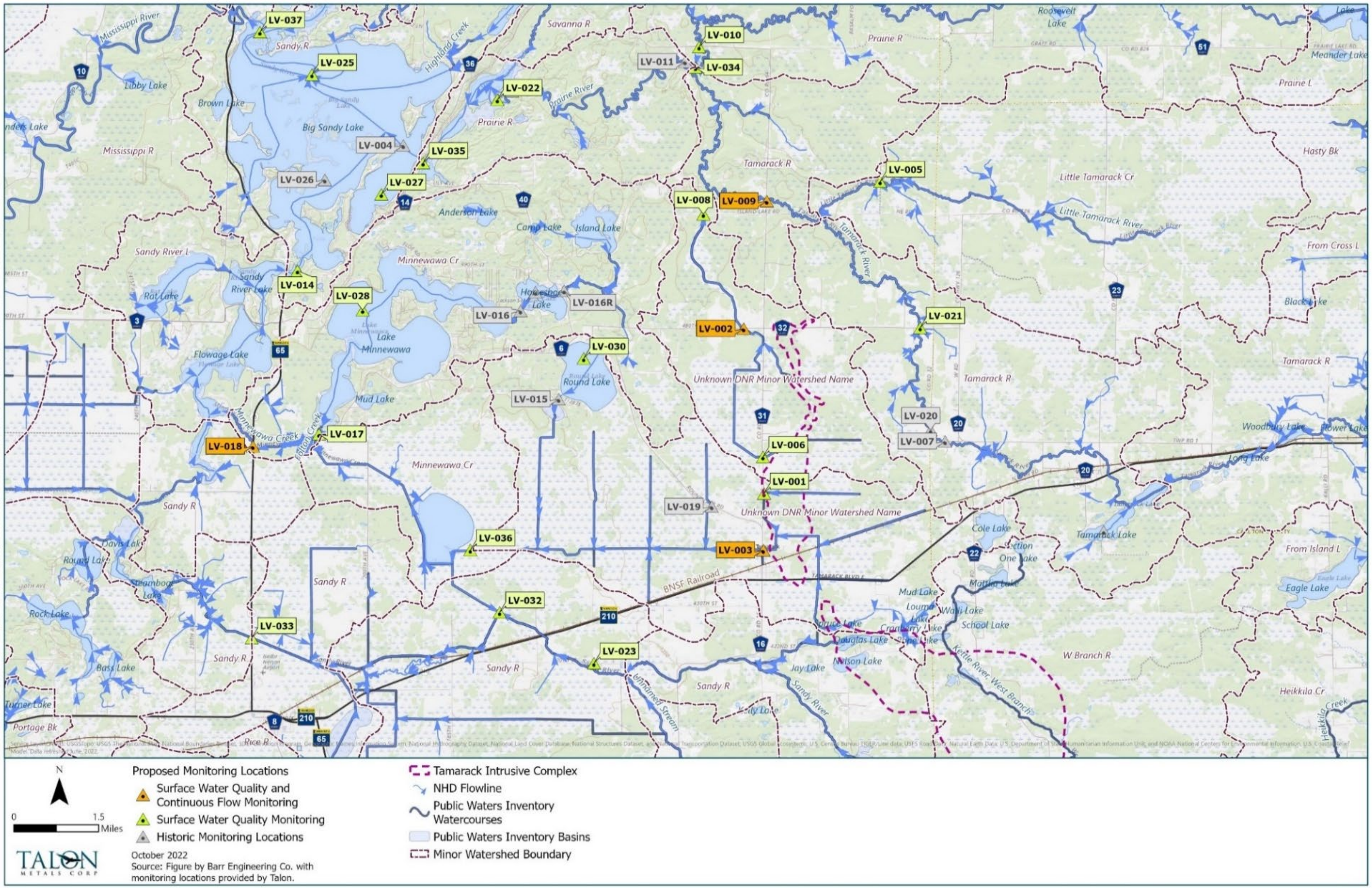


Figure 20.10: Surface Water Features and Monitoring Locations



20.1.3 Water Quality Monitoring

Baseline groundwater and surface water quality monitoring has been conducted since 2008 and 2006 respectively and is ongoing.

20.1.3.1 Groundwater Quality Data

Groundwater quality samples have been collected from Quaternary monitoring wells, bedrock monitoring wells and exploration boreholes.

- Quaternary and bedrock groundwater quality samples are collected quarterly from the monitoring wells listed on Table 20.1. Locations of the monitoring wells are shown on Figure 20.4. Analytic parameters have varied over the years. Table 20.6 lists the current analytical parameters for Quaternary and bedrock groundwater quality samples.
- In 2022, Deep Bedrock groundwater quality samples were collected from five deep boreholes, as summarized in Table 20.7.
    - Water quality samples were collected using packers to isolate specific zones. Testing intervals ranged in depth from 290 to 1472 ft below the ground surface and represent five of the geologic units encountered in the Deep Bedrock (SMSU, MZNO, MSU, FGO, and SED).
    - Water quality samples were also collected daily during the 72-hour pumping test of a Deep Bedrock borehole.
    - Samples were analyzed for the same parameters as the Quaternary and bedrock samples (Table 20.6), and for isotopes.

20.1.3.2 Surface Water Quality Data

Surface water quality monitoring focuses on waterbodies upstream and downstream of the Tamarack North Project.

- Water quality monitoring is completed quarterly at a total of 24 lake and stream sites. Current and historical monitoring locations are shown on Figure 20.10. Analytic parameters have varied over the years. Table 20.8 lists the current analytical parameters for surface water quality samples.

20.1.3.3 Water Quality Data Quality Assurance/Quality Control

To produce baseline water quality data that is representative, useable, and high-quality, Talon follows procedures specified in the Project Quality Assurance Project Plan (QAPP). The QAPP describes data quality objectives, and details procedures for field data acquisition, laboratory analysis, and data assessment.

Table 20.6: Groundwater Monitoring Analytical Parameters

Analyte	Method	Container	Sample Volumes	Preservation	Hold Time
Quaternary and Shallow Groundwater Well Analytes					
General Chemistry					
Alkalinity, Bicarbonate as CaCO3	2320B	Plastic	250 mL	0-6°C	14 days
Alkalinity, Total	2320B	Plastic	250 mL	0-6°C	14 days
Ammonia (un-ionized as N)	350.1	Amber Glass	1 L	0-6°C	NA
Bromide	300	Plastic	500 mL	0-6°C	28 days
Chloride	300	Plastic	500 mL	0-6°C	28 days
Dissolved Organic Carbon	5310	2x VOA vials	40 mL (x2)	Sulphuric acid, 0-6°C	28 days
Fluoride	300	Plastic	500 mL	0-6°C	28 days
Nitrate (as N)	300	Plastic	500 mL	0-6°C	48 hours
Nitrite (as N)	300	Plastic	500 mL	0-6°C	48 hours
Nitrate + Nitrite (as N)	353.2	Plastic	250 mL	Sulphuric acid, 0-6°C	28 days
Phosphorus, Total	4500_P_E	Plastic	500 mL	Sulphuric acid, 0-6°C	28 days
Sulphate	300	Plastic	500 mL	0-6°C	28 days
Sulphide	SM4500_S2_F	Plastic	500 mL	Zn acetate & NaOH	7 days
Total Dissolved Solids (TDS)	2540D	Plastic unpreserved	500 mL	0-6°C	7 days
Total Suspended Solids (TSS)	2540D	Plastic unpreserved	1 L	0-6°C	7 days
Dissolved Metals					
Aluminum, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Antimony, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Arsenic, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Barium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Beryllium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Boron, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Cadmium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Calcium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Chromium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Cobalt, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Copper, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Iron, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Lead, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Magnesium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Manganese, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Nickel, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Potassium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Selenium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Silver, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Sodium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Strontium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Thallium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Tin, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Uranium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days

Analyte	Method	Container	Sample Volumes	Preservation	Hold Time
Vanadium, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Zinc, Dissolved	6020B	Plastic	250 mL	Nitric acid	180 days
Hardness (Ca+Mg)	6020B	Plastic	250 mL	Nitric acid	180 days
Total Metals					
Mercury, Low Level	1631E	LLHg kit, 2x VOA vials	40 mL (x2)	0-6°C	28 days
Field Parameters					
pH	NA	NA	NA	NA	NA
Dissolved Oxygen	NA	NA	NA	NA	NA
Oxidation Reduction Potential	NA	NA	NA	NA	NA
Specific Conductance	NA	NA	NA	NA	NA
Temperature	NA	NA	NA	NA	NA
Turbidity	NA	NA	NA	NA	NA
Ferrous Iron	NA	NA	NA	NA	NA

Table 20.7: Deep Bedrock Water Quality Samples

Hole ID	Sample ID	Sample Interval Top (ft toc) (1)	Sample Interval Bottom (ft toc) (1)	Sample Interval Top (ft TVD) (2)	Sample Interval Bottom (ft TVD) (2)	Packer Middle Depth (ft TVD)	Geologic Unit
08TK0048	08TK0048	1400	1420	1377.6	1397.3	1387.5	SMSU
16TK0241	16TK0241_DB_373_1	1209.4	1239.4	1203.4	1234.8	1219.1	SMSU
16TK0241	16TK0241_DB_373_2	1209.4	1239.4	1203.4	1234.8	1219.1	SMSU
21TK0335	21TK0335_DB_183_1	590.6	610.6	591.5	612.5	602.0	MZNO-MSU
21TK0294	21TK0294_DB_102.40	338.6	348.2	323.4	338.0	330.7	FGO
21TK0294	21TK0294_DB_102.40_2	338.6	348.2	323.4	338.0	330.7	FGO
21TK0265	21TK0265_DB_445_1	1444.2	1472.0	1434.3	1464.7	1449.5	MZNO
21TK0265	21TK0265_DB_445_2	1444.2	1472.0	1434.3	1464.7	1449.5	MZNO
21TK0265	21TK0265_DB_89_1	290.0	297.9	282.1	302.0	292.0	FGO
21TK0265	21TK0265_DB_89_2	290.0	297.9	282.1	302.0	292.0	FGO
21TK0282	21TK0282_DB_147.6_1	478.1	536.0	462.0	529.4	495.7	SED
21TK0282	21TK0282_DB_147.6_2	478.1	536.0	462.0	529.4	495.7	SED

Notes: (1) Feet from top of casing along borehole length.

(2) Feet in true vertical depth based on interpolation of borehole bend depth.

Table 20.8: Surface Water Monitoring Analytical Parameters

Analyte	Method	Container	Sample Volumes	Preservation	Hold Time
General Chemistry					
Alkalinity, Bicarbonate as CaCO3	2320B	Plastic	250 mL	0-6°C	14 days
Alkalinity, Total	2320B	Plastic	250 mL	0-6°C	14 days
Ammonia (as N)	350.1	Plastic	500 mL	sulphuric acid, 0-6°C	28 days
Ammonia (un-ionized as N)	350.1	Calculation	--	--	NA
BOD 5-Day	5210 B	Plastic	1-liter	0-6°C	48 hours
Chloride	300	Plastic	500 mL	0-6°C	28 days
Bromide	300	Plastic	500 mL	0-6°C	28 days
Fluoride	300	Plastic	500 mL	0-6°C	28 days
Dissolved Organic Carbon	5310	2x VOA vials	40mL (x2)	sulphuric acid, 0-6°C	28 days
Total Organic Carbon	5310	2x VOA vials	40mL (x2)	sulphuric acid, 0-6°C	28 days
Nitrate (as N)	300	Plastic	500 mL	0-6°C	48 hours
Nitrite (as N)	300	Plastic	500 mL	0-6°C	48 hours
Phosphorus, low-level, total	4500_P_E	Plastic	500 mL	sulphuric acid, 0-6°C	28 days
Sulphate	300	Plastic	500 mL	0-6°C	28 days
Sulphide	SM4500_S2_F	Plastic	500 mL	zn acetate & NaOH	7 days
Total Dissolved Solids (TDS)	2540D	Plastic unpreserved	500 mL	0-6°C	7 days
Total Suspended Solids (TSS) – low-level	2540D	Plastic unpreserved	1 L	0-6°C	7 days
Total (Unfiltered) Metals					
Aluminum	6020B	Plastic	250 mL	nitric acid	180 days
Antimony	6020B	Plastic	250 mL	nitric acid	180 days
Arsenic	6020B	Plastic	250 mL	nitric acid	180 days
Barium	6020B	Plastic	250 mL	28 days	180 days
Beryllium	6020B	Plastic	250 mL	nitric acid	180 days
Boron	6020B	Plastic	250 mL	nitric acid	180 days
Cadmium	6020B	Plastic	250 mL	nitric acid	180 days
Calcium	6020B	Plastic	250 mL	nitric acid	180 days
Chromium	6020B	Plastic	250 mL	nitric acid	180 days
Cobalt	6020B	Plastic	250 mL	nitric acid	180 days
Copper	6020B	Plastic	250 mL	nitric acid	180 days
Iron	6020B	Plastic	250 mL	nitric acid	180 days
Lead	6020B	Plastic	250 mL	nitric acid	180 days
Magnesium	6020B	Plastic	250 mL	nitric acid	180 days
Manganese	6020B	Plastic	250 mL	nitric acid	180 days
Mercury, Low Level	1631E	LLHg kit, 2x VOA vials	40mL (x2)	0-6°C	28 days
Methylmercury	1630	MeHg kit; glass	250 mL	hydrochloric acid, 0-6°C	28 days
Nickel	6020B	Plastic	250 mL	nitric acid	180 days
Potassium	6020B	Plastic	250 mL	nitric acid	180 days
Selenium	6020B	Plastic	250 mL	nitric acid	180 days
Silver	6020B	Plastic	250 mL	nitric acid	180 days

Analyte	Method	Container	Sample Volumes	Preservation	Hold Time
Sodium	6020B	Plastic	250 mL	nitric acid	180 days
Strontium	6020B	Plastic	250 mL	nitric acid	180 days
Thallium	6020B	Plastic	250 mL	nitric acid	180 days
Tin	6020B	Plastic	250 mL	nitric acid	180 days
Uranium	6020B	Plastic	250 mL	nitric acid	180 days
Vanadium	6020B	Plastic	250 mL	nitric acid	180 days
Zinc	6020B	Plastic	250 mL	nitric acid	180 days
Hardness (Ca+Mg)	6020B	Plastic	250 mL	nitric acid	180 days
Dissolved (Filtered) Metals					
Aluminum, Dissolved	6020B	Plastic	250 mL	nitric acid	180 days
Mercury, Dissolved	1631E	LLHg kit, 2x VOA vials	40mL (x2)	0-6°C	28 days
Methylmercury, Dissolved	1630	MeHg kit; glass	250 mL	hydrochloric acid, 0-6°C	28 days
Field Parameters – 3 foot intervals in lakes (except Secchi disk)					
pH	NA	NA	NA	NA	NA
Dissolved Oxygen	NA	NA	NA	NA	NA
Oxidation Reduction Potential	NA	NA	NA	NA	NA
Specific Conductance	NA	NA	NA	NA	NA
Temperature	NA	NA	NA	NA	NA
Turbidity	NA	NA	NA	NA	NA
Secchi disk transparency – lakes only	NA	NA	NA	NA	NA

20.1.4 Wetland Studies

In 2022, Talon initiated wetland studies to characterize baseline wetland conditions. Wetland studies will include wetland delineation, installation of shallow piezometers and wetland monitoring wells, installation of stilling wells in ditches, wetland water quality sampling, wetland soil sampling, ditch sediment and porewater sampling, wetland criteria and vegetation monitoring, and peat thickness measurements. Wetland studies that are underway are described below. Wetland studies to be conducted in 2023 are described in Item 26.4.

20.1.4.1 Wetland Delineation

Wetlands were identified and delineated using the procedures described in the USACE *Wetlands Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Wakeley et al., 2012). These methods use the standard multi-parameter approach (vegetation, hydrology, and soils) for wetland identification as outlined in the *Northcentral and Northeast Region Corps of Engineers Wetland Determination Data Forms* (NCNE Supplement Data Forms). In general, an area is considered a wetland if hydrophytic vegetation, wetland hydrology, and hydric soils are present. Delineated wetlands were classified in accordance with the classification systems set forth in *Wetlands of the United States* (Shaw and Fredine, 1971), *Wetlands and Deepwater Habitats of the United States* (Cawardin et al., 1979), and *Wetland Plants and Plant Communities of Minnesota and Wisconsin* (Eggers and Reed, 2014).

Other aquatic resources including seasonal ponds, seeps, springs, ditches, and streams within the analysis area were identified and delineated as described in the *Guidance for Submittal of Delineation Reports to the St. Paul*

District Army Corps of Engineers and Wetland Conservation Act Local Governmental Units in Minnesota (USACE, 2015).Preliminary wetland plant communities, as determined by the wetland delineation, are shown on Figure 20.11.

20.1.4.2 Wetland Monitoring Wells

Talon is in the process of installing 35 wetland monitoring wells. Exact locations and station numbering will be determined during installation. The wetland wells will provide information on wetland water levels. They will be two inches in diameter and screened over a length long enough to capture the typical water table fluctuation zone within the wetland deposits.

- Each well will be fitted with a water level logger that will record the water level elevation at one-hour intervals during non-frozen conditions; data collection will begin in late 2022 or early 2023.
- Where conditions allow, slug tests and borehole infiltration tests are being conducted in the 12 wetland wells listed in Table 20.9 to estimate the vertical and horizontal hydraulic conductivity of the wetland deposits.

Table 20.9: Planned Wetland Well Locations for Hydraulic Conductivity Testing

Wetland Well	Rationale	Wetland type
22TKWW001	Nested with existing piezometers.	Open bog
22TKWW002	Nested with existing piezometers.	Open bog
22TKWW003	Nested with existing piezometers.	Open bog
22TKWW004	Nested with existing piezometers.	Open bog
22TKWW011	Near ditch	Deep marsh
22TKWW015	Nested with existing piezometers and monitoring wells	Open bog
22TKWW018	Near ditch and stilling well	Open bog
22TKWW006	Gather data on alder thicket properties	Alder thicket
22TKWW024	Near ditch and stilling well, nested with proposed piezometers	Shallow marsh
22TKWW026	Near ditch and stilling well	Shallow marsh
22TKWW030	Near ditch and stilling well, nested with proposed piezometers	Open bog
22TKWW032	Near ditch and stilling well	Coniferous Bog

Wetland monitoring wells include transects spanning ditches at two locations. Each transect includes six closely spaced wetland monitoring wells to provide data on the hydrologic connections between the wetlands and the ditches. Figure 20.12 Illustrates the conceptual layout of wetland/ditch transect A.

Wetland water quality is being sampled adjacent to current and future wetland monitoring wells. Wetland water quality samples are collected using temporary PushPoint samplers at discrete locations separate from wetland hydrology monitoring wells so that continuous water level recording is not interrupted. For the Fall 2022 sampling, samples were analyzed for the parameters listed Table 20.11.

Figure 20.11: Preliminary Wetland Plant Communities

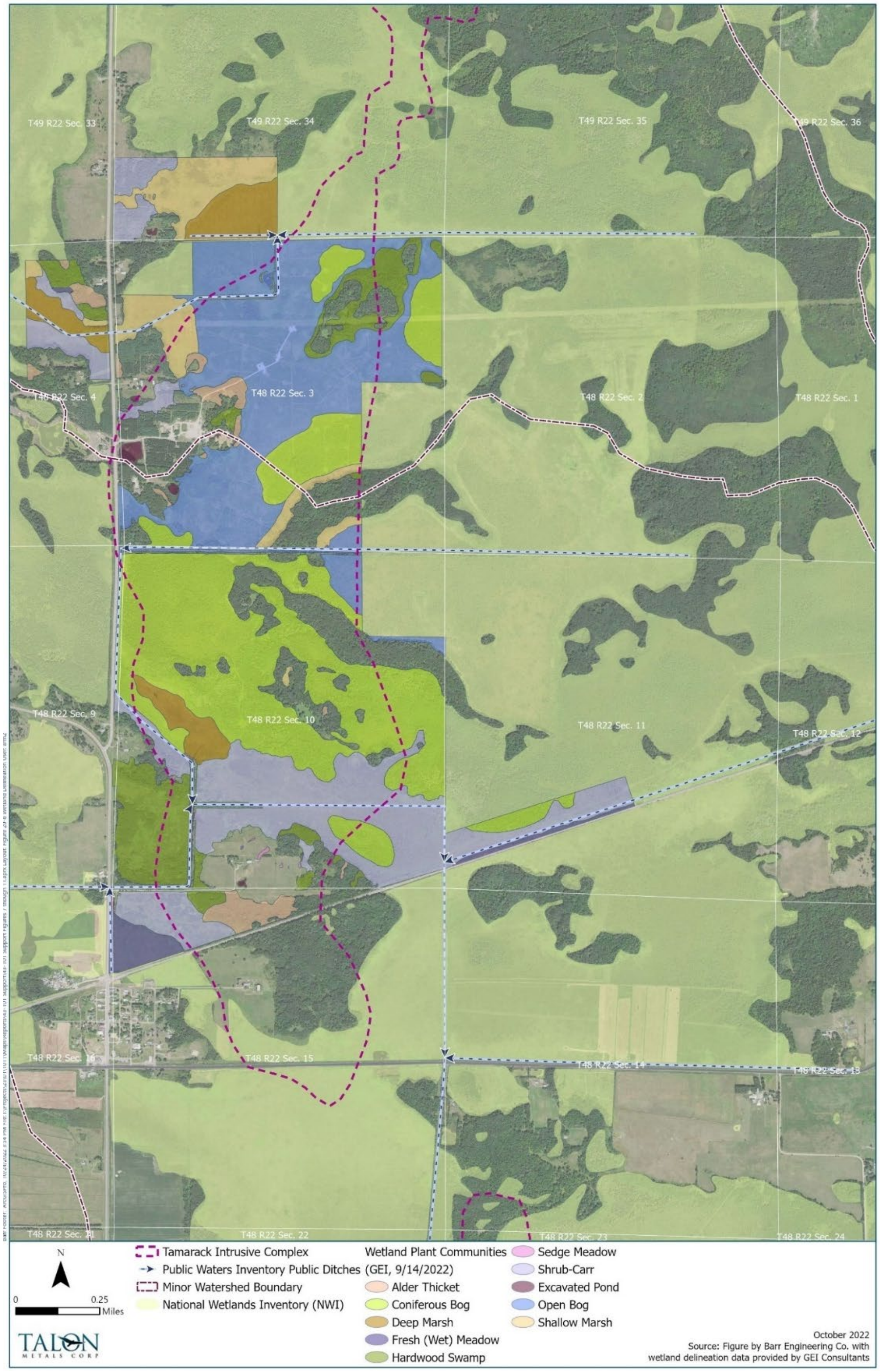
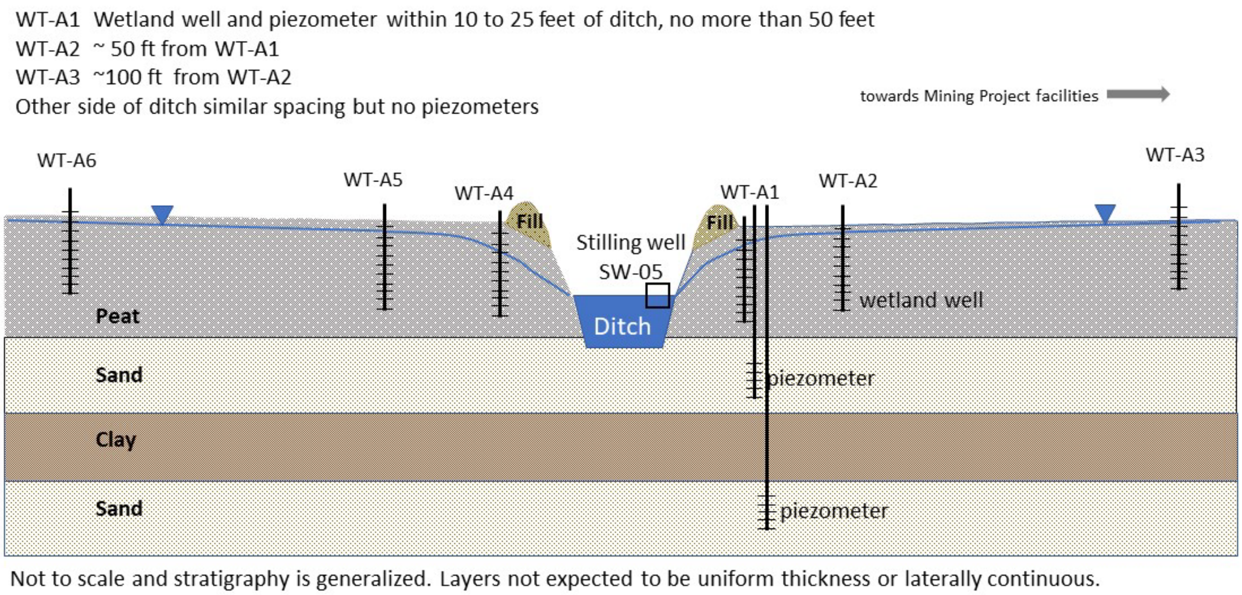


