YMEP TARGET EVALUATION 23-044

BIG CREEK PROPERTY
ASSESSMENT REPORT
on
SOIL GEOCHEMISTRY

January 2024

Work Applied to:

YD120301 - 304 (BC 1 to 4); YD120557 - 560 (BC 257 to 260); YD120587 - 590 (BC 287 to 290); YD120617 - 618 (BC 317 to 318); YD120648 (BC 348); YD120650 (BC 350); YD120652 (BC 352); YD120654 (BC 354); YD120715 - 954 (BC 415 to 654)

Whitehorse Mining District

NTS Mapsheets 115I/05 and 115I/12

62°28.5'N Latitude and 137°44'W Longitude

Prepared by:

Jesse R. Halle, P.Geo.

HALLE GEOLOGICAL SERVICES LTD.

3-1345 DRESDEN ROW

HALIFAX, NS B3J2J9

Prepared for:

TRIUMPH GOLD CORP.

SUITE 1100 – 1111 MELVILLE STREET

VANCOUVER BC V6E3V6

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1 – INTRODUCTION

1.1 Authorization and Purpose

This report was prepared for Triumph Gold Corp Ltd. ("Triumph Gold") by Jesse R. Halle (the "Author") of Halle Geological Services Ltd. ("Halle Geological") to document the 2023 exploration activities and results on mineral claims held by Triumph Gold at its Big Creek Property (the "Property"). The mineral deposits of interest at the Property are related to copper-gold porphyry and related epithermal mineralization within mid and late Cretaceous intrusive rocks.

Triumph Gold is a public company, incorporated in Vancouver BC and trading on the TSX Venture Exchange (TIG: TSX-V). Triumph Gold has a 100% ownership in the Property, located in the Whitehorse Mining District.

The 2023 field program was conducted under the supervision of Halle Geological and Marty Henning, Principal Geologist at Triumph Gold. Field activities at the Property centred around soil geochemistry. All fieldwork was conducted by employees or contractors of Triumph Gold, under the management of Halle Geological.

This report is prepared to satisfy assessment work credit obligations and to partially fulfil the requirements of Triumph Gold's agreement with the Energy, Mines and Resources Branch of the Yukon Government for partial funding through the Yukon Mineral Exploration Program ("YMEP") Target Evaluation Module (YMEP number 23-044). Triumph Gold would like to thank the Energy, Mines and Resources Branch of the Yukon Government for this support, and acknowledge YMEP as a valuable tool for exploration and discovery.

1.2 Sources of Information

Exploration data used in this report was made available to the Author with permission of Triumph Gold. The Author spent 19 days during the 2023 exploration season under contract to Triumph Gold, providing ample opportunity to observe active data collection and field methods.

Claim information was supplied by the Yukon Mining Recorders Office in Whitehorse, Yukon. The report also draws on general geologic information available in the public domain.

1.3 Units and Currency

Unless otherwise stated, all units used in this report are metric. The coordinate system is used in this report is Universal Transverse Mercator ("UTM") Zone 8N, and the datum used is North American Datum 1983 ("NAD83"). North arrows on plan maps depict true north ("TN"). Gold and silver concentrations are reported in grams per tonne ("g/t") and the concentration of other elements of interest are reported in parts per million ("ppm"). All currency values in the report are expressed in Canadian dollars ("CAD") as of 2023.

2 – RELIANCE ON OTHER EXPERTS

When appropriate, the Author has relied upon information previously described in historical reports, including text excerpts and direct reproduction of figure information to illustrate discussions in the text.

For the purpose of this report, the Author has relied on an ownership and claim information from the Yukon Mining Recorder. The author also relies on topographic maps published by the Government of Canada and geological maps produced by the Yukon Geological Survey.

3 – PROPERTY LOCATION AND DESCRIPTION

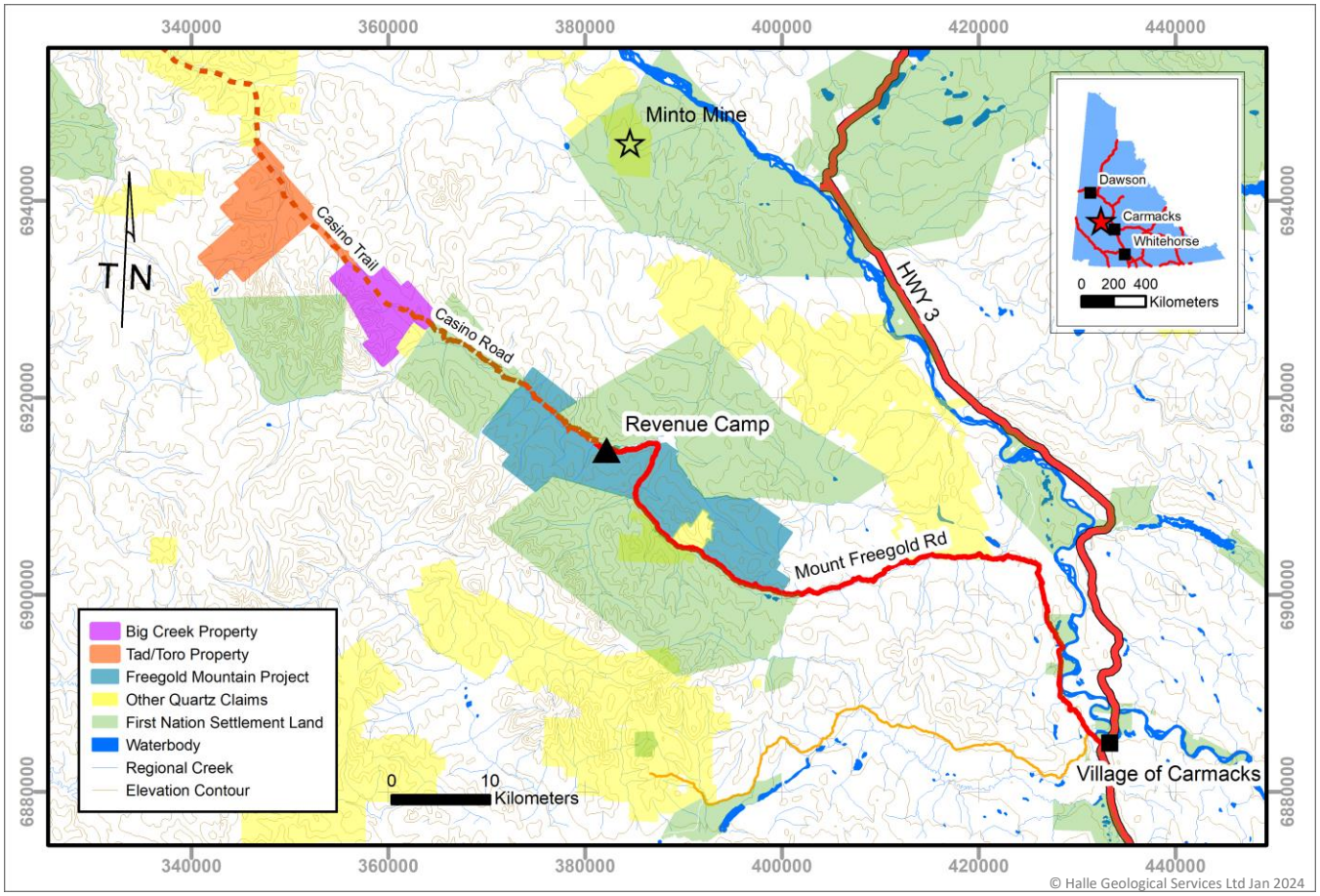
3.1 Location

The Property is located approximately 240 kilometres northwest of the city of Whitehorse and 85 kilometres northwest of the village of Carmacks in the Yukon, Canada (Figure 3.1.1). Carmacks is situated on the Klondike Highway (Yukon Highway 3), a paved all-weather highway connecting Whitehorse to Dawson City.

The Property was accessed by helicopter from Triumph Gold's Revenue Camp, located at kilometre 82 on the unpaved Mount Freegold Road out of Carmacks. The Casino Road and Casino Trail are currently winter roads but funding for the Northern Gateway Project may soon turn these to all season roads.

The Property covers parts of National Topographic Survey ("NTS") map sheets 115I/05 and 115I/12, and is centered approximately at UTM 359100mE, 6930100mN (62°28.5'N latitude and 137°44'W longitude).

Figure 3.1.1: Location Map of the Big Creek Property (1:750,000 scale)



3.2 Description of Mineral Tenure

The Property consists of 258 contiguous quartz claims within the Whitehorse Mining District, as described in Table 3.2.1. The claims are held under the Yukon Territory Quartz Mining Act and Quartz Mining Land Use Regulation and are administered by the Yukon Government through the mining recorder's office. The locations of each claim are shown in Figure 3.2.1.

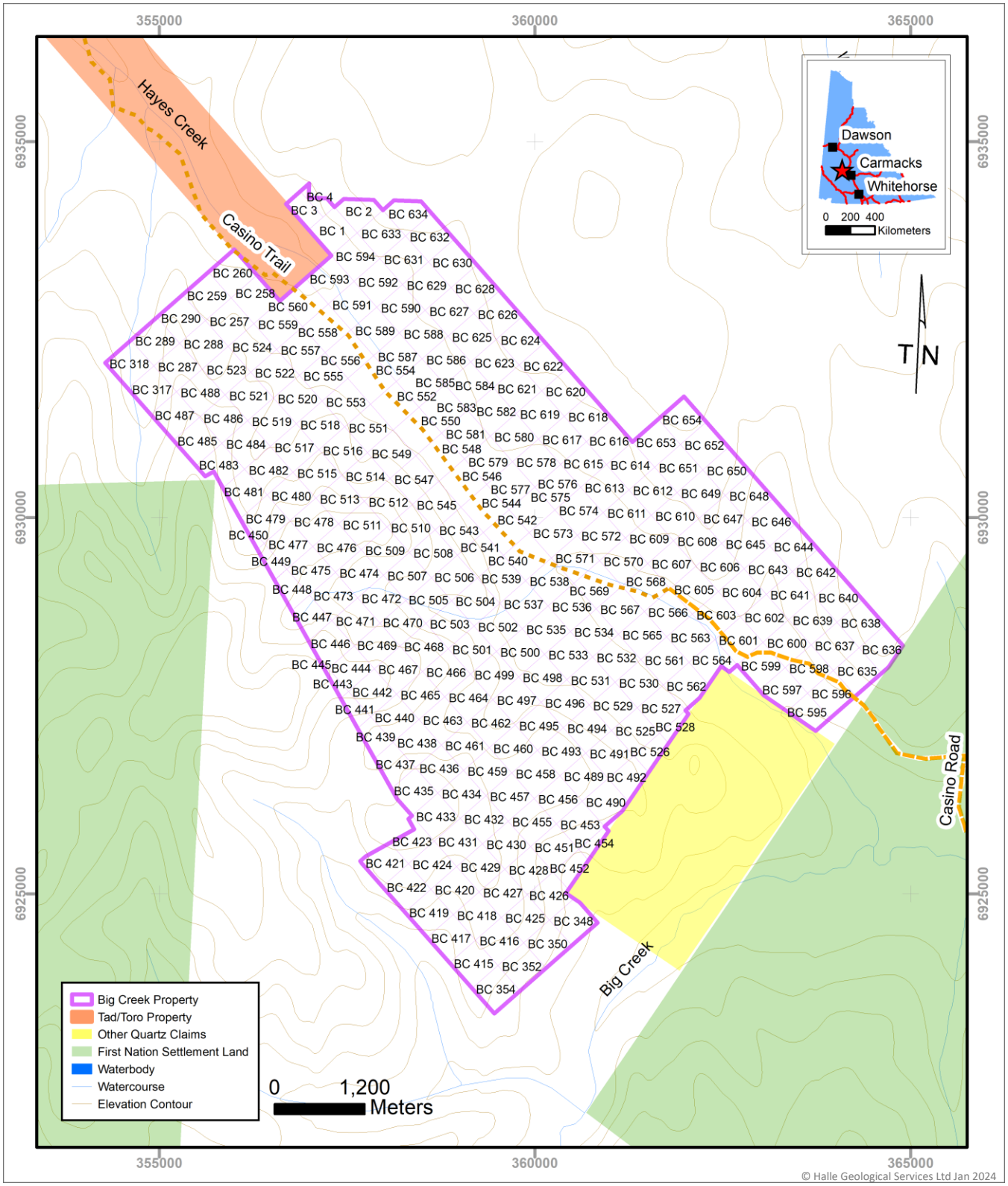
The lands of the Property are Yukon Territorial lands under which mining claims are physically-staked by erecting two legal posts at each end of the location line (defined as a straight line opened or indicated throughout between No. 1 and No. 2 location posts of a mineral claim and joining them). An application to record the claim with the Mining Recorder of the mining district within which the claim is situated is submitted within 30 days from the date of staking. The application date is the recording date of the claim and the claim is in good standing for one year after the date it is recorded. During this one-year period, the claim holder is required to do $100.00 of representation or assessment work on the claim. The fees for claim filing are $5.00 per claim per year. Claim holders can apply for up to five years of work at once if the claim is in its lapsing year or up to four years if the claim is not scheduled to lapse in the year of application. Payment in lieu of representation work can also be made.

