

**2022 YMEP Target Evaluation Final Report**  
on the  
**Catalyst Project, Yukon**  
**22-044**

**Kluane Region**  
**NTS Map Sheets 115G/05, 06 & 11**  
**Latitude 61.26° North by Longitude 139.36° West**  
**Whitehorse Mining District**

BC 229 - BC 323	YE64829 - YE64923	BC 1 - BC 34	YE64601 - YE64634
AR 1 - 9	YD12517 - YD12525	BC 57 - BC 68	YE64657 - YE64668
AR 61	YC18892	BC 324 - BC 480	YE64924 - YE65080

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February 7, 2023

Period of Work: Aug 4 – 12, 2022



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## Summary

This report summarizes the YMEP-funded 2022 Target Evaluation program on the Catalyst North, Arch Island and Corky claim blocks which comprise part of the Catalyst Property. The property is adjacent and on trend with the main Nickel Shäw (formerly Wellgreen) deposit – one of the world’s largest undeveloped PGE-Ni-Cu – now being advanced by Nickel Creek Platinum. Cursory work completed over 2017-2020 has involved preliminary geological mapping, contour soil, MIG geochemical sampling and rock sampling to test airborne geophysical targets. In addition, in 2020 a follow-up UAV-Mag survey was completed on the Corky claim block and outlined linear magnetic lows corresponding to significant higher grade copper samples.

The 2022 exploration program was performed between August 4<sup>th</sup> and 12<sup>th</sup>, 2022 including MIG (Mobile Ion Geochemistry) soil sampling, prospecting, a ground magnetic, and a VLF-EM (Very Low Frequency Electromagnetic) survey for a total of 30 person-days (18 TPX, 8 pilot, 4 AGL). In summary, the exploration program consisted of:

### ***Corky***

- MIG soil sampling, ridge and spur and contours (79)
  - Focus along Upper Quill and Tatamagouche Creeks where exposures transect lithologies as well as known shear-zone orientations.
- General prospecting and rock sample collection proximal to soil sampling lines (16)
- 6.24 line-km of ground magnetic and VLF-EM surveying over the Ram and newly discovered showings.

### ***Catalyst North***

- MIG soil sampling contours (51)
  - Focus along the Denali fault where aeromagnetic anomalies are observed.
  - Examination along the Hasen Creek Formation contact to the west, particularly where it comes into contact with local limestone.

Each block comprising the Catalyst project are currently interpreted to have different styles of mineralization and thus potential mineral endowment. The work history on these areas of interest have seen varying levels of cursory exploration, however the bulk of the exploration activities performed to date, primarily occurred during the 1950s-1980s. Since this time, Nickel Creek has demonstrated the effectiveness of transient electromagnetic surveying and the validity of adequate project-scale geochemical sampling and mapping to create drill-confident targets.

The Catalyst property is located in a triangle bordered by the Shakwak valley, Burwash Creek and the Donjek River approximately 35 km northwest of Burwash Landing and ~15 km south of the Alaska Highway, 285 km from Whitehorse. The Catalyst Property covers rocky ridges and rounded upland areas of the Kluane Ranges and broad valleys of Upper Quill, Tatamagouche and Arch Creeks on NTS map sheets 115G/05, 06 & 11. The project centered around Nickel Creek which is underlain by the Wellgreen deposit at ~61.26° north latitude by Longitude 139.36° west longitude. The Corky claim block, straddles Tatamagouche Creek, Catalyst North block is centered around Quill Creek.

Access is via the Alaska Highway to KM 1699 turning onto the Quill Creek gravel road to km 11, then turn left onto the Upper Quill Creek access road which crosses the divide into the headwaters of Tatamagouche Creek. The northwestern portion of the property can be accessed by the Arch Creek Road which branches off the Quill Creek Road at kilometer 14. Placer trails provide ATV access to Upper Quill and Lower Arch Creeks. More remote and rugged portions of the claim blocks require helicopter access.

The regional and property geology is summarized from the Arch Creek (Catalyst Property) assessment report by D. James, 2016 and from Metallogeny of the Kluane Ranges by R. Carne (2003). The property is located within the Kluane Ultramafic Belt, a 600km long belt of rocks in the southwest corner of the Yukon that are characterized by mineralized mafic to ultramafic Triassic aged sills known as the Kluane mafic-ultramafic Suite. The Kluane Ultramafic Belt extends

from northern BC into Alaska and hosts magmatic Ni-Cu-PGE ( $\pm$  Au) deposits and occurrences. It is the second largest Ni-Cu-PGE mafic-ultramafic belt in North America after the Circum-Superior Belt in central Canada (Hulbert, 1997).

As noted in Lewis & Relf's (2021) 'Yukon critical minerals inventory', we are now at the front-end of a transition in which renewable energy will replace fossil fuels. A key component of this shift into clean energy, is the essential requirement of critical minerals which are necessary for the development of these technologies. Amongst the critical minerals listed in the inventory are multiple minerals endowed in the Kluane Ultramafic Belt which hosts the Catalyst project. This includes, nickel, platinum group metals, copper, cobalt, and gold.

The project surrounds the Nickel Shäw deposit, which consists of disseminated to semi-massive and massive sulphide layers within the Quill Creek Ultramafic complex and reports a resource of 1.8 billion pounds of nickel, 1.1 billion pounds of copper, 5.7 million ounces of platinum group metals ("PGM's") and 107 million pounds of cobalt in the measured and indicated categories ([www.nickelcreekplatinum.com/Home/default.aspx](http://www.nickelcreekplatinum.com/Home/default.aspx), viewed Feb 6, 2023). Expansion of the current Nickel Shäw resource would allow the Yukon Territory may help fulfil the demand for these critical minerals. The Catalyst project is a potential acquisition towards this expansion. YMEP support helped Group Ten Metals further the current level of understanding with respect to the geological potential underlying these claims.

The 2022 YMEP-funded Target Evaluation on the Catalyst project was successful in accomplishing the objectives set out in the application. These objectives included: MIG soils sampling to examine geochemistry, test the MIG analysis effectiveness at Corky and Catalyst North, and expand the geochemical anomalies between known zones and beyond into new areas. The geophysics surveys are adding to the existing layers of data over this project. The Catalyst project could not have been advanced in such a short time without the support of the Yukon Government's YMEP programs.

# 1 Introduction

This application summarizes the 2022 Target Evaluation program on the Catalyst North and Corky claim blocks which comprise part of the Catalyst Property. The property is adjacent and on trend with the main Nickel Shāw<sup>1</sup> deposit – one of the world’s largest undeveloped PGE-Ni-Cu – now being advanced by Nickel Creek Platinum. Cursory work completed over 2017-2020 has involved preliminary geological mapping, contour soil geochemical sampling and rock sampling to test airborne geophysical targets. A local UAV-Mag survey was completed at Corky to test exploration methodology. Overall, all work on the targets in modern-day has been relatively limited and more work is needed to advance these targets which surround the Nickel Shāw deposit to potentially further resource potential.

## 1.1 Underlying Agreements & Land Tenure

The blocks worked on, Corky and Catalyst North, are part of the Catalyst Project which is 100% owned by Group Ten Metals (now Stillwater Critical Minerals Inc.). **Table 1. Claim Status** tabulates the current land package and expiry dates; **Figures 2-4. Catalyst North, Arch Island and Corky Claims Maps** illustrate claim location details.

**Table 1. Claim Status**

Claim Name	Grant No.	No. of Claims	Current Expiry	Owner
BC 229-BC 323	YE64829 – YE64923	95	2025-02-11	Group Ten Metals Inc. – 100%
BC 1 – BC 34	YE64601 – YE64634	34	2025-02-11	Group Ten Metals Inc. – 100%
BC 57 – BC 68	YE64657 – YE64668	12	2025-02-11	Group Ten Metals Inc. – 100%
BC 324 -BC 480	YE64924 – YE65080	157	2025-02-11	Group Ten Metals Inc. – 100%

<sup>1</sup> Formerly the Wellgreen deposit.

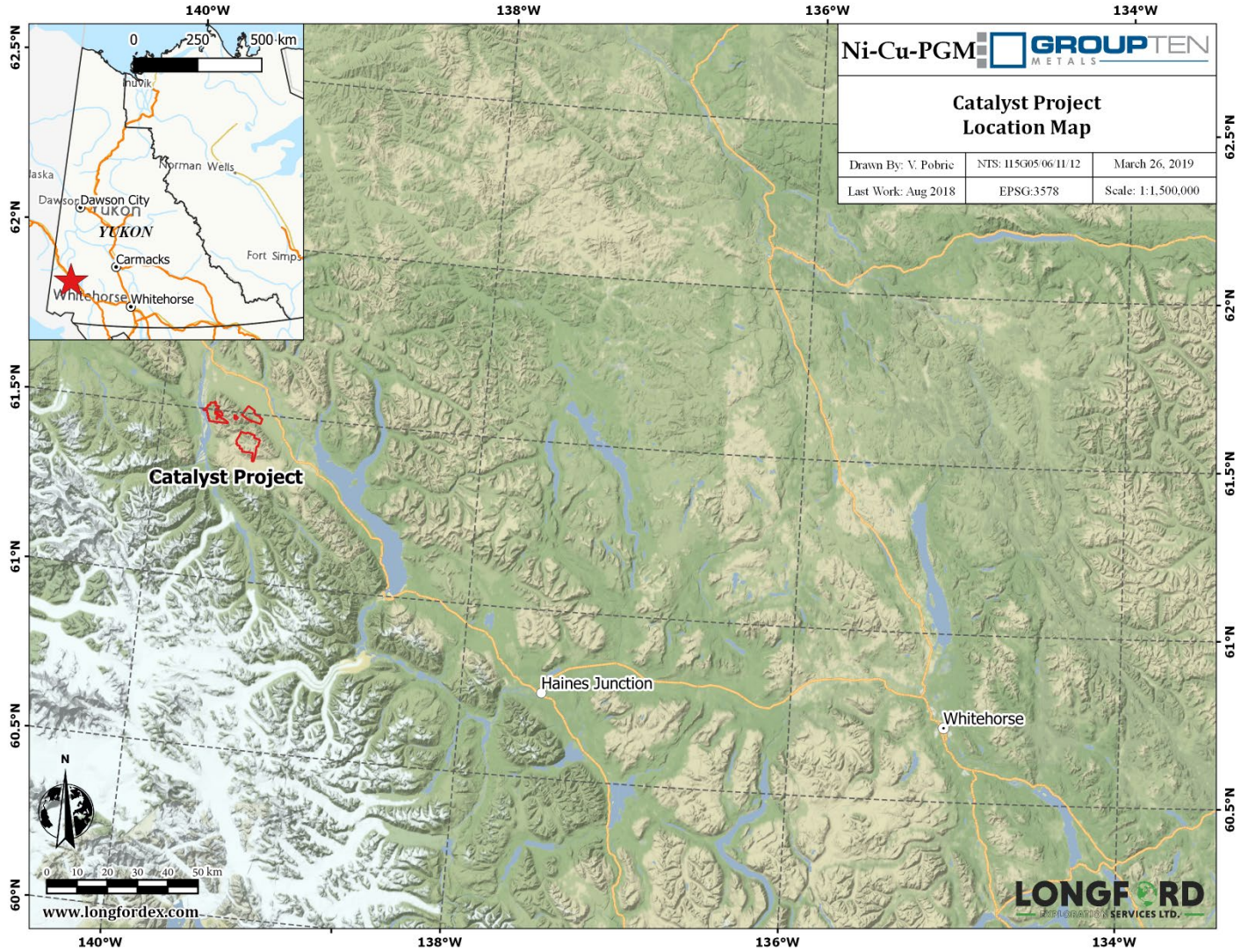
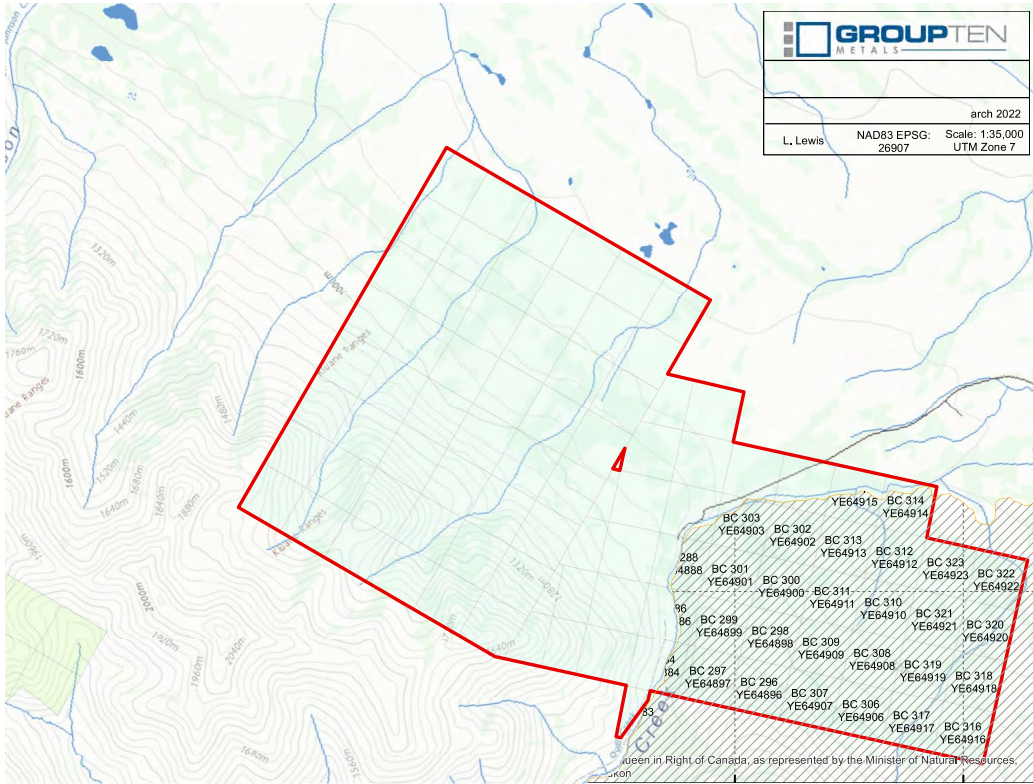
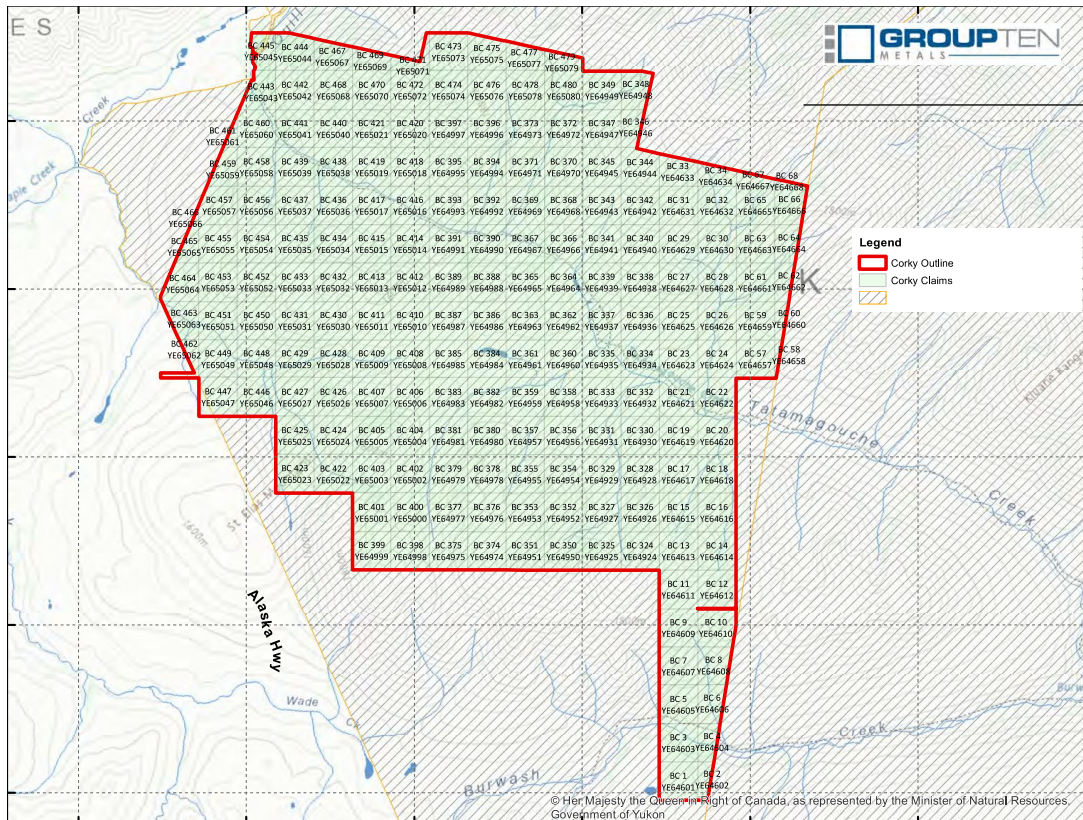