Figure 20.12: Wetland/Ditch Transect a Conceptual Layout



20.1.4.3 Piezometers

Talon has installed a network of 24 piezometers (12 nests) completed in mineral soils just below the organic wetland soil. The shallower piezometer in each pair is screened in the mineral deposits immediately beneath the wetland soils. The deeper piezometer in each pair is set 2.5 to 10 feet deeper than its neighbor. Two additional piezometer nests (4 piezometers total) will be installed along the wetland transects described below.

- Groundwater elevation loggers have been installed in the piezometers that measure groundwater elevation at one-hour intervals.
- Slug tests are being conducted in the piezometers to estimate the hydraulic conductivity of the mineral soils just below the wetland deposits.

Water quality samples from the shallower of each piezometer pair will be tested for the parameters listed in Table 20.10.

Table 20.10: Piezometer Analytical Parameters

Analyte	Method	Container	Sample Volumes	Preservation	Hold Time
General Chemistry					
Chloride	300	Plastic	500 mL	0-6°C	28 days
Fluoride	300	Plastic	500 mL	0-6°C	28 days
Sulphate	300	Plastic	500 mL	0-6°C	28 days
Dissolved (Filtered) Metals					
Calcium	6020B	Plastic	250 mL	nitric acid	180 days
Magnesium, Dissolved	6020B	Plastic	250 mL	nitric acid	180 days
Potassium, Dissolved	6020B	Plastic	250 mL	nitric acid	180 days
Sodium, Dissolved	6020B	Plastic	250 mL	nitric acid	180 days
Mercury, Dissolved	1631E	LLHg kit, 2x VOA vials	40 mL (x2)	0-6°C	28 days
Methylmercury, Dissolved	1630	MeHg kit; glass	250 mL	hydrochloric acid, 0-6°C	28 days
Field Parameters					
pH	NA	NA	NA	NA	NA
Dissolved Oxygen	NA	NA	NA	NA	NA
Oxidation Reduction Potential	NA	NA	NA	NA	NA
Specific Conductance	NA	NA	NA	NA	NA
Temperature	NA	NA	NA	NA	NA
Ferrous Iron	NA	NA	NA	NA	NA

20.1.4.4 Stilling wells

Stilling wells have been installed in ditches at four locations.

The stilling wells will be fitted with pressure transducers to record water levels during non-frozen conditions. Stilling wells, and associated stage discharge curves will provide data on the ditch water levels and flow rates and inform understanding of the nature and degree of hydrologic connection between wetlands and ditches, and the groundwater/surface water interaction.

Water quality samples are collected at the stilling wells. For the Fall 2022 sampling, samples are being tested for the parameters listed in Table 20.8.

Table 20.11: Wetland and Ditch Porewater Initial Sampling Analytical Parameters

Analyte	Method	Container	Sample Volumes	Preservation	Hold Time
General Chemistry					
Alkalinity, Bicarbonate as CaCO3	2320B	Calculation	--	--	NA
Alkalinity, Total as CaCO3	2320B	Plastic	250 mL	0-6°C	14 days
Ammonia (as N)	350.1	Plastic	500 mL	sulphuric acid, 0-6°C	28 days
Ammonia (un-ionized as N)	350.1	Calculation	--	--	NA
Chloride	300	Plastic	500 mL	0-6°C	28 days
Fluoride	300	Plastic	500 mL	0-6°C	28 days
Bromide	300	Plastic	500 mL	0-6°C	28 days
Dissolved Organic Carbon	5310	2x VOA vials	40mL (x2)	sulphuric acid, 0-6°C	28 days
Nitrate (as N)	300	Plastic	500 mL	0-6°C	48 hours
Nitrite (as N)	300	Plastic	500 mL	0-6°C	48 hours
Total dissolved phosphorus, low-level	4500_P_E	Plastic	500 mL	sulphuric acid, 0-6°C	28 days
Sulphate	300	Plastic	500 mL	0-6°C	28 days
Sulphide, dissolved	SM4500_S2_F	Plastic	500 mL	zn acetate & NaOH	7 days
Dissolved Metals[1]					
Aluminum	6020B	Plastic	250 mL	nitric acid	180 days
Antimony	6020B	Plastic	250 mL	nitric acid	180 days
Arsenic	6020B	Plastic	250 mL	nitric acid	180 days
Barium	6020B	Plastic	250 mL	nitric acid	180 days
Beryllium	6020B	Plastic	250 mL	nitric acid	180 days
Boron	6020B	Plastic	250 mL	nitric acid	180 days
Cadmium	6020B	Plastic	250 mL	nitric acid	180 days
Calcium	6020B	Plastic	250 mL	nitric acid	180 days
Chromium	6020B	Plastic	250 mL	nitric acid	180 days
Cobalt	6020B	Plastic	250 mL	nitric acid	180 days
Copper	6020B	Plastic	250 mL	nitric acid	180 days
Iron	6020B	Plastic	250 mL	nitric acid	180 days
Lead	6020B	Plastic	250 mL	nitric acid	180 days
Magnesium	6020B	Plastic	250 mL	nitric acid	180 days
Manganese	6020B	Plastic	250 mL	nitric acid	180 days
Mercury, Low Level	1631E	LLHg kit, 2x VOA vials	40mL (x2)	0-6°C	28 days
Methylmercury	1630	MeHg kit; glass	250 mL	hydrochloric acid, 0-6°C	28 days
Nickel	6020B	Plastic	250 mL	nitric acid	180 days
Potassium	6020B	Plastic	250 mL	nitric acid	180 days
Selenium	6020B	Plastic	250 mL	nitric acid	180 days
Silver	6020B	Plastic	250 mL	nitric acid	180 days
Sodium	6020B	Plastic	250 mL	nitric acid	180 days
Strontium	6020B	Plastic	250 mL	nitric acid	180 days
Thallium	6020B	Plastic	250 mL	nitric acid	180 days
Tin	6020B	Plastic	250 mL	nitric acid	180 days
Uranium	6020B	Plastic	250 mL	nitric acid	180 days
Vanadium	6020B	Plastic	250 mL	nitric acid	180 days

Analyte	Method	Container	Sample Volumes	Preservation	Hold Time
Zinc	6020B	Plastic	250 mL	nitric acid	180 days
Hardness (Ca+Mg)	6020B	Plastic	250 mL	nitric acid	180 days
Field Parameters					
pH	NA	NA	NA	NA	NA
Dissolved Oxygen	NA	NA	NA	NA	NA
Oxidation Reduction Potential	NA	NA	NA	NA	NA
Specific Conductance	NA	NA	NA	NA	NA
Temperature	NA	NA	NA	NA	NA
Turbidity	NA	NA	NA	NA	NA
Ferrous Iron	NA	NA	NA	NA	NA

Note: Dissolved metals samples are filtered in the field.

20.1.4.5 Wetland Soil Sampling

Wetland soil composition data will be used to describe baseline wetland soil characteristics.

- Wetland soil samples are being collected at 18 locations. Samples are collected at two different depths, corresponding to horizons above and below the water table, as determined by field observations at the time of sampling.
- Wetland soil samples are being analyzed for the parameters listed in Table 20.12. Because samples will contain both porewater and solids, analytical techniques have been selected to target both solid and total concentrations of chemical analytes.

20.1.4.6 Ditch Sediment and Porewater Sampling

Sediment and porewater samples will be collected at five locations in ditches to assess baseline sediment chemistry.

- Three of the locations will be approximately collocated with existing surface water monitoring locations (LV-003, LV-006, and LV-021), but may be adjusted in the field depending on sediment conditions. Two of the locations will be associated with ditch transects at SW-01 and SW-02.
- Sediment samples will be analyzed for parameters listed in Table 20.12.
- Porewater samples will be field filtered and will be analyzed for parameters listed in Table 20.11.

20.1.4.7 Peat Thickness Measurements

The thickness of the surficial peat material was measured at across the Tamarack North Project area.

- Peat thickness was measured with a fiberglass tile probe. The tile probe is designed to easily penetrate peat when the probe is pushed into the ground but encounter refusal upon contact with mineral soil.
- Within the survey area, measurements were generally obtained on a 100-meter x 100-meter grid or a 200-meter x 200-meter grid, with additional spot measurement locations determined in the field.

Table 20.12: Wetland Soil and Sediment Sample Parameter List

Parameter	Method
Bulk Density	Gravimetric
Water Content	Oven Dry
Grain Size Analysis (Sediments Only)	ASTM D422-16
Loss on Ignition (LOI)	LECO
Total Sulphur and Acid-Leachable Sulphur	LECO
Total Carbon, TOC (Total Organic Carbon) and TIC (Total Inorganic Carbon)	LECO
pH	In Water Suspension and in CaCl2 (Per MDNR, 1982)
Nitrogen, Total	Calculation From TKN (Total Kjeldahl Nitrogen) and Nitrate (4500N and SM4500)
Phosphorus, Total	Bray's Phosphate
Mercury	EPA 1631 Modified
Methyl Mercury	EPA 1630 Modified
Total Metals (Al, As, Ba, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, Sn, Tl, Zn)	Oven Dry, Digestion, ICP
Mineralogy of Crystalline Fraction	XRD Rietveld Refinement and Spike after Combustion
Inorganic Particulate Chemistry and Structure	SEM/EDX with BSE after Freeze Drying Peat

20.1.5 Materials Characterization Studies

The framework for developing and executing material characterization is governed by Minnesota Rule 6132.1000, which requires characterization of mine wastes from nonferrous mining projects as part of the Permit to Mine process. The Tamarack Materials Characterization program is designed to meet these regulations and was initiated in April 2021.

The Tamarack Materials Characterization Work Plan describes the data collection activities to be undertaken. Each plan is extensively reviewed by the MDNR to reach agreement on specific materials to be tested, analytical methods to use, and industry recognized approaches to evaluate the geochemical data returned from the tested materials.

The Materials Characterization program is focused on understanding the geochemical behavior under oxidizing conditions of the eight lithologies that will be excavated during the life of the mine. The eight lithologies are classified as either 'development rock' or 'ore'. The unconsolidated glacially deposited material (development overburden, referred to elsewhere as Quaternary deposits) above the bedrock surface is considered a ninth unit in the evaluation (Table 20.13).

Table 20.13: Lithologies included in the Materials Characterization Program

Lithologic Description	Unit Code	Category
Fine-Grained Orthocumulate	FGO	Development Rock
Metasediments	SED	Development Rock
Coarse-Grained Orthocumulate	CGO	Development Rock
Mixed Zone Olivine	MZNO	Development Rock
Saprolite	SAP	Development Rock
Duricrust	DUR	Development Rock
Unconsolidated Glacial Deposits	OVB	Development Overburden
Semi-Massive Sulphide Unit	SMSU	Ore
Massive Sulphide Unit	MSU	Ore

The Materials Characterization Program is designed so that early phases of work inform and guide subsequent work to build a comprehensive body of knowledge over time. Phase 1 has been completed and Phase 2 is in progress. The Phase 1 data was evaluated to inform further sample selection for the Phase 2 test work.

- Phase 1: Fifty-six samples of rock from drill core selected to be representative of lithology, sulphur content of each lithology, and spatial location. All 56 samples were analyzed by the Static test suite shown in Table 20.14.
- Phase 2: Eighty-three samples of rock from drill core selected to be representative of lithology, sulphur content, and spatial location within the area of the mine plan. Forty-three samples of unconsolidated glacially deposited material (overburden) were collected from rotosonic drill core. The 83 rock core samples have completed the static test suite shown in Table 20.14. The 43 overburden samples will complete static testing but have not done so at this time. A subset of samples are in process of completing mineralogy and kinetic testing.

Analytical methods used to test all, or a subset of these samples include static tests, kinetic tests, mineralogy, and short-term leach tests (Table 20.14). Of the 182 samples collected at this point in the Program, each will undergo one or more of the analytical methods listed in Table 20.14.

Table 20.14: Test Types, Methods, Phases of Work, and Sample Materials

Test Type and Method		Method Reference	Phase I	Phase II
Physical Characterization	Overburden Logging, with Field Screening	ASTM D2487-17	NA	Overburden
	Grain Size and Surface Area Analysis	ASTM D5744-18	NA	Development Rock and Ore
Static Testing	Bulk Chemistry: Major Oxide Whole Rock	Lithium Borate Fusion, XRF 9.6.1	Development Rock and Ore	Overburden, Development Rock and Ore
	Bulk Chemistry and Trace Elements	EPA 200.8; EPA 3050B/6020ª, EPA 200.8	Development Rock and Ore	Overburden, Development Rock and Ore
	ABA: Total Sulphur and Total Carbon	ASTM E1915-13	Development Rock and Ore	Overburden, Development Rock and Ore
	ABA: Sulphate and Sulphide	ASTM E1915-13	Development Rock and Ore	Overburden, Development Rock and Ore
	ABA: Bulk NP	Modified Sobek	Development Rock and Ore	Development Rock and Ore
	ABA: Total Inorganic Carbon	ASTM E1915-13	Development Rock and Ore	Overburden, Development Rock and Ore
	ABA: Paste pH	ASTM E1915-07A	Development Rock and Ore	Development Rock and Ore
	ABA: NAG pH	Miller et al. (1997)	Development Rock and Ore	Development Rock and Ore
Mineralogy	Optical Mineralogy	NA	NA	Waste Rock and Ore
	XRD with Rietveld Refinement +/- Spike	NA	Development Rock and Ore	Development Rock and Ore
	TIMA-X	NA	Development Rock and Ore	Development Rock and Ore
Short Term Leach	SPLP	SW-846 Test Method 1312	Development Rock and Ore	Overburden
Kinetic Test	Humidity Cell	ASTM D5744-18	NA	Development Rock and Ore
	Diffusion Testing	USEPA Method 1315 (2017)	NA	NA

20.1.6 Biological Studies

Biological studies completed in 2022 included aquatic biology studies, vegetation surveys, wild rice surveys, and wildlife surveys.

20.1.6.1 Aquatic Biology Studies

Aquatic biology surveys consisted of habitat characterization, fish community assessment, benthic macroinvertebrate assessment, and qualitative freshwater mussel surveys.

- Talon assessed physical aquatic habitat at 12 locations following the Minnesota Pollution Control Agency's (MPCA) Stream Habitat Assessment Protocol for Stream Monitoring Sites (MPCA, 2017a). At each location, the field survey team recorded the data listed in Table 20.15.

Table 20.15: Aquatic Habitat Assessment Data

Riparian Width	Siltation	Channel Development
Estimate of bank erosion	Channel depth variability	Man-made modifications
Percentage of shade	Channel stability	Aquatic vegetation
Substrate type	Velocity type	Cover types and amounts available to fish
Channel type	Sinuosity	Surrounding land use and flood plain quality
Embeddedness	Pool/riffle width	

- Talon assessed the fish community at 12 locations. At wadable sites biologists followed the MPCA Fish Data Collection Protocols for Lotic Waters in Minnesota (MPCA, 2017b). A team of four to six biologists surveyed each site in a downstream to upstream direction using backpack electrofishing equipment. At sites that were not wadable due to water depth being greater than 3 ft or excessive fine sediment that precludes safe wading, biologists assessed the fish community using either boat-mounted electrofishing or passive sampling using used fyke nets and/or minnow traps. Regardless of capture technique, biologists:
  - Identify fish over 25 millimeters in length to the lowest practicable taxa (generally species).
  - Count the number of fish.
  - Measure to the nearest 25 millimeters.
  - Weigh with other members of its taxon for a species-specific batch weight.
  - Release the fish back in the waterbodies where they were collected.
- Each fish sampling effort produced a species list, photographs, the number of each species or taxon collected, a length range, and a total wet weight for each species/taxon. Fish community metrics such as fish species richness and relative abundance may be used to generate fish index of biotic integrity (IBI) scores.
- Biologists assessed the benthic macroinvertebrate community at 12 locations. At wadable sites, biologists followed the MPCA's Macroinvertebrate Data Collection Protocols for Lotic Waters in Minnesota protocol (MPCA 2017c). At non-wadable sites, biologists assessed the benthic macroinvertebrate community using techniques similar to the U.S. Environmental Protection Agency *National Rivers and Streams Assessment Field Operations Manual for Non-Wadable protocol* (EPA, 2013). Regardless of sample collection method, samples were preserved in ethanol and shipped to an ecological laboratory for analysis. Certified taxonomists at the laboratory process the samples according to the MPCA protocol to identify macroinvertebrates.
- Biologists conducted qualitative freshwater mussel surveys at each location where fish and macroinvertebrates assessments occurred. Methods were generally consistent with the DNR's Level I Surveys specified in the *Minnesota Freshwater Mussel Survey and Relocation Protocol* (MDNR, 2013). This consists of meandering visual mussel searches of at least 20 minutes in wadable stretches to assess for the presence of live or dead freshwater mussels. Biologists also search banks for muskrat middens and shells from dead mussels. They identify any shells and take representative photos of both valves and the umbo (at

minimum). Biologists also document the percentages of each substrate type (i.e., percent gravel, sand, silt, etc.) in the stretch evaluated for mussels.

20.1.6.2 Vegetation Survey

The vegetation survey conducted in 2022 focused on documenting baseline conditions within approximately 1,631 acres near the Project. The vegetation survey consisted of:

- Desktop analysis was conducted of available information to identify land cover types, potential habitat, native plant communities, and species occurrence records.
- Field surveys were conducted to document and accurately map the plant community boundaries. The field surveys were completed from late-May to early-September and consisted of meander surveys (paths walked by observers to observe, estimate, and record vegetation data) within each plant community. Observed plant species, percent relative cover, and notes on habitat condition were recorded.
- Observations of invasive species on the Minnesota Department of Agriculture (MDA) noxious weed list were documented.
- Wetland functional assessments were completed on wetland plant communities within the analysis area. The wetland functional assessments used the *Minnesota Rapid Floristic Quality Assessment* (FQA). The Rapid FQA is a vegetation based ecological condition assessment approach that has increasingly been used for wetland monitoring and assessment.

20.1.6.3 Wild Rice Surveys

Talon conducted wild rice surveys in 2022, which included habitat delineation, sediment sampling, porewater sulphide sampling, and water quality sampling.

- Wild rice habitat delineation was conducted on waterbodies downstream of the Tamarack North Project. Habitat delineations were also conducted on several waterbodies in the Big Sandy Lake watershed that are not hydrologically connected to the Tamarack North Project.
- Sediment sampling was conducted according to the 2018 MPCA methods (MPCA, 2018) in eight waterbodies where wild rice habitat was identified. According to the MPCA 2018 method, wild rice habitat are areas that (1) support or have supported wild rice, or (2) identified as likely to support wild rice (MPCA, 2018). Sediment samples were analyzed for total extractable iron and total organic carbon.
- Samples were also collected from each sediment sample collection location to analyze the porewater sulphide concentrations.
- Water column sulphate samples were collected from each sediment sample collection location. Field measurements of specific conductance, dissolved oxygen, and temperature were also recorded.

20.1.6.4 Wildlife Studies

The wildlife studies conducted in 2022 focused on documenting terrestrial wildlife resources baseline conditions within approximately 1,255 acres near the Tamarack North Project. The wildlife studies included habitat assessments and field surveys to document the presence or absence of avian species, herptiles (reptiles and amphibians), mammals, and other terrestrial wildlife.