The annual fees and work commitments due on all claims comprising the Property are in compliance and all of the claims are in good standing. None of the claims of the property have been surveyed.

Table 3.2.1: Status of mineral claims in the Big Creek Property (January, 2024)

Grant Number	Claim Name	No. of claims	NTS	Anniversary Date	Owner and Work Done By
YD120301 - 304	BC 1 to 4	4	115I/12	2024-03-06	Triumph Gold Corp. - 100%
YD120557 - 560	BC 257 to 260	4	115I/05 and /12	2024-03-06	Triumph Gold Corp. - 100%
YD120587 - 590	BC 287 to 290	4	115I/05	2024-03-06	Triumph Gold Corp. - 100%
YD120617 - 618	BC 317 to 318	2	115I/05	2024-03-06	Triumph Gold Corp. - 100%
YD120648	BC 348	1	115I/05	2024-03-06	Triumph Gold Corp. - 100%
YD120650	BC 350	1	115I/05	2024-03-06	Triumph Gold Corp. - 100%
YD120652	BC 352	1	115I/05	2024-03-06	Triumph Gold Corp. - 100%
YD120654	BC 354	1	115I/05	2024-03-06	Triumph Gold Corp. - 100%
YD120715 - 954	BC 415 to 654	240	115I/05	2024-03-06	Triumph Gold Corp. - 100%

Figure 3.2.1: Claim map, Big Creek Property (1:75,000 scale)



3.3 Royalties

In February of 2021, Triumph Gold entered into an agreement with Teck Resources Limited ("Teck") to acquire the Big Creek Property; part of the consideration included a 1.5% net smelter return granted to Teck.

3.4 Environmental Liabilities

Environmental liabilities have not yet been formally evaluated for the Property. However, preliminary inspection indicates that they are low. Local flora and fauna are typical of this region of the Yukon throughout the Property area. Moose, lynx, brown and black bear are observed most commonly along major drainages. Caribou have not been recorded on the Property.

The Property is not located in a protected area. Periodically, placer miners and/or trappers may access the area in tracked vehicles via the Mount Freegold Road and Casino Trail. During low, four-wheel-drive vehicles can travel as far as the Big Creek-Hayes Creek pass, approximately 110 road-kilometres from Carmacks.

As an addendum to the Class 1 Notification, Heritage Yukon advised on the location of seven known archaeological sites within the Property, identified as KeVf-1, KcVf-2, KcVf-3, KdVf-4, KdVf-7, KdVf-13, and 115I/05/001. The sites were identified during a heritage review of the historic Casino Trail by Casino Mining Company (Mooney, et al., 2012).

Though most sites describe lithic scatter and/or burned bones indicative of prehistoric camp sites, site KdVf-7 was notable in that a Chinese coin "cast between 1667-1671" was found. Mooney and Dale (2014) suggest possible uses of the coin were to either supplement a Tlingit warriors' armour, or that the coin was curated and traded for many years as a token or amulet and deposited in the project area by Chinese placer miners. Another site, 115I/05/001, identified as a Yukon Historic Site, is on the Property but was not described in the Mooney and Dale (2014) report.

Typically, avoidance of these sites is recommended and if avoidance is not possible, data recovery work is recommended to include infill shovel testing to better determine artifact densities, followed by a series of 1 by 1 metre unit block excavations in relationship to the size and distribution of the site.

3.5 Permits

Exploration activity in Yukon requires a mining land use operating permit. A Class 1 Notification allows activities considered low-impact, typically early-stage exploration. Class 2 and higher permits allow mineral exploration activities that are subject to approval under the Yukon Environmental and Socio-economic Assessment Act ("YESAA"), a single assessment process that applies throughout Yukon to all projects and all levels of government. The 2023 exploration work at the Property proceeded under a Class 1 Notification.

3.6 First Nations Communities

The Selkirk First Nation has settlement land which bounds a small portion the extreme southeast of the Property. In 1997, the Selkirk First Nation signed final claim settlement agreements with the Government of Canada and the Government of the Yukon.

3.7 Site Access Risk Factors

The Property is most easily accessed by helicopter from either Minto Landing or Revenue Camp, but a fixed-wing airstrip on the adjacent Tad/Toro property was utilized as late as 2011. Due to reliance on air-support for typical operations, access to the site is subject to favourable weather conditions.

Ground-support via the Mount Freegold Road can be reduced by heavy rains in the spring and summer that can slow travel and can raise creek water levels making creek crossings difficult. During the winter months, there may be limited or no access to the Freegold Mountain Project by truck due to unplowed roads. More rarely, high winds can topple trees across roads making them impassable until road clearing can be performed.

4 – ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

4.1 Accessibility

The Property is accessible year-round by helicopter. During periods of low water, sturdy four-wheel-drive vehicles have continued along the Casino Road by fording Big Creek at kilometre 84. As the termination of the Casino Road is 3 kilometres inside of the boundary of the Property, road access in the summer may be possible with adequate preparation and equipment.

4.2 Climate

The Property lies within the Dawson Range mountains in southwestern Yukon and has a northern interior climate. Winters are long and have typically low precipitation, with temperatures often reaching -30° centigrade. Summertime is relatively dry with the exception of common afternoon thunderstorms. The exploration season typically spans June to September.

Vegetation consists of alpine grass and moss, willow and black spruce at relatively high elevations. Valleys in the area are vegetated with white spruce, balsam poplar, and white birch. Alder and willow form dense cover over disturbed areas.

4.3 Local Resources

The nearest town to the Property area is Carmacks, with a population nearing 500 permanent residents. In addition to accommodation, groceries, fuel, and potable water, both skilled and unskilled labour can be found there. Whitehorse, with a population of over 25,000 people, acts as the primary supply centre for exploration activities.

4.4 Infrastructure

Minimal infrastructure currently exists in the immediate vicinity of the Property. The closest electrical grid, natural gas pipeline, and communication networks are at the past-producing Minto Mine, some 30 kilometres to the northeast.

The Casino Trail winter road connects the Property to the adjoining Tad/Toro property, including rough road access to the historical camp and airstrip.

4.5 Physiography

The Property lies in an area of moderately steep hills and broad valleys (Figure 4.5.1). Elevations range from 700 metres to 1300 metres above sea level. Hayes Creek and Big Creek are the main perennial streams draining the area. Water in these creeks is available year-round.

Permafrost is discontinuous and can typically occur near surface on north facing slopes and underneath the upper one metre of soil cover on south-facing slopes.

Figure 4.5.1: Physiography of the Big Creek Property

5 – EXPLORATION HISTORY

Berg and Farmer (2012) summarized well the history of Property exploration, excerpted here:

> During the staking rush which followed the announcement of the Casino prospect in the latter part of 1969 (approximately 50 kilometres northeast of the Big Creek Property) several companies launched exploration programs within the Big Creek claim group.
>
> In December of 1969, Chataway Exploration Company Ltd. staked the GB 1-96 claim group located at the north end of the Big Creek property. Field reconnaissance and a geochemical survey were completed in 1970 but no significant mineralization or soil anomalies were recognized.
>
> In 1970 the STAR 1-40 claim group was staked by Starbird Mines Ltd. on the south side of Prospector Mountain in the southwest corner of the Big Creek claim group. In February of 1971, an airborne magnetometer survey and a geochemical survey over the STAR (1-40) group were completed. The airborne survey detected an anomalous magnetic high which coincided with copper highs from the geochemical survey.
>
> During the summer of 1971, Occidental Minerals Corporation of Canada staked the PRO Claim group immediately north of the STAR claims. Geological mapping and geochemical sampling completed by Occidental Mineral Corp. identified six geochemical anomalies associated with the following mineralization: Chrysocolla in andesite of the Mt Nansen group; native copper, tetrahedrite and copper oxides along the syenite contact; and pyrite, tetrahedrite, enargite, proustite and sphalerite in felsic dykes.
>
> Placer mining activity along Hayes Creek which runs between the central boundaries of the Big Creek claim group was documented from 1898 to 1989. Gold in small amounts was reported as far upstream as Butterfield Creek located adjacent to the northwest end of the Big Creek claim group. No significant placer mining operations were found within the property.

In 2011, Teck completed soil and stream geochemical sampling and prospecting collecting 44 stream sediment samples, 746 soil samples and 31 rock samples were collected from their Big Creek claims, which included the current Property in addition to a contiguous belt of claims parallel to Hayes Creek northeast of the current Tad/Toro property. Particularly useful was the collection of the organic Ah (humic) horizon in an attempt to detect ionic anomalies possible through chelation of mobile ions with organic acids.

A pronounced silver anomaly in the south-central portion of the current Property was recommended for additional work. Prospecting identified quartz-eye porphyries, and molybdenum to 432 ppm in quartz veining through granite. Overlying Carmacks Group basalt and andesite were found to have local anomalous copper.

In 2012, Teck returned to the area to complete soil geochemical sampling, geological mapping and prospecting, line cutting, induced polarization and ground magnetic geophysical surveys. Some 599 soil samples and 43 rock samples were collected from the Big Creek claims. Several multi-element zones of anomalous metals resulted from both B- and Ah-horizons soil geochemistry.

Ground magnetics were reported to well-define the Big Creek Fault and associated fault splays and restraining bends. Chargeability results from induced polarization surveying identified two distinct anomalies (now

underneath the current Property) potentially representing pyritic haloes. Diamond drilling was recommended but not performed.

In July of 2021, a LiDAR survey was commissioned by Triumph Gold over the entire Property by McElhanney Limited's geomatics branch. The survey collected both exacting topological information and high-resolution ortho-corrected aerial photographs.

Until this program in 2023, no further work had been done on the Property.

6 – GEOLOGICAL SETTING AND MINERALIZATION

6.1 Regional Geology and Structure

The Omineca Belt is a Jurassic through Cretaceous volcanic arc terrane which extends from Alaska through the Yukon and British Columbia to Washington State. The belt is composed of the Slide Mountain, Cassiar, and Yukon-Tanana Terranes. These terranes are three magmatic island arcs that formed at a convergent boundary near the ancient continental margin. The Yukon-Tanana Terrane is thought to have accreted to the North American craton during the Late Triassic to Early Jurassic periods.