Figure 1: Location Map



**Figure 2: North Catalyst Claims**



**Figure 3: Corky Claims.**

## 1.2 Location & Access

The Catalyst property is located in the Shakwak Valley ~35 km northwest of Burwash Landing and ~15 km south of the Alaska Highway, 285 km from Whitehorse. The Catalyst Property covers rocky ridges and rounded upland areas of the Kluane Ranges and broad valleys of Upper Quill, Tatamagouche and Arch Creeks on NTS map sheets 115G/05, 06 & 11. The project centered around Nickel Creek which is underlain by the Nickel Shāw deposit at ~61.26° north latitude by Longitude 139.36° west longitude (refer to **Figure 1**). The Corky claim block, straddles Tatamagouche Creek, Catalyst North block is centered around Quill Creek and Arch Island is centered around Arch Creek.

Access is via the Alaska Highway to KM 1699 turning onto the Quill Creek gravel road to km 11, then turn left onto the Upper Quill Creek access road which crosses the divide into the headwaters of Tatamagouche Creek. The northwestern portion of the property can be accessed by the Arch Creek Road which branches off the Quill Creek Road at kilometer 14. Placer trails provide ATV access to Upper Quill and Lower Arch Creeks. More remote and rugged portions of the claim blocks require helicopter access.

## 1.3 Physiography & Climate

The Catalyst project straddles the Shakwak Valley which is flanked by the Kluane Ranges and the St. Elias Mountains. At its centre is Nickle Creek which cuts into the Quill Creek Complex, one of several ultramafic sills enriched in nickel-copper-PGE mineralization. The claims lie on upland slopes and valleys east of the Donjek River, deeply incised by the drainages of Quill Creek, Tatamagouche Creek, Arch Creek and unnamed minor creeks. Upland areas feature grass and rock up to 2000m while the Donjek valley floor at 900m elevation is mainly spruce forest, gravel flats and swamp. Precipitous canyons along the tributaries of the Donjek River expose extensive rock faces and steep talus slopes. Forest cover on the property is light, with treeline at approximately 1200m elevation. Black spruce, white spruce, balsam, poplar, and white poplar dominate the forested slopes; alder willow and sub-alpine flora are found at and above the timberline.

The Quill Creek area features a northern interior climate with long cold winters and low annual precipitation. The exploration season extends from early June until late September with occasional thunderstorms and a few intervals of warm dry conditions.



Figure 4: typical physiography of the area.

## 2 Property History & Known Zones

The area around the Catalyst project has been explored periodically since the early 1950's with the discovery of the Nickel Shāw mineral deposit on upper Quill Creek (MINFILE 115G024) that initiated an exploration boom through the Kluane Ranges focused on rocks of the Kluane Ultramafic Belt. The Catalyst Project includes the Corky, Catalyst North and Arch Island, Arch and Catalyst 'Dump' claim blocks which surround the Nickel Shāw Deposit. The Corky and Catalyst North claim blocks were worked on during this program and are described individually in the following sections. **Table 2** summarizes the known work history on the Catalyst project, which is primarily comprised of very early-stage work; this information is primarily based on the YGS's MINFILE database (Deklerk and Traynor, 2008).

**Table 2. Property History**

Year	Work	Results
1952-54	Staked by Conwest Exploration Company Ltd. and Teck Exploration Company. Geological mapping, prospecting.	Two copper-nickel showing identified. Musketeer (now Teck) and Conwest showings (Walker, 1955 and Frohberg, 1953).
1953-1955	Geological mapping and an SP survey by Callinan Flin Flon Mining Ltd. uncovered a gabbro body northwest of Maple Creek (Davis, 1953 and Allan, 1955).	
1955	Ground EM and Magnetic surveys over the Teck and east of Conwest Showings by Teck along Arch Creek.	Linear magnetic anomaly over buried ultramafic sill (Clarke, 1956).
1965-66	P. Verslucce & Assoc. located and staked a copper occurrence in Nikolai basalts on Ram Creek at the head of Upper Quill Creek. The prospect was explored by bulldozer trenching and diamond drilling by Newmont Mining Corp. in 1967.	Mineralization consisted of chalcocite, bornite and chalcopyrite disseminated and in veinlets associated with chlorite and serpentine in sheared or crumbled basalt (Campbell, W. 1981). Bulldozer trenching in 1967 exposed mineralization at "Showing 3" with copper values of 2.02% over 132 ft. and at "Showing 6" with copper values of 2.21% over 40 ft. (Assessment #013065, Newmont Mining Corp. & Quill Creek Mines Ltd). Two diamond drill holes (1967) intersected two mineralized zones, one averaging 0.3% Cu over 5.8m, and the other averaging 0.89% Cu over 2.4m (Campbell, 1981).
1967	Geological mapping, magnetometer and EM-16 surveys on Arch Creek by J.B. O'Neil and C. Gibbons.	Linear magnetic anomaly (Hilker, 1967).
1972	Geological mapping, geochemical sampling, magnetometer, and EM surveying by the Nickel Syndicate.	No results available. Strong magnetic high and several weak or broad conductors reported in Yukon MINFILE (Deklerk, 2009).
1986	Area was restaked and road building was carried out by Columbia Mining Ltd. (Deklerk, 2009).	
1986-88	Geochemical sampling in 1986 by Kluane Joint Venture on large grid extending along the north side of Arch Creek from the Wellgreen property to Serpentine Creek. Grid lines 100m apart with samples at 50m intervals. In 1987 magnetometer and VLE-EM surveys over same	Poor sampling conditions towards the west end of the grid (Serpentine Creek area) because of permafrost and deep overburden. Weak, spot anomalies in Pt, Pd, Cu, Ni and Au. EM conductors and linear magnetic features. Grid does not cover the Conwest or Teck Showing but does overlap part

Year	Work	Results
	grid. One 85.6m drill hole in 1988 through Donjek sill.	of the 2013 Arch grid. Weakly anomalous values from drillhole (Eaton, 1987).
1987	G. Mogensen completes bulldozer trenching in 1987 in conjunction with placer mining on Catalyst North (“Arby” showing).	Exposed propylitically altered mafic volcanic rocks of the Permo-Pennsylvanian Station Creek Formation; claims expanded following year to east and west.
1988	Ground magnetic survey and 30 soil samples close to mouth of Arch Creek by Lodestar.	Linear magnetic anomaly coincident with anomalous soils. Anomalous Pt, Pd and Au. 7 samples >20ppb Au, 7 samples >50 ppb Pt and 12 samples >20ppb Pd (Davidson, 1989).
2000	Geochemical sampling and trenching around Teck showing by Auterra Ventures Inc.	Detailed trench mapping and consistent sampling over the sill (Vanwermeskerken, 2001).
2001	Rock sampling and 11 km of magnetic and VLF EM surveys by around the Teck showing.	Anomalous magnetic linear 60m north of the Tech showing. VLF EM was less responsive and two weak axes appear to border the magnetic anomaly (Brickner, 2002).
2013	Compilation of previous work, chip sampling at Teck showing. Testing of different biogeochemical and geophysical surveys over a 4 line-km grid centered on the Teck showing. Work for Bill Harris and Tom Morgan. Claims were optioned to Ashburton Ventures (now Group Ten) late in the year.	Best chip samples were in altered ultramafic close to contact with Station Creek. Spruce bark samples performed the best of the 4 methods tested. Projected sill location was traced, and new anomalies were detected. ELF geophysical survey was better than the HLEM but needs further processing (James, 2014).
2016	Geophysical data compilation and interpretation by Walcott & Assoc. summarized in a Geophysical Interpretation Report (James, 2016).	
2018	Longford Exploration Services collected a total of 167 soil samples on contour soil lines targeting favourable geology and airborne geophysical anomalies above Quill and Arch Creeks. Also initiated geological mapping, rock sampling (27 samples) and prospecting of the Arch, Upper Quill and Tatamagouche Creeks areas.	Uplands traverses highlight potential for substantial copper mineralization in the Nikolai basalts. On the Arch Creek block target areas “A & B” summarized by D. James (2016) remain valid, target area A is the intense magnetic anomaly evident on the airborne and surface magnetic maps outlining a peridotite sill covered in part by the Arch Island claims.
2019	Longford Exploration Services completed work on Arch and Corky properties. 100 soil samples on contour and grid lines were collected above Arch and Quill Creeks, targeting reprocessed aeromagnetic anomalies outlined in 2017-18. 17 rock samples were collected, including 14 samples from the Ram showing and newly discovered shear zone on Corky. 3 more rocks were collected during traversed in the Arch Creek area.	At the Ram showing historic results along with new rock sample assays indicate potential for substantial copper mineralization in sheared Nikolai basalts. The best assays from the historic Ram showing included 2.14% Cu from a 15m grab chip sample, and 2.29% Cu from a 5m grab chip sample. The Ram showing is contained within a mag low. A second zone of copper mineralization was located downstream of the Ram showing associated with calcite veining along a sheared contact between basalt and gabbro, proximal to a limestone unit, with two rock grab samples assaying 6.75% and 1.66% Cu. Samples demonstrate a 650 m strike-length so far. The structure appears as a magnetic low on the regional geophysics which extends for a total

Year	Work	Results
		potential strike length of ~2.9 km. One traverse over the upper portion of Arch Creek canyon located an ultramafic sill in outcrop on the north rim of the canyon and a grab sample assayed 2365ppm nickel, 286 ppm copper and 113 ppb PGE+Au.
2020	In March 2020, Pioneer Aerial Surveys carried out a UAV-MAG survey consisting of 108.32-line kms over the Ram and newly discovered shear zone south of Ram, both in the north half of the Corky property.	The follow-up UAV-MAG survey outlined linear magnetic lows corresponding to higher grade copper samples collected in 2019. This feature may extend for up to 1.8km (Longford, 2020).
2020	Longford Exploration Services carried out a small program over the Arch and Catalyst North properties in August. On Arch, 1 test line consisting of 16 MMI samples were collected over a strong aeromagnetic anomaly in the north-central part of the property; 5 rock samples were collected during one traverse, also in the area of the strong mag signature; and 4 heavy mineral concentrate samples were collected including one in Upper Arch Creek, one in Lower Arch Creek, one below Arch Island claim block and one below the Wellgreen main ultramafic sill. Two days spent on Catalyst North included 1 line of 21 MMI samples testing effectiveness in a permafrost area underlain by the main aeromagnetic anomaly through the centre of the claim block. A second day included a mapping traverse along the Wellgreen road, collecting 3 rock samples.	The MMI test line over the aeromagnetic mag anomaly in the north-central area of the Arch claims returned elevated response ratios for copper and nickel and unexpected strong response ratios for zinc. Sampling in this area was over steep terrain, cut by frequent landslides, underlain by a volcanic ash layer and permafrost. Indicator minerals from the heavy mineral concentrate (HMC) samples yielded 23 grains of VG from the sample taken in Upper Arch Creek above the canyon. Of the 23 grains of VG, 8 were classified as pristine, indicating possible close to source. The HMC sample from below the Arch Island claims yielded 8 VG grains of which 5 were classified as pristine and possible close to source. The mapping traverse on Arch was targeting the aeromagnetic anomaly that trends on to the Arch claim block, along strike of the ultramafic sill that outcrops further east on the Arch Island Claims. Approaching the magnetic high of the north anomaly, a magnetic gabbro, 30-35m wide was sampled (2064246) returned slightly elevated Pt and Pd but did not carry anomalous Cu or Ni. It is suggested that extending the traverse further down the gully is warranted. On Catalyst North, one line of MMI soil samples transecting the main aeromagnetic anomaly produced elevated Cu, Ni and Zn response ratios. Further lines, east and west of this line are warranted to further test the effectiveness of MMI soils in low-lying, covered, permafrost areas. Mapping exposures along Quill Creek, adjacent to the road, in the vicinity of the linear airborne mag anomaly returned one anomalous sample (2064248) assaying 996 ppb Au from a narrow shear zone in mafic volcanics of the Station Creek Formation. The mafic volcanic at this location was not magnetic, but the abundant red-brown fractures cutting the rock are moderately magnetic.