- Desktop and field assessments were conducted to identify potential suitable habitat for sensitive wildlife species.
- Avian surveys were conducted including:
  - General point count surveys: Point count surveys are one of the most common and widely used survey methods to document and record bird populations. This survey method records all birds, including both common and rare species, detected by sight and sound at positions located throughout the analysis area to establish the baseline bird population. The point count surveys occurred for three replications to capture the spring migration period (May), the summer resident/breeding period (June), and the fall migration period (September).
  - Nocturnal species surveys: Most nocturnal species will not be detected during the general point counts, which are conducted during daylight hours. Nocturnal bird species surveyed include owls, nightjars, and other species known to be active at night.
  - Game brood bird surveys: This survey consisted of recording broods observed while completing biological field surveys.
- Herptile field surveys were conducted to identify frogs, toads, salamanders, snakes, and turtles following established standard protocols.
- Mammal field surveys were conducted, which included recording incidental observations, summer/fall camera surveys, and bat habitat assessment.

20.1.7 Cultural Resources Studies

While the term “cultural resource” is not defined in federal regulations, it is commonly used to refer to the material remains of past human life or activities. To determine whether the Tamarack North Project has the potential to effect significant cultural resources, tribal, archaeological, and historical resources at the site and in the area are being documented and evaluated according to state and federal requirements. This topic is of great interest to tribes and the local communities. Talon has completed the following cultural resources studies:

- A cultural resources literature review has been completed. It included coordination with the Minnesota State Historic Preservation Office (SHPO) and the Office of the State Archaeologist (OSA) to review data compiled by these agencies regarding previously identified cultural resources and previous cultural resource investigations within the Tamarack Project area, including surface infrastructure and the proposed underground mining footprint, plus a 1-mile buffer. The literature review report will allow Talon to better understand the nature and extent of cultural resources located in and near the Tamarack North Project area, as well as identify any previously recorded cultural resources that may warrant further consideration for project-related effects. The literature review will also identify areas of low probability for encountering cultural resources located in and near the Tamarack North Project area, and areas with increased potential for containing cultural resources.
- A preliminary Tribal Cultural Resources Survey was completed in 2022 by Dirt Divers, a Native-owned cultural resources management firm. Tribal Cultural Resources are defined as locations of significance to members of Tribal communities, including cultural corridors, seasonal activity sites, natural resource collection places such as sugar maple stands or family netting camps, and other sites of cultural and religious significance to Tribes

located in and near the Tamarack North Project area. Tribal cultural resources can also include sites established and used by Tribes within the last 50 years. The tribal cultural resource survey also helps determine areas that should be further investigated archaeologically. The results of the tribal cultural resources survey will be integrated with the cultural resources literature review to provide Talon with a comprehensive document that outlines areas of cultural resource concern. Results will also aid the future archaeological investigation.

20.1.8 Noise Survey

In 2022 a noise survey was conducted to determine sound levels from drill rigs and sound levels at residential areas near the Tamarack North Project. Dosimeters were deployed at seven locations, and sound levels were recorded for 12 hours.

20.2 Environmental Review

20.2.1 State of Minnesota

For mining projects in Minnesota, permitting can proceed in parallel to or after environmental review. State-level environmental review would be completed through an EIS process subject to the Minnesota Environmental Policy Act (MEPA) requirements for nonferrous mines.

The MDNR will be the MEPA RGU (Minnesota Rules, part 4410.2000, subpart 2). Additional cooperating agencies may also be identified and could potentially include the Minnesota Pollution Control Agency, Minnesota Department of Health, Native American Tribes, or others as coordinated by MDNR.

The four major steps in the state EIS environmental review process are:

- Scoping of the EIS;
- Preparation of the draft EIS;
- Preparation of the final EIS; and
- Adequacy Decision.

The EIS environmental review process invites participation from the public and interested stakeholders. A brief summary of each of the four major steps, as described in Minnesota Rules, chapter 4410, is provided in the subsequent sections. The environmental review process has not yet been initiated by Talon, nor have any permit applications been prepared.

20.2.1.1 Scoping

The purpose of the scoping process is to reduce the scope and bulk of an EIS. During the scoping process, potentially significant issues relevant to the proposed project are identified. Additionally, potential alternatives to the proposed action, resources that warrant more detailed analysis and level of detail of such analysis, procedures for assessment of cumulative impacts, timeline for EIS preparation, and preparers of the EIS, as well as the permits for which information will be developed concurrently with the EIS, are determined during scoping. A Minnesota Scoping Environmental Assessment Worksheet (SEAW) must be filed for all projects that require an EIS (Minnesota Rules, part 4410.2100, subpart 2) under MEPA; the SEAW provides a basis for preparation of a draft and subsequent final Scoping Decision Document (SDD). Typically, scoping comments are received prior to the release of a draft EIS and incorporated in the draft EIS, whereas comments on the draft EIS are received after its release and incorporated into the final EIS. Therefore, stakeholders may provide suggestions for modification of the scope and analysis throughout the EIS process.

20.2.1.2 Draft EIS

A Draft EIS would be prepared by the RGU consistent with Minnesota Rule, parts 4410.0200 through 4410.6500 and in accordance with the final SDD. The Draft EIS would describe the proposed project, consider reasonable alternatives or modifications to avoid adverse impacts, assess the potential environmental, economic, and sociological impacts of the proposed project and each alternative carried forward for analysis. Minnesota provides a process for a robust evaluation of alternatives to the proposed action, including alternative technologies, size, configuration, location, etc. to avoid and minimize potential adverse impacts of the proposed action. The Draft EIS would be distributed and made available for review and comment by the public, government agencies, and other interested parties. It is expected that the RGU would hold an informational meeting once the Draft EIS is released for public review.

20.2.1.3 Final EIS

The Final EIS would ultimately identify the likely impacts of the Tamarack North Project as well as additional alternatives that may lessen or mitigate adverse impacts. It would respond to the comments on the Draft EIS consistent with the scoping decision. The RGU would discuss any responsible opposing views relating to scoped issues which were not adequately discussed in the Draft EIS, as appropriate, and would indicate the agency's responses to the views.

20.2.1.4 Adequacy Decision

The EIS process would conclude with an Adequacy Decision that would explain the MDNR's decision, summarize the alternatives considered, and provide the plans for mitigation and monitoring, as necessary.

20.2.2 Federal

Environmental review will be necessary to comply with the National Environmental Policy Act (NEPA) based on the need for authorization from the U.S. Army Corps of Engineers (USACE) for impacts to waters of the U.S. Additional cooperating agencies may also be identified and could potentially include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Native American Tribes, or others as coordinated by USACE. If an EA or EIS is required to comply with the NEPA process, the lead federal agency would evaluate the potential for significant environmental impacts to the human and natural environment under NEPA. Should the lead federal agency determine that there may be potential for significant impacts, an EA would be prepared to finalize the determination. The EA would result in a Finding of No Significant Impact (FONSI) or the preparation of an EIS. If the lead federal agency determines that there is potential for significant effects, they would proceed directly to the preparation of an EIS. Significant or significantly, as defined under NEPA, requires considerations of both context of the proposed action and the intensity, or severity of the impact. If a federal EIS is necessary, it is possible that a Memorandum of Understanding (MOU) between the lead federal and state agencies could be entered to prepare a single, joint EIS that fulfills both federal and state lead agency requirements. Alternately, the lead federal agency and lead state agency may decide that a joint EIS is not appropriate and that each level of government would require its own EIS. In this scenario, two EIS documents would be prepared – one under NEPA and a second under MEPA.

The four major steps in the federal EIS environmental review process are:

- Scoping of the EIS;
- Preparation of the draft EIS;
- Preparation of the final EIS; and
- Record of Decision

These steps are similar to those in the state process, described above. One noteworthy difference is that under the Council on Environmental Quality NEPA guidelines, an agency has the discretion to accept comments on the EIS process from the publication of the Notice of Intent through the release of a final EIS. 33 CFR 230.7 specifies USACE actions normally requiring an EA but not necessarily an EIS. Specifically relevant to the project, 33 CFR 230.7(a) states most permits will normally require only an EA.

20.3 Permitting Requirements

After the environmental review process is complete, the Tamarack North Project would be required to obtain applicable local, state, and federal permits. A preliminary list of permits that may be required for the Tamarack North Project is provided in Table 20.16. Permitting requirements may change if additional permitting requirements are identified within the environmental review process and/or as the Tamarack North Project siting and design progresses. Generally, significant permits are obtained through a process that includes a public comment period. Talon has not initiated permitting efforts to date.

Significant permits anticipated for the Tamarack North Project's include the Permit to Mine from the MDNR (Item 20.3.1), the NPDES / State Disposal System (SDS) Permits from the MPCA (refer to Item 20.3.2), the Air Permit from the MPCA (refer to Item 20.3.3), and Section 404 Permit from the USACE (Item 20.3.4).

Equally important are the local permitting and approvals. County and municipal units of government have building and zoning requirements to address. The local communities and their representatives will have opportunities to provide input, understand the Tamarack North Project, and negotiate on relevant issues. Talon has not defined social or community related requirements and plans for the Tamarack North Project. Formal negotiations and agreements with local communities for the Tamarack North Project have not been initiated.

Table 20.16: Potentially Applicable Permits and Approvals for the Tamarack North Project

Permit or Approval	Regulatory Agency	Regulatory Citation	Description
Federal			
Section 404 of the Clean Water Act Permit	USACE	CWA 40 CFR 230; Section 404(b)(1)	Filling, excavating or placing materials into either waters of the state or waters of the US, will require wetlands permits. Depending on the classification of the wetland area, both state and federal jurisdictions could be triggered. For dredge and fill impacts to wetlands or waters of the US - USACE permit required. Under the jurisdiction of the USACE.
Section 106 Review. National Historic Preservation Act Compliance	USACE and SHPO	36 CFR Section 800	Section 106 of the NHPA requires federal agencies to account for the effects of their undertakings on historic properties and provide the Advisory Council on Historic Preservation a reasonable opportunity to comment.
Endangered Species Consultation	USFWS	Endangered Species Act, section 7(a)(1), (2)	Consultation by the USACE to determine ESA impacts of federal action on federally endangered species.
Underground Injection Control (UIC) Permit	USEPA	40 CFR 144.3. 146; MN Rules 4725.2050 for variance approval	Applicable to activities that could allow movement of fluid containing contaminants into an underground source of drinking water and that violate primary drinking water standards. If a Class V injection well is determined for mine backfill, a variance from the MN non-injection rule is needed from MDH.
State			
Permit to Mine – Non Ferrous Metallic Mining	MDNR	MN Rules Chapter 6132.1000 to 6132.5300	PTM application (Ch. 6132.1100) must be preceded by a mine waste conference per Ch. 6132.1000. Mine waste characterization must be included with the application along with information on the environmental setting, mining and reclamation plans and mining and reclamation maps. The application must include financial assurance and a plan for the first year of operation.
Dam Safety Permit	MDNR	MN Rules Chapter 6115.0300 to 6115.0520	Rules apply to structures that pose potential threat to public safety or property. Exemptions apply for dams less than 6 ft high and/or impoundments less than 15 acre-ft of water. Permits are required for new dams, to perform major maintenance, modify dam operation, or reconstruct a dam.
Water Appropriation Permit	MDNR	MN Rules Chapter 6115.0600 to 6115.0810	Ch. 6115.0600 to 6115.0810 require a water use permit for withdrawal of more than 10,000 gallons per day or 1M gallons per year from waters of the state. Permit applications for metallic mining facilities must provide additional information per Ch. 6115.0720 including withdrawal plans, water use and storage, and disposal of waters of the state.
Public Waters Permit Program	MDNR	MN Rules Chapter 6115.0160 to 6115.0280 MN Status 103G.245;	Applies to a facility that changes or diminishes the course, current, or cross section of public waters, entirely or partially within waters of the state, including filling,

Permit or Approval	Regulatory Agency	Regulatory Citation	Description
			excavating or placing of materials in or on the beds of public waters.
Permit for the Take of Threatened and Endangered Species Incidental to a Development Project	MDNR	MN Rules Chapter 6212.1800 to 6212.2300	A permit may be required if one removes, transports or sells any portion of a species designated as threatened, endangered or a species of special concern. A list of species is codified at Ch. 6134. Permits are available for certain conditions by the MDNR. Certain exemptions are also available, especially for situations where unknowing destruction takes place.
License to Cross Public Lands and Waters	MDNR	MN Rules Chapter 6135	For installation of utility services (as defined in statute), across MDNR administered land and public waters.
Easement or Lease to Construct	MDNR	MN Statutes 84.63 and 84.631	If a road is constructed across state land, either a lease or easement must be issued by the state.
Minnesota Wetland Conservation Act – Wetland Replacement Plan Approval	MDNR	MN Rules Chapters 8420 and 6132.5300	Wetland permitting necessary for impacts under a Permit to Mine require a Wetland Replacement Plan as part of approval.
Section 401 Water Quality Certification or Waiver	MPCA	CWA 40 CFR 230: Section 401	For projects needing federal authorization with a discharge to the waters of the US. Required in conjunction with Section 404 Permit.
Individual NPDES and SDS Permits	MPCA	MN Rules Chapter 7001.1035	NPDES permit is required for wastewater discharge containing any pollutants to Waters of the US. The SDS may be applied to the project through the minimal seepage through lined facilities and the backfilled excavation.
NPDES Construction Storm Water Permit	MPCA	MN Rules Chapter 7090.2000 to 7090.2060	The permit requires implementation of Best Management Practices in accordance with a Storm Water Pollution Prevention Plan addressing the construction duration.
Air Permit	MPCA	MN Rules Chapter 7007	All facilities with sources of air emissions are required to obtain an air permit, unless it meets certain exemptions under Ch. 7007.0300. MPCA has several types of air permits that may apply depending on facility-wide emission estimates. A likely air permit type for this facility is a state synthetic minor permit.
Hazardous Waste Generator License	MPCA	MN Rules Chapter 7045.0225	Hazardous waste generators must obtain a license for each generation site. Facilities generating more than 10 gallons of hazardous waste are subject to annual fees and reporting.
Aboveground Storage Tank Permit and Notification	MPCA	MN Rules Chapter 7001.4205	Facilities storing less than 1M gallons of industrial products need to notify MPCA of tanks storing 1,100 gallons or more.
Miscellaneous Requirements			
Open Burning Permit	MDNR	MN Statute 88.16	Permission is required from the local MDNR forestry office or fire warden prior to starting any open fire.
Subsurface Sewage Treatment System (SSTS) Permit	Aitkin County	MN Rules Chapter 7082.500 and Aitkin County	By state rule, Aitkin County has been delegated authority to issue licenses for SSTS in its jurisdiction. Counties are

Permit or Approval	Regulatory Agency	Regulatory Citation	Description
		Individual Sewage Treatment System and Wastewater Ordinance No. 1	required to adopt ordinances in accordance with Ch. 7080 and 7081. Aitkin County has rules for obtaining a permit under its own ordinance.
Aquatic Vegetation Removal Permit	MDNR	MN Rules Chapter 6280	Permit is required for removal of emergent and submerged vegetation, but removal of the latter may be allowed if area is less than 2,500 square ft. Physical removal of floating leaf vegetation is allowed if channel is no greater than 15 ft wide.
Railroad Spur Installation	Surface Transportation Board (STB) and/or MN Department of Transportation	MN Rules Chapter 8830.2150 and 8830.9991	If a railroad spur is installed, approval may depend on a multifaceted jurisdictional test through the STB. An operating license may be needed if a railroad crossing includes necessity for a warning signal
Conditional Use Permit	Aitkin County	General Zoning Ordinance; Shoreland Management Ordinance; Floodplain Management Ordinance; Mining Ordinance	Pursuant to county ordinances for zoning, shoreland management, floodplain management, mining of metallic minerals and wetlands protection, a conditional use permit will be required.
Building Permits	Aitkin County	City Ordinance	Permits will be required for building construction, including compliance with various building codes.
Electrical Transmission	MN Public Utility Commission (MPUC)	MN Rules Chapter 7849 and 5350 MN Statutes 216B.42	If transmission upgrades are needed, coordination will be needed between transmission owners in the area. A site or route permit may be needed from the MPUC if it involves installation of power lines or substations at certain thresholds or re-routing of high transmission line to serve a single customer and will be located on property owned at least 80% by the customer.

20.3.1 Permit to Mine (MDNR)

Pursuant to Minnesota Rules, chapter 6132, a Permit to Mine will be required and signifies a legal approval issued by the commissioner of the MDNR to conduct a mining operation. The purpose of the MDNR Permit to Mine program is to control possible adverse environmental effects of nonferrous metallic mineral mining, to preserve natural resources, and to encourage planning of future land utilization (Minnesota Rules, part 6132.0200). Therefore, it is MDNR policy that mining activities be planned and executed in a manner to reduce environmental impacts, mitigate impacts where unavoidable, and reclaim the mining area to a condition that protects natural resources and minimizes the need for maintenance to the extent practicable.

The nonferrous mining rules set forth in Minnesota Rules, chapter 6132 includes a detailed procedure for obtaining a Permit to Mine, including requirements for:

- Mine waste characterization (Minnesota Rules, part 6132.1000);
- The contents of a Permit to Mine application (Minnesota Rules, part 6132.1100);

- Financial assurance (Minnesota Rules, part 6132.1200); and
- Annual reporting (Minnesota Rules, part 6132.1300).

Reclamation standards are further defined in Minnesota Rules, part 6132.2000 through part 6132.3200 and include standards for siting, buffers, reactive mine waste, OB portion of pitwalls, storage pile design, tailings basins, heap and dump leaching facilities, vegetation, dust suppression, air overpressure and ground vibrations from blasting, subsidence, corrective action, and closure and post-closure maintenance. Meeting these standards is accomplished through the use of appropriate mining methods, proper mine waste management, and implementing passive reclamation procedures that maximize physical, chemical, and biological stabilization of areas disturbed by mining, along with the use of active treatment technologies when necessary. The requirements for financial assurance are also determined in the Permit to Mine application process. Financial assurance is designed to address the cost for reclamation of the Tamarack North Project, should the mine be required to close for any reason at any time, and includes closure and post-closure maintenance activities. The financial assurance requirements are reviewed annually by the MDNR and can be adjusted at any time.

20.3.2 NPDES/SDS Permits (MPCA)

Permits with the intent to protect waters for uses such as drinking water, aquatic life, and recreation are required under the NPDES/SDS program (refer to Minnesota Statutes, Section 115.04 and Section 115.07), which is administered by the MPCA.

The NPDES program applies to wastewater and stormwater discharges from point sources into surface waters. Potential project discharges requiring permit coverage may include mine dewatering, wastewater, industrial stormwater, and construction stormwater. Pursuant to water quality standards of receiving and downstream waters, the individual NPDES/SDS permit establishes wastewater discharge effluent limitations and monitoring requirements. An anti-degradation analysis is required at the time of the application. The objective of the anti-degradation analysis is to demonstrate that the project will achieve and preserve the highest possible water quality in surface waters, such as lakes, streams, and wetlands, by maintaining and protecting existing uses. Where applicable, the analysis will document how degradation of high water quality is avoided and minimized and only allowed for the purpose of important economic or social development.

Coverage for industrial stormwater discharges will likely be included with the individual NPDES/SDS permit. Additionally, a Construction Stormwater General Permit requires implementation of best management practices and permanent stormwater management techniques specific to managing stormwater run-off from construction sites. Water management during construction and operations must comply with the requirements of the permits by implementing best management practices described in the Stormwater Pollution Prevention Plans (SWPPPs).

The SDS program applies to the construction and operation of disposal systems, regardless of whether they discharge to surface waters and/or groundwater. A groundwater non-degradation analysis is required at the time of the application. The objective of the non-degradation analysis is to show that, to the maximum practicable extent, groundwater will be maintained at its natural quality. Where applicable, the analysis will document how a proposed change is justifiable for economic or social development and will not preclude appropriate present and future uses of the groundwater.

20.3.3 Air Permit (MPCA)

For most sizable mining facilities, an air permit will be needed before construction and operations can begin (40 CFR parts 52 and 70. Minnesota rules part 7007). State and federal programs have been established to protect air quality as it relates to human health and the environment. Applicability of federal and state air permitting rules will need to be evaluated for the project. The applicable rules depend on the quantity and type of pollutants emitted and the potentially affected air shed.

Production, design, and operational details are incorporated into the permit and are the basis for the facility emission calculations. Regardless of the type of air permit needed, the environmental review and permit application must demonstrate how the facility will maintain compliance with applicable standards. Analyses include the Class I modelling evaluation of facility impacts on air quality at wilderness areas, national parks, and other similar air sheds; and Class II modelling to demonstrate compliance with National Ambient Air Quality Standards (NAAQS). Federal and state rules may also mandate Best Available Control Technology, New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants (NESHAPS). Evaluations of Hg emissions, emission deposition on soils and local water bodies, and Air Emission Risk Analysis (AERA) will be documented. Management approaches to airborne dust avoidance and mitigation are also included in the air permit application.

Air permits are specific to infrastructure, equipment selection, and operations descriptions. Changes in the design basis and selections necessitates a permit amendment evaluation that may require changes to the permit. Permit amendments can range from minor to major levels of effort and time.

20.3.4 Wetland Permitting

A permit from the USACE for the discharge of dredged or fill material to waters of the US is required under Section 404 of the Clean Water Act. Where project impacts to wetlands are unavoidable, compensation (i.e., the construction, restoration or enhancement of wetlands) is required as replacement for affected wetlands. To obtain the Section 404 Permit, a Section 401 Water Quality Certification is required from the MPCA.

The MDNR regulates impacts to wetlands and other waters listed on the state's Public Waters Inventory. The Minnesota Wetlands Conservation Act (WCA) requires a state permit for impacts to wetlands beyond those covered by USACE and/or public waters permitting. A Wetland Replacement Plan is required and would be incorporated into the mining and reclamation plans for the Tamarack North Project under the Permit to Mine. Aitkin County will also require compliance with its wetland ordinances.

Applications for wetland impacts and an associated Wetland Replacement Plan needs to be submitted to the USACE and MDNR under each entity's respective application process. Financial assurance could be part of the WCA permitting.

20.4 Social, Community and Tribal Engagement

Talon conducts regular and extensive community engagements to better understand interests, concerns, and perceived potential community impacts. Talon is committed to meaningful consultations with tribal sovereign governments and tribal communities. Talon also maintains an open-door policy and community members often drop by the office in the town of Tamarack, MN.