The Yukon-Tanana Terrane is comprised by the Nasina Assemblage, Mississippian-aged metasedimentary and metavolcanic rocks subdivided into the Snowcap Suite (Finlayson Suite), metaplutonic rocks of the Simpson River Suite, Jurassic batholithic intrusions (e.g., the Long Lake Suite), and Middle Cretaceous intrusions (e.g., the Whitehorse Suite). Intrusive rocks often dominate the terrane.

The youngest rocks in the region are volcanic rocks and associated shallow intrusions of the Late Cretaceous Casino, Prospector Mountain, and Carmacks Group Suites. The Casino Suite is oldest of these and is represented by high-level plugs, dykes, and breccias emplaced along the length of the Dawson Range Batholith. Prospector Mountain and Casino Suite rocks are coeval and slightly younger than the Casino Suite. Prospector Mountain suite rocks are found over a broad area of the Dawson Range and are represented by small intrusive bodies (e.g., Prospector Mountain stock). The Carmacks Group are the youngest rocks in the region and comprise a compositionally diverse range of volcanic rocks that can locally cover older lithologies.

The main structural features in the region are steeply-dipping northwest-trending dextral fault zones, parallel to the regional Tintina and Denali faults. The major structural feature in the Property area is the Big Creek Fault.

6.2 Big Creek Property Geology and Structure

Very little natural outcropping exists in the Property area. The multi-year mapping and sampling program completed by Teck geologists is the best first-hand account of the geology of the Property, and is excerpted below:

> The Big Creek Property is predominantly underlain by medium to coarse-grained, equigranular biotite hornblende granodiorite to quartz diorite of Jurassic to Mid-Cretaceous age comprising the Dawson Range batholith (Whitehorse Suite), hornblende monzonite and syenite of the Early Jurassic Long Lake Suite, hornblende biotite granodiorite to diorite of the Triassic Klotassin Suite (Payne, 1987), and andesitic to basaltic rocks of the Late Cretaceous Carmacks Group volcanics. Upper slopes and ridge tops are dominated by unconformable Carmacks Group volcanics which dip in opposite directions on both sides of the Big Creek fault. The older intrusive rocks outcrop in the north, central and southernmost areas of the claim area predominantly at lower topographic levels. Granodiorite intrudes metamorphic rocks of Yukon Tanana Terrane, predominantly Snowcap assemblage rocks consisting of buff to brown weathered quartzite, quartz-mica schist and marble outcropping on the southwest side of the Big Creek Fault within the property. Grey to pink quartz porphyry rocks were also observed on slopes directly south of the prominent restraining fault bend of the Big Creek fault

within the claim group. The quartz phenocrysts in this intrusion are stretched, suggesting syn-tectonic and possibly a Late Cretaceous age of intrusion.

Table 6.2.1 lists and describes the geologic units observed within and nearby the Property area and relates them to the lithologic coding found on Yukon government geologic maps.

Table 6.2.1: Regional Geologic Units surrounding the Big Creek Property

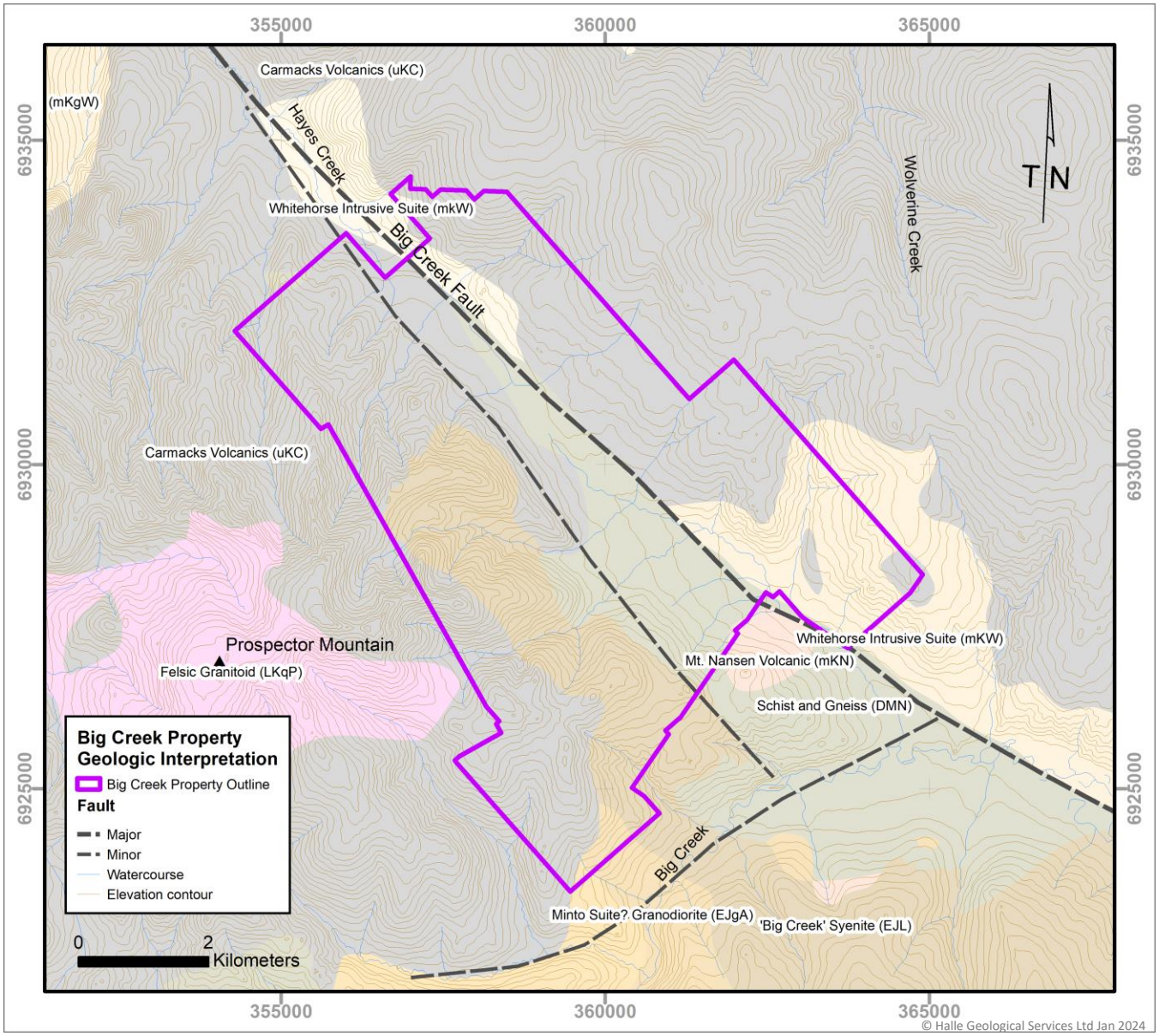
Geologic Unit (code)	Geologic Period	Corresponding Age (Ma)	Description	Examples
Nasina Assemblage (DMN, DMgPW)	Devonian to Mississippian	370-345	intermediate to mafic metasedimentary and metavolcanic rocks including schist, phyllite, and gneiss	outcroppings on the Mount Freegold Road near the confluence of Seymour and Big Creeks
Long Lake Suite (eJL)	early Jurassic	180-195	K-feldspar megacrystic hornblende monzonite to syenite; biotite-hornblende granodiorite	Big Creek Syenite, Granite Mountain Batholith, Minto Suite intrusives?
Whitehorse Suite (mKW)	early to mid Cretaceous	105-112	quartz-feldspar or feldspar-hornblende porphyry; leucogranite, aplite; K-megacrystic biotite quartz monzonite; biotite-hornblende granodiorite to quartz monzonite	Dawson Range Batholith, Coffee Creek Granite, Revenue Granite
Nansen Suite (mKN)	mid Cretaceous	105-112	Feldspar phyric andesite to dacite flows, breccia and tuff	
Prospector Mountain Suite (LKqP)	late Cretaceous	70	biotite-pyroxene monzodiorite to monzogabbro; hornblende-biotite quartz syenite to quartz monzonite	Prospector Mountain intrusive stock, Seymour Creek Stock
Carmacks Group (uKC)	upper Cretaceous	69-70	rhyodacite; augite-olivine basalt and breccia, hornblende-feldspar porphyry andesite and dacite flows, vesicular augite-phyric andesite and trachyte	

The Property parallels the regionally-significant Big Creek Fault. The fault is moderately- to steeply-dipping and dominantly dextral. The Big Creek Fault is thought to have undergone multiple reactivations resultant in the many intrusive suites in the area.

A fault splay parallel to the Big Creek Fault running the length of the Property was interpreted by Tempelman-Kluit (1984), who also interpreted a northeast-trending break at the upper reaches of Big Creek (Figure 6.2.1).

Most of the higher parts of the property are unglaciated during the last few glacial events resulting in the preservation of a surface cap of weathered material formed during the extended period of tropical weathering. Oxidation extends to depths of 20 metres to 200 metres below the present ground surface depending on local structural and lithological controls.

Figure 6.2.1: Property-scale Geology and Structure, Big Creek Property (1:100,000 scale)



6.3 Mineralization

In 2011, a rock sample of “rusty quartz vein hosted in weathered granite” collected from the Property assayed 432ppm Mo and 62 ppm Cu. That same year, four basaltic andesite grab samples assayed between 44 to 323 ppm Cu. The following year saw descriptions of “strong, pervasive quartz- chlorite-(epidote) alteration with quartz veinlets and trace pyrite” in schist, assaying up to 84.9 ppm Zn and 30.1 ppm Cu.

Soil geochemistry from both 2011 and 2012 revealed anomalous copper, silver and arsenic along both the southeast and northwest ends of the Big Creek fault located in the main valley on the Property.

7 – DEPOSIT TYPES

7.1 Porphyry and Epithermal Related Mineralization

Porphyry and epithermal systems in the Dawson Range belt extend from the Casino deposit to the Mt. Nansen camp. The belt has been long recognized for the potential to host large porphyry copper-molybdenum-gold deposits. The Casino porphyry deposit is located 55 kilometres northwest of the Property and contains a proven and probable mineral milling reserve of 1.22 billion tonnes grading 0.19% copper ("Cu"), 0.22 g/t gold ("Au"), 0.021% molybdenum ("Mo"), and 1.7 g/t silver ("Ag") not including a proven and probable heap leach reserve (Roth et al., 2022). Another Dawson Range porphyry-related deposit is the Revenue Deposit, with a current combined open pit and underground inferred resource of 27.5 million tonnes grading 0.77g/t Au, 0.12% Cu, and 0.009% Mo (Sim and Davis, 2020). Yet another porphyry-style deposit is Sonora Gulch, a gold-silver-copper-zinc ± molybdenum prospect in which Late Cretaceous feldspar porphyry dikes and quartz porphyry stocks are observed with hypogene pyrite-pyrrhotite-chalcopyrite assemblages.

Other historic porphyry-related prospects in the Dawson Range include the Mt. Cockfield Cu-Mo prospect hosted in Late Cretaceous quartz monzonite, the Cash Cu-Mo porphyry, the Antoniuk Au porphyry-breccia system, and the Cyprus Cu-Mo porphyry.

In addition to copper porphyry deposits, intrusive-hosted gold mineralization is also prominent in Dawson Range rocks. In the Mount Freegold area, 40 kilometres southeast of the Property, is Triumph Gold's Nucleus Au-Ag-Cu deposit. It consists of polyphase quartz-chalcopyrite-pyrite-arsenopyrite veins, infill breccia and semi- to massive-sulfide lenses consistent with multiple phases of skarn and epithermal gold mineralization It has a current indicated resource of 31 million tonnes containing 0.65 g/t Au, 0.7 g/t Ag, and 0.07% Cu and an inferred resource of 9.4 million tonnes containing 0.56 g/t Au, 0.72 g/t Au, and 0.04% Cu, each resource using a 0.30 g/t gold equivalent ("AuEq") cut-off grade (Sim and Davis, 2020).