Year	Work	Results
2021	<p>Rodrigo Diaz of Global RSG prepared a study of Remote Spectral Geology Target Definition Generation Project – Ni-Cu-PGE Kluane District, covering Catalyst, Spy, Ultra &amp; Ellen-Pacer Projects for Group 10 Metals. The focus of the study was for the definition-generation of zones of interest-targets with ranking and priority throughout the district and project areas.</p>	<p>The RSG Target Definition Generation Project is a detailed study of the Ni-Cu-PGE Kluane District. It includes: <b>1)</b> A structural interpretation of remote sensing lineaments where the interpreted NW, NE and NNW structures are consistent with the geophysical mega-lineaments. NE structures look to have a dextral displacement of the main blocks. <b>2)</b> Generated images of spectral anomalies of the mineral alteration zones including Iron Oxides/Limonite-Goethite (corresponding to the oxidation of sulfides of the mineralized systems and related halos) &amp; Iron Oxides/Hematite would correspond partially to the oxidation of magnetite associated with the mineralized systems and the mafic-ultramafic intrusive bodies and related volcanics. The Undifferentiated Clay-Sericite would correspond to secondary/supergene clays, and possibly also to partially sericite in some defined Zones of Interest/Targets. The author notes that some Ni-Cu-PGE Zones of Interest/Targets could have some possible overprinting of Porphyry Copper alteration-mineralization style, particularly in areas where Mesozoic or Tertiary stocks are emplaced. <b>3)</b> Zones of Interest-Targets: 133 for Ni-Cu-PGE, 12 for Porphyry Copper-Epithermal (2 included in the Catalyst System-Cluster), and 8 undifferentiated (1 included in Catalyst and 5 in Spy. All of the Zones of Interest-Targets were classified and ranked from 1 (highest exploration priority; e.g., Nickel Shaw/Wellgreen) to 3 (lower priority).</p>

## 2.1 Corky

Historic occurrences in the Corky claim area include the Ram showing (MINFILE 115G021). In 1965-1966 P. Verslucce & Assoc. located and staked a copper occurrence in Nikolai basalts on Ram Creek (MINFILE 115G021) at the head of Upper Quill Creek. The prospect was explored by bulldozer trenching and diamond drilling by Newmont Mining Corp. in 1967 (*Photo-plate 2.*, below). Mineralization is present as chalcocite, bornite and chalcopyrite disseminated and in veinlets associated with chlorite and serpentine in sheared or crumbled basalt (Campbell, W. 1981). Bulldozer trenching in 1967 exposed mineralization at 'Showing 3' with copper values of 2.02% over 132 ft. and at 'Showing 6' with copper values of 2.21% over 40 feet (Newmont Mining Corp., 1967). Two diamond drill holes (1967) intersected two mineralized zones, one averaging 0.3% Cu over 5.8m, and the other averaging 0.89% Cu over 2.4m (Campbell, 1981).

Preliminary geochemical sampling by Group Ten reported >5% Cu in grab rock samples at the Ram Showing and in 2019 a new showing was discovered a kilometer south which has reported up to 6.75% copper in-situ.



Figure 5: Photo showing 1967 bulldozer trenches on the Ram showing, Upper Quill Creek.

## 2.2 Catalyst North

Very little work has been completed on the Catalyst North block. The claims were originally staked as the Arby claims in 1986 by G. Mogensen, who performed bulldozer trenching in 1987 in conjunction with placer mining. In 1987, the claims were tied onto east and west and explored with cursory geochemical sampling. Bulldozer trenching exposed propylitically altered mafic volcanic rocks of the Permo-Pennsylvanian Station Creek Formation. Preliminary geochemical sampling by Group Ten has reported anomalous Cu, Ni and Au in soils and up to 1.9% Cu in rock samples. A sill assayed 2.03% Ni & 1.79% Cu for a length of 38 ft. and an average width of 3.5 ft (Hilker, B., 1967). This occurrence is 2 km southeast of the Catalyst Arch Island block and 1967 geophysical surveys by Kluane Nickel Mines Ltd. extended the grid over the northeast corner of the Catalyst property. A prominent magnetic anomaly was identified which is also seen on the more recent YGS aeromagnetic map.

### 3 Regional and Property Geology

#### 3.1 Regional Geology and Tectonic Setting

The regional and property geology is summarized from the Arch Creek (Catalyst Property) assessment report by D. James, 2016 and from Metallogeny of the Kluane Ranges by R. Carne (2003). The property is located within the Kluane Ultramafic Belt, a 600km long belt of rocks in the southwest corner of the Yukon that are characterized by mineralized mafic to ultramafic Triassic aged sills known as the Kluane mafic-ultramafic Suite. The Kluane Ultramafic Belt extends from northern BC into Alaska and hosts magmatic Ni-Cu-PGE (+/- Au) deposits and occurrences. It is the second largest Ni-Cu-PGE mafic-ultramafic belt in North America after the Circum-Superior Belt in central Canada (Hulbert, 1997).

The Kluane Ultramafic Belt lies within a displaced slice of the Wrangell Terrane which is bounded on the south by the Duke River Fault and on the north by the Denali Fault (**Figure 3**, page 17). The Wrangell Terrane is underlain by Carboniferous to Permian and Triassic sedimentary and volcanic rocks, intruded by the Upper Triassic Kluane Ultramafic suite and Cretaceous granitic intrusions. Topographically, the Kluane Ultramafic Belt is in the Kluane Ranges which are foothills to the St. Elias Mountains that range along the Yukon-Alaska border. The ultramafic rocks are distinctively coloured glassy black to dark brown or light green to pale grey when altered) and can be seen as distinctive linear features.

The dominant structural direction, controlled by the major Duke River and Denali faults, ranges in orientation from 270° to 310°. Movement of Wrangellia northwards along the Denali Fault began in the Tertiary and continues today. The fault is steeply-dipping and the order of displacement may be 100s of kilometres. The Duke River Fault is also near vertical and joins the Denali Fault southwest of Haines Junction. Between the major faults small scale faulting is common and faults increase in number to the southeast. Major fold axes are oriented in the same dominant northwest direction. The folds are tight and inclined to the southwest. A later folding episode has refolded the strata at right angles to the dominant direction along northeast axes.

The Kluane mafic/ultramafic sills are elongated cumulate bodies than are postulated to be the crystallized magma chambers that fed the overlying Triassic Nikolai basalts. The sills are layered, with a thin rim of gabbro around the margins grading into an ultramafic core of peridotite and dunite (Hulbert, 1997). The width of the sills ranges from less than 10 to 600m and they can cover up to 20 km in strike length. The sills intrude the older Pennsylvanian to Permian Skolai Group near the contact between the lower Station Creek Formation and the overlying Hasen Creek formation. Most of the sills are poorly exposed and some are deformed and altered by faults. Nickel and Copper values increase from east to west along the belt. Compared to other Ni-Cu-PGE deposits worldwide, the belt is known for having high concentrations of PGEs such as Osmium, Iridium, Ruthenium and Rhodium and high Platinum to Palladium ratio.

The oldest formation in the Skolai Group is the Station Creek volcanic and volcanoclastic rocks with increasing sedimentary content in the upper half (Carne, 2003). The Station Creek Formation includes shale siltstone, limestone, and argillite interbedded with fine grained tuff layers that decrease in abundance upwards. The contact with the overlying Hasen Creek Formation is gradual and is placed at the top of the tuff layers. The Hasen Creek Formation consists of shale, cherty argillite, chert, and siltstone grading up into limestone, conglomerate, greywacke and sandstone.

Sill-like gabbroic bodies of the Maple Creek Gabbro intrude the Hasen Creek Formation. They are generally found higher in the sequence than the ultramafic sills and may be feeders to the Nikolai volcanics. Maple Creek gabbro can be distinguished from Kluane gabbro because they do not grade into peridotite or dunite, can be finer grained and may display columnar jointing. They also are not associated with Ni-Cu-PGE mineralization.

The Nikolai Group is one of the more extensive units in the region. It consists of a thick pile (up to 1 km thick) of basalt flows and pillow lavas with local interbedded limestone, unconformably overlying the Hasen Creek Formation. The likely sources of the Nikolai volcanics are magma chambers represented by the Kluane mafic/ultramafic sills and feeders represented by the Maple Creek Gabbro.

Rock units found in the region are described in the table of formations summarized in **Table 3**.

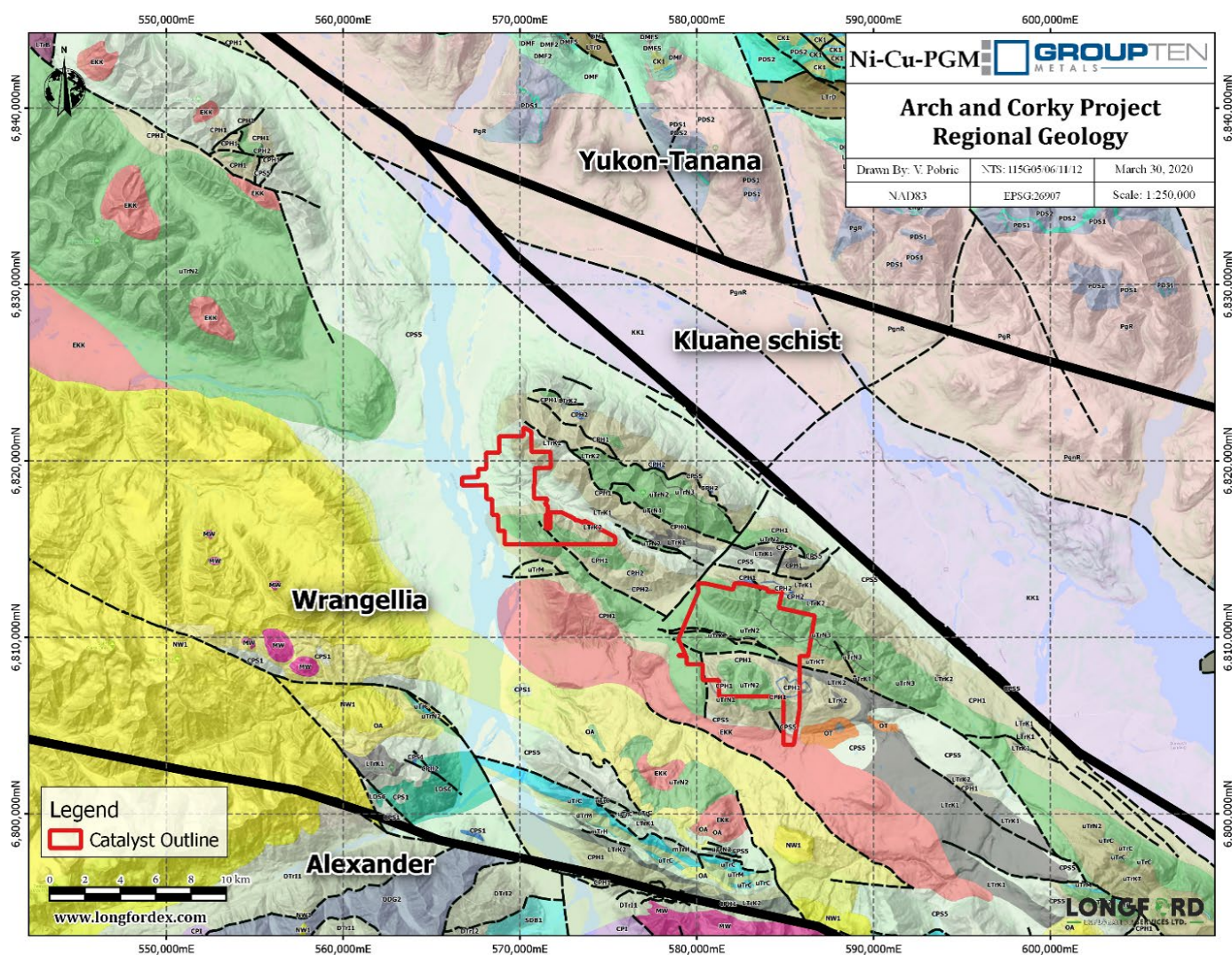


Figure 6: Regional Geology (after Gordey (2003) and Israel (2005)).