20.4.1 Jobs and Workforce Development

In July 2021, Talon signed a workforce development and neutrality agreement with the United Steelworkers union that covers all its operations. Talon also has in place a Project Labour Agreement MOU with the Minnesota Building Trades unions (February 2022).

As part of Talon's workforce development work, a summer internship program has been developed for local high-school graduates. This program provides an opportunity for students to gain workforce skills and experience the diverse job opportunities in the mineral exploration industry.

21.0 CAPITAL AND OPERATING COSTS

Not applicable to this Technical Report.

22.0 ECONOMIC ANALYSIS

Not applicable to this Technical Report.

23.0 ADJACENT PROPERTIES

Not applicable to this Technical Report.

24.0 OTHER RELEVANT DATA AND INFORMATION

There is no additional information or explanation necessary with respect to this report.

25.0 INTERPRETATION AND CONCLUSIONS

25.1 Drilling / Exploration

With the use of their own geophysical equipment and drill rigs, Talon has been able to quickly obtain and update quality data on site to develop strategic exploration plans, which ultimately led to the discovery of CGO East and CGO West mineralization.

During a two-day site visit in May of 2022, the QP observed the drilling and field exploration activities and noted the Talon exploration procedures adhere to strict environmental and safety practices. The QP noted that drilling, collar survey, in-hole survey and drill core handling activities were consistent with industry best practices, as described in the CIM Mineral Exploration Best Practice Guidelines (2018) and suitable for supporting the MRE stated in Item 14.0 of this Technical Report.

25.2 Sample Preparation, Analysis and Security

The QP observed that core logging activities and geotechnical procedures were detailed and consistent, producing high-quality data. Talon utilizes a number of protocols to ensure quality assay data such as internal QA/QC analysis to confirm that results are consistent within expected ranges, and cross comparison with lab standards.

The QP noted that all drill core handling, geological logging, sampling and material shipping to the assay laboratory activities were found to be consistent with the industry practices, as described in the CIM Mineral Exploration Best Practice Guidelines (2018) and suitable for supporting the MRE stated in Item 14.0 of this Technical Report.

25.3 Data Verification

The QP completed spot checks of the 2021-2022 drill hole data representing a broad metal grade range, from all the mineral domains except the 138 Zone, which has not received recent drilling. No issues were identified in the base metal assays (Ni, Cu and Co), while minor differences in the precious metal assays (5 samples) were identified when compared to the certificate values but the differences were determined to be not material to the MRE.

A suite of fifteen sample intervals from partial core, along with two Certified Reference Material (CRM), were assayed by an independent laboratory (SGS Canada), with the results compared to the original ALS Minerals assays provided to Talon. No material bias was identified in these check assays.

The QP's review of the Talon assays against the original certificates and the check assays provides confidence that the assay dataset is of suitable quality to support the basis of the MRE stated in Item 14.0 of this Technical Report.

25.4 Mineral Resource

It is the QP's opinion that the information relating to geology, exploration, and mineral resource estimation presented in this Technical Report is representative of the Tamarack North Project, and based on the verification and data analysis work completed, is of the opinion that the sample database is of suitable quality to support the basis of the MRE and recommendations reached in this Technical Report. The MRE for the Tamarack North

Project has been estimated in conformity with November 2019 CIM "Estimation of Mineral Resource and Mineral Reserves Best Practice" guidelines.

The QP has taken reasonable steps to make the block model and MRE representative of the project data, but notes that there are risks related to the accuracy of the estimates related to the following:

- The assumptions used by the QP to prepare the data for resource estimation;
- The accuracy of the interpretation of mineralization;
- Estimation parameters used by the QP;
- Assumptions and methodologies used to estimate SG;
- Orientation of drill holes; and
- COG and related assumptions of commodity prices, mining costs and metallurgical recovery.

For these reasons, actual results may differ materially from the reported MRE.

25.5 Metallurgy

Metallurgical process development continued through 2021 and 2022 and confirmed the robustness of the primary flowsheet that was presented in PEA #3. The flowsheet was extended with a primary and secondary scavenger cleaning circuit to incorporate a higher level of process flexibility. The optimized flowsheet will facilitate the generation of a 10% Ni concentrate and a separate high-Fe sulphide concentrate, or a lower-grade Ni concentrate with high Fe sulphide content in addition to a Cu concentrate.

Reagent optimization work that was completed in 2021 resulted in updated Ni regression curves with up to 10% higher Ni rougher recoveries for lower grade samples and 2-3 % Ni recovery gains for high grade composites.

The low levels of deleterious elements in the Cu and Ni concentrates are not expected to trigger any penalty payments. The MgO content in the Ni concentrate of the composite was just below the typical 5% threshold of smelters. Also, optimization work to limit gangue recovery into the flotation concentrates is ongoing.

Credits for by-products will mostly derive from Cu and Co with potentially minor contribution from Au, Pt, and Pd. Further, Fe in Sulphides % in the Ni concentrate may become a major by-product.

25.6 Environmental Studies, Permitting, and Social or Community Impact

Baseline environmental studies expanded in 2022 and early coordination meetings with the DNR have begun to discuss the environmental review process. Baseline data collection for resource areas needed for environmental review and permitting is either underway or planned for 2023. The studies completed to data have not identified any environmental issue that could materially impact the ability to mine the resource. It is the QP's opinion that the existing baseline data, and the additional studies and reports planned for 2023 will provide adequate information for the RGUs to scope and prepare an EIS.

It will be important for Talon to continue to engage with the agencies, tribes and various stakeholders throughout the environmental review and permitting processes.

26.0 RECOMMENDATIONS

26.1 Exploration, Drilling and Geophysics

In PEA #3, it was recommended that Talon should focus on resource expansion and definition drilling to progress towards a Prefeasibility Study (PFS) and eventually a FS. It was estimated that between 25,000 and 30,000 m of drilling would be required, mostly focused on expansion of the Tamarack North Project's current resource area.

Since that time Talon has drilled approximately 49,100 metres, discovering CGO East and CGO West while also increasing contained nickel by 98% in the Indicated category. Contained nickel in MSU/MMS (Indicated Mineral Resource category) increased by 570%.

On January 20, 2022, Talon signed the Tesla Supply Agreement to supply 75 kt of nickel in concentrate over a period of 6 years, starting in 2026.

Since January 2021, Talon has developed an Advanced Exploration System (AES), which is a combination of:

- MT, EM, and passive seismic survey equipment operated by Talon's team of geophysicists;
- Five Talon owned and operated drill rigs, producing at a significantly reduced cost per metre compared to historical costs;
- Borehole electromagnetic (BHEM) and cross-hole Seismic Survey equipment also operated by Talon's team of geophysicists;
- Talon's team of onsite geologists responsible for core-logging, geological modelling and exploration planning;
- Talon's pseudo real-time assay estimating, resource modelling and mine planning system that allows Talon to rapidly prioritize new discoveries according to economic potential.

Additionally, Talon's AES is designed to discover and delineate high grade nickel along the MCR.

The QP recommends that Talon continue exploration along the Tamarack North Project portion of the TIC while focusing on the following areas that show high grade potential:

- Determine if the CGO West mineral resources connect to the Main Zone MSU and if connected, drill the resource into the Indicated category. This work is estimated to require 3,000 to 5,000 m of drilling;
- Determine if the CGO East mineral resources connect to the Main Zone MSU and if connected, drill the resource into the Indicated category. This work is expected to require 3,000 to 5,000 m of drilling;
- Determine if the MSU below the 138 Zone terminates or extends to the northeast and/or south towards high grade mineralization intercepted in the 164 Zone. Due to the large area between the MSU in the 138 Zone and the 164 Zone this work is expected to require 10,000 m of drilling;
- Deploy the AES in the 221 Zone and 264 Zone to determine the size and extent of high grade nickel MSU/MMS. Due to the complete lack of drilling between these zones this work is expected to require 15,000 m or more of drilling.

26.2 Mineral Resource

The updated MRE provides a reasonable representation of the in situ mineral resources. Recommendations to improve future estimations and to potentially increase mineral resources include:

- Collecting more laboratory SG measurements, in particular for the disseminated mineralization (CGO West, CGO East, 138 Zone). The current method of SG determination, using the ALS Minerals OA-GRA08b method, is appropriate for the types of sulphide mineralization in the Tamarack North deposits;
- Change the collar location of future drilling into the MSU and LSMSU domains to provide different intersection angles through the mineralization. This would provide better information on the lateral extents of the sulphide mineralization;
- Conduct additional geometallurgical test work on the Tamarack North mineralization to confirm the precious metal recoveries in the current flowsheet;
- Conduct additional electron micro-probe test work on the Tamarack North mineral domains to better define the elemental composition of the sulphide minerals. Additional test results could better support the approximation of the Fe in Sulphides % algorithm;
- Document the results of metallurgical test work related to Fe in Sulphides % recovery.

26.3 Mineral Processing and Metallurgical Testing

The following recommendations are made for metallurgical activities:

- Complete the process development of its high recovery nickel, iron, copper and cobalt flowsheet to maximize metal and sulphur recoveries to concentrates, while reducing sulphur in the tailings;
- Investigate the commercialization of sulphur which would be extracted at the refining stage from the Tamarack nickel concentrates;
- Continue to explore carbon sequestration and/or the production of Supplementary Cementitious Material (SCM).

If the above activities are successful, Talon will be able to valorize 100% of each tonne of rock, which means maximum environmental protection while deriving significantly higher economic benefits compared to the present nickel supply chain.

26.4 Environmental Studies, Permitting, and Social or Community Impact

Recommendations related to environmental review and permitting include additional studies and models to estimate potential environmental impacts, as well as reports that will provide the information needed for development of the EIS.

26.4.1 Additional Studies and Models

Planned and recommended additional environmental studies to be completed in 2023 to support environmental review and permitting include:

- Groundwater level elevation logging as described in Item 20.1.1 will continue in 2023;

- Surface water flow monitoring described in Item 20.1.2 will continue in 2023;
- The surface water and groundwater quality monitoring programs described Item 20.1.3 will continue in 2023. Talon should update the QAPP to reflect refinements to the water quality monitoring program;
- Water level elevation logging in piezometers, wetland monitoring wells, and stilling wells as described in Item 20.1.4 should continue in 2023;
- Wetland water quality sampling, and water quality sampling from piezometers and stilling wells, as described in Item 20.1.4 should continue in 2023. The analytical parameter list may be refined based on the results of the fall 2022 sampling;
- Five wetland criteria monitoring transects are planned along upland/wetland transition zones. The wetland criteria monitoring transects should consist of three fixed sampling points. One in the upland, one at the upland/wetland boundary, and one in the wetland. The transects will be used to assess the baseline wetland hydrology near wetland boundaries;
- A vegetation plot will be established at each wetland monitoring well. The plots should be sampled per the DNR Relevé Method (Minn Natural Heritage, 2013) to document the vegetation species composition. Vegetation plot sampling should occur annually during the approximate peak of the growing season;
- Various modelling methods should be used to estimate potential Project impacts on water resources. Modelling efforts will include:
  - Water balance and mass balance modelling;
  - Surface water hydrology and water quality modelling;
  - Groundwater flow and water quality modelling; and
  - Multimedia assessment of Project air deposition, wetland characteristics, and surface water quality.
- Ongoing Materials Characterization testing and analysis, including:
  - Humidity Cell Testing will continue;
  - Additional mineralogical and petrographical studies should be completed;
  - Cemented Rock Fill material should undergo porosity and diffusion testing;
  - Off-site Construction Aggregate should undergo bulk chemistry and short-term leach testing;
  - Elongate Mineral Particle test work should be conducted on drill core samples; and
  - Geochemical modelling of the data set should be integrated into the groundwater model for the Tamarack Project.
- Additional biological studies may occur in 2023 based on consultation and coordination with agency staff;
- A Phase I Archaeological Reconnaissance Survey should be conducted, focusing on areas of high probability for cultural resources, as identified through the literature review and tribal cultural resources survey;

- A historic architectural survey and assessment is planned to identify historic structures and other aboveground cultural resources that could be affected by the Project, including visual and/or auditory effects;
- Additional noise monitoring should be conducted, and noise modelling will estimate potential Project noise impacts;
- Visual impact analysis should be performed to establish the visibility of Project features from key observation points in the Tamarack North Project area;
- A traffic study may be conducted to establish baseline traffic patterns and estimate potential Project effects on local traffic;
- A meteorological station should be installed at the Project site and monitoring conducted;
- Air modelling should be conducted, including:
  - Air Emission Risk Analysis;
  - Class I Area Air Dispersion Modelling;
  - Class II Air Quality Dispersion Modelling;
  - Assessment of Potential Ecosystem Acidification Cumulative Impacts in Northeast Minnesota;
  - Assessment of Potential Visibility Cumulative Impacts in Federal Class I Areas in Minnesota; and
  - Greenhouse Gas Life Cycle Analysis.

It is recommended that this work commence in early 2023.

26.4.2 Scoping Environmental Assessment Worksheet

Talon should submit a SEAW worksheet to the DNR in the first quarter of 2023. The SEAW worksheet will contain the information requested on the Minnesota Environmental Quality Board form. It will provide sufficient information for the DNR to scope the EIS.

26.4.3 Reports and Plans

Talon should produce the reports and plans listed below. While these reports and plans would be needed to support environmental review, the date at which they would be needed is dependent on the duration of the SEAW process, which is uncertain, and thus the full costs for developing them are not included in the budget provided in Item 26.6. These documents would be in four categories: baseline data reports, modelling reports, resource reports, and management plans. These reports and plans will be needed to support preparation of the EIS. They will also support preparation of permit applications.

26.4.3.1 Baseline Data Reports

Baseline data reports should document baseline data collection methods and provide the baseline data. Talon plans to produce the following baseline data reports:

- Surface Water Baseline Studies Report;
- Groundwater Baseline Studies Report;

- Hydraulic Properties Report;
- Biological Resources Baseline Studies Report;
- Wetland Delineation Report; and
- Materials Characterization Report.

It is recommended that this work commences in early 2023.

26.4.3.2 Modelling Reports

Modelling reports should describe modelling methods and present results. Talon plans to produce the following modelling reports:

- Water and Mass Balance Modelling Report;
- Surface Water Modelling Report;
- Groundwater Modelling Report;
- Geochemical Modelling Report; and
- Multimedia Assessment Report.

It is recommended that this work commences in 2023.

26.4.3.3 Resource Reports

Resource reports should summarize baseline conditions and provide estimates of potential project impacts. Talon plans to produce the following resource reports:

- Air Resources Report;
- Biological Resources Report;
- Cultural Resources Report;
- Noise Report;
- Socioeconomics and Environmental Justice Report;
- Traffic Report;
- Visual Resources Report;
- Water Resources Report; and
- Wetland Resources Report.

It is recommended that this work commences in 2023.

26.4.3.4 Management Plans

Management plans will describe project activities, as well as construction, operation, reclamation, and closure of project facilities. Talon should produce the following management plans:

- Mine Plan;
- Ore Transportation Plan;
- Rock and Overburden Management Plan;
- Backfill Plan;
- Water Management Plan;
- Air quality Management Plan;
- Reclamation and Closure Plan;
- Wetland Management Plan; and
- Wastewater Treatment System Design and Operations Plan.

It is recommended that this work commences in 2023.

26.4.4 Social and Community Engagement

Talon intends to progress the project with clear commitments to diversity and inclusion, equitable outcomes for communities negatively impacted by climate change (disadvantaged communities), equitable distribution of the economic benefits that come from the energy transition and respect for tribal governments and tribal members.

In partnership with the community, Talon plans to build upon current community engagement plans to:

- Identify potential community impacts and opportunities connected to project operations;
- Develop community investment plans that align with the community’s long-term development goals;
- Ensure best in class community engagement and understanding of project operations; and
- Promote equal opportunities for good-paying, high quality jobs with involvement of organized labor in the design and establishment of operations.

26.5 Feasibility Study (FS)

At this time, there is sufficient resource knowledge, geotechnical data, and environmental baseline data for Talon to commence with a FS for the development of a mine at the Tamarack North Project, including surface facilities and a rail loadout facility, as well as an out-of-state battery minerals processing facility. The engineering work for the FS will consist of three main scope areas:

- Underground mine;
- Surface facilities at underground mine; and
- Out-of-State Processing Facility.

Environmental and regulatory considerations must be taken into account during every step of the engineering design, as well as opportunities for innovation and cost savings. Models for CAPEX, OPEX, and revenue will be created to develop a definitive economic analysis of the project.

26.6 Budget for Recommended Work

Table 26.1 is a reproduction of Table 1.3 and provides the budget for recommended work.

Table 26.1: Budget for Recommended Work

Item	Description	Amount (US$)	Amount (C$)
1.0	Exploration, Drilling, Geophysics and Mineral Resource	$5,900,000	$8,000,000
2.0	Metallurgy and Processing	2,200,000	2,900,000
3.0	Environmental Studies, Permitting, Social or Community Impact and Government Relations	10,000,000	13,600,000
4.0	Engineering and Feasibility Study	12,000,000	16,400,000
5.0	Tamarack Land Package	1,000,000	1,400,000
6.0	Local Site Costs, Legal Support, Data Management and Other	2,400,000	3,200,000
	Total	**$33,500,000**	**$45,500,000**

27.0 REFERENCES

Annual Estimates of Resident Population: April 1, 2010 to July 1, 2016. US Census Bureau, Population Division. Release Date 2020.

Boerboom Terrence J., project manager. 2009. 6 pls. Scales 1:100,000 and 1:200,000. Pl. 1 data-base map; pl. 2, bedrock geology; pl. 3, surficial geology; pl. 4, Quaternary stratigraphy; pl. 5, bedrock topography, depth to bedrock, and sand distribution model; pl. 6, mineral endowment.

Boldt, J. R., 1967, The Winning of Nickel – It's Geology, Mining, and Extractive Metallurgy, Longmans Canada Ltd.

Bornhorst, T.J., and Rose, W.I., 1994. Self-guided geological field trip to the Keweenaw Peninsula, Michigan. Institute on Lake Superior Geology, Proceedings 40th annual meeting, Houghton, Michigan. vol. 40 - part 2. 185p.

Cawardin, L. M., V. M. Carter, F. C. Golet and E. T. LaRoe, 1979."Classification of Wetlands and Deepwater Habitats of the United States," U.S. Fish and Wildlife Service, Biological Services Program, Washington, DC, 1979.

Canadian Institute of Mining, Metallurgy and Petroleum (CIM), 2014, CIM Definition Standards for Mineral Resources & Mineral Reserves.

Canadian Institute of Mining, Metallurgy and Petroleum (CIM), 2018, CIM Mineral Exploration Best Practice Guidelines.

Canadian Institute of Mining, Metallurgy and Petroleum (CIM), 2019, CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines.

Conte, V., van Rooyen, H., Mehalek, K., and Peters, O., Talon Resource Cut-off Grade (draft), memo to Golder Associates, October 3, 2022.

Eggers S. D., and D. M. Reed, 2014. "Wetland Plants and Plant Communities of Minnesota and Wisconsin, Version 3.1.," U.S. Army Corps of Engineers, St. Paul District, 2014.

Geokon, 2021. Model 4500 Series Vibrating Wire Piezometer Instruction Manual. https://www.geokon.com/content/manuals/4500_Piezometer.pdf

Goldner B.D., 2011. Igneous petrology of the Ni-Cu-PGE mineralised Tamarack Intrusion. Aiken and Carlton Counties, Minnesota. MSC Thesis, University of Minnesota.

Golder Associates Ltd., 2021, Tamarack North 2021 Mineral Resource Estimate. Report Number 1407088-9000, January 29, 2021.

Hinze, W.J., Allen, D.J., Braile, L.W., Mariano, J., 1997. The Midcontinent rift system: a major Proterozoic continental rift. Eds.

Historic State Nonferrous Metallic Mineral Leases. October 2017. Minnesota Department of Natural Resources, Division of Lands and Minerals, State Nonferrous Metallic Mineral Leasing Web Map, http://mndnr.maps.arcgis.com/apps/webappviewer/index.html?id=094ca0b7a81d45ffae670e125cd82487.

Holm, D.K., R. Anderson, T.J. Boerboom, W.F. Cannon, V. Chandler, M. Jirsa, J. Miller, D.A. Schneider, K.J. Schulz, W.R. Van Schmus, 2007, Reinterpretation of Paleoproterozoic accretionary boundaries of the north-central US based on a new aeromagnetic-geologic compilation. Precambrian Research, v. 157, P. 71–79.

U.S. Climate Data. Climate Tamarack – Minnesota. https://www.usclimatedata.com/climate/tamarack/minnesota/united-states/usmn1351.

Hutchinson, D R., R F. White, W F. Cannon, and K J. Schulz, 1990, Keweenaw Hot Spot; Geophysical Evidence for a 1.1 Ga Mantle Plume Beneath the Midcontinent Rift System. Journal of Geophysical Research 95, p. 10869-10884.Larsen et al., 2000.

Jennings, Carrie E. and Kostka, Steven J., April 2014. Aitkin County Aggregate Resources Sand And Gravel Potential, Plate A. Department of Natural Resources, Division of Lands and Minerals, Scale 1:100,000 with digital data.

Kennecott Aeromagnetic Survey, Modified by Talon, 2017.

Larsen, M.L., and Pedersen, A.K., 2000. Processes in High-Mg, High-T magmas: evidence from olivine, chromite and glass in Palaeogene picrites from West Greenland. J. of Petrology, vol. 41, n.7 pp. 1071-1098.

Level III and IV Ecoregions of Minnesota, June 2015. Scale 1:2,250,000. United States Environmental Protection Agency, Ecosystem Research, Region 5. ftp://newftp.epa.gov/EPADataCommons/ORD/Ecoregions/mn/mn_map.pdf

Miller, J.D., Jr., Smyk, M., Sage, R.P., and Green, J.C., 1995, Geology, petrology and metallogeny of intrusive igneous rocks of the Midcontinent Rift system. in Miller, J.D., Jr. (ed.), Field trip guidebook for the geology and ore deposits of the Midcontinent rift in the Lake Superior region. Minnesota Geological Survey Guidebook Series 20 p. 121-216.