Newmont's Coffee Project is roughly 50 kilometres northwest from the Property has measured and indicated resources of 46.3 million tonnes of 1.46 g/t Au equaling 2.17 million ounces of gold (Newmont Mineral Resources Report, 2019).

Southwest along the Big Creek structure, another intrusive-hosted gold deposit is the Laforma gold deposit belonging to FM Resources Corp. In 1999 FM Resources reported a drill-indicated resource (not 43-101-compliant) for the deposit of 602,000 tonnes, grading 4.31 g/t gold (Yukon Minfile, 2002). There are a number of other mineralization types in the Mount Freegold area including the Antoniuk intrusive breccia gold occurrence and Tinta Hill polymetallic epithermal vein deposit.

The reserve information listed above is not necessarily indicative of the mineralization on the Property that is the subject of this report.

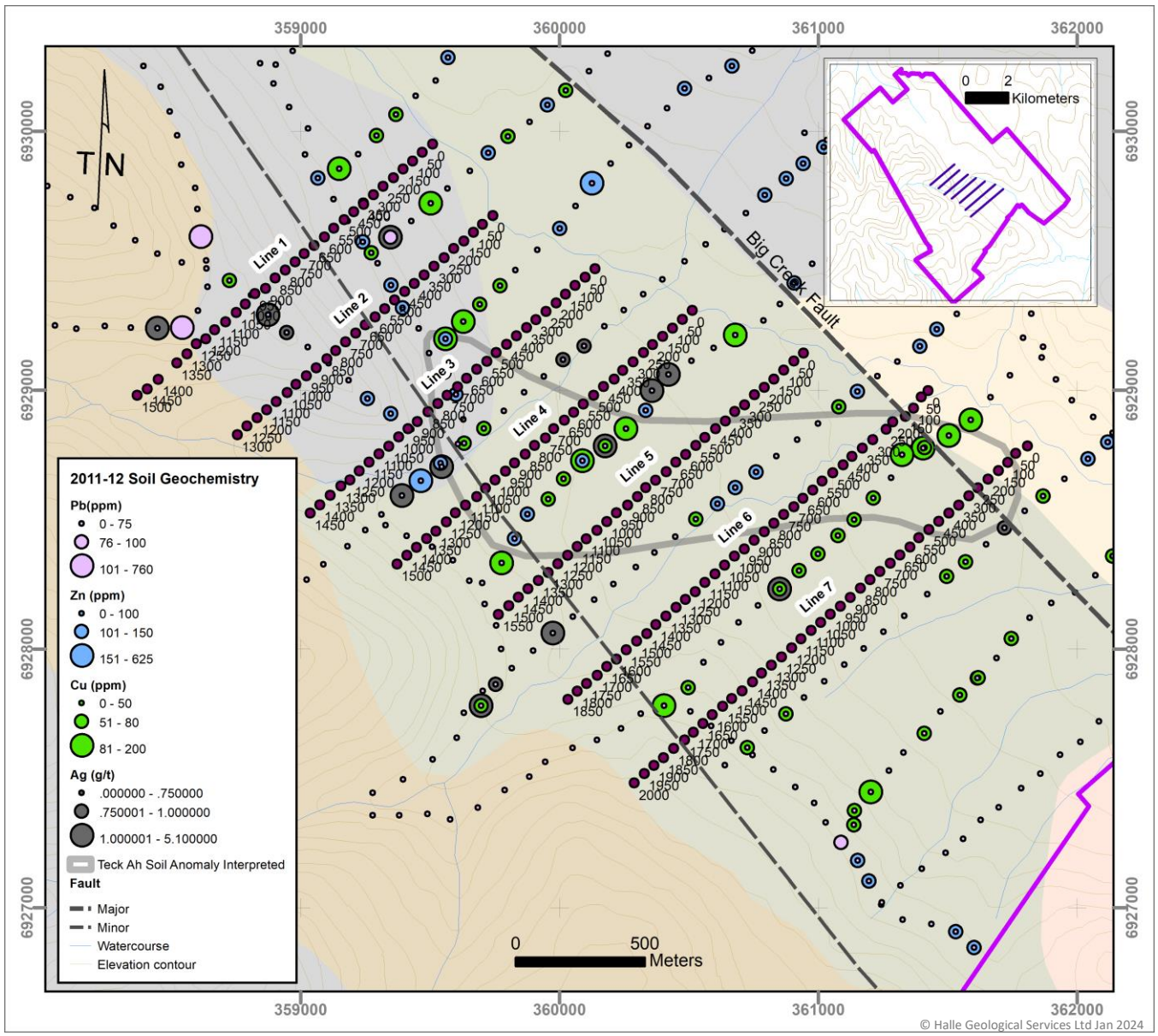
8 – 2023 MINERAL EXPLORATION

A program of helicopter-assisted surface mineral exploration was conducted on the Property by Triumph Gold, including soil sampling from August 5th to 9th and reconnaissance outcrop prospecting and sampling from August 5th to 14th, 2023.

8.1 Big Creek Property Soil Sampling

The soil sampling grid targeted an area in the southeast-central portion of the Property, strategically placed between geochemically-anomalous results from soil geochemistry and IP geophysics performed by Teck in 2011 and 2012. Approximately 11.15 line-kilometers of soil grid were sampled, with sampling stations spaced at 50 metres on each of the seven lines (Figure 8.1.1).

Figure 8.1.1: Soil Sample Stations, Big Creek Property (1:25,000 scale)

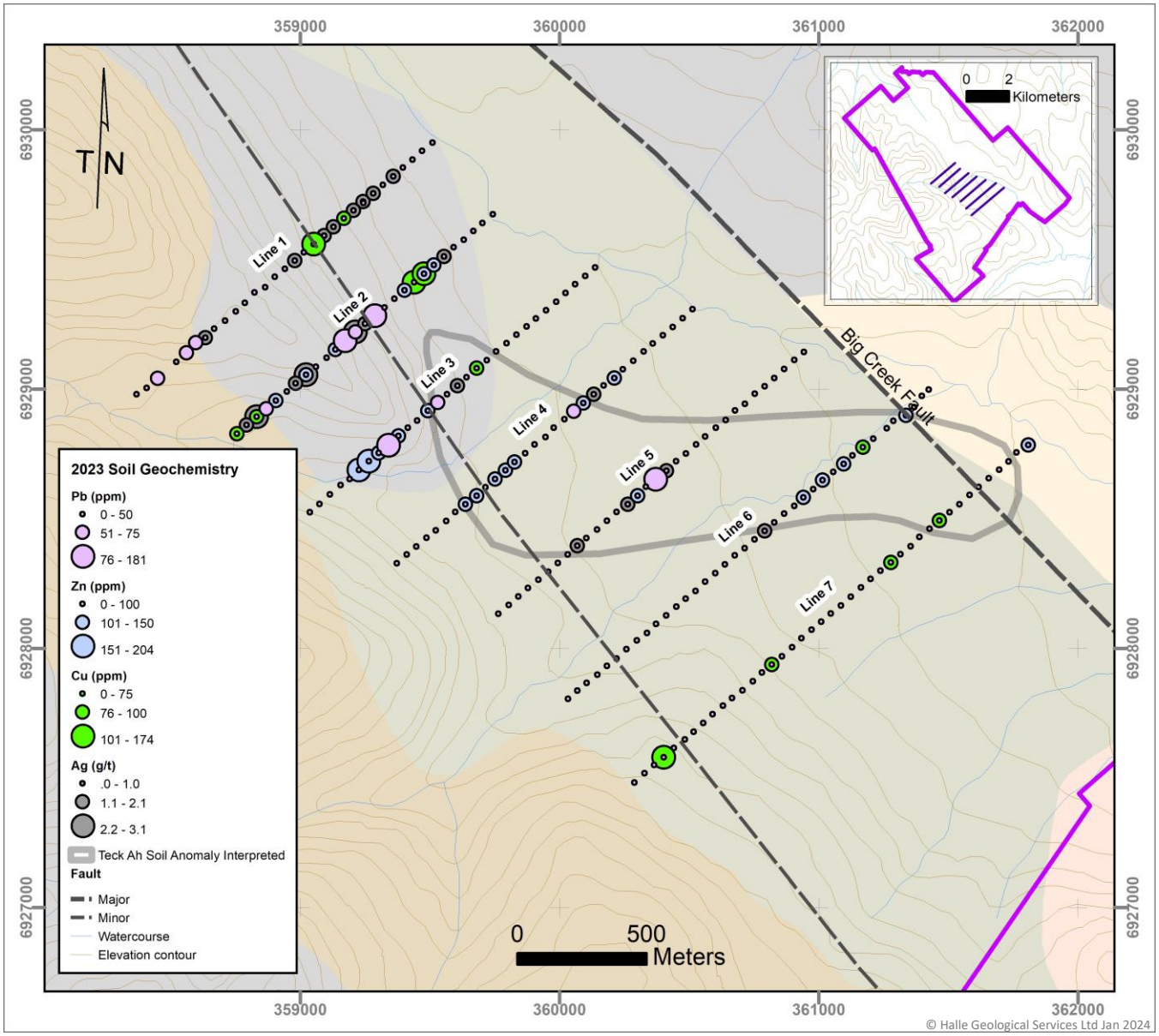


Some 230 sample locations were attempted, but samples were unable to be collected at two locations due to excessive alluvium cover.

Soil samples were collected using a combination of shovels and soil augers and preferentially sampled the Ah or B soil horizon. Soil samples were analyzed using super-trace inductively coupled plasma mass spectrometry ("ICP-MS") giving multi-element estimation including gold. For full details on these methods, see Chapter 10. Soil sample descriptions can be found in Appendix A.

Figure 8.1.2 presents a summary of the resultant geochemical anomalies for Ag, As, Cu, Pb, and Zn where symbols for each are graduated when above two standard deviations of their respective population mean. Five consecutive samples on Line 2 returned values greater than 1 g/t Ag. Two adjacent samples on Line 2 returned 2.85 g/t Ag, 204 ppm Zn, and 181 ppm Pb and 3.1 g/t Ag, 102 ppm Zn and 50 ppm Pb (respectively).