**Table 3. Geological Formations**

Period	Units
Q – Quaternary	Unconsolidated alluvium, colluvium and glacial deposits.
NW, Miocene to Pliocene Wrangell Lavas	NW1 - Extensive volcanic unit, volumetrically significant but not associated with mineralization. Occur on the southwest side of Wrangellia overlapping onto the Alexander Terrane. Abundant west of the Donjek River and typically form piles 400-1000m thick. Mafic to felsic volcanic rock with NW2 – volcanic conglomerate.
MW, Mid to late Miocene Wrangell Suite	MW - Youngest intrusions in the area. Related to the Wrangell Lavas. Felsic to mafic composition.
OT, Oligocene Tkope Suite	OT-Homogeneous granite with lesser granodiorite, diorite and gabbro. Subvolcanic rhyolite, rhyodacite and dacite.
EKK, EKP, Early Cretaceous Kluane Ranges Intrusive Suite	EKK, EKP - medium to coarse-grained, biotite-hornblende granodiorite, quartz diorite, quartz monzonite and hornblende diorite. Minor diorite and gabbro. Pegmatite and porphyry dykes.
JKD, Early Cretaceous Dezadeash Formation	JKD - lithic greywacke, sandstone, siltstone, shale, argillite and conglomerate, rare tuff.
JKS, Jurassic, St. Elias Suite	JKS - coarse grained hornblende-biotite granodiorite and quartz diorite.
uTM, Late Triassic McCarthy Fm.	uTM - Conformably overlies the Nikolai Group, varying in thickness from zero to several hundred metres. Argillaceous limestone and argillite; massive limestone, limestone breccia and well-bedded limestone, gypsum and anhydrite (McCarthy, Chitistone and Nazina limestone).
uTu, uTmg, LTKp, LTKg, LTKd Late Triassic Kluane Mafic/Ultramafic Suite	Preferentially intrudes at or near the Hasen Creek-Station Creek contact. uTu / LTKp - peridotite, dunite and clinopyroxenite, layered intrusions, locally with uTg / LTKg gabbroic chilled margins. LTKd – diabase. uTmg - Maple Creek gabbro. Fine to coarse grained diabase and gabbro sills and dykes. Intrudes the Skolai Group and locally the Kluane ultramafic suite.
uTN, Late Triassic Nikolai formation	uTN3 – thinly bedded grey limestone, gypsum and argillite. uTN – dark green to maroon amygdaloidal basalt and basaltic andesite flows, locally pyroxene and plagioclase phyrlic. (Nicolai Greenstone) uTN1 – light to dark green volcanic breccia, pillow lava and basal conglomerate.
uTB, Late Triassic Bear Creek Assemblage	uTBm - strongly foliated to massive intermediate to mafic metavolcanic rocks, lesser metaclastics, volcanoclastics and carbonate horizons uTBs – meta-siltstone, mudstone and sandstone; phyllitic to schistose, pyritic. uTBv – strongly foliated to intermediate to mafic metavolcanic rocks, greenschist.
PH, Mississippian to Permian Hasen Creek Fm.	PH – fine-grained clastic rocks. Lower part contains volcanoclastics, rare basalts, rare chert beds and chert-pebble conglomerate. PHc – limestone, locally fossiliferous, massive to bedded, gypsum.
CS, Mississippian to Permian Station Creek Fm.	CS - dark green basalt flows, pillows, pillow breccia, local magnetite-rich jasper. CSvt – bedded to massive chert, tuff. CSv – interbedded volcanic breccia, volcanoclastics; minor basalt flow. CSvt – laminated volcanic tuff and volcanoclastic siltstone.

Period	Units
DTI, Devonian to Upper Triassic Icefields Formation	DTIq – quartzite, light orange. DTII – limestone, light orange, calcite stockwork. DTIe – gypsum, white, cream, massive beds. DTLa - argillite with quartzite, cream, massive beds, pyrite. DTLaf – Frohberg siliceous unit, pale green, disseminated sulphides. DTLS – silicified schist, buff, +/- chlorite. DTLp – phyllite, dark grey, foliated. DTLv – metavolcanics, green to purple, volcanoclastics and flows.
Dp, Dc, Dv Silurian to Devonian, Bullion Creek Assemblage	Dp – fine grained phyllite and calcareous phyllite. Dc – light grey to cream marble, strongly deformed. Dv – dark green meta-basalt, greenschist.

### 3.2 Property Geology

No property-scale geological map has been completed on the Corky or Catalyst North blocks as of this writing. Very preliminary mapping has been completed in recent years during prospecting traverses. This preliminary mapping has verified lithologies thought to be present on a regional-scale:

On the Arch Island - Catalyst North Property, the oldest units are the Permian Skolai Group consisting of Station Creek volcanics overlain by Hasen Creek sediments and Triassic Nikolai mafic volcanics. Intrusions of upper Triassic age include ultramafic-mafic sills and dykes of the Kluane mafic-ultramafic Suite mainly peridotite or gabbro and Triassic Maple Creek gabbro. The younger Kluane Range Intrusive Suite consists of granodiorite, diorite and quartz diorite sills, dykes and plugs. The older units are folded in a series of anticlines and synclines along fold axis at the dominant 270-310 deg. trend parallel to the Shakwak Valley. At lower elevations in the Tatamagouche and Quill Creek valleys the bedrock is locally overlain by Quaternary unconsolidated glacial, glacio-fluvial and glacio-lacustrine deposits.

The oldest unit, the Station Creek Formation consists of augite basaltic and andesitic volcanic flows that are succeeded upwards by fine to medium grained tuff (Carne, 2003). Volcanic agglomerate and breccia are locally present and discontinuous beds of argillite and limestone occur throughout. The upper portion of the formation is transitional with overlying Hasen Creek Formation with the contact informally put at the cessation of pyroclastic deposition (Campbell, 1981). Sedimentary and volcanic textures suggest a restricted marine basin as the environment of deposition for the Station Creek Formation.

The Hasen Creek Formation consists of a fine grained clastic lower member composed of grey to black shale, cherty argillite, chert and siltstone overlain by argillaceous limestone and massive buff-coloured bioclastic limestone containing narrow beds of reddish-brown conglomerate, greywacke and sandstone. Thin basaltic flows, breccia and tuff are locally present.

The overlying Nikolai basalt flows can be divided into fine diabasic-textured flows, porphyritic flows with or without amygdules, and very fine-grained amygdaloidal lava flows (Carne, 2003). Phenocrysts include plagioclase, augite, olivine and hornblende in a groundmass of plagioclase, augite, magnetite, ilmenite and volcanic glass. In the upper Quill Creek area Nikolai basalt flows are dark green to reddish-purple, aphanitic to very fine grained and occasionally porphyritic with vesicles and veinlets of chlorite, calcite

and epidote (Campbell, 1981). Minor beds of chert, shale, argillite and limestone of the Hasen Creek Formation are interbedded in the basalts.

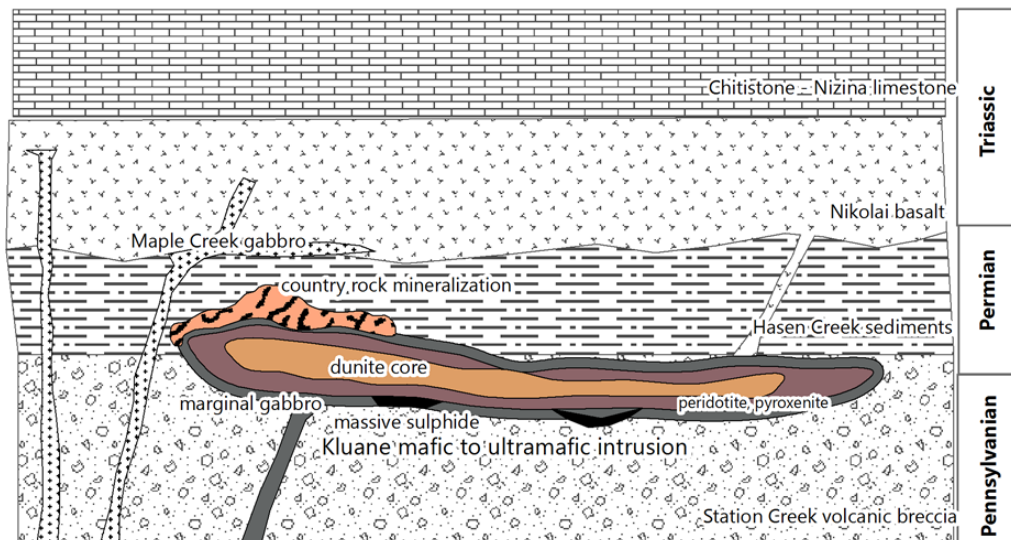
Intrusive rocks consists of the Kluane Mafic/Ultramafic Suite, primarily sills of peridotite, gabbro, dunitite and serpentinite exposed in outcrop along cliffs of the Arch Creek and Upper Quill Creek canyons. Gabbroic and diorite dykes were also seen in the placer cut and canyon walls along Arch and Quill Creeks, part of the Cretaceous Kluane Ranges Intrusive Suite that includes grey, medium to coarse grained, biotite hornblende granodiorite, quartz diorite, diorite and quartz monzonite.

## 4 Mineralization-Style & Deposit-Type

There are four main types of Ni-Cu-PGE mineralization in the Kluane Mafic/Ultramafic Belt found in all the mineralized sills from southeast Alaska to northern B.C. (from Hulbert, 1997):

1. Basal accumulations of massive sulphides;
2. Disseminated sulphides at the gabbro-ultramafic contact in each intrusion;
3. PGE and Au rich zones associated with hydrothermal quartz-carbonate alteration at the edges of the sills and extending into the country rock; and
4. Disseminated and lesser net textured or massive sulphides in the ultramafic core of each sill.

The ultramafic sills preferentially intruded along the contact between the Station creek and overlying Hasen Creek formations of the Skolai Group. The most common sulphide minerals are pyrrhotite, pyrite, pentlandite and chalcopyrite; the common oxide minerals are magnetite and ilmenite. **Figures 7 and 8** illustrate a typical, simplified mafic/ ultramafic sill with associated mineralization. The best-known deposit and the sole producer in the belt is Nickel Creek Platinum's Nickel Shaw Deposit (MINFILE 115G024). Here, the platinum group metals combine with As, Sb, Te, Bi, Ni, S, Co and Fe to form minerals and alloys. Sperrylite (PtAs<sub>2</sub>) and Sudburyite (PdSb) are two of the more abundant minerals (Hulbert, 1997). The Nickel Shaw deposit contains 1.8 billion pounds of nickel, 1.1 billion pounds of copper, 5.7 million ounces of platinum group metals ("PGM's") and 107 million pounds of cobalt in the measured and indicated categories ([www.nickelcreekplatinum.com/Home/default.aspx](http://www.nickelcreekplatinum.com/Home/default.aspx), viewed Feb 6, 2023).



**Figure 7: Deposit model for the Kluane Belt (modified from Hulbert, 1997).**

Other types of mineralization present in the Kluane Ranges include (Hulbert, 1997):

- (1) Skarn ores developed in Permian carbonates;
- (2) Ni-rich ores within the footwall in the White River sill;

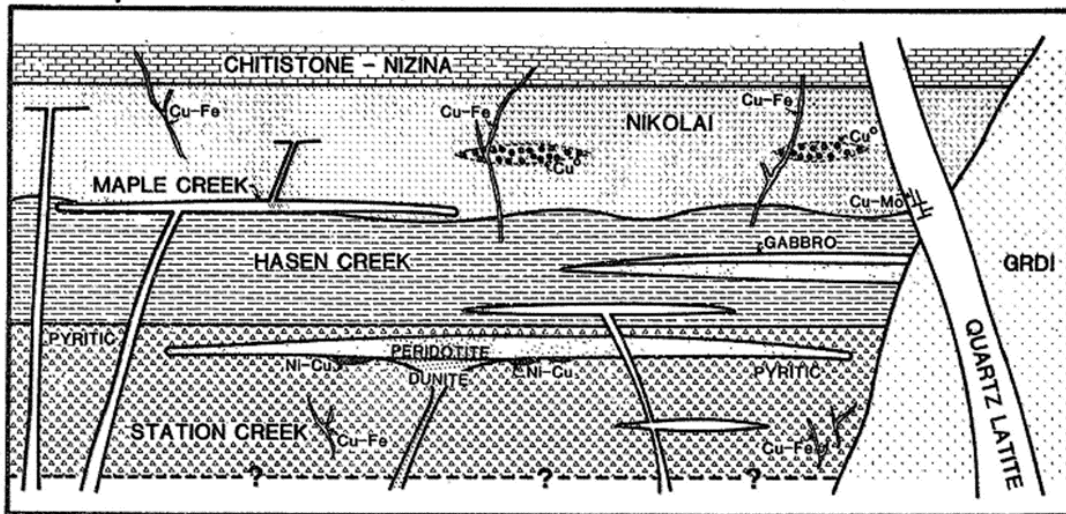


Figure 8: Mineralization and Stratigraphy in the Kluane Ranges (Campbell 1981).