Miller, J.D., Jr., and Vervoort, J.D., 1996, The latent magmatic stage of the Midcontinent rift: a period of magmatic underplating and melting of the lower crust: Institute on Lake Superior Geology, 42nd Annual Meeting, Cable, Wis., Proceedings, v. 42, Program and Abstracts, pt. 1, p. 33-35.

Minnesota Biological Survey, Minnesota Natural Heritage and Nongame Research Program, and Ecological Land Classification Program, 2013. A handbook for collecting vegetation plot data in Minnesota: The relevé method. 2nd ed St. Paul, Minnesota. Biological Report 92.

Minnesota Department of Natural Resources, 2013. Minnesota Freshwater Mussel Survey and Relocation Protocol. April 2013.

Minnesota Pollution Control Agency, 2017a. MPCA Stream Habitat Assessment (MSHA) Protocol for Stream Monitoring Sites. May 2017. wq-bsm3-02.

Minnesota Pollution Control Agency, 2017b. Fish Data Collection Protocols for Lotic Waters in Minnesota: Sample Collection, Sample Processing, and Calculation of Indices of Biotic Integrity. March 2017. wq-bsm3-12b.

Minnesota Pollution Control Agency, 2017c. Macroinvertebrate Data Collection Protocols for Lotic Waters in Minnesota: Sample Collection, Sample Processing, and Calculation of Indices of Biotic Integrity for Qualitative Multihabitat Samples. March 2017. wq-bsm3-12a.

Minnesota Pollution Control Agency, 2018. Sampling and Analytical Methods for Wild Rice Waters. Attachment 5 of Letter to Chief Administrative Law Judge Tammy L. Pust Re: In the Matter of the Proposed Rules of the Pollution Control Agency Amending the Sulphate Water Quality Standard Applicable to Wild Rice and Identification of Wild Rice Waters. March 2018. OAH Docket # 80-9003-34519, Revisor ID #4324.

Naldrett, A. J. 1999: World-class Ni-Cu-PGE deposits: key factors in their genesis. Mineralium Deposita 34, pg. 227-240.

Owen et al. 2013. NI 43-101 Technical Report on the Eagle Mine, Upper Peninsula of Michigan, USA. Lundin Mining Corporation.

Peters, O., Clarification of the metallurgical recoveries for the Talon Tamarack North Project, October 6, 2022, e-mail to Golder.

Schneider, D.A., Bickford, M.E., Cannon, W.F., Schultz, K.J., and Hamilton, M.A., 2002, Age of volcanic rocks and syndepositional Fe formations, Marquette Range Supergroup: implications for the tectonic setting of Paleoproterozoic Fe formations of the Lake Superior region. Can. J. Earth Sci., vol. 39, pp. 999-1012. Severson, 2003.

Severson, M.J., and Heine, J.J., 2003, Sedimentary exhalative (SEDEX) potential of the Cuyuna North Range, Cuyuna South Range, Emily District, and portions of Aitkin County - Old drill log searches: Natural Resources Research Institute, University of Minnesota, Duluth, Technical Report NRRI/TR-2003/13, 40 p.

Shaw S. P., and C. G. Fredine, 1971. "Wetlands of the United States. U.S. Fish and Wildlife Circular 39," U.S. Department of the Interior, Washington, DC, 1971.

Sims, P.K., and Day, W.C., 1993. The Great Lakes Tectonic Zone-revisited. US Geological Survey Bull. 1904-S, 11 p.

Southwick, D. L., Morey, G. B., Holst, Timothy B., edited by Sims, P. K., Carter, L. M. H. 1991. Tectonic imbrication and foredeep development of the Penokean orogen, east-central Minnesota – an interpretation based on regional geophysics and the result of test-drilling. US Geological Survey Bulletin 1904, 17pp.

Tesla 2020 Annual Meeting of Stockholders and Battery Day, Tuesday, September 22, 2020; 2020 Annual Meeting of Stockholders and Battery Day | Tesla.

US Army Corps of Engineers, 1987. "Wetlands Delineation Manual- Wetlands Research Program Technical Report Y-87-1," Environmental Laboratory U.S. Army Corps of Engineers, Vicksburg, MS, 1987.

US Army Corps of Engineers, 2015. Guidance for Submittal of Delineation Reports to the St. Paul District Army Corps of Engineers and Local Units of Government in the State of Minnesota., U.S. Army Corps of Engineers and Wisconsin Department of Natural Resources, 2015.

U.S. Environmental Protection Agency, 2013. National Rivers and Streams Assessment 2013/14: Field Operations Manual – Non-Wadeable. May 2013. EPA-841-B-12-009a.

Wakeley, J. S., R. W. Lichvar, C. V. Noble and J. F. Berkowitz, 2012. "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0),," U.S. Army Corps of Engineers Research and Development Center, Vicksburg, MS, 2012.

28.0 ANNEX 1 DRILL HOLE COMPOSITE SAMPLE INTERVALS USED FOR RESOURCE MODELLING

Table 28.1: Drill Holes

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
USMSU	02L001	491082	5169031	388	275.5	110.0	-75.7	161.0	209.8	48.8	47.5	0.33	0.15	0.01	0.03	0.02	0.03	0.44
USMSU	03L004	490909	5169081	388	350.2	40.0	-89.3	200.5	300.0	99.5	99.5	0.33	0.18	0.01	0.07	0.04	0.06	0.46
USMSU	07L030	491237	5169421	388	117.4	0.0	-90.0	60.5	91.7	31.2	31.2	0.59	0.23	0.02	0.09	0.05	0.05	0.76
USMSU	07L031	490851	5169118	388	350.5	178.0	-88.1	209.0	286.0	77.0	77.0	0.51	0.34	0.02	0.38	0.22	0.16	0.81
USMSU	07L034	491189	5169368	388	156.7	0.0	-90.0	78.0	111.7	33.7	33.7	0.51	0.35	0.02	0.13	0.08	0.07	0.75
USMSU	08L040	491262	5169515	388	169.5	78.0	-76.6	51.5	68.4	16.9	16.4	0.54	0.34	0.02	0.15	0.07	0.09	0.78
USMSU	08L042	490735	5168848	389	515.7	179.0	-79.6	325.6	408.5	82.9	81.6	1.15	0.76	0.03	0.17	0.12	0.12	1.61
USMSU	08TK0048	490715	5168730	391	908.0	33.0	-79.4	331.0	407.5	76.5	75.6	1.44	0.81	0.04	0.18	0.13	0.12	1.93
USMSU	08TK0061	490673	5168988	389	634.3	145.0	-66.1	329.0	409.0	80.0	73.6	0.22	0.10	0.01	0.09	0.05	0.04	0.32
USMSU	08TK0064	490672	5168987	389	492.9	96.4	-62.6	292.5	412.5	120.0	107.1	0.39	0.20	0.01	0.08	0.05	0.04	0.54
USMSU	08TK0067	490735	5168847	389	590.4	168.5	-70.5	364.5	415.5	51.0	48.6	0.43	0.28	0.01	0.12	0.08	0.06	0.62
USMSU	08TK0073	490846	5168867	389	550.5	251.1	-74.0	309.5	386.0	76.5	74.0	0.41	0.26	0.02	0.08	0.05	0.05	0.58
USMSU	08TK0074	490846	5168867	389	531.9	250.2	-77.0	305.3	398.5	93.2	91.1	1.28	0.76	0.04	0.15	0.09	0.11	1.74
USMSU	08TK0076	490593	5168728	390	553.8	100.5	-69.2	385.0	436.0	51.0	46.3	0.42	0.26	0.01	0.10	0.06	0.05	0.60
USMSU	08TK0089	490846	5168866	389	603.7	237.3	-75.6	316.8	409.5	92.7	90.4	2.67	1.39	0.06	0.18	0.13	0.12	3.46
USMSU	08TK0090	490848	5168866	390	534.0	216.7	-71.2	350.9	415.0	64.1	61.3	0.74	0.56	0.02	0.17	0.10	0.11	1.08
USMSU	08TK0091	490596	5168734	390	526.7	78.8	-64.7	379.0	428.0	49.0	43.6	0.44	0.25	0.02	0.10	0.07	0.07	0.62
USMSU	08TK0093	490598	5168729	390	545.0	63.6	-57.0	389.0	411.5	22.5	18.7	0.57	0.44	0.02	0.35	0.19	0.14	0.91
USMSU	09TK0094	490970	5168799	389	509.6	309.6	-60.7	322.6	429.0	106.4	95.1	0.49	0.30	0.02	0.09	0.05	0.06	0.69
USMSU	09TK0096	490910	5169084	389	534.9	104.0	-59.7	212.0	321.5	109.5	96.6	0.39	0.21	0.01	0.18	0.09	0.08	0.56
USMSU	10TK0127	490909	5169024	389	599.9	282.5	-86.4	230.1	355.0	124.9	124.8	0.45	0.25	0.02	0.11	0.06	0.06	0.63
USMSU	11TK0131	490993	5169060	389	509.6	106.0	-82.8	185.5	284.3	98.8	98.2	0.34	0.17	0.01	0.07	0.04	0.04	0.47
USMSU	11TK0132	490878	5169035	389	441.7	324.2	-83.3	226.5	314.5	88.0	87.2	0.36	0.20	0.01	0.08	0.04	0.05	0.51
USMSU	11TK0133	490830	5168964	389	405.7	281.4	-83.0	266.3	300.2	34.0	33.6	0.50	0.30	0.02	0.48	0.27	0.17	0.82

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
USMSU	13TK0175	491197	5169241	389	398.5	4.7	-89.0	86.4	132.5	46.1	46.1	0.58	0.29	0.02	0.17	0.10	0.08	0.81
USMSU	13TK0176	491199	5169144	388	243.0	110.0	-89.3	111.0	187.0	76.0	75.9	0.36	0.17	0.02	0.11	0.07	0.05	0.51
USMSU	13TK0181	491202	5169446	388	375.0	338.1	-89.6	60.0	87.0	27.0	27.0	0.24	0.11	0.01	0.09	0.05	0.06	0.35
USMSU	13TK0184	491218	5169328	388	276.6	133.7	-89.2	60.6	123.0	62.4	62.4	0.39	0.16	0.01	0.25	0.15	0.09	0.57
USMSU	14TK0203	490910	5168938	388	651.7	325.6	-80.2	263.1	352.0	88.9	87.8	0.42	0.20	0.01	0.30	0.16	0.09	0.62
USMSU	14TK0204	490909	5169083	388	557.2	141.3	-83.1	208.5	335.0	126.5	125.7	0.36	0.20	0.01	0.09	0.05	0.06	0.51
USMSU	14TK0205	490760	5169049	388	443.5	91.8	-81.7	245.3	329.0	83.7	82.8	0.22	0.08	0.01	0.09	0.05	0.04	0.31
USMSU	14TK0208	490829	5169013	388	811.7	3.0	-89.7	242.5	351.5	109.0	108.9	0.20	0.05	0.01	0.03	0.02	0.01	0.25
USMSU	16TK0237	490839	5168769	389	502.3	268.0	-81.6	336.0	399.5	63.5	62.5	0.66	0.51	0.02	0.14	0.08	0.11	0.96
USMSU	16TK0237A	490839	5168769	389	456.6	268.0	-81.6	340.0	365.0	25.0	24.8	0.47	0.33	0.01	0.27	0.16	0.10	0.73
USMSU	16TK0241	490840	5168865	389	480.4	269.0	-83.6	296.0	403.0	107.0	106.5	1.18	0.69	0.03	0.14	0.09	0.09	1.60
USMSU	16TK0242	490707	5168733	391	551.1	74.3	-85.2	349.0	404.5	55.5	55.2	0.57	0.39	0.02	0.12	0.08	0.08	0.82
USMSU	16TK0251	490799	5168870	389	450.3	353.8	-83.6	287.3	387.0	99.7	99.2	0.33	0.16	0.01	0.08	0.04	0.04	0.46
USMSU	20TK0277	490840	5168869	389	505.7	231.8	-80.9	307.2	400.0	92.8	91.7	1.91	1.06	0.05	0.16	0.10	0.13	2.53
USMSU	21TK0281	491193	5169142	389	221.3	140.0	-73.2	126.5	197.0	70.5	67.3	0.49	0.27	0.02	0.19	0.11	0.09	0.71
USMSU	21TK0284	491190	5169242	388	205.7	129.0	-60.7	103.5	161.4	57.9	51.8	0.43	0.20	0.01	0.17	0.09	0.07	0.60
USMSU	21TK0301	490839	5168862	389	474.6	314.3	-86.3	290.5	400.4	109.9	109.7	0.67	0.49	0.02	0.15	0.09	0.11	0.98
USMSU	21TK0312	490835	5168867	389	498.7	219.8	-84.2	306.0	397.1	91.1	90.9	0.80	0.59	0.02	0.23	0.14	0.15	1.19
USMSU	21TK0313	491068	5169036	389	267.3	317.9	-56.0	210.3	222.0	11.7	10.1	0.52	0.31	0.02	0.11	0.06	0.07	0.73
USMSU	21TK0315	490825	5168861	389	413.9	28.3	-80.2	284.3	335.8	51.5	50.8	0.70	0.38	0.02	0.68	0.34	0.21	1.10
USMSU	21TK0316	491068	5169036	389	313.9	308.9	-54.1	224.1	241.6	17.5	14.7	0.54	0.37	0.02	0.11	0.07	0.07	0.78
USMSU	21TK0317	491077	5169039	389	292.6	305.6	-59.7	212.2	248.0	35.8	31.5	0.31	0.15	0.01	0.05	0.03	0.03	0.41
USMSU	21TK0319	491077	5169039	388	292.6	307.3	-64.8	191.3	220.5	29.2	27.2	0.57	0.27	0.02	0.11	0.07	0.05	0.76
USMSU	21TK0320	491009	5168964	389	296.1	340.2	-53.5	230.6	267.8	37.2	30.7	0.49	0.26	0.02	0.12	0.07	0.06	0.67

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
USMSU	21TK0323	491078	5169039	388	249.3	358.8	-72.0	179.1	190.8	11.7	11.2	0.34	0.18	0.01	0.10	0.06	0.04	0.47
USMSU	21TK0327	491077	5169040	389	231.1	21.1	-66.2	171.4	184.3	12.9	12.1	0.39	0.21	0.02	0.18	0.10	0.07	0.58
USMSU	21TK0328	491077	5169040	388	231.7	342.1	-68.8	180.8	190.7	10.0	9.4	0.66	0.41	0.02	0.09	0.05	0.06	0.91
USMSU	21TK0329	491074	5169045	389	228.0	20.5	-66.5	177.5	179.8	2.3	2.1	0.34	0.18	0.02	0.04	0.02	0.02	0.47
USMSU	21TK0330	491008	5168963	389	301.8	16.4	-60.0	206.1	249.7	43.6	38.7	0.44	0.25	0.01	0.12	0.07	0.06	0.61
USMSU	21TK0331	491060	5169035	388	277.4	333.8	-72.6	178.9	204.0	25.1	24.2	0.39	0.19	0.01	0.14	0.08	0.07	0.55
USMSU	21TK0332	491060	5169036	388	231.7	355.7	-71.2	180.4	195.7	15.3	14.7	0.80	0.45	0.03	0.16	0.09	0.10	1.10
USMSU	21TK0333	491009	5168964	389	403.9	336.3	-56.2	231.2	279.0	47.8	40.5	0.53	0.29	0.02	0.17	0.10	0.08	0.74
USMSU	21TK0334	491060	5169036	388	324.9	326.2	-65.5	188.8	204.0	15.2	13.9	0.34	0.17	0.01	0.12	0.07	0.06	0.48
USMSU	21TK0336	491009	5168964	389	295.1	25.5	-59.0	206.0	246.7	40.7	35.6	0.75	0.47	0.02	0.16	0.09	0.11	1.05
USMSU	21TK0340	491008	5168963	389	446.2	330.8	-62.3	227.4	314.3	87.0	78.3	0.47	0.25	0.02	0.07	0.04	0.05	0.64
USMSU	21TK0347	491143	5169174	388	212.8	125.2	-85.0	144.3	176.6	32.3	32.2	0.39	0.17	0.02	0.10	0.06	0.04	0.54
USMSU	21TK0348	490988	5168995	389	298.1	42.3	-58.7	203.3	227.3	24.0	20.9	0.61	0.38	0.02	0.28	0.15	0.14	0.90
USMSU	21TK0350	490988	5168995	388	285.6	35.3	-60.6	199.1	231.2	32.1	28.6	0.77	0.41	0.02	0.15	0.09	0.09	1.04
USMSU	21TK0355	491137	5169180	389	257.4	192.4	-69.4	166.9	183.5	16.6	15.8	0.26	0.11	0.01	0.03	0.02	0.02	0.34
USMSU	21TK0360	490988	5168995	388	297.3	16.3	-61.3	202.5	226.5	24.0	21.3	0.44	0.23	0.01	0.12	0.07	0.06	0.61
USMSU	21TK0364	490771	5168676	390	471.8	9.3	-80.4	348.7	399.9	51.1	50.6	0.70	0.34	0.02	0.25	0.17	0.07	0.98
USMSU	21TK0366	490988	5168995	388	517.3	274.2	-69.4	299.5	394.1	94.6	89.0	0.81	0.52	0.02	0.20	0.12	0.11	1.15
USMSU	21TK0368	491066	5169122	388	285.9	135.1	-80.1	169.4	171.6	2.1	2.1	0.39	0.25	0.01	0.03	0.02	0.03	0.54
USMSU	22TK0382	490764	5168677	392	474.9	20.3	-88.8	353.7	399.0	45.4	45.3	0.24	0.15	0.01	0.10	0.06	0.04	0.36
USMSU	22TK0396	491115	5169076	389	246.3	336.9	-81.9	158.9	175.1	16.2	16.0	0.53	0.29	0.02	0.48	0.25	0.15	0.83
USMSU	22TK0411	490674	5168732	388	486.6	94.6	-77.0	371.5	396.8	25.3	24.9	0.60	0.36	0.02	-	-	-	#VALUE!
USMSU	22TK0414	490674	5168734	388	506.7	54.7	-72.6	337.0	417.3	80.3	77.3	2.73	1.72	0.06	0.25	0.17	0.20	3.67
LSMSU	08L042	490735	5168848	389	515.7	179.0	-79.6	411.5	464.0	52.5	51.7	2.53	1.64	0.06	0.54	0.38	0.27	3.54

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
LSMSU	08TK0048	490715	5168730	391	908.0	33.0	-79.4	409.0	479.5	70.5	69.6	2.46	1.55	0.06	0.64	0.40	0.31	3.45
LSMSU	08TK0049	490718	5168728	391	553.5	182.8	-80.5	435.0	460.5	25.5	25.1	0.62	0.51	0.02	1.03	0.51	0.29	1.17
LSMSU	08TK0058	490590	5168609	390	649.5	89.5	-70.6	473.0	558.5	85.5	81.0	2.19	0.99	0.06	0.60	0.38	0.20	2.93
LSMSU	08TK0061	490673	5168988	389	634.3	145.0	-66.1	440.5	493.0	52.5	47.9	0.85	0.64	0.02	0.66	0.39	0.26	1.37
LSMSU	08TK0067	490735	5168847	389	590.4	168.5	-70.5	423.0	506.5	83.5	79.8	2.54	1.23	0.07	0.52	0.32	0.23	3.37
LSMSU	08TK0075	490588	5168610	390	578.1	71.2	-68.3	449.0	514.5	65.5	61.4	3.10	1.52	0.08	0.56	0.37	0.22	4.09
LSMSU	08TK0076	490593	5168728	390	553.8	100.5	-69.2	448.5	493.5	45.0	41.1	0.97	0.73	0.03	0.76	0.40	0.33	1.57
LSMSU	08TK0077	490592	5168729	390	558.1	100.1	-72.5	452.0	482.0	30.0	28.9	0.47	0.30	0.01	0.50	0.28	0.18	0.79
LSMSU	08TK0079	490589	5168605	390	582.8	90.0	-66.1	458.7	526.5	67.8	63.4	2.32	1.15	0.06	0.39	0.28	0.18	3.07
LSMSU	08TK0081	490587	5168610	390	601.1	70.6	-69.3	452.5	524.0	71.5	67.9	1.90	0.95	0.05	0.57	0.34	0.26	2.60
LSMSU	08TK0083	490583	5168542	390	705.0	97.8	-67.0	533.0	563.0	30.0	27.9	0.34	0.18	0.01	0.24	0.14	0.11	0.53
LSMSU	08TK0086	490584	5168542	390	621.5	81.9	-68.0	501.5	560.0	58.5	54.9	2.09	0.97	0.06	0.51	0.31	0.27	2.81
LSMSU	08TK0089	490846	5168866	389	603.7	237.3	-75.6	412.5	483.0	70.5	69.2	2.19	1.19	0.05	0.55	0.36	0.25	3.00
LSMSU	08TK0090	490848	5168866	390	534.0	216.7	-71.2	419.5	465.5	46.0	44.3	1.15	0.76	0.03	0.51	0.29	0.26	1.71
LSMSU	12TK0162	490775	5168529	388	620.9	230.1	-89.9	475.0	512.0	37.0	37.0	0.68	0.52	0.02	0.63	0.39	0.26	1.15
LSMSU	15TK0220A	490843	5168638	389	545.0	275.5	-83.7	439.0	506.5	67.5	65.8	2.23	1.08	0.06	0.63	0.39	0.29	3.03
LSMSU	16TK0235	490845	5168713	389	539.2	281.9	-81.4	434.5	451.5	17.0	16.6	0.66	0.44	0.02	0.51	0.32	0.22	1.05
LSMSU	16TK0235A	490845	5168713	389	538.9	281.4	-81.6	418.5	497.5	79.0	76.6	1.41	0.89	0.04	0.75	0.45	0.32	2.11
LSMSU	16TK0237	490839	5168769	389	502.3	268.0	-81.6	407.0	434.0	27.0	26.6	1.23	0.64	0.03	0.44	0.30	0.20	1.72
LSMSU	16TK0237A	490839	5168769	389	456.6	268.0	-81.6	400.0	415.0	15.0	14.9	0.46	0.27	0.02	0.49	0.29	0.16	0.76
LSMSU	16TK0242	490707	5168733	391	551.1	74.3	-85.2	403.2	466.5	63.4	63.1	2.16	1.23	0.05	0.62	0.36	0.28	3.00
LSMSU	16TK0243	490864	5168569	388	605.9	259.9	-82.8	467.5	512.5	45.0	44.5	0.53	0.31	0.02	0.41	0.24	0.18	0.83
LSMSU	16TK0244	490708	5168541	389	554.4	87.6	-83.7	493.5	495.0	1.5	1.5	0.45	0.02	0.02	0.03	0.03	0.01	0.51
LSMSU	16TK0247	490833	5168672	389	480.1	253.1	-86.0	454.0	466.0	12.0	11.9	0.57	0.46	0.02	0.80	0.47	0.29	1.04