Figure 8.1.2: 2023 Soil Geochemistry Summary (1:25,000 scale)



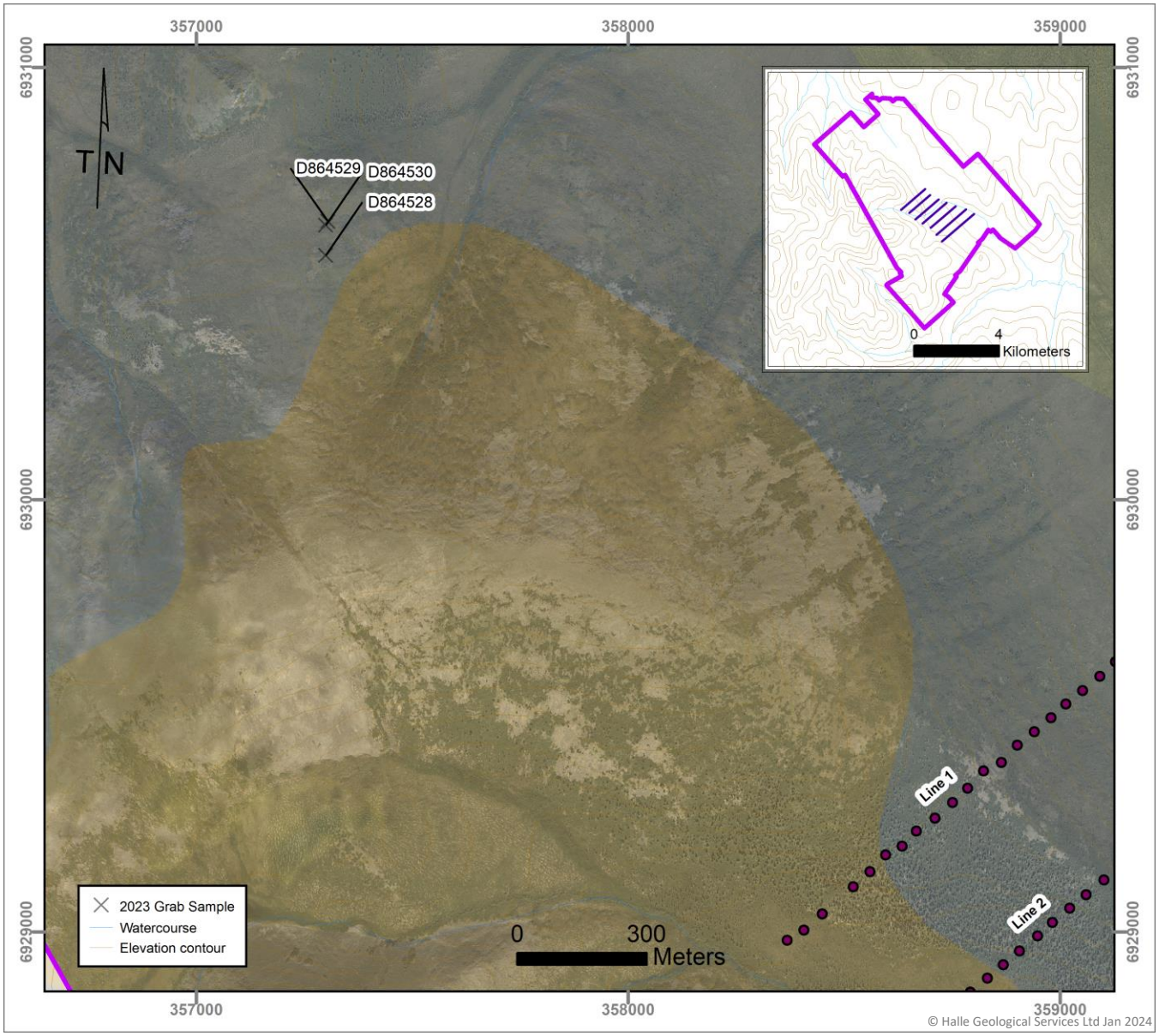
The results show a pronounced multi-element anomaly in the upland area in the northwest portion of the soil grid and immediately to the northwest of the Ah soil anomaly identified by Teck.

8.2 Rock Sampling

An area north of the soil geochemistry grid was targeted to investigate a single grab sample taken by Teck in 2011 that returned 101 ppm Cu and 44 ppm Zn. Three additional samples were collected from the area by Marty Henning, P.Geo in 2023 (Figure 8.2.1), confirming low grade copper (to 146 ppm) and zinc (to 246 ppm). Low grade lead (to 33 ppm) was also returned.

The samples were described as chloritic gneiss with quartz carbonate veining and trace chalcopyrite and pyrite/pyrrhotite. Grab sample locations and descriptions can be found in Appendix B.

Figure 8.2.1: 2023 Grab Samples (1:15,000 scale)



8.3 Data Processing

Assay data returned from ALS Laboratories (“ALS”) was compiled and processed using standard arithmetic functions and graphing capabilities of Microsoft Excel spreadsheet software. ESRI ArcGIS was used to map sample sites in plan view and perform simple thematic mapping.

9 – SAMPLING METHOD AND APPROACH

9.1 Background

The surface sampling program was designed by Marty Henning, P.Geo, and supervised by Jesse R. Halle, P.Geo throughout the field Program. The soil sampling program was executed by a crew of two to four people per day, including three experienced field geologists and a field assistant, under employment/contract to Triumph Gold.

9.2 Soil Sampling Method

A hand-held GPS unit was used to locate sampling stations. A 1.2 metre-long, hand-operated soil auger and/or shovel was used to sample the Ah and/or B soil horizon material. Notes were taken describing the composition, colour, and grain-sizes present, and the sampled material was placed in a labelled kraft soil sample bag. Once at Revenue Camp, all soil samples were verified, air dried (Figure 9.2.1) and placed into larger labeled poly bags and rice bags, before being secured in sealed apple bins and trucked directly to the ALS Laboratory preparation facility in Whitehorse by Small's Expediting and General Services Ltd.

Figure 9.2.1: Photo of soil samples air-drying before shipment

Photo by Halle Geological Services Ltd. Aug 2023

10 – SAMPLE PREPARATION, ANAYSES, AND SECURITY

10.1 Overview

Due to the absence of soil standards for this program, the regular insertion of in-house sample standards and blanks was not undertaken by Triumph Gold. The internal QA/QC from the assay lab is presented here as evidence of the reliability of the assay results. The ALS Laboratory preparation facility in Whitehorse is not equipped to for actual assaying, and therefore must forward pulp samples to ALS Laboratories in North Vancouver, British Columbia.

Three grab samples were collected from the Property in 2023. One certified reference standard sample (CDN-CM-39) inserted by Triumph Gold was assayed immediately following these samples. Gold, copper and silver values of the inserted standard were returned within two standard deviations of the expected mean.

A discussion on sample preparation, analytical procedures, performance of laboratory QA/QC, and security measures for soil samples is presented in their respective sections below.

10.2 Rock Sample Preparation and Analysis

At the ALS Laboratory preparation facility in Whitehorse, grab samples were weighed, dried and crushed to 70% passing 2 millimeters, then riffle-split to obtain a 250-gram sub-sample which was pulverized to greater than 85% passing 75 microns (PREP-31). Upon sample pulp arrival in North Vancouver, a 0.25-gram sample from each pulp was analyzed for multi-element geochemistry using 4-acid (near-total) digestion and induced coupled plasma atomic emission spectroscopy (ICP-AES) giving 33 elements (ME-ICP61). A 30-gram sample from each pulp was analyzed for Au using fire assay and atomic absorption spectroscopy (Au-AA24).

10.3 Soil Sample Preparation and Analysis

No further preparation of soil samples in the field is required after sampling before shipment to the laboratory.

Soil samples were weighed, dried and sieved using a 180-micron sieve, with both fractions retained (PREP-31). A 0.5-gram sample from the finer fraction was analyzed for multi-element geochemistry using aqua regia (partial) digestion and induced coupled plasma and mass spectroscopy giving 53 elements including Re and Te (ME-ICP41L). Au is semi-quantitative using this method due to the small sample weight.

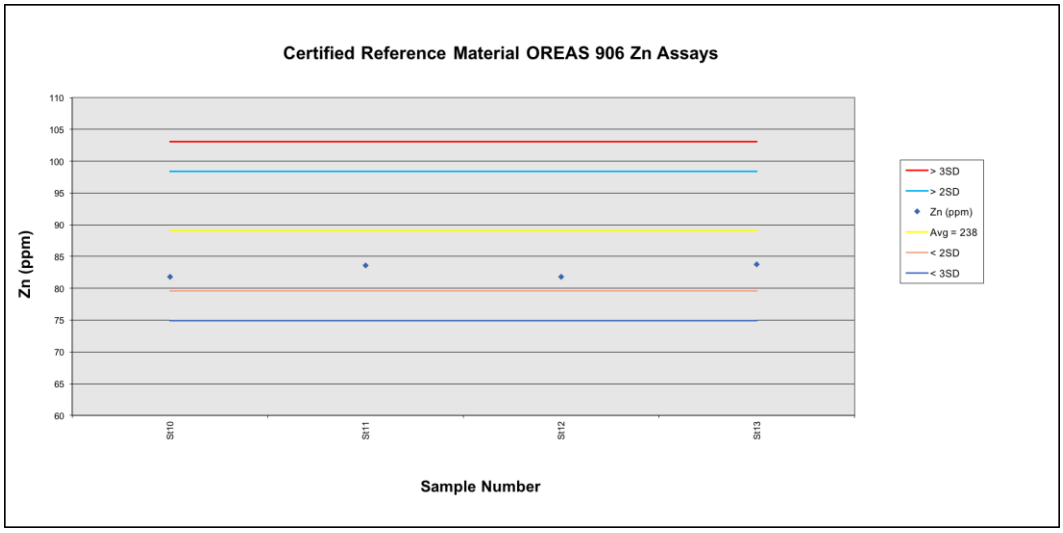
10.4 ALS Laboratories QA/QC Program

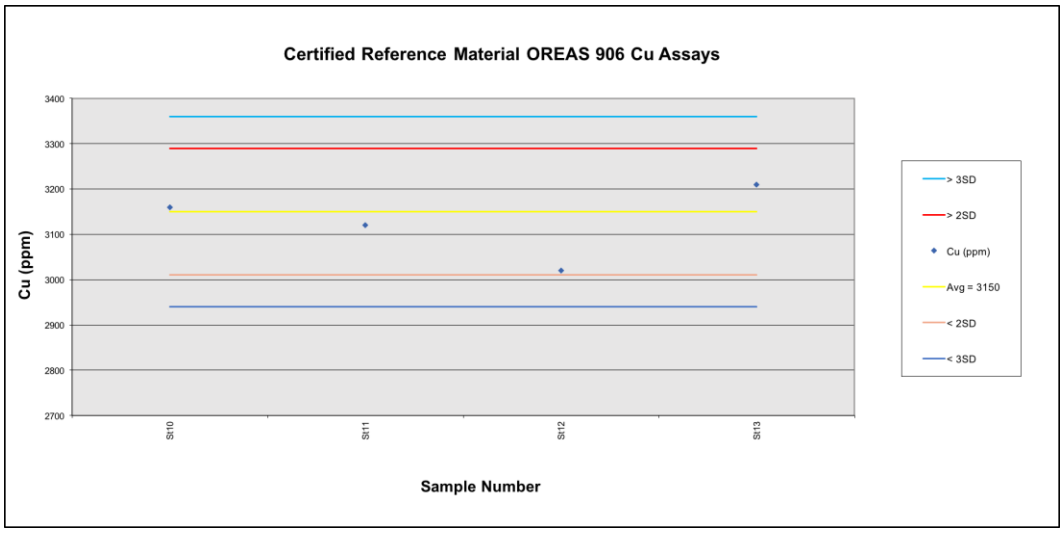
Standard Sample Performance, Soil Samples:

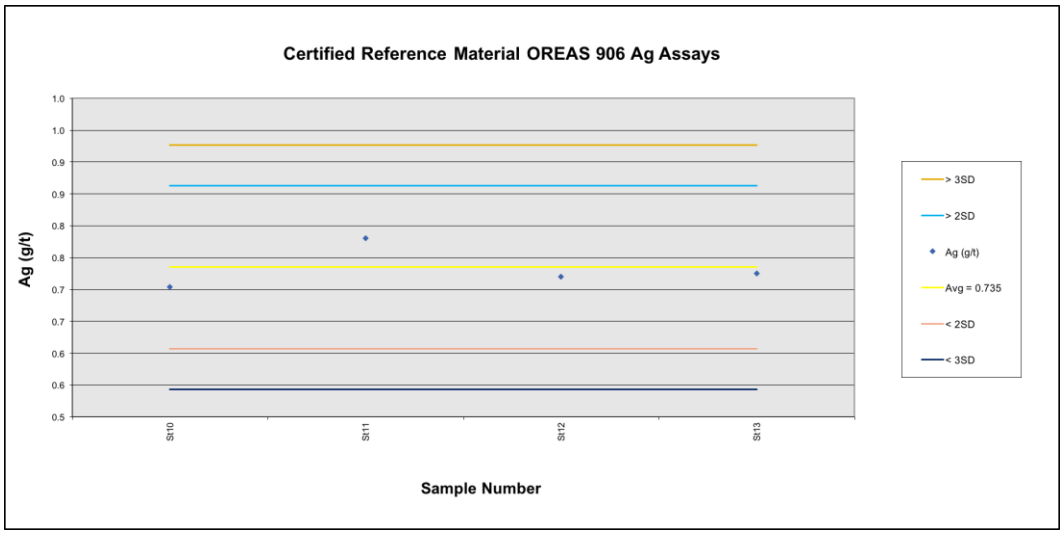
Four commercially prepared standards were inserted by ALS Laboratories into the sample stream as checks for the accuracy and precision of their multi-element results for the soil program. The commercially-prepared standards included the insertion of four OREAS 906 certified reference standards. Results are plotted for a select number of key elements in Figure 10.4.1 as a testament to the accuracy of the soil assays.