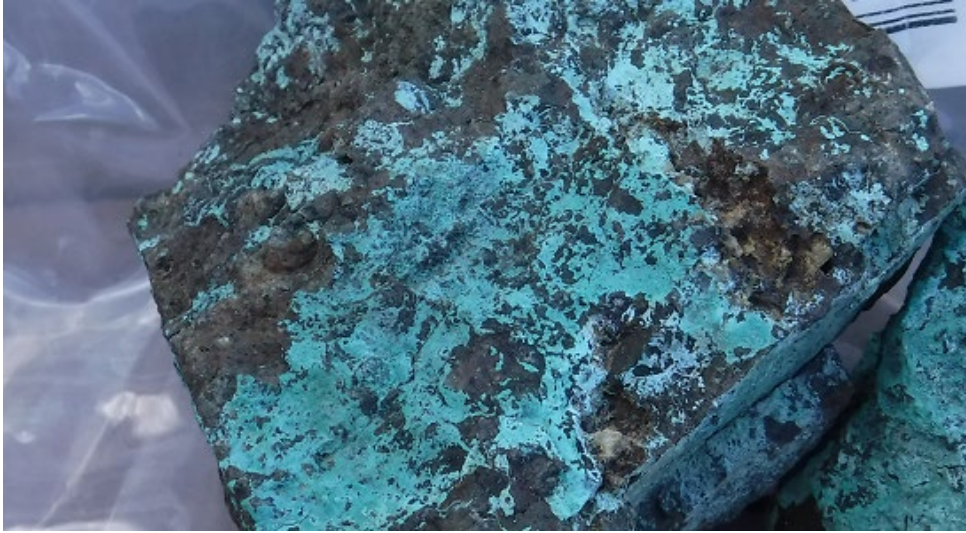
- (3) Cu-rich mineralization in shear zones and deformed intervals of Nikolai basalt, including the Ram showing; and
- (4) Cyprus type volcanogenic massive sulphide (VMS) mineralization in mafic volcanic rocks.

## 4.2 Property Mineralization

In the Arch Creek area sills of the Kluane Mafic/Ultramafic Suite have the potential to host Cu-Ni-PGE mineralization. The Airways sill 1.4km southeast of the Catalyst Arch Island claim block, was sampled with significant Cu-Ni mineralization reported in the history section. The aeromagnetic anomaly outlining the Airways sill continues northwest across the Arch claim block.

Copper occurrences in the district occur in Nikolai basalt including four types of mineralization documented by Newmont on the Catalyst properties:

- (1) dispersed chalcocite in amygdules;
- (2) native copper as disseminated flecks and fibres in massive basalt;
- (3) native copper, chalcocite and malachite with minor bornite, cuprite, chalcopyrite, azurite associated with quartz, calcite and epidote veining and alteration in shear zones and amygdaloidal basalt; and
- (4) chalcocite in either fine grained sooty form or as veinlets with minor bornite and chalcopyrite associated with chlorite and serpentine in sheared or crumbled basalt (Campbell, W., 1981). Type 4 mineralization is exposed in bulldozer trenches at the Ram Creek showing (see Figure 9)



**Figure 9: Photo-plate. 2018 sample from Ram trench assayed 5.05% Cu.**

## 5 2022 YMEP-Funded Work Program

The 2022 exploration program at the North Catalyst and Corky claim blocks on the Catalyst Project was completed between August 4<sup>th</sup> and August 12<sup>th</sup>. The program consisted of MIG soil sampling, general prospecting in areas proximal to the planned soil sampling, VLF-EM and ground magnetic geophysics surveys. A total of \$75,673.58 was spent over the duration of the work program, with \$70,233.98 eligible for YMEP reimbursement.

In summary, the exploration program consisted of:

### Corky

- MIG soil sample collection [79] to follow up previous rock samples and explore previously unsampled areas.
- Prospecting and rock sample collection [16] in areas proximal to soil sampling.
- Ground Mag and VLF-EM geophysics surveys totaling 6.24 line-km on Corky.

### Catalyst North

- MIG soil sample collection in Catalyst North [51] to follow up on previous soil contours and examine aeromagnetic high/low contacts.

### 5.1 Lodging

The crew stayed at the Talbot Arm Motel in Destruction Bay for the duration of the project, driving to the Destruction Bay airport for helicopter access to site. Because of this, there was no field camp.

### 5.2 MIG Soil Sampling

A total of 130 MIG (Mobile Ion Geochemistry) soil samples were collected over the duration of the 2022 field program, 51 from North Catalyst and 79 from Corky. The samples from Corky were along ridge-and-spur lines mainly at 50m spacing, and locally 25m spacing near areas of interest. The sampling lines in the North Catalyst claims were chosen to examine NW-SE trending aeromagnetic anomalies. The sampling lines in the Corky claims were chosen to investigate potential extension from previously collected mineralized rock samples, including the historically trenched Ram showing.

MIG analysis was chosen for the 2022 soil sampling program to test if the method could capture soil anomalies with higher contrast than those previously noted in traditional soil data. Selective extraction is used to chemically liberate metal ions which are adsorbed to the surfaces of soil particles, as opposed to ions that are chemically bound to the soil particles. These adsorbed ions are considered to have ‘recently’ been brought from bedrock to near the ground surface. Because the ions being analyzed are considered to be more ‘recent’ they are less affected by surface processes such as weathering (Mann et al., 1998). The analysis of mobile metallic ions in soil can provide a sharper outline to chemical anomalies, avoiding broader or smeared anomalies that can be present through traditional soil sampling techniques due to mechanically dispersion of soil (Mann et al., 1998). Since MIG analysis is examining elements at the ppb scale, care must be taken when collecting samples to reduce contamination from metals. For example, using plastic shovels and removing jewellery prior to sample collection.

MIG soil samples were optimally collected 20-25cm below the organic horizon. Sample pits were dug with a shovel and then, to prevent metal contamination, a plastic trowel was used to clean the hole and

collect approximately 200-300g of soil. The samples were double bagged in Ziploc freezer bags and were shipped to ActLabs in Ancaster Ontario. These samples were dried at 40°C and sieved to -177µm prior to analysis. These samples then went through selective extraction using a weak acid leach to liberate chemically active metal ions which were loosely adsorbed to soil particles. The resultant solutions were analyzed with ICP-MS. This data is compiled in **Appendix II**.

### 5.3. Rock Sampling – Geochemical Analysis

A total of 16 rock samples were collected for geochemical analysis during prospecting from the 2022 field season. All 16 were sent to Bureau Veritas in Whitehorse for geochemical processing and analysis, these results are compiled in **Appendix II**. Multiple analysis packages were used to evaluate precious metal concentrations. Sample preparation included crushing and splitting, then pulverizing 250g of rock to ≥85% 75µm. Splits of 0.5g were digested using aqua regia, and then analyzed for 34 elements with ICP-ES. Lead collection fire assay fusion was used on 30g of split sample, this was done to analyze Au, Pt, and Pd with ICP-ES. Overweight Cu was analyzed with a modified aqua regia digestion to target metal ores, then analyzed with ICP-ES.

### 5.4 Prospecting

Prospecting during the 2022 field season was focused on examining outcrops accessible from planned soil lines. Outcrops and float with observed mineralization (Cu oxide minerals, sulphide minerals) were noted and sampled. Samples include mineralization of the previously described Types 1, 3, and 4, examples of these are shown in Figure 18.

### 5.5 Rock and Soil Sample Results

#### 5.5.1 Corky

Soil sample lines 1-3, 6 for Corky mainly followed the ridge-and-spur approach, Lines 4 and 5 were a contour approach. Line 1 was designed to gather data from a previously unsampled area of the property. Lines 2 and 6 were designed to explore soil chemistry near notable Cu bearing rock samples (Type 3) collected during the 2019 field season. Line 3 was on the ridge proximal to Line 2 to examine possible continuity of mineralization observed near Lines 2 and 6. The Line 3 area also shows similar UAV-Mag 1VD readings to those at the mineralized rock collection sites from the 2019 field season. Lines 4 and 5 were designed to test a potential north-western extension of the abundant type 4 mineralization observed in the historic Ram showing trenches.

Line 1 has moderately anomalous copper values in soil but not does reach as far north as rock sample 4509689 with 2.69% Cu. This line should be up to and extended beyond the rock sample. Line 2 has anomalous copper in the middle of the line. Lines 3, 4, 5 and 6 have weakly anomalous values for copper. Surprisingly, lines 4 and 5 between the Ram trenches at the Quill showings low in copper.

Thirteen of sixteen rock samples produced significant copper values from 0.11% to 2.69%. East of Line 1 in a valley there is a cluster of Cu anomalous rock samples 4509686 – 688, 690 with copper values ranging from 1.01% to 2.08%. A single rock sample beyond the north end of Line 1 (4509689) with 2.69% Cu was the highest result of the program. It is located 200m northwest of the cluster in the valley.

Prospecting between the two areas should be undertaken to determine if they are along the same structure.

Refer to Table 4 for a list of selected samples and to figures 10-17 for maps with sample locations and plotted values for Cu, Ni, and Au+Pd+Pt.

**Table 4. Selected Rock sample results from Corky.**

Sample #	Easting	Northing	Description	Cu (%)	Ni (ppm)	Au (ppb)	Pd (ppb)	Pt (ppb)
4509686	583525	6811517	Outcrop. Malachite + bornite nodules in quartz carbonate veinlets in basalt	2.05	39	10	30	9
4509687	583518	6811512	Outcrop. Malachite in purple-hued soil with Fe staining. Malachite and Fe on basalt.	1.01	37	12	17	8
4509688	583427	6811581	Outcrop. Malachite and Fe staining in carbonate altered basalt. Locally malachite nodules with bornite and chalcopyrite.	1.01	60	33	50	15
4509689	583324	6811792	Outcrop. Malachite, chrysocolla, bornite along seams of quartz carbonate veinlet in basalt.	2.69	44	22	22	10
4509690	583532	6811508	Outcrop. Malachite with carbonate veinlet in purple/orange basalt.	2.08	31	16	45	10
4509691	583405	6811441	Outcrop. Coarse grained quartz-carbonate vein with malachite, minor azurite and bornite.	0.88	47	8	32	14
4509692	583364	6811467	Outcrop. Malachite along fractures in fine grained brown host rock.	0.50	37	7	15	7
4509693	583360	6811462	Outcrop. Carbonate dominant veins with diffuse malachite blebs.	0.20	26	9	32	11
4509694	583349	6811467	Outcrop. Heavily rotted, rust oxidized zone 1-2m wide in host rock. Malachite and minor azurite in veinlets throughout. Chalcopyrite/pyrite blebs up to 1.5 cm.	0.21	58	14	61	19
4509697	583763	6811430	Float. Malachite in nodule beneath soil sample 4509672.	0.87	58	8	43	10
4509698	583833	6811404	Outcrop. Malachite in quartz carbonate veins 1-10cm wide.	0.27	55	15	34	11
4509699	584442	6811425	Float. Minor malachite with dark metallic nodules.	0.28	52	7	14	5
4509700	584454	6811432	Float. Near soil sample 4509584. Malachite around dark metallic nodule in quartz vein.	0.11	16	10	7	3

## 5.5.2 Catalyst

No rock samples were collected at Catalyst North.

Soil sample lines for Catalyst North were chosen to examine transitions between magnetic anomalies, which are interpreted to be ultramafic contacts. Line 7 was designed to gather soil samples across an aeromagnetic high. Previous soil sampling done in 2018 had an anomalously high Au-Pt-Pd value of 111ppb approximately 100m upslope from Line 7 (Davidson, 2019b). Line 8 was designed to gather soil samples across an aeromagnetic low and provided data to extend west from previous soil sampling conducted at the same elevation contour in 2018. Line 9 was designed to collect samples across an aeromagnetic high and was approximately 200m from the Arby showing. This line was not sampled because it is close to road access and would be relatively easy to collect in a later program. Higher priority was given to sample lines in areas with less prior information and areas which required

helicopter access. Line 10 was designed to collect samples from a previously unsampled area across an aeromagnetic high.

Line 7 traversed a mapped Hasen Creek limestone within Hasen Creek sediments. Copper values were low over the limestone while nickel and gold + palladium were anomalous. The north end of line 7 close to the contact between the Hasen Creek and Station Creek formations was anomalous in copper and gold + palladium. Anomalous values of copper and gold + palladium correlate along line 8. Values for all elements of interest were low along Line 10. Refer to figures 10-17 for maps with sample locations and plotted values for cu, Ni, and Au+Pd+Pt.