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
LSMSU	20TK0272	490772	5168600	389	496.2	25.4	-84.1	444.0	472.0	28.0	27.9	0.64	0.48	0.02	0.60	0.33	0.25	1.07
LSMSU	20TK0277	490840	5168869	389	505.7	231.8	-80.9	406.0	455.7	49.7	49.1	1.03	0.85	0.02	0.68	0.38	0.32	1.66
LSMSU	21TK0301	490839	5168862	389	474.6	314.3	-86.3	401.5	409.0	7.5	7.5	0.77	0.61	0.02	0.83	0.48	0.34	1.34
LSMSU	21TK0312	490835	5168867	389	498.7	219.8	-84.2	399.4	427.0	27.5	27.5	0.71	0.44	0.02	0.31	0.17	0.16	1.05
LSMSU	21TK0352	490702	5168743	390	489.8	16.6	-85.3	412.7	428.0	15.3	15.3	0.58	0.58	0.02	0.45	0.25	0.23	1.01
LSMSU	21TK0359	490702	5168742	390	489.8	153.5	-79.7	427.6	464.9	37.3	36.8	1.24	0.86	0.03	0.84	0.45	0.43	1.95
LSMSU	21TK0370	490737	5168651	390	529.7	162.3	-84.9	430.7	484.6	53.9	53.8	2.75	1.20	0.07	0.52	0.30	0.25	3.58
LSMSU	21TK0372A	490765	5168687	388	477.6	153.6	-85.5	424.3	463.0	38.7	38.7	0.40	0.29	0.01	0.39	0.23	0.18	0.68
LSMSU	21TK0376	490859	5168536	388	535.8	285.9	-83.3	469.4	502.6	33.1	32.6	0.39	0.17	0.01	0.22	0.13	0.11	0.56
LSMSU	21TK0377	490757	5168601	390	493.2	175.9	-86.9	457.1	493.2	36.1	36.0	0.93	0.63	0.02	0.64	0.31	0.31	1.45
LSMSU	21TK0379	490757	5168601	390	498.8	168.2	-81.6	472.4	498.8	26.4	26.2	0.60	0.44	0.02	0.50	0.28	0.22	0.99
LSMSU	22TK0382	490764	5168677	392	474.9	20.3	-88.8	408.9	474.3	65.4	65.3	2.36	1.08	0.06	0.55	0.37	0.26	3.14
LSMSU	22TK0397	490774	5168480	388	597.2	2.4	-81.1	468.5	534.5	66.0	65.5	2.00	0.97	0.05	0.66	0.38	0.30	2.74
LSMSU	22TK0405	490673	5168734	388	474.9	123.7	-77.5	420.3	464.0	43.7	43.3	0.96	0.72	0.02	0.76	0.38	0.35	1.56
LSMSU	22TK0406A	490888	5168485	388	578.5	264.9	-79.9	512.3	527.0	14.7	14.6	0.82	0.67	0.02	-	-	-	1.15
LSMSU	22TK0411	490674	5168732	388	486.6	94.6	-77.0	407.8	464.1	56.2	55.3	1.33	0.76	0.04	-	-	-	1.72
LSMSU	22TK0414	490674	5168734	388	506.7	54.7	-72.6	414.5	465.3	50.8	49.0	1.07	0.68	0.03	0.30	0.18	0.14	1.53
MSU	08TK0049	490718	5168728	391	553.5	182.8	-80.5	396.0	408.0	12.0	11.8	6.17	3.36	0.11	0.67	0.60	0.34	8.06
MSU	08TK0058	490590	5168609	390	649.5	89.5	-70.6	448.8	452.2	3.3	3.1	4.95	2.55	0.08	0.52	0.45	0.46	6.41
MSU	08TK0068	490733	5168847	389	516.3	194.3	-74.8	378.4	382.2	3.7	3.6	3.94	1.47	0.09	0.33	0.32	0.09	4.89
MSU	08TK0075	490588	5168610	390	578.1	71.2	-68.3	420.5	423.7	3.1	2.9	5.23	2.12	0.10	0.43	0.35	0.09	6.47
MSU	08TK0077	490592	5168729	390	558.1	100.1	-72.5	396.4	409.9	13.6	13.0	5.84	2.69	0.13	0.43	0.38	0.10	7.39
MSU	08TK0081	490587	5168610	390	601.1	70.6	-69.3	421.1	431.6	10.5	9.9	5.08	3.05	0.09	0.95	0.52	0.29	6.81
MSU	08TK0083	490583	5168542	390	705.0	97.8	-67.0	497.5	507.8	10.3	9.6	7.29	3.01	0.15	1.47	0.73	0.30	9.26

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
MSU	09TK0095	490983	5168407	389	663.9	265.2	-73.6	512.9	516.6	3.7	3.7	4.82	2.26	0.10	1.07	0.54	0.33	6.30
MSU	12TK0153	490982	5168405	388	683.7	161.1	-82.3	554.5	575.3	20.8	20.6	5.36	2.32	0.10	0.43	0.40	0.13	6.70
MSU	12TK0153A	490982	5168405	388	615.1	159.6	-82.1	555.0	566.4	11.4	11.2	7.11	2.99	0.14	0.62	0.49	0.16	8.86
MSU	12TK0153C	490982	5168405	388	618.1	164.1	-82.3	578.5	585.6	7.1	7.0	8.34	3.27	0.16	0.85	0.65	0.44	10.37
MSU	12TK0158	490850	5168418	388	594.7	58.3	-89.2	482.9	495.7	12.8	12.7	5.92	2.30	0.13	1.28	0.58	0.40	7.53
MSU	12TK0162	490775	5168529	388	620.9	230.1	-89.9	439.1	443.0	3.9	3.9	2.81	1.21	0.06	0.13	0.24	0.13	3.54
MSU	13TK0171	491049	5168348	389	641.9	157.4	-89.8	573.3	581.0	7.7	7.7	8.04	2.87	0.15	0.41	0.54	0.21	9.77
MSU	14TK0211	490857	5168535	388	648.0	264.9	-85.3	441.0	457.0	16.0	15.9	7.16	2.43	0.17	0.81	0.69	0.37	8.88
MSU	14TK0213	490856	5168535	388	618.0	216.0	-84.9	455.1	464.7	9.7	9.6	7.06	2.44	0.15	1.20	0.79	0.92	8.93
MSU	15TK0220A	490843	5168638	389	545.0	275.5	-83.7	411.0	415.1	4.1	3.9	2.26	1.31	0.05	0.54	0.59	0.82	3.27
MSU	16TK0233A	490914	5168369	388	583.3	308.7	-84.5	508.0	517.0	9.0	8.9	5.24	2.20	0.11	0.60	0.46	0.25	6.61
MSU	16TK0233C	490914	5168369	388	562.7	300.3	-85.4	500.5	506.2	5.7	5.4	4.81	1.95	0.11	0.38	0.39	0.21	6.02
MSU	16TK0233E	490914	5168369	388	562.4	302.4	-85.6	513.1	523.7	10.5	10.5	5.77	2.36	0.12	0.55	0.62	0.27	7.27
MSU	16TK0234	490950	5168389	388	696.8	180.6	-85.1	547.0	552.1	5.1	5.0	4.53	1.88	0.09	0.63	0.50	0.27	5.74
MSU	16TK0235	490845	5168713	389	539.2	281.9	-81.4	381.4	392.3	10.8	10.6	4.94	2.49	0.08	0.42	0.35	0.14	6.29
MSU	16TK0235A	490845	5168713	389	538.9	281.4	-81.6	379.5	393.5	13.9	13.5	4.20	2.13	0.08	0.29	0.25	0.09	5.36
MSU	16TK0243	490864	5168569	388	605.9	259.9	-82.8	435.3	438.3	3.0	3.0	7.36	2.91	0.17	0.76	0.55	0.14	9.18
MSU	16TK0244	490708	5168541	389	554.4	87.6	-83.7	448.8	450.8	2.0	2.0	9.60	4.04	0.18	0.88	0.96	0.45	12.04
MSU	16TK0246	490881	5168290	388	611.4	10.4	-81.0	529.0	533.4	4.4	4.3	5.28	2.13	0.12	0.70	0.49	0.28	6.68
MSU	16TK0247	490833	5168672	389	480.1	253.1	-86.0	398.0	403.0	5.0	4.9	3.41	2.70	0.04	0.17	0.31	0.29	4.74
MSU	20TK0265	490949	5168389	388	584.0	174.3	-83.6	538.0	546.8	8.8	8.8	2.70	1.32	0.06	0.56	0.30	0.23	3.54
MSU	20TK0272	490772	5168600	389	496.2	25.4	-84.1	404.3	407.2	2.9	2.9	2.15	1.10	0.04	0.18	0.16	0.08	2.77
MSU	20TK0278	490709	5168544	388	535.8	127.8	-77.6	459.7	481.5	21.7	21.3	6.86	3.02	0.13	0.75	0.57	0.39	8.68
MSU	21TK0343	490702	5168742	390	462.2	163.2	-86.8	360.5	378.7	18.2	18.2	5.02	1.94	0.13	0.41	0.28	0.10	6.25

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
MSU	21TK0346A	490736	5168651	390	430.4	178.3	-87.3	396.6	401.4	4.8	4.8	3.00	1.62	0.06	0.11	0.18	0.09	3.86
MSU	21TK0352	490702	5168743	390	489.8	16.6	-85.3	345.5	354.1	8.6	8.6	2.06	1.05	0.05	0.22	0.14	0.14	2.69
MSU	21TK0359	490702	5168742	390	489.8	153.5	-79.7	387.5	392.0	4.5	4.4	4.09	2.02	0.08	1.21	0.28	0.07	5.35
MSU	21TK0364	490771	5168676	390	471.8	9.3	-80.4	373.3	377.6	4.3	4.2	4.70	1.87	0.15	0.68	0.61	0.12	6.07
MSU	21TK0367	490770	5168673	390	419.4	31.5	-87.5	381.9	394.0	12.2	12.2	5.39	2.84	0.09	0.34	0.29	0.19	6.89
MSU	21TK0372	490765	5168689	390	427.9	154.8	-85.5	395.8	398.3	2.5	2.5	4.50	3.10	0.09	0.06	0.19	0.04	5.99
MSU	21TK0372A	490765	5168687	388	477.6	153.6	-85.5	386.8	397.3	10.5	10.5	4.82	2.62	0.08	0.28	0.23	0.08	6.16
MSU	21TK0376	490859	5168536	388	535.8	285.9	-83.3	435.2	440.4	5.3	5.2	5.15	1.81	0.11	0.69	0.50	0.51	6.46
MSU	21TK0377	490757	5168601	390	493.2	175.9	-86.9	420.6	422.9	2.3	2.3	2.35	0.91	0.09	0.21	0.24	0.08	3.03
MSU	21TK0378	490888	5168484	388	553.7	233.8	-81.7	476.1	490.3	14.3	13.9	5.33	2.44	0.11	1.23	0.65	0.44	6.96
MSU	21TK0379	490757	5168601	390	498.8	168.2	-81.6	431.4	437.8	6.4	6.3	1.07	0.65	0.04	0.26	0.14	0.04	1.49
MSU	21TK0380	490773	5168481	388	506.0	111.6	-85.5	453.7	477.2	23.4	23.4	6.21	2.93	0.12	0.64	0.51	0.35	7.93
MSU	22TK0400	490863	5168533	388	523.0	248.6	-84.3	452.5	457.7	5.3	5.2	6.45	2.38	0.14	0.73	0.58	0.29	8.04
MSU	22TK0402	490757	5168601	388	477.9	76.6	-81.7	413.4	420.8	7.4	7.4	6.26	2.45	0.15	0.42	0.43	0.23	7.81
MSU	22TK0404A	490773	5168480	388	518.2	348.2	-83.3	448.2	458.7	10.6	10.5	6.67	3.11	0.13	1.40	0.70	0.56	8.70
MSU	22TK0405	490673	5168734	388	474.9	123.7	-77.5	380.9	393.2	12.3	12.2	5.79	2.92	0.13	0.62	0.42	0.31	7.50
MSU	22TK0406	490888	5168485	388	520.6	265.6	-79.6	465.5	475.4	9.9	9.9	5.34	2.27	0.11	1.19	0.68	0.53	6.93
MSU	22TK0409	490673	5168735	388	487.7	142.2	-77.7	392.6	403.5	10.9	10.7	6.26	3.73	0.12	0.94	0.69	0.59	8.41
MSU	14TK0211	490857	5168535	388	648.0	264.9	-85.3	425.0	429.0	4.0	4.0	5.74	2.07	0.13	0.68	0.40	0.10	7.09
MSU	14TK0213	490856	5168535	388	618.0	216.0	-84.9	435.7	443.4	7.7	7.7	5.13	2.24	0.11	0.91	0.47	0.32	6.57
MSU	16TK0243	490864	5168569	388	605.9	259.9	-82.8	418.0	428.5	10.5	10.4	6.15	2.41	0.15	0.52	0.43	0.08	7.66
MSU	16TK0249C	490889	5168485	388	483.6	261.2	-84.1	447.0	458.3	11.2	11.1	4.30	1.83	0.09	1.00	0.45	0.39	5.56
MSU	20TK0273	490772	5168601	389	461.2	100.7	-86.5	414.7	424.4	9.7	9.6	7.47	2.77	0.18	0.60	0.49	0.16	9.24
MSU	22TK0400	490863	5168533	388	523.0	248.6	-84.3	431.4	433.0	1.6	1.5	1.39	0.70	0.05	1.50	0.39	0.13	2.10

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
MSU	22TK0406	490888	5168485	388	520.6	265.6	-79.6	456.6	465.5	8.9	8.8	4.47	2.00	0.09	0.50	0.43	0.32	5.72
138 MZNO	12TK0138	491125	5168285	388	731.5	273.9	-74.4	431.5	564.0	132.5	128.8	1.04	0.96	0.03	0.26	0.17	0.19	1.60
138 MZNO	12TK0146	491125	5168286	389	670.0	292.6	-74.5	430.5	526.5	96.0	93.3	0.55	0.37	0.02	0.13	0.07	0.09	0.79
138 MZNO	12TK0153	490982	5168405	388	683.7	161.1	-82.3	423.0	542.5	119.5	118.5	0.43	0.28	0.02	0.11	0.06	0.06	0.62
138 MZNO	12TK0153A	490982	5168405	388	615.1	159.6	-82.1	424.1	545.5	121.4	119.7	0.51	0.31	0.02	0.11	0.07	0.07	0.72
138 MZNO	12TK0153B	490982	5168405	388	600.5	159.0	-82.5	423.0	498.0	75.0	74.8	0.41	0.24	0.02	0.09	0.05	0.06	0.59
138 MZNO	12TK0153C	490982	5168405	388	618.1	164.1	-82.3	423.0	543.0	120.0	117.8	0.39	0.23	0.02	0.10	0.06	0.05	0.56
138 MZNO	12TK0156	490996	5168294	388	703.8	292.8	-82.9	417.3	540.9	123.6	122.9	0.86	0.63	0.02	0.22	0.12	0.14	1.26
138 MZNO	12TK0160	490996	5168293	388	634.0	240.0	-85.5	417.5	554.0	136.5	136.4	1.06	0.84	0.03	0.27	0.16	0.18	1.57
138 MZNO	13TK0167	490922	5168361	388	635.8	240.0	-89.4	417.0	494.5	77.5	77.5	0.34	0.16	0.02	0.13	0.07	0.05	0.49
138 MZNO	13TK0171	491049	5168348	389	641.9	157.4	-89.8	416.0	532.5	116.5	116.5	0.65	0.45	0.02	0.17	0.10	0.11	0.94
138 MZNO	13TK0189	491051	5168340	389	652.7	46.9	-84.5	416.8	530.1	113.4	112.6	0.38	0.20	0.02	0.12	0.07	0.06	0.55
138 MZNO	13TK0194	490881	5168389	389	615.0	144.7	-89.4	410.0	468.0	58.0	58.0	0.26	0.10	0.01	0.09	0.05	0.04	0.37
138 MZNO	13TK0196	490845	5168229	389	724.5	75.1	-85.3	413.5	452.5	39.0	38.8	0.45	0.24	0.02	0.10	0.06	0.06	0.63
138 MZNO	14TK0206	491095	5168293	388	786.0	356.5	-86.3	417.0	533.4	116.4	115.6	0.45	0.29	0.02	0.15	0.08	0.08	0.66
138 MZNO	16TK0233	490914	5168369	388	545.9	307.1	-85.7	410.5	418.0	7.5	7.5	0.27	0.10	0.01	0.13	0.08	0.05	0.39
138 MZNO	16TK0233A	490914	5168369	388	583.3	308.7	-84.5	411.0	420.0	9.0	8.9	0.27	0.10	0.02	0.11	0.07	0.04	0.38
138 MZNO	16TK0233B	490914	5168369	388	551.1	302.0	-85.5	412.0	507.0	95.0	93.8	0.38	0.19	0.02	0.11	0.07	0.05	0.54
138 MZNO	16TK0233E	490914	5168369	388	562.4	302.4	-85.6	412.0	476.0	64.0	63.9	0.25	0.10	0.01	0.08	0.04	0.03	0.35
138 MZNO	16TK0234	490950	5168389	388	696.8	180.6	-85.1	419.0	531.5	112.5	111.0	0.40	0.22	0.02	0.10	0.06	0.05	0.57
138 MZNO	16TK0245	490937	5168279	388	585.0	288.6	-88.1	414.0	531.0	117.0	116.8	0.63	0.46	0.02	0.24	0.13	0.13	0.95
138 MZNO	16TK0246	490881	5168290	388	611.4	10.4	-81.0	419.0	510.5	91.5	90.8	0.42	0.28	0.02	0.12	0.07	0.08	0.61
138 MZNO	16TK0248	491049	5168348	389	680.3	142.0	-86.8	417.5	549.0	131.5	131.2	0.86	0.60	0.03	0.22	0.13	0.15	1.25
138 MZNO	16TK0250	490999	5168293	388	648.9	169.1	-87.9	419.0	559.9	140.9	140.9	0.47	0.36	0.02	0.15	0.08	0.08	0.72

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
138 MZNO	20TK0265	490949	5168389	388	584.0	174.3	-83.6	422.0	535.0	113.0	112.7	0.52	0.32	0.02	0.15	0.09	0.07	0.74
CGO West MMS/MSU	07L024	491138	5169307	388	177.4	202.0	-89.9	136.3	138.5	2.2	2.2	3.09	1.02	0.11	0.13	0.07	0.11	3.82
CGO West MMS/MSU	07L033	491135	5169177	388	192.0	214.0	-89.2	162.3	165.1	2.8	2.8	0.52	0.32	0.02	0.43	0.24	0.19	0.83
CGO West MMS/MSU	08L043	490993	5169220	388	249.3	179.8	-81.2	186.4	187.6	1.2	1.1	2.17	0.51	0.07	0.10	0.06	0.06	2.59
CGO West MMS/MSU	10TK0124	491106	5169429	388	205.3	182.5	-81.1	109.5	112.0	2.5	2.5	1.40	0.90	0.03	0.34	0.23	0.09	1.93
CGO West MMS/MSU	13TK0166	491100	5169249	389	414.0	266.4	-89.9	161.9	163.5	1.6	1.6	1.68	1.51	0.04	0.46	0.22	0.20	2.54
CGO West MMS/MSU	13TK0169	491099	5169354	389	164.3	151.0	-89.9	127.5	128.2	0.7	0.7	0.94	1.06	0.02	0.47	0.29	0.32	1.60
CGO West MMS/MSU	13TK0174	491001	5169144	389	221.3	117.3	-89.7	192.5	197.1	4.6	4.6	2.92	1.28	0.09	0.28	0.18	0.23	3.79
CGO West MMS/MSU	21TK0282	491191	5169242	389	166.6	318.8	-75.9	135.3	140.6	5.3	5.2	4.49	1.50	0.12	0.31	0.27	0.12	5.52
CGO West MMS/MSU	21TK0285	491004	5169145	389	218.5	338.5	-87.1	193.9	195.7	1.8	1.7	4.81	1.88	0.15	0.37	0.24	0.22	6.08
CGO West MMS/MSU	21TK0287	491005	5169142	388	217.9	36.2	-75.8	191.3	193.6	2.3	2.2	5.87	2.35	0.18	0.45	0.27	0.27	7.44
CGO West MMS/MSU	21TK0298	491113	5169255	388	203.3	241.9	-72.4	169.8	170.9	1.1	1.1	0.53	0.26	0.02	0.10	0.04	0.05	0.71
CGO West MMS/MSU	21TK0299	491108	5169254	388	182.3	0.5	-65.9	149.9	152.0	2.0	1.9	1.79	0.77	0.06	0.18	0.09	0.10	2.32
CGO West MMS/MSU	21TK0313	491068	5169036	389	267.3	317.9	-56.0	225.4	239.4	13.9	12.1	5.59	2.16	0.17	0.26	0.22	0.08	6.97
CGO West MMS/MSU	21TK0314	491069	5169036	388	236.4	11.8	-55.5	197.8	198.9	1.1	1.0	1.07	0.65	0.04	0.12	0.09	0.11	1.48
CGO West MMS/MSU	21TK0316	491068	5169036	389	313.9	308.9	-54.1	241.6	248.9	7.3	6.1	4.80	1.88	0.15	0.23	0.18	0.12	6.02
CGO West MMS/MSU	21TK0317	491077	5169039	389	292.6	305.6	-59.7	248.0	253.2	5.2	4.6	5.34	2.16	0.13	0.17	0.17	0.08	6.62
CGO West MMS/MSU	21TK0320	491009	5168964	389	296.1	340.2	-53.5	267.8	277.7	9.9	8.2	5.79	2.16	0.16	0.33	0.24	0.20	7.18
CGO West MMS/MSU	21TK0321	491078	5169040	389	224.9	21.7	-55.1	206.7	207.8	1.1	0.9	2.45	0.99	0.07	0.27	0.16	0.11	3.12
CGO West MMS/MSU	21TK0323	491078	5169039	388	249.3	358.8	-72.0	192.0	202.8	10.8	10.4	4.93	1.84	0.15	0.34	0.26	0.13	6.17
CGO West MMS/MSU	21TK0328	491077	5169040	388	231.7	342.1	-68.8	191.7	199.1	7.4	7.0	1.70	0.58	0.06	0.21	0.14	0.10	2.16
CGO West MMS/MSU	21TK0329	491074	5169045	389	228.0	20.5	-66.5	187.9	199.2	11.3	10.6	2.83	1.23	0.09	0.26	0.19	0.12	3.65
CGO West MMS/MSU	21TK0330	491008	5168963	389	301.8	16.4	-60.0	269.1	273.6	4.4	3.9	8.11	4.69	0.09	2.65	2.58	2.25	11.49
CGO West MMS/MSU	21TK0331	491060	5169035	388	277.4	333.8	-72.6	232.0	236.9	4.9	4.7	3.42	2.22	0.07	0.67	0.39	0.26	4.70