All silver, zinc, and copper assays were on or within two standard deviations of the accepted value, indicating excellent assay accuracy.

Figure 10.4.1: Results from ALS certified reference material







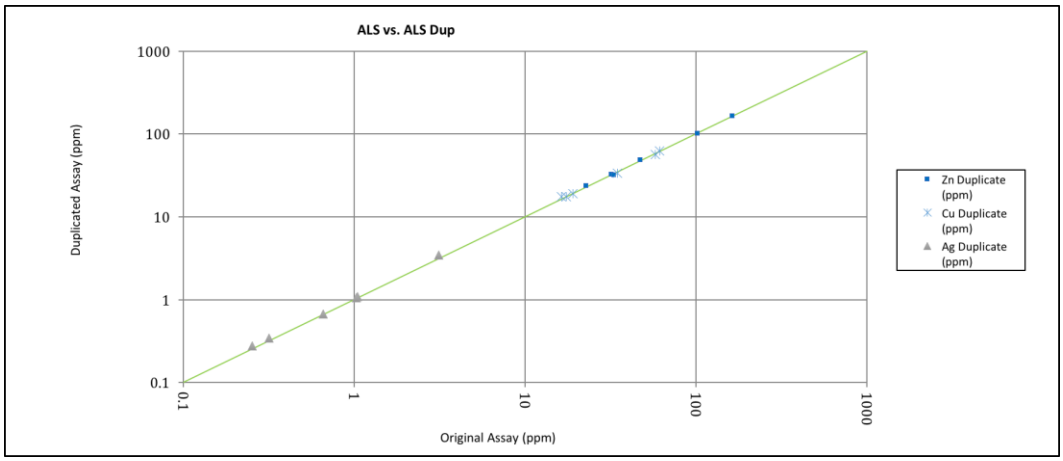
Blank Sample Performance, Soil Samples:

In the course of assaying soil samples, ALS Laboratories tested several of their own blanks for Au and multi-element concentrations. Resultant concentrations were at or below the detection limit for all Au, Ag, Zn, and Cu for the vast majority of samples, indicating very good performance from the blanks and little to no downstream contamination.

Duplicate Sample Performance, Soil Samples:

Six soil samples were re-assayed during the course of the ALS internal QA/QC program, all six re-run for silver, copper and zinc concentrations. The results are plotted in the Figure 10.4.2. All laboratory-initiated duplicates show excellent repeatability and all are well within a 10% acceptable margin of error.

Figure 10.4.2: Silver, Copper and Zinc results from ALS Soil duplicate assays



In summary, the assays returned from ALS are accepted and reliable to guide exploration.

10.5 Sample Security

There is an established and firm chain of custody procedure for program sampling, storage, and shipping. All samples were verified, labeled and secured in apple bins prior to being regularly trucked to the ALS Mineral Services laboratory in Whitehorse, Yukon by Small's Expediting and General Services Ltd.

11 – CONCLUSIONS AND RECOMMENDATIONS

The Property is situated in the Dawson Range Gold Belt, a district with proven high-grade gold and base-metal mineralization. Past-producing hard-rock mines such as Laforma and Tinta, and those reported to soon to come on-line such as the Coffee and Casino Projects, are testament to the potential of the immediate area. Recent high-grade copper and gold discoveries at the Revenue and Nucleus deposits attest to the discoveries that can still be made in the area.

The largest obstacle to exploration in the area is access. Though 4x4 vehicles have successfully made the journey to the Property, this is a long endeavor and can only be done during periods of consistently low water levels. If completed, the upgrade of the Casino Trail to an all-season road, as announced by the federal and territorial governments, will facilitate new discoveries on the Property an in the surrounding areas.

The results of 2023 soil geochemistry are encouraging, confirming and focusing the broad multi-element anomaly discovered in 2011 and expanded in 2012 by Teck. Follow up mapping, rock sampling and hand trenching is recommended over the Line 2 multi-element anomaly to confirm style of mineralization.

Follow-up work previously recommended by Berg and Liebrecht (2013) included diamond drilling at the southeastern end of the Property over the prominent 2012 Ah soil anomaly as well as targeting the IP anomalies and the “inferred porphyry stock between the chargeable bodies” to its immediate south. The Author agrees with this recommendation and adds an additional drill target to the north of the Ah anomaly resulting from 2023 work.

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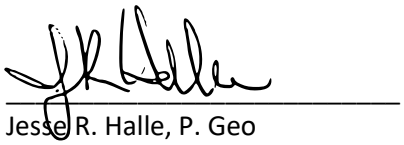
13 – DATE AND SIGNATURE PAGE

I, Jesse R. Halle (P.Geo) of Halifax, Nova Scotia do hereby certify that:

1. I am a part owner and Senior Geoscientist with Halle Geological Services Ltd., having an address at Unit 3 – 1345 Dresden Row, Halifax, NS, CANADA B3J 2J9.
2. I am a graduate of the University of Toronto with an Honors B.Sc. (Env. Sci.) in 1996, and of Lakehead University with an Honors B.Sc. (Geology) in 2002.
3. I am a member, in good standing, of Geoscientists Nova Scotia (301), the Professional Engineers and Geoscientists of Newfoundland (10743), Engineers and Geoscientists of British Columbia (157202).
4. I have worked in my chosen field in Nova Scotia, Newfoundland and Labrador, Québec, Ontario, Manitoba, British Columbia, Northwest Territories, Yukon, and Alaska as a geologist or geoscientist from 1996 to the present, and have been extensively involved in mineral exploration, resource definition, and technical reporting.
5. I accepted the position of VP Exploration with Triumph Gold Corp in January of 2020, and have occupied the posting since that time.
6. I supervised all aspects of the 2023 field program at the Big Creek Property and am responsible for the content of all sections of this report.
7. I am not aware of any material fact or material change, the omission of which would make this report misleading.

Dated at Halifax, Nova Scotia, this 31st Day of January, 2024.



Jesse R. Halle, P. Geo

VP Exploration
Triumph Gold Corp
Vancouver, BC

APPENDIX A – Soil Sample Locations and Descriptions

Sample_ID	UTM_E	UTM_N	Horizon	Depth_Fr (cm)	Depth_To (cm)	Colour	Description
BCL1-0000	359510	6929950	Ah	45	50	black	disturbed, on grey false c, under moss
BCL1-0050	359470	6929918	Ah	35	40	black	disturbed, on grey false c, under moss
BCL1-0100	359433	6929884	Ah	30	40	black	on top of grey rocky false c
BCL1-0150	359396	6929854	Ah	25	35	black/brown	on top of rocky B/C, under moss
BCL1-0200	359358	6929820	Ah	20	30	black/brown	moss>spruce, on colluvium
BCL1-0250	359318	6929787	Ah	20	30	black	2-5cm thick, on top of gray colluvium
BCL1-0300	359281	6929754	Ah	25	30	black	moss, on colluvium
BCL1-0350	359242	6929722	Ah	23	28	black	under moss on top of grey colluvium
BCL1-0400	359243	6929717	Ah	15	20	black	under moss on top of grey colluvium
BCL1-0450	359205	6929689	Ah	15	20	black	under moss on top of grey colluvium
BCL1-0500	359168	6929658	Ah/B	30	40	D.brown/black	under moss on top of grey colluvium
BCL1-0550	359128	6929625	Ah/B	30	40	black/brown	under moss on top of grey colluvium, permafrost
BCL1-0600	359092	6929591	B/C	25	30	L.brown/olive	mossy slope
BCL1-0650	359052	6929558	Ah	25	28	D.brown/black	directly above C, colluvium no B horizon on slope
BCL1-0700	359013	6929527	B/C	25	35	L.brown/M.olive	sitting on top of angular colluvium, silt-sand
BCL1-0750	358979	6929495	Ah	25	30	black/brown	next to gray ash pocket
BCL1-0800	358940	6929463	B	25	35	D.Brown	minor roots, poorly developed soil horizon on slope, directly atop Talus
BCL1-0850	358901	6929432	Ah	15	20	D.brown/black	silt-sand above M.brown B, above Talus
BCL1-0900	358864	6929392	B	15	20	D.brown/red	silt sand B, under Ah/Ash/Ah/LF, contaminated and unsampleable Ah. sits atop d.re d colluvium
BCL1-0950	358823	6929372	Ah	15	20	black	slope with spruce/shrubs/moss on top of angular colluvium
BCL1-1000	358786	6929332	Ah	10	30	black	slope with spruce/shrubs/moss on top of angular colluvium
BCL1-1050	358751	6929299	Ah	10	20	black	slope with spruce/shrubs/moss on top of angular colluvium
BCL1-1100	358710	6929263	B	10	20	L.brown	minor roots in B, directly below LF with 1-2cm unsampleable Ah.
BCL1-1150	358667	6929233	B	10	15	L.brown/orange	well developed but thin soil profile.
BCL1-1200	358634	6929198	Ah	15	20	black	between felsenmeer boulders and spruce roots with lots of charcoal.
BCL1-1250	358596	6929178	B	30	40	L.brown	under ash, spruce and tall brush veg.
BCL1-1300	358560	6929139	B	15	25	L.brown	clay-silt, under 5cm of volcanic ash.
BCL1-1350	358521	6929104	B	30	50	L.brown	clay-silt in between talus rocks.
BCL1-1400	358449	6929041	B	30	50	D.brown	entering meadow, brush/moss on boulder-field, clay-silt
BCL1-1450	358407	6929004	Ah	15	25	black	meadow, sparse bush and spruce trees, hummocky moss/grass frost-boils
BCL1-1500	358368	6928980	Ah	12	15	black	black and rooty sitting above ash and colluvium
BCL2-0000	359742	6929674	Ah	30		Dark brown-black	30% organics, underlain by olive grey C. Along cat train ground
BCL2-0050	359703	6929640	C	40	45	Olive brown-grey	Silty, below light-med brown moss. No Ah, B or ash. Underlain by PF, on cat train (Casino trail), sample taken 5m off trail
BCL2-0100	359667	6929609	Ah	30		Black-brown	30% root organics, underlain by thin ash and B below
BCL2-0150	359630	6929575	Ah	25	30	Black-brown	Minor ash below and permafrost below, 15% organics