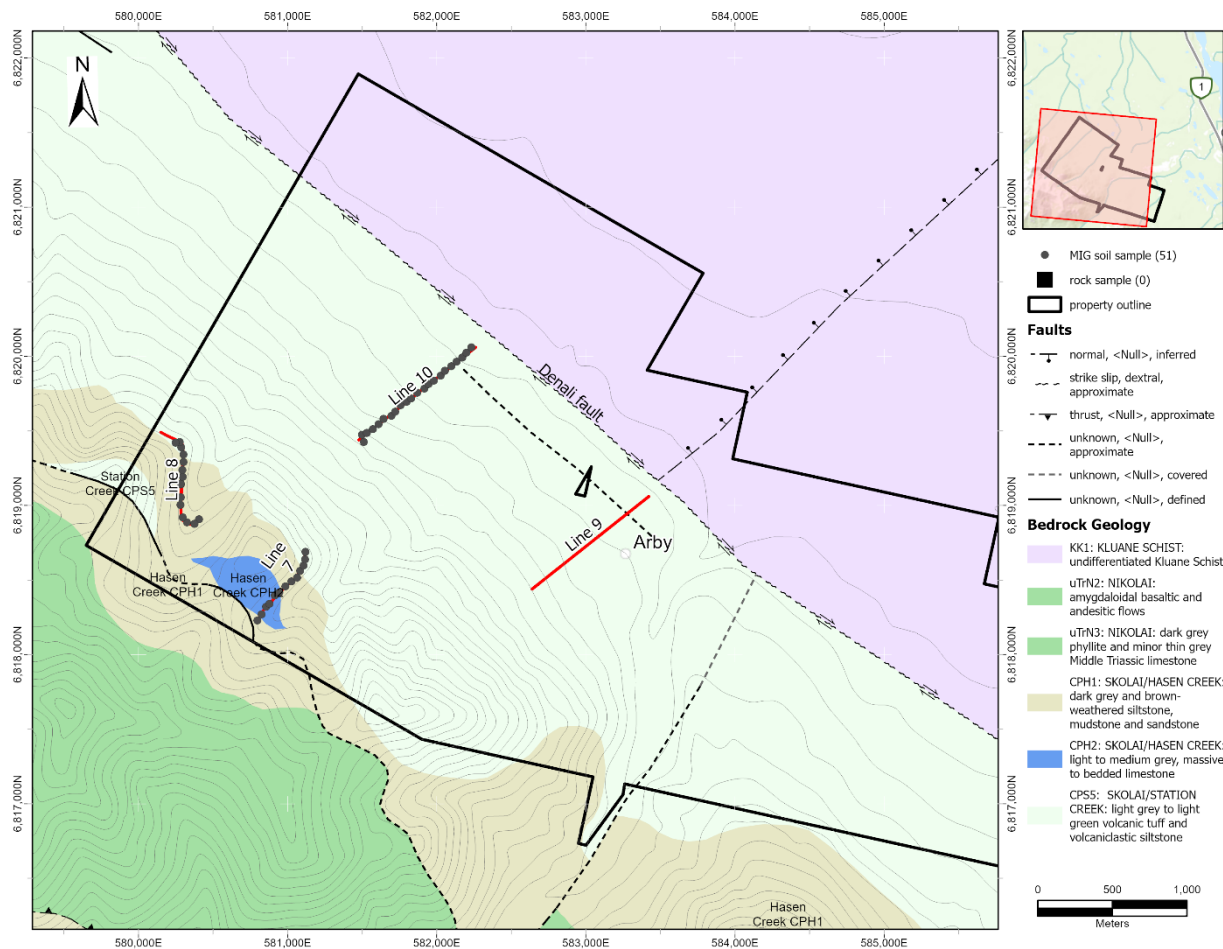


Figure 10: Sample Location Map Catalyst North

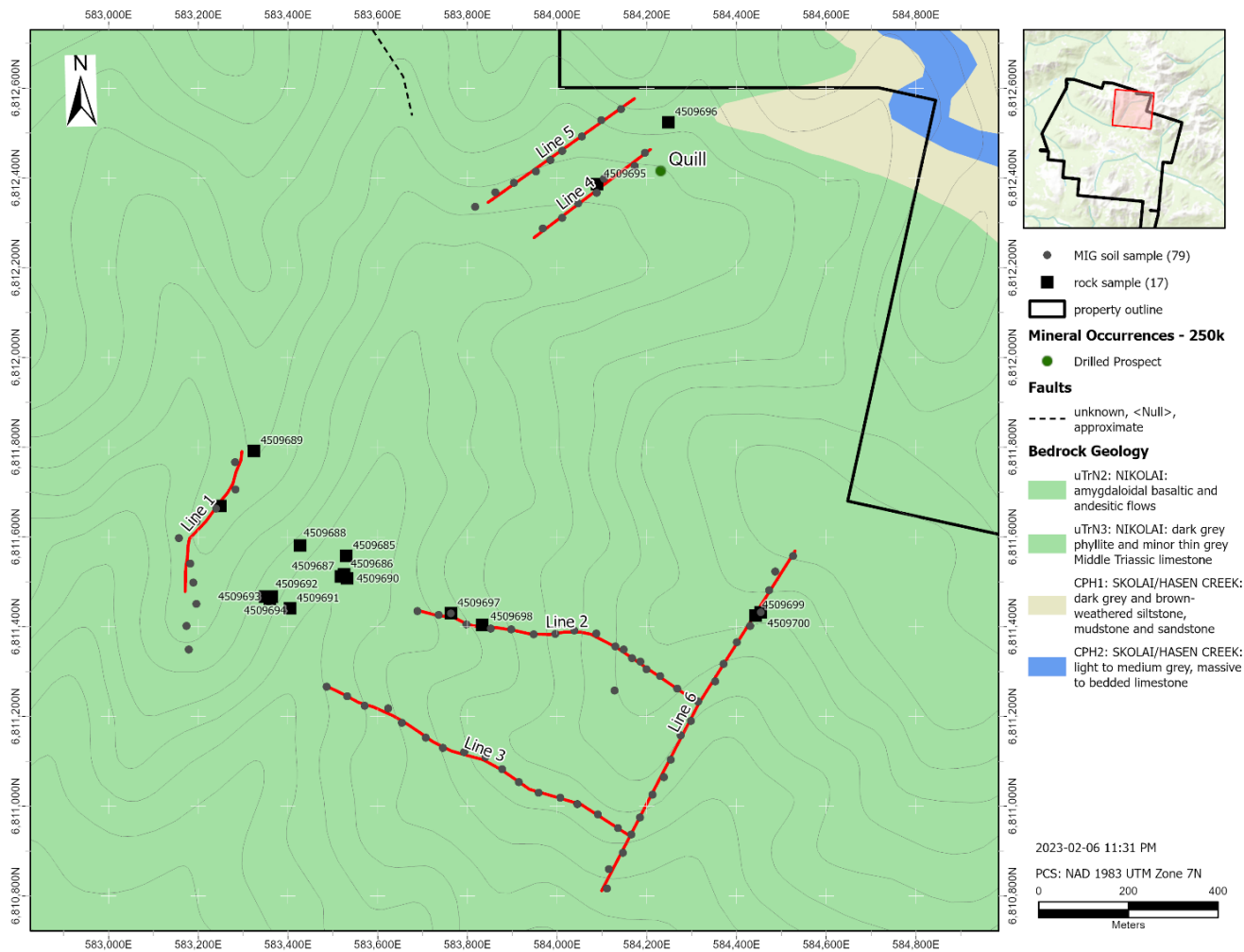
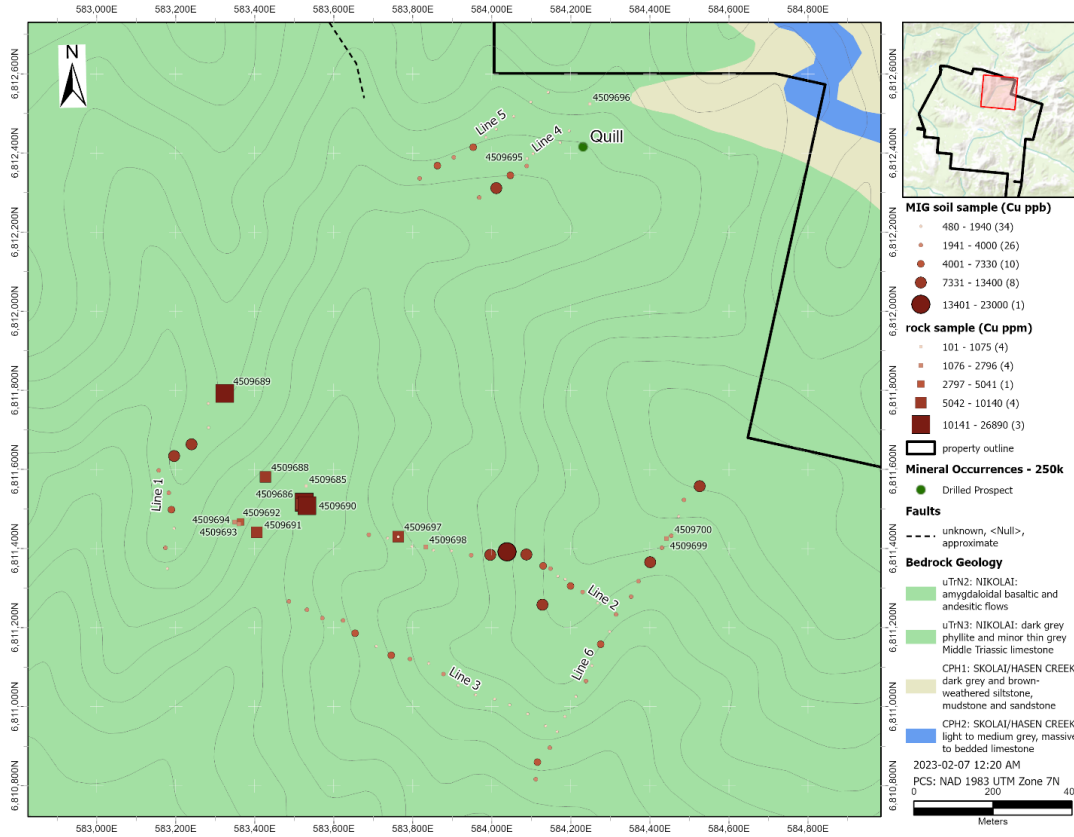
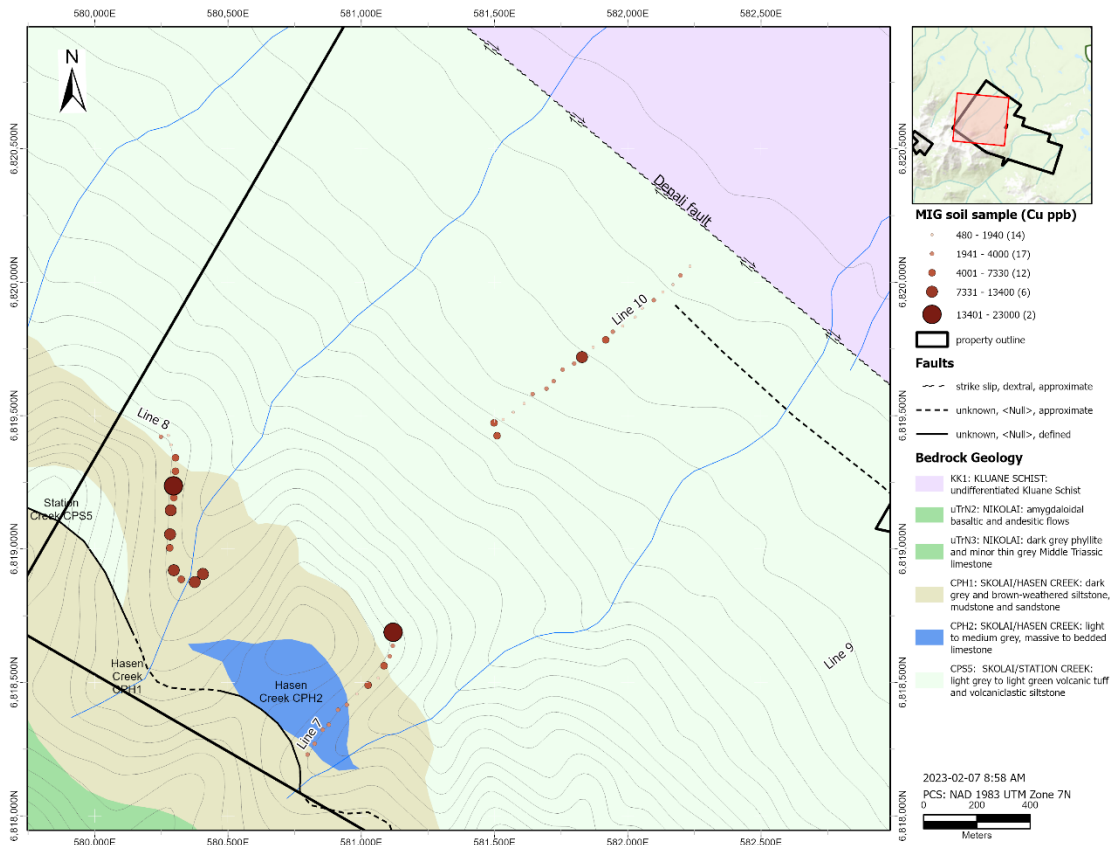


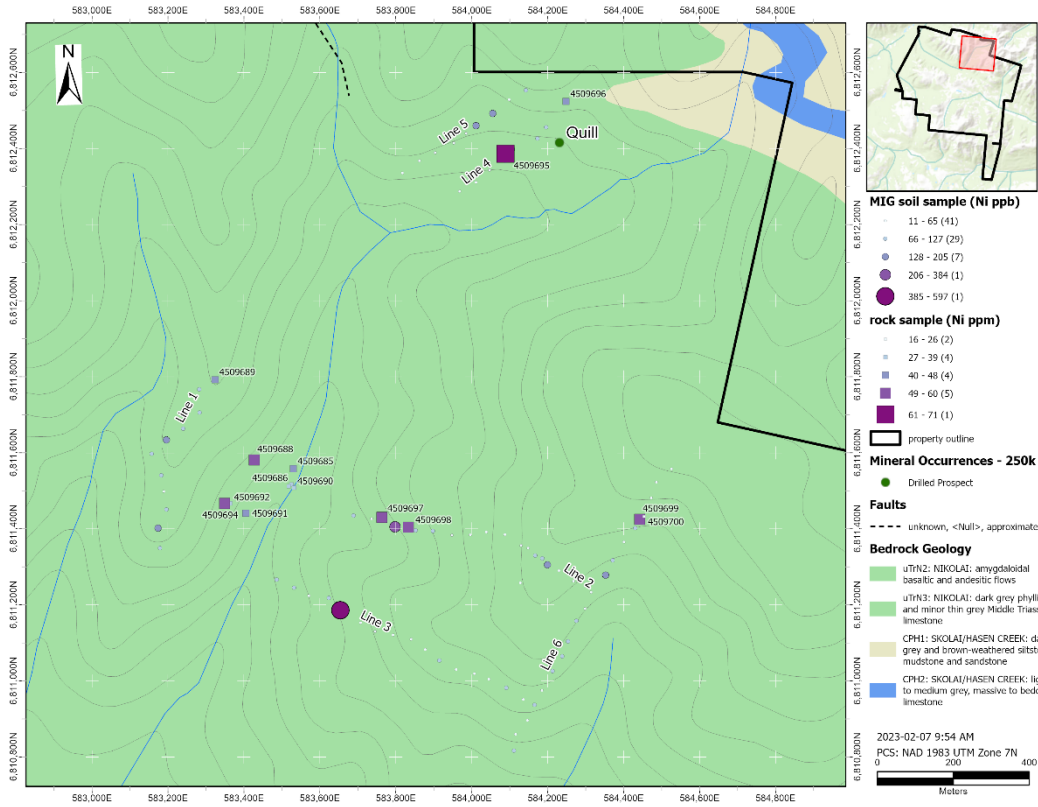
Figure 11: Sample Location Map Corky.