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
CGO West MMS/MSU	21TK0332	491060	5169036	388	231.7	355.7	-71.2	195.9	201.3	5.4	5.2	4.23	1.50	0.15	0.18	0.17	0.08	5.29
CGO West MMS/MSU	21TK0333	491009	5168964	389	403.9	336.3	-56.2	290.2	291.7	1.5	1.2	4.52	2.27	0.11	0.21	0.17	0.10	5.78
CGO West MMS/MSU	21TK0334	491060	5169036	388	324.9	326.2	-65.5	231.6	246.9	15.3	14.1	6.08	2.50	0.16	0.40	0.30	0.14	7.63
CGO West MMS/MSU	21TK0335	491143	5169175	388	219.5	215.7	-70.0	185.3	190.1	4.8	4.6	4.27	1.94	0.14	0.40	0.26	0.19	5.55
CGO West MMS/MSU	21TK0336	491009	5168964	389	295.1	25.5	-59.0	265.3	274.0	8.7	7.7	4.80	2.02	0.11	0.62	0.49	0.27	6.11
CGO West MMS/MSU	21TK0338	491143	5169175	388	209.7	241.4	-75.8	173.3	174.8	1.5	1.4	1.96	0.58	0.05	0.34	0.19	0.13	2.43
CGO West MMS/MSU	21TK0339	491143	5169176	389	228.6	284.9	-65.9	188.7	190.4	1.7	1.6	2.57	1.19	0.07	0.36	0.23	0.14	3.35
CGO West MMS/MSU	21TK0341	491143	5169175	388	203.3	261.5	-79.0	165.5	169.0	3.5	3.4	2.89	0.96	0.10	0.18	0.13	0.10	3.60
CGO West MMS/MSU	21TK0344	491142	5169175	388	209.7	324.0	-71.8	165.3	167.4	2.1	2.0	1.34	0.55	0.06	0.08	0.05	0.06	1.75
CGO West MMS/MSU	21TK0345	491142	5169176	388	195.4	345.9	-59.6	171.5	174.9	3.4	3.0	3.50	1.53	0.09	0.39	0.25	0.15	4.47
CGO West MMS/MSU	21TK0348	490988	5168995	389	298.1	42.3	-58.7	250.3	263.4	13.2	11.5	5.48	2.32	0.12	0.72	0.56	0.27	6.98
CGO West MMS/MSU	21TK0349	491142	5169168	388	203.6	297.1	-74.4	166.5	167.6	1.2	1.1	3.07	1.54	0.08	0.11	0.10	0.05	3.94
CGO West MMS/MSU	21TK0350	490988	5168995	388	285.6	35.3	-60.6	245.7	258.9	13.3	11.8	4.71	1.81	0.13	0.35	0.31	0.16	5.88
CGO West MMS/MSU	21TK0351	491136	5169180	389	218.9	220.3	-62.6	197.4	199.0	1.6	1.4	1.60	0.79	0.06	0.12	0.08	0.07	2.13
CGO West MMS/MSU	21TK0354	491137	5169180	389	517.6	212.4	-63.2	198.5	202.3	3.9	3.5	2.70	1.26	0.09	0.22	0.20	0.17	3.55
CGO West MMS/MSU	21TK0355	491137	5169180	389	257.4	192.4	-69.4	202.9	218.0	15.1	14.4	5.12	1.74	0.13	0.73	0.51	0.17	6.38
CGO West MMS/MSU	21TK0357	491136	5169180	388	279.8	211.3	-77.0	173.8	176.4	2.7	2.6	4.19	1.33	0.14	0.23	0.19	0.10	5.17
CGO West MMS/MSU	21TK0360	490988	5168995	388	297.3	16.3	-61.3	241.6	256.4	14.8	13.1	5.05	2.04	0.13	0.32	0.22	0.14	6.31
CGO West MMS/MSU	21TK0361	491134	5169166	389	224.3	347.7	-50.9	193.7	194.9	1.2	1.0	2.37	1.09	0.08	0.25	0.18	0.09	3.08
CGO West MMS/MSU	21TK0362	491134	5169166	389	206.7	13.2	-64.4	156.3	158.2	1.9	1.8	3.55	1.38	0.15	0.22	0.11	0.08	4.55
CGO West MMS/MSU	21TK0368	491066	5169122	388	285.9	135.1	-80.1	184.2	193.2	8.9	8.8	2.66	1.22	0.08	0.25	0.17	0.12	3.44
CGO West MMS/MSU	21TK0369	491021	5169143	389	224.0	269.9	-77.9	203.5	209.7	6.2	6.1	4.54	1.96	0.13	0.24	0.19	0.17	5.77
CGO West MMS/MSU	21TK0371	491021	5169144	389	228.0	340.6	-78.7	189.8	192.5	2.7	2.6	6.14	2.24	0.18	0.50	0.31	0.41	7.73
CGO West MMS/MSU	21TK0373	491021	5169143	388	224.0	20.6	-68.9	188.2	190.3	2.1	2.0	4.38	1.71	0.13	0.44	0.24	0.25	5.56

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
CGO West MMS/MSU	21TK0374	491021	5169142	389	228.0	293.4	-75.6	194.5	195.6	1.2	1.2	0.58	0.56	0.02	0.09	0.07	0.11	0.89
CGO West MMS/MSU	22TK0383	491154	5169304	388	173.1	260.1	-73.0	148.9	150.8	1.9	1.8	3.42	1.48	0.09	0.40	0.34	0.20	4.39
CGO West MMS/MSU	22TK0384	491108	5169254	389	188.4	320.0	-79.0	164.2	165.3	1.1	1.1	1.78	0.98	0.05	0.38	0.21	0.14	2.41
CGO West MMS/MSU	22TK0385	491154	5169304	388	178.3	194.0	-79.0	148.4	150.7	2.3	2.3	4.06	1.47	0.13	0.45	0.28	0.17	5.12
CGO West MMS/MSU	22TK0386	491154	5169305	388	171.0	123.0	-76.0	141.8	143.1	1.3	1.3	3.33	1.72	0.10	0.37	0.28	0.10	4.39
CGO West MMS/MSU	22TK0388	491024	5169141	389	216.4	30.0	-71.0	187.0	190.5	3.4	3.3	3.11	1.14	0.09	0.27	0.17	0.18	3.91
CGO West MMS/MSU	22TK0392	491149	5169168	389	178.9	288.0	-70.0	170.4	172.1	1.7	1.6	4.22	1.82	0.13	0.26	0.35	0.22	5.43
CGO West MMS/MSU	22TK0396	491115	5169076	389	246.3	336.9	-81.9	204.5	213.4	8.8	8.7	4.18	1.30	0.12	0.38	0.29	0.12	5.12
CGO West Disseminated	07L024	491138	5169307	388	177.4	202.0	-89.9	97.5	136.3	38.8	38.8	0.38	0.27	0.02	0.07	0.04	0.04	0.55
CGO West Disseminated	07L033	491135	5169177	388	192.0	214.0	-89.2	143.4	162.3	18.9	18.9	0.21	0.09	0.01	0.03	0.01	0.02	0.29
CGO West Disseminated	08L043	490993	5169220	388	249.3	179.8	-81.2	160.0	186.4	26.4	26.0	0.50	0.36	0.02	0.09	0.05	0.07	0.72
CGO West Disseminated	10TK0124	491106	5169429	388	205.3	182.5	-81.1	61.5	109.5	48.0	47.5	0.32	0.20	0.02	0.03	0.02	0.04	0.46
CGO West Disseminated	13TK0166	491100	5169249	389	414.0	266.4	-89.9	119.0	161.9	42.9	42.9	0.40	0.24	0.02	0.05	0.04	0.04	0.56
CGO West Disseminated	13TK0169	491099	5169354	389	164.3	151.0	-89.9	81.0	127.5	46.5	46.5	0.42	0.26	0.02	0.05	0.03	0.04	0.59
CGO West Disseminated	13TK0174	491001	5169144	389	221.3	117.3	-89.7	165.5	192.5	27.0	27.0	0.68	0.36	0.02	0.06	0.04	0.04	0.90
CGO West Disseminated	21TK0282	491191	5169242	389	166.6	318.8	-75.9	117.5	135.3	17.8	17.4	0.42	0.28	0.02	0.08	0.04	0.04	0.59
CGO West Disseminated	21TK0285	491004	5169145	389	218.5	338.5	-87.1	163.5	193.9	30.4	30.4	0.45	0.29	0.02	0.08	0.05	0.06	0.64
CGO West Disseminated	21TK0287	491005	5169142	388	217.9	36.2	-75.8	157.0	191.3	34.3	33.1	0.57	0.38	0.02	0.11	0.07	0.07	0.81
CGO West Disseminated	21TK0298	491113	5169255	388	203.3	241.9	-72.4	126.5	169.8	43.3	42.1	0.53	0.35	0.02	0.07	0.04	0.05	0.75
CGO West Disseminated	21TK0299	491108	5169254	388	182.3	0.5	-65.9	107.0	149.9	42.9	39.8	0.49	0.33	0.02	0.10	0.06	0.05	0.70
CGO West Disseminated	21TK0313	491068	5169036	389	267.3	317.9	-56.0	210.3	225.4	15.1	13.1	0.44	0.25	0.02	0.09	0.05	0.05	0.61
CGO West Disseminated	21TK0314	491069	5169036	388	236.4	11.8	-55.5	178.4	197.8	19.4	16.7	0.27	0.15	0.01	0.02	0.01	0.02	0.37
CGO West Disseminated	21TK0316	491068	5169036	389	313.9	308.9	-54.1	224.1	241.6	17.5	14.6	0.55	0.38	0.02	0.11	0.07	0.07	0.79
CGO West Disseminated	21TK0321	491078	5169040	389	224.9	21.7	-55.1	189.0	206.7	17.7	14.8	0.33	0.18	0.01	0.06	0.03	0.05	0.47

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
CGO West Disseminated	21TK0323	491078	5169039	388	249.3	358.8	-72.0	179.1	192.0	12.9	12.4	0.40	0.19	0.01	0.10	0.06	0.04	0.55
CGO West Disseminated	21TK0328	491077	5169040	388	231.7	342.1	-68.8	179.7	191.7	12.0	11.3	0.62	0.39	0.02	0.09	0.05	0.06	0.86
CGO West Disseminated	21TK0329	491074	5169045	389	228.0	20.5	-66.5	174.5	187.9	13.4	12.5	0.31	0.15	0.01	0.03	0.02	0.02	0.41
CGO West Disseminated	21TK0332	491060	5169036	388	231.7	355.7	-71.2	179.7	195.9	16.2	15.6	0.79	0.44	0.02	0.16	0.09	0.10	1.08
CGO West Disseminated	21TK0335	491143	5169175	388	219.5	215.7	-70.0	160.4	185.3	24.9	23.6	0.39	0.23	0.02	0.07	0.03	0.05	0.54
CGO West Disseminated	21TK0338	491143	5169175	388	209.7	241.4	-75.8	151.7	173.3	21.6	21.0	0.23	0.12	0.01	0.02	0.01	0.01	0.32
CGO West Disseminated	21TK0339	491143	5169176	389	228.6	284.9	-65.9	146.5	188.7	42.2	39.4	0.51	0.35	0.02	0.05	0.03	0.05	0.72
CGO West Disseminated	21TK0341	491143	5169175	388	203.3	261.5	-79.0	145.5	165.5	20.0	19.8	0.25	0.13	0.01	0.04	0.02	0.02	0.35
CGO West Disseminated	21TK0344	491142	5169175	388	209.7	324.0	-71.8	138.2	165.3	27.2	26.3	0.24	0.14	0.01	0.04	0.02	0.06	0.35
CGO West Disseminated	21TK0345	491142	5169176	388	195.4	345.9	-59.6	138.6	171.5	32.9	29.1	0.25	0.13	0.01	0.02	0.01	0.02	0.34
CGO West Disseminated	21TK0349	491142	5169168	388	203.6	297.1	-74.4	143.5	166.5	23.0	22.4	0.36	0.20	0.01	0.05	0.03	0.03	0.50
CGO West Disseminated	21TK0351	491136	5169180	389	218.9	220.3	-62.6	166.7	197.4	30.7	27.9	0.26	0.15	0.01	0.03	0.01	0.03	0.36
CGO West Disseminated	21TK0354	491137	5169180	389	517.6	212.4	-63.2	172.0	198.5	26.5	24.3	0.34	0.20	0.01	0.04	0.02	0.04	0.47
CGO West Disseminated	21TK0357	491136	5169180	388	279.8	211.3	-77.0	150.6	173.8	23.2	22.7	0.25	0.13	0.01	0.03	0.02	0.03	0.35
CGO West Disseminated	21TK0361	491134	5169166	389	224.3	347.7	-50.9	145.0	193.7	48.7	39.5	0.58	0.37	0.02	0.08	0.05	0.05	0.81
CGO West Disseminated	21TK0362	491134	5169166	389	206.7	13.2	-64.4	138.5	156.3	17.8	16.4	0.38	0.26	0.01	0.05	0.03	0.04	0.54
CGO West Disseminated	21TK0368	491066	5169122	388	285.9	135.1	-80.1	167.0	184.2	17.2	17.1	0.46	0.27	0.02	0.07	0.04	0.06	0.64
CGO West Disseminated	21TK0369	491021	5169143	389	224.0	269.9	-77.9	173.3	203.5	30.2	29.6	0.87	0.61	0.03	0.10	0.06	0.07	1.22
CGO West Disseminated	21TK0371	491021	5169144	389	228.0	340.6	-78.7	158.4	189.8	31.4	30.8	0.59	0.40	0.02	0.10	0.06	0.07	0.83
CGO West Disseminated	21TK0373	491021	5169143	388	224.0	20.6	-68.9	155.0	188.2	33.2	31.3	0.69	0.46	0.02	0.13	0.08	0.08	0.98
CGO West Disseminated	21TK0374	491021	5169142	389	228.0	293.4	-75.6	166.2	194.5	28.3	27.6	0.52	0.35	0.02	0.05	0.04	0.05	0.73
CGO West Disseminated	22TK0383	491154	5169304	388	173.1	260.1	-73.0	104.9	148.9	44.0	42.5	0.44	0.30	0.02	0.09	0.05	0.06	0.63
CGO West Disseminated	22TK0384	491108	5169254	389	188.4	320.0	-79.0	111.0	164.2	53.2	52.5	0.75	0.59	0.02	0.14	0.08	0.09	1.10
CGO West Disseminated	22TK0385	491154	5169304	388	178.3	194.0	-79.0	105.0	148.4	43.4	43.0	0.31	0.20	0.01	0.06	0.04	0.04	0.46

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
CGO West Disseminated	22TK0386	491154	5169305	388	171.0	123.0	-76.0	105.9	141.8	35.9	35.2	0.45	0.23	0.02	0.07	0.05	0.04	0.61
CGO West Disseminated	22TK0388	491024	5169141	389	216.4	30.0	-71.0	156.5	187.0	30.5	28.9	0.40	0.25	0.02	0.07	0.04	0.05	0.56
CGO West Disseminated	22TK0392	491149	5169168	389	178.9	288.0	-70.0	146.8	170.4	23.6	22.5	0.55	0.36	0.02	0.06	0.04	0.05	0.77
CGO East MMS/MSU	03L007	491180	5168997	388	228.3	223.0	-88.6	213.5	214.7	1.2	1.2	3.19	1.55	0.12	0.21	0.30	0.29	4.24
CGO East MMS/MSU	03L010	491178	5168998	388	237.4	107.0	-61.8	211.5	213.8	2.3	2.0	0.93	0.70	0.03	0.11	0.04	0.07	1.33
CGO East MMS/MSU	03L011	491289	5169183	389	194.5	110.0	-60.0	157.5	160.8	3.3	2.9	0.19	0.14	0.01	0.03	0.02	0.06	0.29
CGO East MMS/MSU	03L013	491107	5168910	388	252.4	0.0	-90.0	221.0	223.9	2.9	2.9	1.08	0.53	0.03	0.27	0.14	0.21	1.46
CGO East MMS/MSU	03L014	491330	5169065	389	196.9	0.0	-90.0	166.5	168.0	1.5	1.5	0.97	2.07	0.03	0.15	0.06	0.36	1.98
CGO East MMS/MSU	07L028	491379	5168962	388	367.3	194.3	-89.2	137.0	138.6	1.6	1.6	0.43	0.23	0.02	0.06	0.03	0.08	0.60
CGO East MMS/MSU	07L035	491343	5168813	388	165.2	0.0	-90.0	114.5	117.5	3.0	3.0	0.90	0.57	0.03	0.03	0.04	0.03	1.22
CGO East MMS/MSU	09TK0097	491255	5168876	389	251.5	350.3	-85.9	172.0	175.2	3.2	3.2	0.90	0.63	0.03	0.22	0.08	0.20	1.31
CGO East MMS/MSU	13TK0168	491393	5168895	389	160.9	191.8	-89.8	115.2	117.8	2.6	2.6	1.08	0.86	0.03	0.07	0.07	0.08	1.54
CGO East MMS/MSU	13TK0170	491401	5169046	389	179.2	192.5	-89.2	141.0	143.3	2.3	2.3	0.29	0.14	0.02	0.02	0.01	0.03	0.40
CGO East MMS/MSU	13TK0186	491301	5169450	388	119.5	0.0	-90.0	83.5	86.0	2.5	2.5	0.41	0.23	0.02	0.13	0.07	0.06	0.59
CGO East MMS/MSU	13TK0187	491280	5169254	389	177.0	51.2	-89.7	138.9	141.8	2.8	2.8	3.89	1.65	0.12	0.36	0.28	0.37	5.02
CGO East MMS/MSU	13TK0190	491392	5169254	389	177.0	73.5	-89.6	113.0	115.8	2.8	2.8	0.44	0.19	0.02	0.03	0.02	0.03	0.58
CGO East MMS/MSU	13TK0193	491299	5169149	389	205.5	55.1	-89.6	163.0	164.4	1.4	1.4	0.82	0.34	0.02	0.11	0.04	0.07	1.06
CGO East MMS/MSU	13TK0197	491022	5168949	389	428.0	303.7	-87.0	252.0	254.0	2.0	2.0	0.54	0.37	0.02	0.15	0.09	0.12	0.79
CGO East MMS/MSU	13TK0200	491221	5168779	389	249.3	261.8	-84.5	154.4	156.5	2.1	2.1	0.92	0.53	0.04	0.01	0.03	0.03	1.26
CGO East MMS/MSU	16TK0238	491292	5169362	389	1224.0	161.2	-84.2	117.7	119.9	2.2	2.2	1.75	0.89	0.06	0.16	0.15	0.12	2.33
CGO East MMS/MSU	20TK0266	491023	5168951	389	283.5	105.9	-82.9	244.5	247.8	3.3	3.2	1.54	0.88	0.05	0.38	0.19	0.28	2.18
CGO East MMS/MSU	20TK0267	491023	5168951	388	295.5	78.7	-70.1	247.7	249.0	1.3	1.2	3.35	0.89	0.13	0.79	0.44	0.29	4.29
CGO East MMS/MSU	20TK0271	491022	5168955	389	299.6	111.0	-78.5	242.8	245.6	2.7	2.7	5.13	1.70	0.16	0.35	0.20	0.21	6.34
CGO East MMS/MSU	21TK0281	491193	5169142	389	221.3	140.0	-73.2	193.5	197.0	3.5	3.4	1.58	0.91	0.05	0.24	0.17	0.19	2.18