Sample_ID	UTM_E	UTM_N	Horizon	Depth_Fr (cm)	Depth_To (cm)	Colour	Description
BCL2-0200	359591	6929547	Ah	15	20	Black-brown	Minor moderate organics (20-25%), minor ash below, underlain by permafrost
BCL2-0250	359554	6929511	Ah	25		Black-brown	Minor organics (10%), ash underlain (thin 1cm). Dark brown B below
BCL2-0300	359516	6929478	B	35		Med-brown	Silty-muddy. Minor sand granules, no ash observed, thin Ah (sub-cm)
BCL2-0350	359477	6929444	Ah	10	15	Black-brown	50% root organics, muddy-silty
BCL2-0400	359439	6929412	Ah	15		Brown-black	40% root organics in sample, ash and cobbles below
BCL2-0450	359402	6929380	B/C	15	20	Med-brown to olive grey-brown	1cm-thick Ah above, no ash observed. Silty with minor granules
BCL2-0500	359363	6929348	Ah	20		Dark brown	30-40% roots organics, underlain by ash
BCL2-0550	359325	6929314	Ah	15	20	Brown-black	20% root organics, muddy-silt, underlain by ash
BCL2-0600	359287	6929282	Ah	15	20	Black-brown	Silty mud, underlain by ash. Cobbly bottom, 20% roots organics
BCL2-0650	359249	6929252	Ah	20	25	Black-brown	10cm thick Ah, no ash observed. 40% root organics, silty-muddy
BCL2-0700	359212	6929220	Ah	30	35	Dark brown-black	20% mossy organics and roots. Underlain by thin ash layer
BCL2-0750	359174	6929185	Ah	35	40	Dark brown-black	Thick moss above, no ash, sample contains 25-30% organics
BCL2-0800	359136	6929152	Ah	25		Black-brown	Muddy-silty with 15% pebbles. Cobbles below, minor organics (<5%)
BCL2-0850	359102	6929120	B	35		Med-brown	Minimal pebbles
BCL2-0900	359060	6929086	B/C	25		Med-brown to olive	Silty seds with 10% pebbles, 10% cobbles, thin ash layer above
BCL2-0950	359022	6929055	B	15	20	Med-brown	Silty with 30/% pebbles, less cobbles. No ash visible
BCL2-1000	358982	6929022	B	40		Med-brown	Above ash layer, some ash in sample.
BCL2-1050	358948	6928990	B	35	40	Light-med brown	Silty with fine pebbles, below ash
BCL2-1100	358906	6928955	B/C	15		Med-brown	Below thin ash (2cm), silty with pebbles and minor cobbles
BCL2-1150	358869	6928924	B/C	20		Med-brown	Silty B with 15% small pebbles. Below ash, cobbles mixed in layer
BCL2-1200	358832	6928892	Ah	15	20	Black	Very wet with permafrost base. 30-40% organics
BCL2-1250	358793	6928860	Ah	25		Black	Well-developed thick layer in hummocky drainage. Quite wet, 30% organics
BCL2-1300	358755	6928827	Ah	35		Dark brown-black	15-20cm moss, 10cm Ah layer underlain by ash. Gentle drainage area
BCL3-0000	360137	6929469	Ah	35		Dark brown-black	10cm layer Ah, underlain by 2cm ash layer
BCL3-0050	360099	6929435					
BCL3-0100	360061	6929403	Ah	35		Dark brown-black	25% organics, underlain by ash
BCL3-0150	360023	6929370	Ah	40		Dark brown-black	25% organics, underlain by ash
BCL3-0200	359987	6929337	Ah	40		Dark brown-black	25% organics, underlain by ash
BCL3-0250	359948	6929304	Ah	35	40	Dark brown-black	25% organics, underlain by ash
BCL3-0300	359909	6929272	Ah	35	40	Dark black-brown	30% organics, thick ash below (3-4cm)
BCL3-0350	359873	6929241	Ah	30		Dark brown-black	25% organics, underlain by ash
BCL3-0400	359833	6929209	Ah	25	30	Black-brown	30% organics underlain by thin ash
BCL3-0450	359795	6929176	Ah	15	35	Black-brown	35% organics underlain by thin ash
BCL3-0500	359756	6929145	Ah	15	35	Black-brown	35% organics underlain by thin ash

Sample_ID	UTM_E	UTM_N	Horizon	Depth_Fr (cm)	Depth_To (cm)	Colour	Description
BCL3-0550	359720	6929110	Ah	25	30	Black-brown	35% organics underlain by thin ash
BCL3-0600	359680	6929080	Ah	30	35	Black-brown	35% organics underlain by thin ash
BCL3-0650	359641	6929046	Ah	30	35	Black-brown	35% organics, underlain by cobbly B/C, no ash
BCL3-0700	359606	6929013	Ah	30	35	Black-brown	30% organics, underlain by cobbly B/C, no ash
BCL3-0750	359566	6928980	Ah	15	20	Black-brown	25% organics, ashy underneath. Tough sampling
BCL3-0800	359530	6928948	Ah	15	30	Black-brown	25% organics (roots), underlain by ash
BCL3-0850	359492	6928916	B	25		Dark brown	20% organics (wood and roots), some pebbles mixed with minor ash, underlain by ash.
BCL3-0900	359450	6928878	Ah	20		Black-brown	30% organics, brown ash below
BCL3-0950	359415	6928850	B	20	25	Med-brown	Silty-clay, few pebbles, below ash.
BCL3-1000	359379	6928819	B	10	15	Med-brown	Silty-minor sandy. 10% organics, some granules and pebbles. Thin ash (cm) above
BCL3-1050	359341	6928783	B	10	15	Med-brown	Silty-sand with granules and pebbles. 20% organics, no ash
BCL3-1100	359302	6928753	B	15	20	Med-brown	Silty with minor granules and pebbles, often below ash, occasionally above
BCL3-1150	359264	6928721	Ah	15		Black-brown	20% organics, underlain by ash
BCL3-1200	359226	6928688	Ah	30		Black	Ash underlain, 30-35% organics
BCL3-1250	359190	6928653	B	20		Med-brown	Silty, few granules, below ash
BCL3-1300	359155	6928629	B	15		Med-brown	Thin B layer below moss and above alluvial channel rocks. Sandy-silt
BCL3-1350	359114	6928594	Ah/B	30		Med -dark brown	Silty B with minor black Ah (<5%)
BCL3-1400	359074	6928556	B	25		Med to dark brown	<10% organics, silty. No ash, underlain by permafrost
BCL3-1450	359036	6928524	Ah	15	20	Black-brown	4-5cm thick with significant organics (50%)
BCL4-0000	360514	6929308	Ah	25		Black-brown	25% organics, cobble base. 6m off cat train/Casino Trail, ash base
BCL4-0050	360475	6929273	Ah	15	20	Black-brown	Minor brown B silts mixed in, 25% organics. Cobbles underneath with ash
BCL4-0100	360437	6929239	Ah	20		Black-brown	Cobbles at base, 20% organics. Suspected C at base of sample (grey-brown, olive)
BCL4-0150	360399	6929207	B/C	15	20	Grey-brown	Clay-silt, ash underlain. No Ah
BCL4-0200	360360	6929175	B/C?	20	25	Med-dark brown	Clay-silt, ash underlain (possible C in sample?)
BCL4-0250	360325	6929145	Ah	20		Black-brown	25% organics, underlain by clay-silt B and ash
BCL4-0300	360285	6929109	Ah	15	20	Black-brown	Clay-rich Ah with 10% organics, no ash
BCL4-0350	360244	6929076	Ah	15	20	Black-brown	Clay-rich Ah with 10% organics, well-developed ash below
BCL4-0400	360211	6929042	B/Ah	20	25	Dark brown	Silty B with 10% black Ah
BCL4-0450	360170	6929013	Ah	20	25	Brown-black	25% organics, ash underlain
BCL4-0500	360132	6928980	B	20	25	Dark brown	Silty, 10% Ah, 10% organics
BCL4-0550	360092	6928946	B	5	10	Med-dark brown	5-10% Ah, silty, 10% organics
BCL4-0600	360055	6928914	B	15	20	Med-brown	Silty minor sandy with 5-10% Ah and ash below
BCL4-0650	360019	6928883	Ah	10	12	Black-brown	Poorly developed, 30-35% organics. Minor ash in sample
BCL4-0700	359977	6928850	Ah	15	20	Black-brown	Poorly developed, 30-35% organics. Ash in sample
BCL4-0750	359945	6928814	Ah	20	25	Black-brown	Poorly developed, 30-35% organics
BCL4-0800	359904	6928786	Ah	20		Black-brown	Contains charcoal, 40% organics, rocky and cobbly under ash (B)
BCL4-0850	359867	6928752	Ah/B	20	25	Dark Brown-black	Thin Ah with 30% organics. Minor B (30% med-brown).

Sample_ID	UTM_E	UTM_N	Horizon	Depth_Fr (cm)	Depth_To (cm)	Colour	Description
BCL4-0900	359826	6928718	B	25		Med-brown	5% Ah, 25% organics, silty, no ash, C below
BCL4-0950	359791	6928687	B/Ah	25	30	Med-brown	Black-dark brown Ah, silty B. 15% organics, ash base
BCL4-1000	359751	6928653	B	20	25	Med-brown	Silty with 10% Ah, ash below
BCL4-1050	359714	6928621	Ah	20	25	Black-brown	Muddy clay-silt with 30% organics, underlain by ash and B/C sand
BCL4-1100	359680	6928588	B	25		Med-brown	5-10% black Ah in sample, no ash
BCL4-1150	359637	6928555	B	25		Med-brown	5% black Ah, no ash
BCL4-1200	359598	6928525	B	25		Med-brown	5% black Ah
BCL4-1250	359562	6928491	B	25	30	Med-brown	10% Ah mixed in, ash below
BCL4-1300	359522	6928455	Ah/B	25		Black to dark brown	Mixed B and thin Ah. Minor ash (<5%)
BCL4-1350	359487	6928426	Ah/B	20		Black	2cm Ah horizon, underlain by 4-5cm thick ash. Minor dark brown B intermixed, 10-20% ash in sample
BCL4-1400	359447	6928392	Ah/B	15	18	Black	2cm Ah horizon, underlain by 4-5cm thick ash. 20% B intermixed, some ash in sample
BCL4-1450	359410	6928362	Ah	15	20	Dark brown	20% organics, mixed dirt (B) and ash below
BCL4-1500	359372	6928328	Ah	20	30	Dark brown-black	30% organics, ash underneath
BCL5-0000	360942	6929143	B/Ah	40	50	Dark brown with red	Minor red oxidation, clay-silt. 20% organics
BCL5-0050	360906	6929112	B	30		Dark brown	Clay-silt, minor Ah
BCL5-0100	360867	6929077	Ah	20	25	Black-brown	35-40% organics, underlain by ash
BCL5-0150	360829	6929042	Ah	20	25	Black-brown	40% organics, root, no ash observed
BCL5-0200	360792	6929010	Ah	10	20	black/brown	under tree roots/moss in mature spruce forest. atop olive-gray C? with permafrost
BCL5-0250	360753	6928981	Ah	20	25	Black-brown	30% organics, ash below
BCL5-0300	360715	6928943	Ah	10	20	black	under tree roots/moss in mature spruce forest. atop olive-gray C? with permafrost
BCL5-0350	360677	6928917	Ah	20	25	Black-brown	30% organics, ash below
BCL5-0400	360641	6928880	Ah	30	40	black	under tree roots/moss in mature spruce forest. atop olive-gray C? with permafrost
BCL5-0450	360603	6928851	Ah/B	15	20	Dark brown-black	Ah with minor silty dark brown B, 30-35% organics
BCL5-0500	360562	6928817	Ah	30	40	black	under tree roots/moss in mature spruce forest. atop olive-gray C? with permafrost
BCL5-0550	360527	6928786	Ah/B	15	20	Dark brown-black	Ah with minor silty dark brown B, 30-35% organics
BCL5-0600	360488	6928751	Ah	15	20	black	under tree roots/moss in mature spruce forest. atop olive-gray C? with permafrost
BCL5-0650	360449	6928721	Ah/B	40		Dark brown-black	Mixed Ah/B, 35% organics. C below, no ash observed
BCL5-0700	360413	6928684	Ah	15	20	black	under tree roots/moss in mature spruce forest
BCL5-0750	360372	6928651	Ah	30	40	Dark brown-black	20% organics, ash below
BCL5-0800	360333	6928623	Ah	10	20	black	under tree roots/moss in mature spruce forest
BCL5-0850	360302	6928587	Ah	15	20	Dark brown-black	20-25% organics, no ash observed
BCL5-0900	360263	6928555	Ah	10	25	black	under tree roots/moss in mature spruce forest
BCL5-0950	360220	6928525	Ah	20	40	black	under tree roots/moss in mature spruce forest
BCL5-1000	360183	6928492	Ah	10	15	black	under moss in mature spruce forest
BCL5-1050	360145	6928458	Ah	10	15	black	under moss in mature spruce>deciduous forest adjacent creek