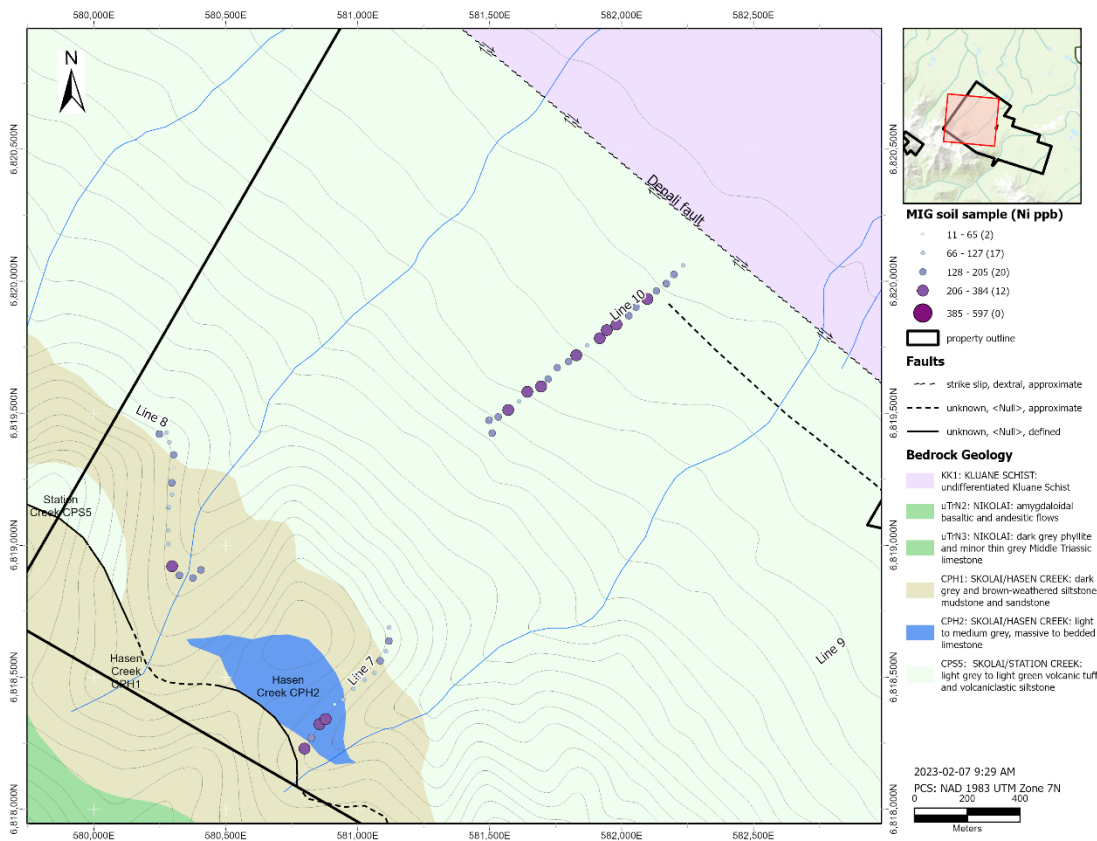
**Figure 13: Copper values in samples from Corky.**



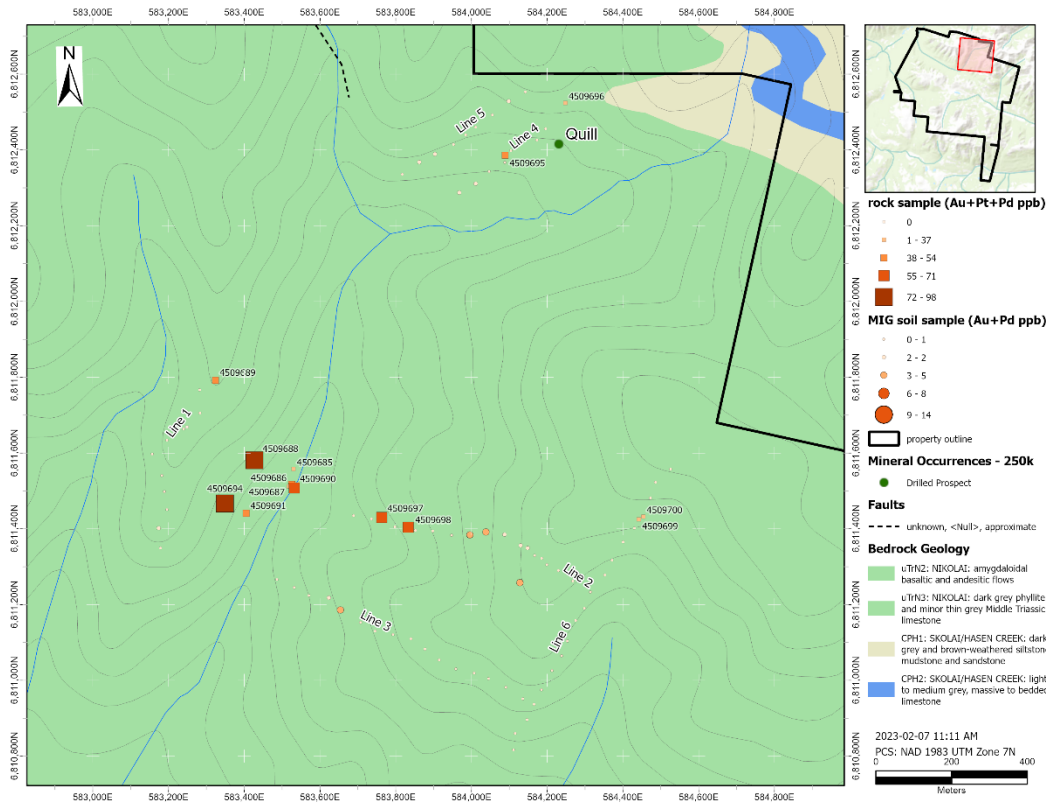
**Figure 12: Copper values for samples from Catalyst North.**



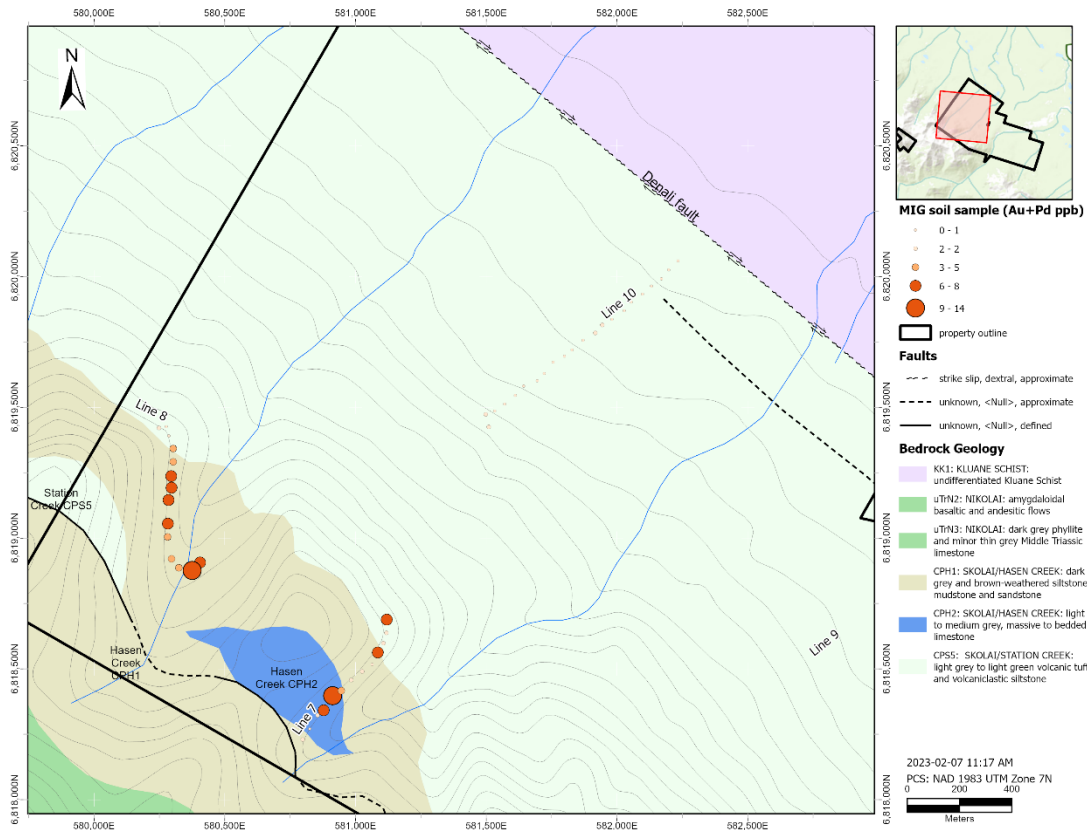
**Figure 15: Nickel values for samples from Corky.**



**Figure 14: Nickel values in soil samples Catalyst North.**



**Figure 17: Gold, Platinum and Palladium values in samples from Corky.**



**Figure 16: Gold and Palladium values in soil samples from Catalyst North.**

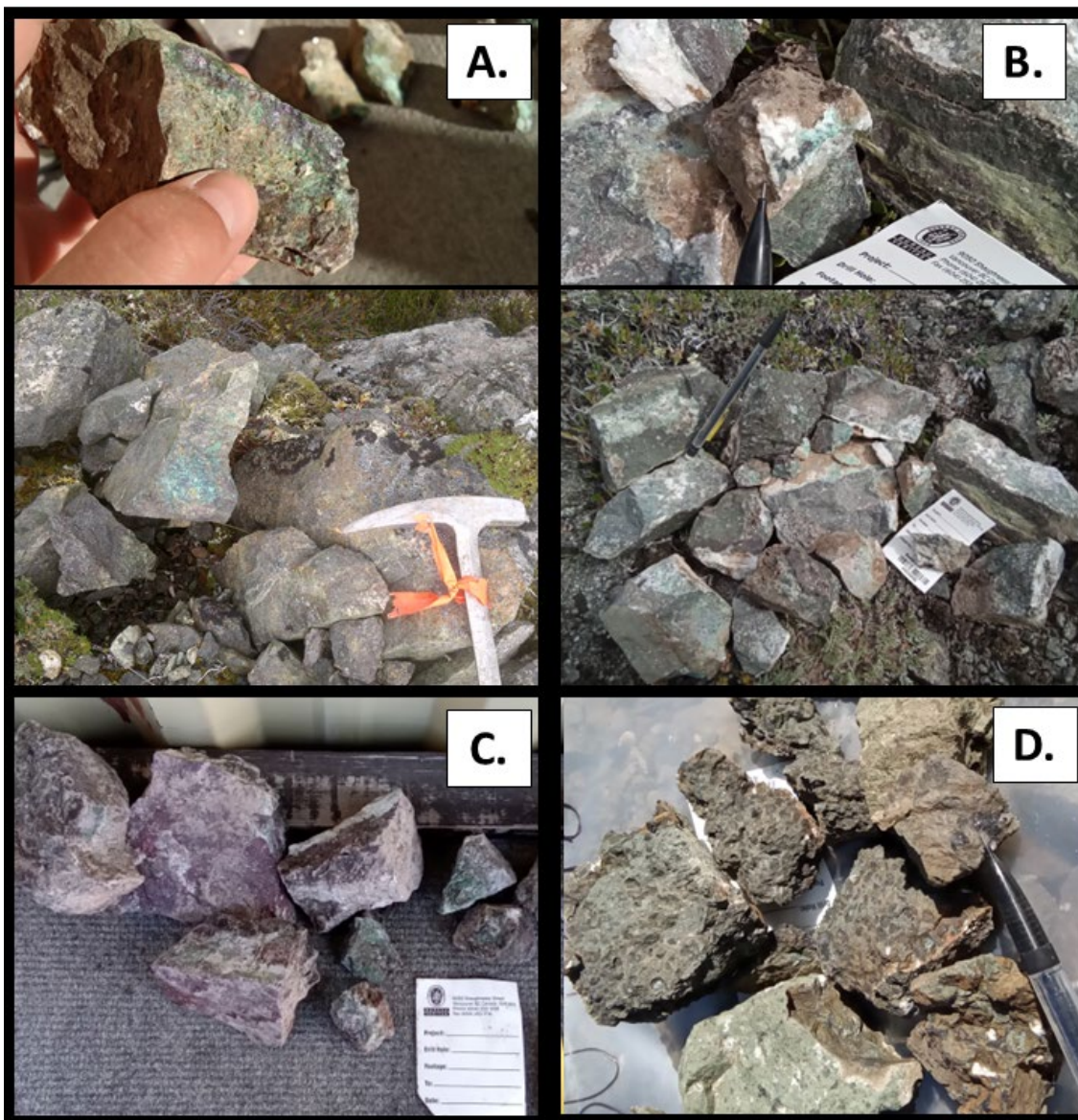


Figure 18: *Photo-plate* (A) Mineralization Type 3, note bornite seam within malachite staining- Sample 4509689; (B) Mineralization Type 3, note malachite within carbonate-rich veining- Sample 4509698; (C) Mineralization Type 4, note purple hematite staining, and green epidote alteration in host rock. Blue/green malachite near carbonate veining- Sample 4509691; (D) Mineralization Type 1, note presence of black metallic mineral in amygdules (potentially Mn oxide?), local <1% fine sulfide minerals in matrix and within amygdules- Sample 4509696.