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
CGO East MMS/MSU	21TK0283	491304	5169146	389	203.3	259.2	-78.0	171.3	176.4	5.1	5.0	5.17	1.68	0.14	0.57	0.32	0.20	6.39
CGO East MMS/MSU	21TK0288	491297	5169147	389	198.3	311.9	-75.2	167.2	169.7	2.5	2.4	1.88	1.06	0.05	0.55	0.28	0.34	2.63
CGO East MMS/MSU	21TK0289	491179	5168986	388	233.9	23.6	-79.5	210.1	212.5	2.4	2.4	3.46	1.14	0.11	0.49	0.33	0.32	4.39
CGO East MMS/MSU	21TK0290	491301	5169146	389	209.7	214.1	-71.8	183.1	184.7	1.6	1.5	5.21	1.74	0.16	0.42	0.33	0.62	6.57
CGO East MMS/MSU	21TK0291	491180	5168986	388	247.5	237.5	-80.1	222.7	224.6	1.9	1.9	2.91	1.58	0.09	0.07	0.09	0.06	3.82
CGO East MMS/MSU	21TK0294	491179	5168986	388	301.1	222.3	-72.9	227.8	231.1	3.3	3.2	0.76	0.66	0.02	0.10	0.05	0.16	1.14
CGO East MMS/MSU	21TK0295	491293	5169151	389	189.0	345.3	-67.3	161.4	165.9	4.6	4.2	3.44	1.28	0.09	0.44	0.28	0.22	4.35
CGO East MMS/MSU	21TK0296	491180	5168986	389	236.7	49.5	-73.9	207.9	209.5	1.6	1.6	2.93	1.96	0.11	0.21	0.15	0.20	4.08
CGO East MMS/MSU	21TK0302	491169	5168992	388	240.8	50.0	-61.5	218.9	220.1	1.2	1.1	3.62	0.95	0.09	0.13	0.13	0.16	4.31
CGO East MMS/MSU	21TK0304	491068	5169034	388	268.2	84.4	-52.8	245.3	248.6	3.3	2.7	2.95	1.18	0.09	0.35	0.21	0.12	3.76
CGO East MMS/MSU	21TK0305	491169	5168991	388	264.3	68.1	-61.0	216.2	217.5	1.2	1.1	1.59	0.62	0.07	0.03	0.05	0.06	2.04
CGO East MMS/MSU	21TK0306	491067	5169036	389	283.5	184.9	-73.8	254.5	256.2	1.7	1.7	2.21	0.69	0.08	0.23	0.15	0.16	2.78
CGO East MMS/MSU	21TK0308	491169	5168992	388	246.6	42.8	-56.5	223.1	223.9	0.8	0.6	2.90	1.52	0.14	0.36	0.26	0.29	4.03
CGO East MMS/MSU	21TK0309	491067	5169036	388	277.5	158.2	-67.5	248.2	251.7	3.5	3.3	3.47	1.68	0.10	0.18	0.15	0.10	4.45
CGO East MMS/MSU	21TK0311	491068	5169035	388	264.4	120.7	-67.8	234.5	238.9	4.4	4.1	3.47	1.41	0.14	0.34	0.20	0.18	4.51
CGO East MMS/MSU	21TK0318	491009	5168963	389	279.8	142.1	-75.8	249.2	251.7	2.5	2.4	1.25	0.67	0.04	0.28	0.14	0.14	1.72
CGO East MMS/MSU	21TK0325	491009	5168963	389	310.3	170.6	-77.5	259.0	260.4	1.4	1.3	0.43	0.54	0.02	0.04	0.03	0.04	0.71
CGO East MMS/MSU	21TK0358	490989	5168994	388	299.8	158.6	-74.0	264.3	267.2	2.9	2.8	5.68	2.04	0.17	0.35	0.23	0.52	7.12
CGO East MMS/MSU	22TK0390	491263	5169248	389	167.6	30.0	-68.0	133.6	140.2	6.6	6.1	3.16	1.07	0.10	0.27	0.15	0.21	3.95
CGO East MMS/MSU	22TK0391	491190	5168984	389	234.7	83.1	-85.6	207.3	209.3	2.0	2.0	2.65	0.93	0.10	0.12	0.08	0.11	3.34
CGO East MMS/MSU	22TK0393	491264	5169250	389	173.7	29.2	-53.0	152.5	153.7	1.2	1.0	2.64	2.45	0.04	1.06	1.01	0.30	4.09
CGO East MMS/MSU	22TK0394	491191	5168983	388	239.1	231.6	-86.2	212.8	215.3	2.5	2.5	2.62	0.64	0.10	0.08	0.08	0.10	3.17
CGO East MM/MSU	22TK0395	491265	5169247	389	172.8	54.9	-68.5	147.2	149.4	2.2	2.1	1.71	0.64	0.06	0.26	0.20	0.11	2.21
CGO East MMS/MSU	22TK0398	491253	5169244	389	303.9	112.2	-72.9	157.4	158.4	1.1	1.0	4.75	2.33	0.15	0.32	0.23	0.09	6.17

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
CGO East Disseminated	03L007	491180	5168997	388	228.3	223.0	-88.6	185.8	213.5	27.7	27.7	0.58	0.42	0.01	0.21	0.12	0.14	0.86
CGO East Disseminated	03L010	491178	5168998	388	237.4	107.0	-61.8	188.4	211.5	23.1	20.4	0.39	0.28	0.01	0.07	0.03	0.07	0.56
CGO East Disseminated	03L011	491289	5169183	389	194.5	110.0	-60.0	129.0	157.5	28.5	24.7	0.38	0.23	0.01	0.08	0.05	0.04	0.53
CGO East Disseminated	03L013	491107	5168910	388	252.4	0.0	-90.0	213.7	221.0	7.3	7.3	0.14	0.05	0.01	0.02	0.01	0.01	0.19
CGO East Disseminated	03L014	491330	5169065	389	196.9	0.0	-90.0	136.0	166.5	30.5	30.5	0.29	0.18	0.01	0.08	0.04	0.05	0.42
CGO East Disseminated	07L028	491379	5168962	388	367.3	194.3	-89.2	126.5	137.0	10.5	10.5	0.21	0.13	0.01	0.03	0.01	0.03	0.31
CGO East Disseminated	07L035	491343	5168813	388	165.2	0.0	-90.0	111.5	114.5	3.0	3.0	0.63	0.44	0.02	0.04	0.04	0.04	0.88
CGO East Disseminated	09TK0097	491255	5168876	389	251.5	350.3	-85.9	154.5	172.0	17.5	17.4	0.38	0.23	0.01	0.06	0.02	0.05	0.53
CGO East Disseminated	13TK0168	491393	5168895	389	160.9	191.8	-89.8	112.5	115.2	2.7	2.7	0.62	0.43	0.02	0.03	0.03	0.04	0.86
CGO East Disseminated	13TK0170	491401	5169046	389	179.2	192.5	-89.2	130.0	141.0	11.0	11.0	0.17	0.08	0.01	0.01	0.01	0.02	0.24
CGO East Disseminated	13TK0186	491301	5169450	388	119.5	0.0	-90.0	59.4	83.5	24.1	24.1	0.42	0.27	0.02	0.14	0.08	0.06	0.61
CGO East Disseminated	13TK0187	491280	5169254	389	177.0	51.2	-89.7	115.0	138.9	23.9	23.9	0.43	0.27	0.02	0.14	0.08	0.09	0.63
CGO East Disseminated	13TK0190	491392	5169254	389	177.0	73.5	-89.6	89.0	113.0	24.0	24.0	0.34	0.19	0.02	0.10	0.06	0.05	0.50
CGO East Disseminated	13TK0193	491299	5169149	389	205.5	55.1	-89.6	139.5	163.0	23.5	23.5	0.61	0.37	0.02	0.15	0.09	0.10	0.86
CGO East Disseminated	13TK0197	491022	5168949	389	428.0	303.7	-87.0	218.7	252.0	33.3	33.3	0.32	0.17	0.02	0.08	0.03	0.06	0.46
CGO East Disseminated	13TK0200	491221	5168779	389	249.3	261.8	-84.5	140.0	154.4	14.4	14.4	0.76	0.44	0.02	0.04	0.04	0.03	1.02
CGO East Disseminated	16TK0238	491292	5169362	389	1224.0	161.2	-84.2	80.0	117.7	37.7	37.6	0.52	0.36	0.02	0.10	0.06	0.07	0.76
CGO East Disseminated	20TK0266	491023	5168951	389	283.5	105.9	-82.9	221.0	244.5	23.5	23.3	0.47	0.32	0.02	0.13	0.05	0.11	0.69
CGO East Disseminated	20TK0267	491023	5168951	388	295.5	78.7	-70.1	223.0	247.7	24.7	23.0	0.54	0.36	0.02	0.20	0.10	0.12	0.80
CGO East Disseminated	20TK0271	491022	5168955	389	299.6	111.0	-78.5	221.6	242.8	21.3	20.8	0.45	0.28	0.02	0.10	0.05	0.10	0.66
CGO East Disseminated	21TK0281	491193	5169142	389	221.3	140.0	-73.2	152.0	193.5	41.5	39.6	0.48	0.26	0.02	0.22	0.12	0.09	0.69
CGO East Disseminated	21TK0283	491304	5169146	389	203.3	259.2	-78.0	143.2	171.3	28.0	27.4	0.54	0.36	0.02	0.20	0.11	0.10	0.80
CGO East Disseminated	21TK0288	491297	5169147	389	198.3	311.9	-75.2	141.0	167.2	26.2	25.5	0.56	0.37	0.02	0.24	0.13	0.12	0.84
CGO East Disseminated	21TK0289	491179	5168986	388	233.9	23.6	-79.5	181.5	210.1	28.6	28.1	0.53	0.39	0.02	0.20	0.11	0.10	0.79

Mineral Domain	Hole No.	Easting (m)	Northing (m)	Elev. ASL (m)	Total Hole Length (m)	Azm. (°)	Dip (°)	From (m)	To (m)	Sample Length (m)	Vertical Length (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
CGO East Disseminated	21TK0290	491301	5169146	389	209.7	214.1	-71.8	151.8	183.1	31.4	30.1	0.76	0.51	0.02	0.26	0.14	0.15	1.12
CGO East Disseminated	21TK0291	491180	5168986	388	247.5	237.5	-80.1	202.9	222.7	19.9	19.7	0.62	0.45	0.02	0.19	0.09	0.17	0.92
CGO East Disseminated	21TK0294	491179	5168986	388	301.1	222.3	-72.9	209.9	227.8	17.9	17.3	0.59	0.36	0.02	0.06	0.03	0.07	0.81
CGO East Disseminated	21TK0295	491293	5169151	389	189.0	345.3	-67.3	137.5	161.4	23.9	22.1	0.57	0.35	0.02	0.16	0.09	0.09	0.81
CGO East Disseminated	21TK0296	491180	5168986	389	236.7	49.5	-73.9	178.0	207.9	29.9	28.7	0.51	0.35	0.02	0.16	0.08	0.11	0.75
CGO East Disseminated	21TK0302	491169	5168992	388	240.8	50.0	-61.5	190.0	218.9	28.9	25.8	0.63	0.47	0.02	0.22	0.11	0.14	0.95
CGO East Disseminated	21TK0304	491068	5169034	388	268.2	84.4	-52.8	216.3	245.3	29.0	23.9	0.51	0.37	0.01	0.21	0.11	0.15	0.78
CGO East Disseminated	21TK0305	491169	5168991	388	264.3	68.1	-61.0	185.8	216.2	30.4	26.8	0.59	0.37	0.02	0.12	0.06	0.09	0.83
CGO East Disseminated	21TK0306	491067	5169036	389	283.5	184.9	-73.8	217.5	254.5	37.0	35.8	0.48	0.28	0.02	0.17	0.08	0.10	0.70
CGO East Disseminated	21TK0308	491169	5168992	388	246.6	42.8	-56.5	179.1	223.1	44.0	37.6	0.49	0.31	0.02	0.13	0.07	0.08	0.71
CGO East Disseminated	21TK0309	491067	5169036	388	277.5	158.2	-67.5	224.3	248.2	23.9	22.5	0.52	0.33	0.02	0.10	0.05	0.09	0.73
CGO East Disseminated	21TK0311	491068	5169035	388	264.4	120.7	-67.8	186.1	234.5	48.5	45.6	0.51	0.29	0.02	0.15	0.07	0.09	0.73
CGO East Disseminated	21TK0318	491009	5168963	389	279.8	142.1	-75.8	232.8	249.2	16.4	15.9	0.31	0.18	0.01	0.05	0.02	0.05	0.44
CGO East Disseminated	21TK0325	491009	5168963	389	310.3	170.6	-77.5	241.1	259.0	17.9	17.5	0.16	0.05	0.01	0.02	0.01	0.01	0.21
CGO East Disseminated	21TK0358	490989	5168994	388	299.8	158.6	-74.0	234.6	264.3	29.7	28.8	0.51	0.33	0.02	0.13	0.05	0.12	0.74
CGO East Disseminated	22TK0390	491263	5169248	389	167.6	30.0	-68.0	112.3	133.6	21.3	19.8	0.38	0.22	0.01	0.18	0.11	0.08	0.57
CGO East Disseminated	22TK0391	491190	5168984	389	234.7	83.1	-85.6	177.7	207.3	29.6	29.5	0.48	0.29	0.02	0.11	0.05	0.09	0.69
CGO East Disseminated	22TK0393	491264	5169250	389	173.7	29.2	-53.0	118.6	152.5	34.0	28.9	0.88	0.56	0.03	0.30	0.16	0.14	1.26
CGO East Disseminated	22TK0394	491191	5168983	388	239.1	231.6	-86.2	187.8	212.8	24.9	24.8	0.42	0.26	0.01	0.06	0.03	0.06	0.59
CGO East Disseminated	22TK0395	491265	5169247	389	172.8	54.9	-68.5	116.1	147.2	31.0	29.6	0.74	0.49	0.02	0.24	0.14	0.15	1.08
CGO East Disseminated	22TK0398	491253	5169244	389	303.9	112.2	-72.9	123.6	157.4	33.8	32.5	0.54	0.33	0.02	0.14	0.08	0.08	0.77

Notes:
The Vertical Length is based on the trigonometry calculation of the composite length and central dip angle, not on a measurement of the composite intersection through the variable geometry mineral envelopes (wireframes).
NiEq grade based on metal prices in U.S. dollars of $9.50/lb Ni, $3.75/lb Cu, $25.00/lb Co, $1,000/oz Pt, $1,000/oz Pd and $1,400/oz Au using the following formula: NiEq% = Ni%+ Cu% x $3.75/$9.50 + Co% x $25.00/$9.50 + Pt[g/t]/31.103 x $1,000/$9.50/22.04 + Pd[g/t]/31.103 x $1,000/$9.50/22.04 + Au[g/t]/31.103 x $1,400/$9.50/22.04. Fe is not included in the NiEq calculation. The NiEq values are added for information purposes only, and not used to calculate the %Ni cut-off grade.

29.0 CERTIFICATES OF QUALIFIED PERSONS – NI 43-101

CERTIFICATE OF QUALIFIED PERSON BRIAN THOMAS

I, Brian Thomas P.Geo., state that:

(a) I am a Geologist at:
Golder Associates Limited
33 Mackenzie Street, Suite 100
Sudbury, Ontario, P3C 4Y1

(b) This certificate applies to the technical report titled **"November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota"** (the "Technical Report"), prepared for Talon Metals Corp. with an effective date of: November 2, 2022.

(c) I am a "qualified person" for the purposes of National Instrument 43-101 (the "Instrument"). My qualifications as a qualified person are as follows. I am a graduate of Laurentian University with a B.Sc. in Geology from 1994, am a member in good standing of the Professional Geoscientists of Ontario (#1366). My relevant experience after graduation includes over twenty-seven years of mine geology, mineral resource estimation and consulting experience in a variety of mineral projects nationally and internationally covering gold and base metal deposits including 9 years of direct nickel-copper, magmatic sulphide deposit experience with Vale in Sudbury, Ontario.

(d) My most recent personal inspection of the property described in the Technical Report occurred on July 16th, 2014, and for a duration of 1 day.

(e) I am responsible for Items 1.1, 1.2, 1.8, 1.9.1, 1.10.2, 1.10.5, 1.10.6, 2, 3, 4.1, 4.2, 4.3, 5, 6, 14, 25.4, 26.2, 26.5, 26.6, 27

(f) I am independent of the issuer as described in section 1.5 of the Instrument.

(g) My prior involvement with the property that is the subject of the Technical Report is as follows. I have previously participated in the Mineral Resource estimate and technical report titled "**First Independent Technical Report on the Tamarack North Project, Tamarack, Minnesota**" with an effective date of August 29, 2014 and have completed an interim Mineral Resource estimate of the MSU zone, with an effective date of April 3, 2015 publicly disclosed in the April 8, 2015 press release entitled "**Talon Metals Announces 167% Increase in Tonnage for the Inferred Massive Sulphide Resource, and an Increase in Grade from 6.42% to 7.26% NiEQ in the Massive Sulphide Unit at Tamarack**". I have also participated in the preparation of the technical report titled "**Second Independent Technical Report on the Tamarack North Project – Tamarack, Minnesota"** with an effective date of: March 26, 2018 as well as the technical report titled "**Preliminary Economic Assessment (PEA) of the Tamarack North Project – Tamarack, Minnesota**" with an effective date of December 14, 2018 and the technical report titled **"Updated Preliminary Economic Assessment (PEA) of the Tamarack North Project – Tamarack, Minnesota"** with an effective date of March 12, 2020, and the technical report titled **"NI43-101 Technical Report Preliminary Economic Assessment (PEA) #3 of the Tamarack North Project – Tamarack, Minnesota"** with an effective date of January 8,2021.

(h) I have read National Instrument 43-101. The part of the Technical Report for which I am responsible has been prepared in compliance with this Instrument; and

(i) At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the part of Technical Report for which I am responsible, contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated at Sudbury, Ontario this 2nd day of November 2022.

Signed and Sealed

____

Brian Thomas, P. Geo.
Principal Resource Geologist
Golder Associates Ltd.

CERTIFICATE OF QUALIFIED PERSON ROGER JACKSON

I, Roger Jackson, P.Geo., state that:

(a) I am a Geologist at:
Golder Associates Limited
33 Mackenzie Street, Suite 100
Sudbury, Ontario, P3C 4Y1

(b) This certificate applies to the technical report titled **"November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota"** (the "Technical Report"), prepared for Talon Metals Corp. with an effective date of: November 2, 2022.

(c) I am a "qualified person" for the purposes of National Instrument 43-101 (the "Instrument"). My qualifications as a qualified person are as follows. I am a graduate of Memorial University of Newfoundland with a B. Sc. in Geology from 1982; a graduate of Laurentian University with a M. Sc. in Geology specializing in sulphide mineral exploration from 2003; and a graduate of Laurentian University with a M. Eng in Mineral Resource Engineering from 2009; a member in good standing of the Professional Geoscientists of Ontario (#0779). My relevant experience after graduation includes over thirty-four years of exploration and mining geology, including 32 years of direct nickel-copper, magmatic sulphide deposit experience with Vale (formerly Inco Ltd.) in Sudbury, Ontario, and at Voisey's Bay, Newfoundland and Labrador. Eleven years with Vale were focused on the Mineral Resource Estimation of producing, past-producing and potentially producing base metal and precious metal deposits.

(d) My personal inspection of the property described in the Technical Report occurred on May 9 and 10, 2022, for a duration of 2 days.

(e) I am responsible for Items 1.4, 1.5, 1.6, 1.8, 1.10.1, 1.10.2, 1.10.5, 1.10.6, 3, 7, 8, 9, 10, 11, 12.1, 12.2, 14, 25.1, 25.2, 25.3, 25.4, 26.1, 26.2 and 28 of the Technical Report.

(f) I am independent of the issuer as described in section 1.5 of the Instrument.

(g) My prior involvement with the property that is the subject of the Technical Report is as follows. I commenced involvement with the sulphide mineral deposits of this property in April of 2022, updating the mineral resource envelopes and mineral resource models with incremental drillhole updates.

(h) I have read National Instrument 43-101. The part of the Technical Report for which I am responsible has been prepared in compliance with this Instrument; and

(i) At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the part of Technical Report for which I am responsible, contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated at Sudbury, Ontario, this 2nd day of November 2022.

Signed and Sealed

Roger Jackson, P. Geo.
Senior Resource Geologist
Golder Associates Ltd.

CERTIFICATE OF AUTHOR

To accompany the technical report entitled "November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota" (the "Technical Report") prepared for Talon Metals Corp, with an effective date of November 2, 2022.

I, Oliver Peters, do hereby certify that:

1) I am President and Principal Metallurgist with Metpro Management Inc. with an office at 102 Milroy Drive, Peterborough, Ontario, Canada;

2) I am a graduate from RWTH Aachen with a M.Sc. in Mineral Processing in 1998 and an MBA from Athabasca University in 2007;

3) I am a registered member the Professional Engineers of Ontario (100078050);

4) I have worked as a Mineral Processing Engineer and Project Manager continuously since my graduation from university;

5) I have read the definition of "qualified person" set out in the National Instrument 43-101 and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements to be an independent qualified person for the purposes of NI 43-101;

6) I have participated in the preparation of the Technical Report and am responsible for Sections 1.7, 1.9.2, 1.10.3, 1.10.5, 1.10.6, 3, 12.3, 13, 25.5, 26.3, 26.5, 26.6.

7) My prior involvement with the property is limited to participation in previous technical reports and previous PEAs for the property that is the subject of this Technical Report.

8) I have not visited the project site;

9) At the date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading;

10) I have no personal knowledge as of the date of this certificate of any material fact or change, which is not reflected in the Technical Report;

11) I am independent of the issuer as defined in Section 1.5 of NI 43-101.

12) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

This 2nd day of November, 2022.

"Oliver Peters"

Oliver Peters, P.Eng, M.Sc., MBA
President & Principal Metallurgist
Metpro Management Inc.

CERTIFICATE OF AUTHOR

To Accompany the NI 43-101 Technical Report entitled **"**November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota**"** (the "Technical Report"), prepared for Talon Metals Corp. with an effective date of November 2, 2022.

I, Christine D. Pint, do hereby certify that:

1) I am a Senior Hydrogeologist and Vice-President at Barr Engineering Co. with an office at 4300 MarketPointe Drive, Suite 200, Minneapolis, Minnesota 55435;
2) I am a graduate from the University of Wisconsin – Eau Claire, with a Bachelor of Science Degree in Geology in 1999, and a graduate from the University of Wisconsin – Madison, with a Master of Science Degree in Geology specializing in hydrogeology in 2002;
3) I am a Registered Member of the Society of Mining, Metallurgy and Exploration (SME) (#04156322), and a Professional Geologist licensed in the State of Minnesota (#46154);
4) I have worked as a consulting hydrogeologist serving the Mining & Metals industry continuously since 2005;
5) I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101;
6) I have participated in the preparation of the report entitled "November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota" dated November 2, 2022 and am responsible for Sections 1.3, 1.9.3, 1.10.4, 1.10.5, 1.10.6, 3, 4.4, 4.5, 20, 25.6, 26.4, 26.5 and 26.6.
7) I visited the site on October 5, 2017 and September 28, 2022;
8) Since 2017 I have acted as an environmental consultant to Talon Metals Corp. in matters relating to the Tamarack Project;
9) At the date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading;
10) I have no personal knowledge, as of the date of the Technical Report, of any material fact or material change which is not reflected in this Technical Report;
11) I am independent of the issuer as defined in section 1.5 of NI 43-101;
12) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

This 2nd day of November 2022.

"Christine Pint"

____
Christine D. Pint, P.G., SME Registered Member
Senior Hydrogeologist and Vice-President
Barr Engineering Co.

golder.com