Sample_ID	UTM_E	UTM_N	Horizon	Depth_Fr (cm)	Depth_To (cm)	Colour	Description
BCL5-1100	360104	6928425	Ah	10	20	black	on bank or creek with mature spruce trees and moss between swamp and creek
BCL5-1150	360069	6928395	Ah	25	40	black/D.brown	heavy organics, moss/peat, abundant spruce trees
BCL5-1200	360032	6928361	Ah	35	45	black/D.brown	moss/spruce on permafrost
BCL5-1250	359994	6928329	Ah	25	35	black/D.brown	moss/grass/spruce hummocks, sampled organic layer beneath peat.
BCL5-1300	359956	6928295	Ah	30	40	black/D.brown	moss/grass/spruce hummocks, sampled organic layer beneath peat.
BCL5-1350	359918	6928264	Ah	15	20	black/D.brown	moss/grass hummocks, sampled organic layer beneath peat.
BCL5-1400	359878	6928232	Ah	25	30	black/D.brown	moss/grass hummocks, sampled organic layer beneath peat.
BCL5-1450	359841	6928200	Ah	35	40	black/D.brown	moss/grass/brush gentle hummocks
BCL5-1500	359804	6928167	Ah	20	25	black	well developed Ah on top of 3cm B, then directly into C on grass/moss covered slope
BCL5-1550	359764	6928133	Ah	10	20	black	sampled between felsenmeer boulders on mossy slope
BCL6-0000	361424	6928997	Ah	10	25	black/brown	sampled between sites between 2 creeks, spruce/moss forest
BCL6-0050	361398	6928973					NO SAMPLE
BCL6-0100	361368	6928930	B	20	40	brown	no Ah developed; silt/sandy B, alluvial influence sand bar?; skipped next sample creek/no-soil profile
BCL6-0150	361336	6928898	Ah	30	40	black	taken adjacent creek bank; spruce/willow/moss
BCL6-0200	361288	6928877	Ah	15	30	black	spruce/moss forest
BCL6-0250	361262	6928848	Ah	10	20	black	shifted due to creek; spruce/moss
BCL6-0300	361211	6928808	Ah	10	20	black/brown	well developed channel bar between old and new creek; spruce/willow/moss
BCL6-0350	361170	6928775	Ah	10	15	black	well developed profile in spruce forest under moss; skipped previous sample
BCL6-0400	361130	6928744					NO SAMPLE
BCL6-0450	361096	6928711	Ah	20	50	black	well developed profile in spruce/moss forest; skipped next sample, no soil
BCL6-0500	361056	6928680	Ah/B	40	50	D.brown	spruce/moss, ends in permafrost, near creek
BCL6-0550	361015	6928648	Ah/B	15	20	brown	directly beneath LF and above sand.
BCL6-0600	360979	6928613	Ah	30	40	black/brown	strong organics on top of sandbar; spruce/moss/willows
BCL6-0650	360941	6928582	Ah	20	30	brown/olive	mixed Ah/Ae; attempting sample between sandbars
BCL6-0700	360906	6928549	Ah	25	30	black/brown	mixed Ah/B taken between sub-rounded rocks on creek bank
BCL6-0750	360867	6928519	Ah	20	25	black	spruce/moss poorly developed soil horizon on sub-rounded to rounded alluvial influenced rocks
BCL6-0800	360829	6928485	Ah	35	45	black/brown	spruce/moss cover
BCL6-0850	360792	6928453	Ah	20	30	black/brown	spruce/moss/willow cover
BCL6-0900	360752	6928420	Ah	30	35	black	spruce/moss cover on sub-angular to sub-rounded alluvial(?) rocks
BCL6-0950	360714	6928386	Ah	10	20	black	spruce/moss cover on colluvium, possible alluvium influence
BCL6-1000	360676	6928358	Ah	10	20	black/brown	colluvium, rocky/moss covered hummocks with spruce trees
BCL6-1050	360638	6928323	Ah	25	50	black/brown	strong layer of peat adjacent spruce lined hummocks
BCL6-1100	360601	6928289	Ah	25	45	D.brown	moss-brush hummocks on edge of spruce trees
BCL6-1150	360562	6928257	Ah	40	60	black/brown	moss-brush hummocks on edge of spruce trees
BCL6-1200	360525	6928221	Ah	30	40	black/brown	spruce forest on mossy hummocks
BCL6-1250	360487	6928191	Ah	40	55	black/brown	spruce forest on mossy hummocks

Sample_ID	UTM_E	UTM_N	Horizon	Depth_Fr (cm)	Depth_To (cm)	Colour	Description
BCL6-1300	360451	6928160	Ah	45	60	black/brown	spruce forest on mossy hummocks
BCL6-1350	360412	6928126	Ah	45	60	brown	valley, hummocks, peat with weak Ah in water under moss/grass/willows; ends in permafrost
BCL6-1400	360372	6928094	Ah	45	55	brown	valley, hummocks, peat with weak Ah in water under moss/grass/willows; ends in permafrost
BCL6-1450	360337	6928059	Ah	40	55	brown	valley, hummocks, peat with weak Ah in water under moss/grass/willows
BCL6-1500	360298	6928030	Ah	40	55	brown	valley, hummocks, peat with weak Ah in water under moss/grass > spruce
BCL6-1550	360258	6927996	Ah	30	50	black	valley, hummocks, peat with weak Ah in water under moss/grass > spruce
BCL6-1600	360220	6927960	Ah	30	45	black	valley, hummocks, peat with weak Ah in water under moss/grass > spruce
BCL6-1650	360183	6927932	Ah	30	45	black/brown	valley, hummocks, peat with weak Ah in water under moss/grass > spruce
BCL6-1700	360146	6927898	Ah	30	45	black	valley, hummocks, peat with weak Ah in water under moss/grass > spruce
BCL6-1750	360105	6927866	Ah	40	60	brown	valley, hummocks, peat with weak Ah in water under moss/grass > spruce. on top of volcanic ash
BCL6-1800	360069	6927837	Ah	40	60	brown	valley, hummocks, peat with weak Ah in water under moss/grass > spruce
BCL6-1850	360033	6927805	Ah	30	40	black/brown	valley, hummocks, peat with weak Ah in water under moss/grass > spruce
BCL7-0000	361809	6928784	B	40	50	M.brown	on sandbar, moved to forest and sampled. Alluvial influence, spruce/moss
BCL7-0050	361763	6928755	B	35	50	L.brown	was on sandbar, shifted to forest
BCL7-0100	361732	6928720	Ah	30	40	L.brown	spruce/moss on alluvium
BCL7-0150	361696	6928689	Ah	20	30	black/D.brown	spruce/moss
BCL7-0200	361656	6928656	Ah/B	40	50	D.brown	spruce/moss
BCL7-0250	361617	6928622	Ah	35	45	D.brown	spruce/moss
BCL7-0300	361582	6928591	Ah	40	50	D.brown	spruce/moss
BCL7-0350	361543	6928555	Ah	30	35	D.brown	spruce/moss
BCL7-0400	361505	6928524	Ah	25	35	black/D.brown	spruce/moss
BCL7-0450	361466	6928493	Ah	25	35	black/D.brown	spruce/moss
BCL7-0500	361428	6928461	Ah	25	35	black/D.brown	spruce/moss
BCL7-0550	361388	6928429	Ah	30	40	black/brown	spruce/moss
BCL7-0600	361355	6928393	Ah/B	50	60	brown	heavy peat organics and roots, possible B sampled
BCL7-0650	361315	6928363	Ah	20	35	black/brown	spruce/moss covered valley with water on top of permafrost
BCL7-0700	361278	6928331	Ah	20	35	black/brown	spruce/moss covered valley with water on top of permafrost
BCL7-0750	361238	6928299	Ah	20	35	black/brown	spruce/moss covered valley with water on top of permafrost
BCL7-0800	361200	6928267	Ah	20	35	black/brown	Ah on top of ash and permafrost, in moss/spruce covered valley
BCL7-0850	361163	6928234	Ah	20	35	black	moss/spruce covered valley on top of grey alluvium
BCL7-0900	361124	6928198	Ah	20	35	black/brown	moss/spruce covered in valley
BCL7-0950	361086	6928165	Ah	20	35	black	moss/spruce covered in valley
BCL7-1000	361047	6928134	Ah	20	35	black	moss/spruce lined gentle slope
BCL7-1050	361010	6928102	Ah	40	50	black/brown	rooty, permafrost at 50cm, moss/spruce gentle slope
BCL7-1100	360972	6928071	Ah	40	50	black/brown	hummocky moss/grass with spruce trees
BCL7-1150	360933	6928039	Ah	25	50	black/brown	gentle moss/spruce covered slope.

Sample_ID	UTM_E	UTM_N	Horizon	Depth_Fr (cm)	Depth_To (cm)	Colour	Description
BCL7-1200	360897	6928004	Ah	35	50	black/brown	gentle moss/spruce covered slope.
BCL7-1250	360858	6927969	B	25	45	M.brown	mossy gentle slope, auger sampled. could not get enough Ah.
BCL7-1300	360819	6927937	Ah	25	35	black/brown	auger sampled mossy slope with minor spruce trees, soil profile more defined
BCL7-1350	360781	6927906	Ah	25	35	black/brown	mossy slope, moderate organics, auger sampled
BCL7-1400	360746	6927873	Ah	25	45	brown	auger sampled, moderate organics, mossy slope
BCL7-1450	360706	6927838	Ah	25	45	black/brown	mossy covered slope directly on colluvium, major organics. shovel broke
BCL7-1500	360666	6927808	Ah	10	20	black/brown	mossy covered slope directly on colluvium, major organics
BCL7-1550	360631	6927778	Ah	15	25	black	mossy covered slope, directly on colluvium, moderate organics
BCL7-1600	360590	6927746	Ah	20	30	black	mossy covered slope, moderate organics. permafrost under Ah layer with volcanic ash pods
BCL7-1650	360554	6927712	Ah	20	40	black	moss covered slope, minor organics
BCL7-1700	360517	6927678	Ah	40	50	black	directly on Ash/coluvium, massive rooty LF horizon
BCL7-1750	360484	6927648	B	10	20	L.brown	no Ah, directly below LF, B amongst angular colluvium.
BCL7-1800	360441	6927615	Ah	15	25	black/brown	moss covered, moderate organics
BCL7-1850	360402	6927579	Ah	25	35	black	moss covered slope, wet heavy organics directly on colluvium
BCL7-1900	360365	6927550	Ah	20	30	black/brown	moss covered slope, wet heavy organics directly on colluvium
BCL7-1950	360328	6927518	Ah	10	20	black/brown	moss covered slope, wet heavy organics directly on colluvium
BCL7-2000	360289	6927482	Ah	20	30	black	moss covered slope above 5cm of ash on top of colluvium

APPENDIX B – Grab Sample Locations and Descriptions

Sample ID	UTM_E	UTM_N	Description
D864528	357300	6930565	Orthogniess feld-pyroxene Chl with Qtz-Calcite vein with tr fg cpy-py-po. Local Actinolite Ep veins near the margin of a granitic dyke with K-spar+/-qtz veins
D864529	357305	6930644	med. green-gray perv chl-epi+/-silica, fine grained tuff(?); small veinlets of epi-silica-py+/-po
D864530	357300	6930635	med. green fine grained tuff(?); pervasive epi-chl+/-silica cut by intrusive; x-cutting intrusive on cm scale feld-qtz-hbld with 0.5-1% py and 0.1% cp, usually in small chl-act nodules; late epi veinlets cut volcanic and intrusive