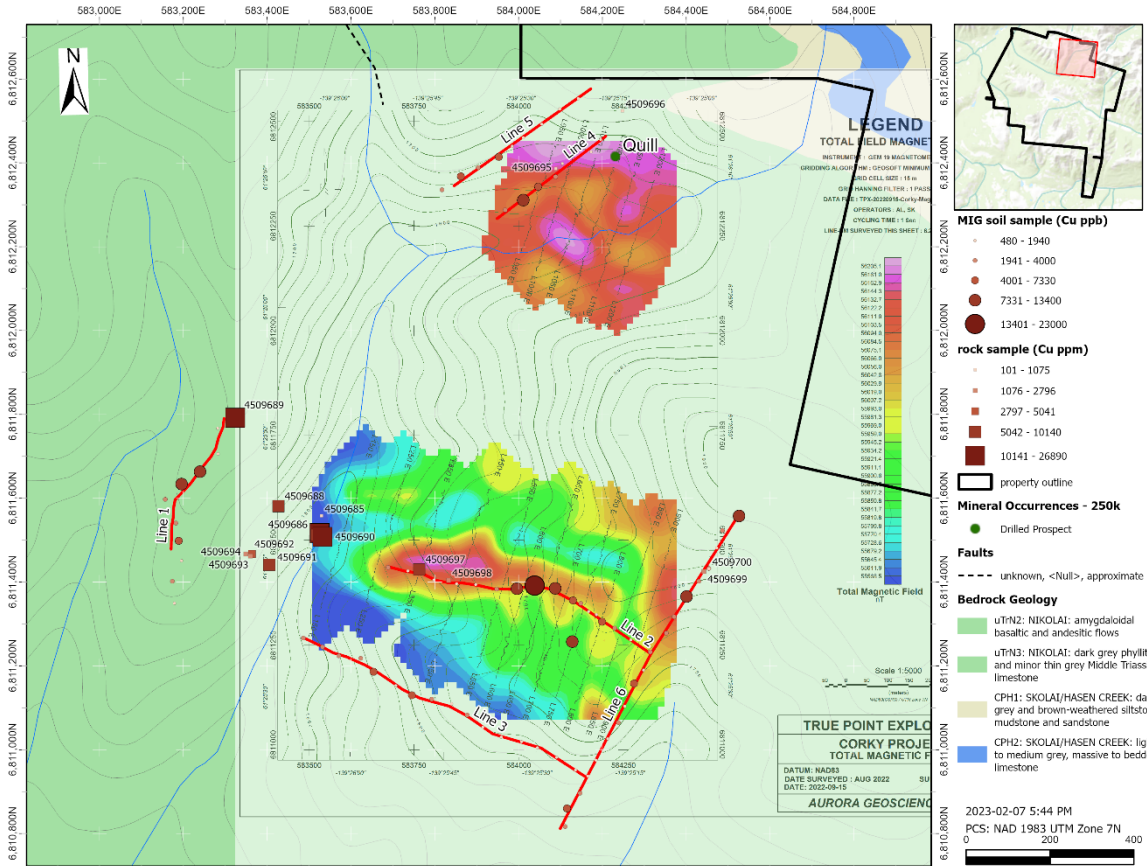
## 5.4 Geophysics

The geophysics surveyed was conducted by Andre Lebel, a geophysicist from Aurora Geosciences Ltd of Whitehorse with help provided by Stephanie Kolbalaski, a geologist with TruePoint Exploration. The survey was done between August 9<sup>th</sup> and 12<sup>th</sup> including mobilization. Very low frequency electromagnetic (VLF-EM) and ground magnetic surveys were completed on two grids within the Corky block, covering a total of 6.24 line-km. The northern grid was conducted at the site of the historic Ram trenching. The southern grid covered an area where mineralized samples were collected during the 2019 field season, and also covered soil sample lines 2 and 3 from 2022. The field report and data files by Aurora Geosciences can be found in **Appendix III** and maps in figures 19 and 20.

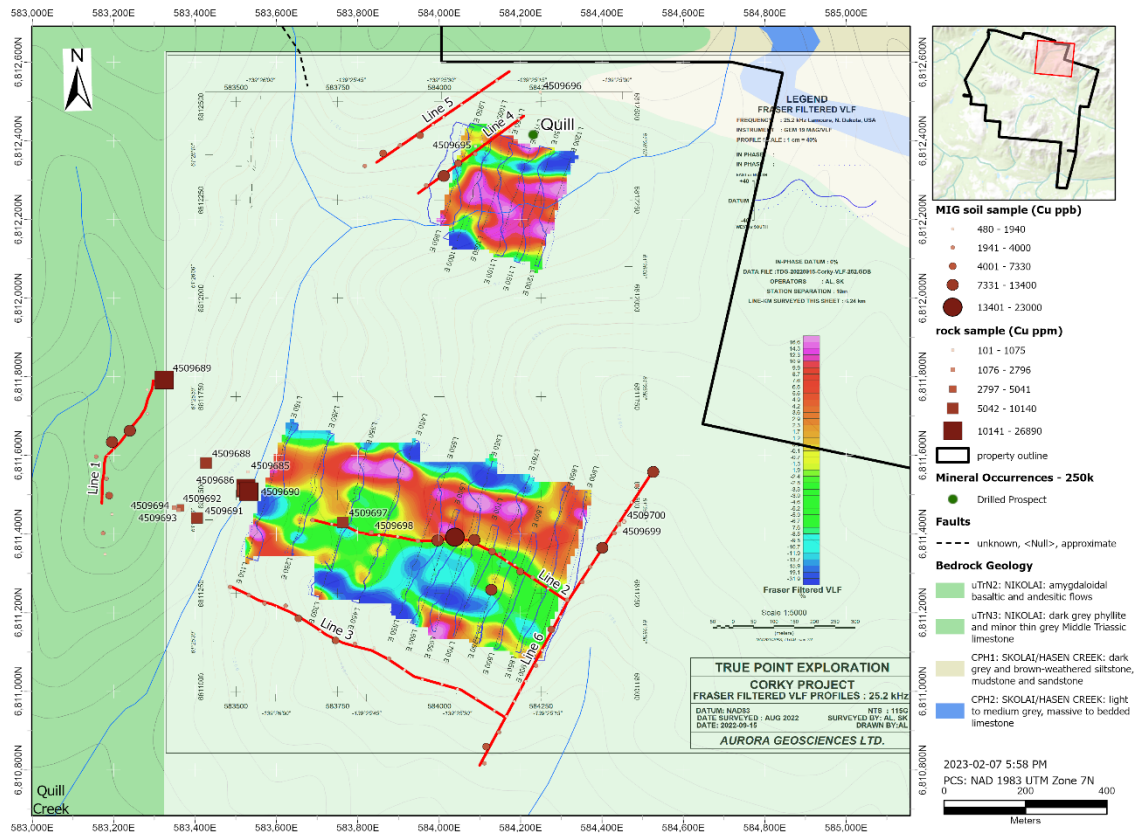
### 5.4.1 Geophysics Results and Map

No interpretation was carried out on the results and the following are observations made by the authors. Regional mapping by the Yukon Geological Survey shows the area covered by the survey to be underlain by the Nikolai basalts. No faults have been mapped in the area of the grids but the dominant structural grain of the region is northwest and creek valleys in the grid area trend north-south except for one creek near the Ram trenches that trends east northeast. The magnetic survey shows a strong east-west magnetic high along soil sample Line 2 that is cut off by the north-south trending valley east of Line 1. The east-west magnetic high feature correlates with anomalous copper soils and rock samples along Line 2. The cluster of high value copper samples in the valley east of Line 1 appears to be in a magnetic low, although it is at the edge of the survey and further work is required to confirm this.

The VLF-EM surveys at 25.2 kHz and 24.0 kHz display similar patterns. A strong conductor running north of soil sample Line 2 on the southern grid and a strong low north of a wide high at the Ram trenches on the northern grid. The strong conductor on the southern grid is adjacent to the magnetic high underneath soil sample Line 2 and may represent an area of alteration.



**Figure 19: Total Field Magnetic survey on Corky. Copper in soil and copper in rock values are plotted over the grids.**



**Figure 20: In Phase VLF-EM 25.2 kHz survey on Corky. Grids are overlain with copper values for rock and soil samples.**

## 6 Conclusions

The 2022 YMEP-funded Target Evaluation on the Catalyst project was successful in accomplishing the objectives set out in the application. These objectives included: MIG soils sampling to examine geochemistry, test the MIG analysis effectiveness at Corky and Catalyst North, and expand the geochemical anomalies between known zones and beyond into new areas. The geophysics surveys are adding to the existing layers of data over this project. The Catalyst project could not have been advanced in such a short time without the support of the Yukon Government's YMEP programs.

### 6.1 Recommendations for Future Work

The Catalyst property remains prospective and is overdue for systematic exploration work. Some grassroots work is recommended to fill in information gaps before planning a drill program.

#### 6.1.1 Corky

##### ***Soil sampling:***

- Follow-up with additional lines and/or grids around higher grading rock samples or soil samples collected during the 2022 field season. Terrain permitting, lines 2 and 3 should be extended westward to intersect with Line 1 and an additional north-south line should be added in the valley east of Line 1.
- continue soil sampling along ridges and expanding from areas of interest.

##### ***Geophysics:***

- Compile and integrate the different scales (regional, property scale and local grids) and types of geophysics available then use the data to produce pseudosections and an interpretation of the work.
- Detailed ground or drone surveys over target areas produced from the above interpretation.

##### ***Mapping:***

- Some sections of creeks have excellent outcrop exposure, and detailed mapping of the area may help connect/group mineralized samples.
- The Ram trenches/Quill Showing should be investigated and systematic chip samples should be collected in the trenches. The trenches may need to be deepened and then reclaimed following this work.

#### 6.1.2 North Catalyst:

##### ***Soil sampling:***

- Line 7 and 8 should be continued in both directions to help locate the contact between the Skolai Group formations.
- A lower priority is to sample Line 9 near the Arby showing, which was not sampled during the 2022 field season. Nearby Line 10 had low values but not enough sampling has been done to discount the area.

##### ***Geophysics:***

- Research, compile and integrate the different scales (regional and property) and types of geophysics available including publicly available work done on the Nickel Shāw deposit. Assessment reports indicate that there has been no property scale geophysics surveys on the Catalyst North property.
- Use results to produce target areas for infill or more detailed surveys.

**Mapping:**

- Some sections of creeks have excellent outcrop exposure, and detailed mapping of the area may help connect/group mineralized samples and locate the fertile contact between the Hasen Creek and Station Creek formation and Hasen Creek limestone bodies which are known to host skarns.

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## 8 Statement of Qualifications

I, Stephanie Kobylinski, of the City of Vancouver, in the Province of British Columbia, HEREBY CERTIFY:

1. That I am a geologist-in-training, and that I worked on the property during the summer or 2022.
2. I am a graduate of the University of Waterloo (B.Sc. Geology Co-op, 2019), and of Western University (M.Sc. Geology, 2022).
3. I have worked in the field of production geology and mineral exploration in Canada (ON, QC) part-time since 2015 (including roles as a geology summer student), and full-time in Yukon Territory and British Columbia since 2021.
4. That I am an employee of TruePoint Exploration (2022-2022). TruePoint is the exploration arm for MMG to which I have been employed since 2022.
5. I consent to the use of this report by Metallic Minerals Corp. for such assessment and/or regulatory and financing purposes deemed necessary.

Dated at Vancouver, British Columbia this 3rd day of October 2022.



Stephanie Kobylinski M.Sc.  
*TruePoint Exploration*  
 225 W22nd Ave,  
 Vancouver, BC, V5Y 2G3

I, Deborah Ann Rachel James of 11-3194 Gibbins Road, Duncan, British Columbia, do hereby certify the following:

- I am a Professional Geoscientist in good standing with Engineers and Geoscientists of B.C.
- I graduated from the University of British Columbia with a B.Sc. degree in Geological Sciences in 1988
- I have been employed continuously in the mineral exploration and mining industry since 2006 and have been practicing my profession as a geologist continuously since 2006.
- I have worked in the Yukon Territory in 1988-1989 and from 2006-present. During that time I have worked in the field on the Mt. Skukum Au-Ag vein deposit near Carcross, YT, the Nucleus and Revenue Cu-Au Porphyry deposits at the Freegold Mountain Property in the Dawson Range, Ni-Cu-PGE occurrences in the Kluane Ranges in southwest YT, Ag-Pb veins in the Keno Hill District, and the Carmacks Copper Cu-Ag-Au metamorphosed porphyry deposit northwest of Carmacks.

- I have not visited the Corky or Catalyst North claims but I have worked on the Arch and Arch Island claims. My role was to finalize the draft version of this report once the data had been received, compile the program expenses, and submit this report.

## **Appendix I. Statement of Expenditures**

See digital files

## **Appendix II. Rock and Soil Descriptions and Results**

See digital files

## **Appendix III. Magnetic and VLF Survey Report**

See digital files