Donjek-Arch Project

Geochemical, Geophysical and

Geological Assessment Report

NTS: 115G05 and 115G12

Latitude 61° 29' 52" North, Longitude 139°45'46" West

Whitehorse Mining District

Work performed between August 7 and 24, 2013

AR 1-9	YD12517-25
AR 1-68	YE69001-68
AR61	YC18892
AR 70-77	YE69070-77
ARCH 1-27	YE69501-27
ARCH 28-37	YE69528-37
ARCH 38-43	YD58910, 913-917
Don 1-20, 21, 29-34	YB46996-47015, YC18523, 32-36
Jek 1-31, 32-137	YE69201-30, YE69069, YE69232-337
Jek 140-155, 156-157	YD88002-YD87987, YD58911-912
Wolv 1-10, 12, 14, 16, 18,	YB46972-81, 83, 85, 87, 89
Wolv 20-21, 23	YB46991-92, 94
Wolv 25-28	YC18509-12

For:
Bill Harris,
Box 31347,
Whitehorse YT Y1A 5P7

By:
Debbie James, B.Sc.
11-3194 Gibbins Road,
Duncan, BC, V9L 1G8
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Summary

The Donjek-Arch Project is located in the Southwest corner of Yukon, 260 km due west of Whitehorse and 40 km northwest of Burwash Landing, the nearest community. The project is adjacent to the west end of Wellgreen Platinum's Wellgreen property.

The project is within the Whitehorse Mining District and is covered by NTS maps 115G05 and 115G12. There are 332 claims in the project covering approximately 6770 hectares, centered at latitude 61^{o} 29' 52" North and longitude 139^{o}45'46" West. The claims are within the Kluane Wildlife Sanctuary, where mining is allowed, and the western claims border onto the Asi Keyi Natural Environment Park. Portions of the project are located in the traditional territory of the Kluane and White River First Nations.

The Donjek-Arch project is 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 hosts the Wellgreen Deposit which is located 15km west of the Donjek-Arch claims. Productive geology and existing mineralization point to good potential for Wellgreen-type gabbroic Ni-Cu-PGE mineralization on the Donjek-Arch Project.

Although there are three showings on the Donjek-Arch project, the extent and depth of Quaternary cover has been a deterrent to exploration, especially on the Donjek portion of the project. A program of innovative, cost-effective and non-intrusive geochemical sampling and geophysical orientation surveys were tested over a known showing. Four different biogeochemical sample media or methods were tested on a grid across an ultramafic sill and two methods of ground geophysics were tested over the same grid.

The Kluane mafic-ultramafic sills are elongated cumulate bodies that 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. 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. On the Donjek and Arch project, rocks of the Skolai Group (Station Creek and Hasen Creek formations) and overlying Nikolai formation are intruded by ultramafic sills, close to the favourable unit contact. Younger Wrangell Lavas form mountains southwest of the project. All rocks have been folded into a series of anticlines and synclines along fold axis parallel to the dominant 290-310^{o} trend and then folded again along NE axes.

On the Arch claims Skolai Group sediments outcrop on the south side of Arch Creek and extend northwards under the creek up to the height of land. Nikolai basalts form the top of ridges on both sides of the valley. Maple Creek gabbroic sills intrude Skolai Group rocks on both side of the Arch valley. The Donjek ultramafic complex (or sill) outcrops along the north side of Arch Creek close to the valley bottom. The sill is largely covered with overburden but has been traced by mapping, trenching and geophysics for 2 km.

Ni-Cu-PGE mineralization at the Teck showing within the Donjek sill has been trenched and exposes the contact between the sill and Station Creek formation volcanics. The ultramafic sill extends north for 100m before disappearing under overburden. The actual contact between the volcaniclastics and ultramafic is obscured by strong calcite alteration and limonite staining that has destroyed original textures. The Conwest showing is located 1km north of the Teck showing on the western fork of Serpentine Creek. It consists of a 200m long pair of oxidized basal gabbros hosted in volcanics that have stockwork quartz and calcite stringer zones at the contact. Both the gabbro and the stockwork volcanics are mineralized with disseminated and interstitial pyrite, chalcopyrite and lesser pentlandite (up to 7% total).

The field work started on August 7th, 2014 and finished on August 24th, 2014. A 3.2 line km survey grid centred on the Donjek sill was flagged and cut around the Teck Showing. The grid was designed to cover a known showing in a mineralized ultramafic sill and to extend into non-mineralized ground on both sides of the showing. Prior to taking samples a reconnaissance survey was made of the forest and land cover to find consistent plant species and soil horizons.

Two geophysical surveys were tested over the Arch grid. Both the HLEM and ELF surveys detected weak to moderate conductors over the Arch grid test area. The ELF system revealed better-resolved features compared to HLEM, although in the case of the latter, the extreme relief in the area may have limited the effectiveness of the method.

White spruce bark, humus and Labrador tea were the three biogeochemical sample media chosen. Humus was sampled twice, for the Soil Gas Hydrocarbon (SGH) analysis method as well as for vegetation analysis. All of the methods showed merit, but the spruce bark medium is considered the most effective because of the ease of sampling and the ultra-trace analysis methods. The biogeochemical surveys were able to pick out the expected location of the ultramafic sill showing linear anomalies that either underlie the sill, or more commonly, parallel the northeast side of the sill. New targets for further exploration were discovered by the biogeochemical surveys that are not related to the known location of the ultramafic sill.

Information produced by the orientation surveys was used to refine an exploration model based on the adjacent Arch sill (off claims). Results from the biogeochemistry suggested anomalies located north and south of the sill that cannot be fully explained by migration of metals downslope. Four scenarios were developed and will be tested in future exploration.

Scenario 1: The Teck and Conwest Showing are in a single sill that has been folded into an antiform along a NW hinge located just north of the Arch grid.

Scenario 2: The Teck and Conwest showings are in the same folded sill but the SW limb is split into a series of smaller sills or there may be a series of fold axes instead of one single axis.

Scenario 3: The Teck and Conwest showings are in 2 subparallel sills.

Scenario 4: The Teck and Conwest showings are in the same sill but are offset along Serpentine Creek (right lateral) instead of being folded.

Key Recommendations for the Donjek-Arch project include

1. Continue using biogeochemical surveys to compliment traditional soil surveys on forested, overburden covered areas such as the Donjek claims.
2. Use VLF-EM and/or ELF surveys on the Donjek claims. VLF-EM is a cheap method and is good for an initial survey. Anomalies can be surveyed in more detail using the ELF to delineate drill targets.
3. Produce 2D sections from the ELF survey. Complete geophysical interpretation of surveys using geology, historic magnetic and VLF-EM surveys, and airborne electromagnetic surveys.
4. Prospect north of the Teck Showing to find the base of the sill. Hand trench or use a small portable excavator to expose and sample across the full width of the sill. Follow contact to northwest and southeast.
5. Starting at the Teck showing, trace and expose the top contact of the sill to the northwest and southeast.
6. Prospect west, south and north of the Conwest Showing to find and expose the sill.

Based on successful completion of above recommendations and if rock sample values warrant:

1. Choose drill targets and start drilling.
2. Continue tracing ultramafic sill west into Arch Creek canyon and towards the Donjek River.
3. Expand vegetation and soil sampling over claims AR 1 to 9 as needed to trace ultramafic sill.
4. Use VLF-EM and ELF on the hillside north of Wolverine Creek where recent mapping uncovered Skolai Formation rocks.

The biogeochemical methods tested in this orientation survey will be used on future overburden covered projects. All methods were non-intrusive and although more expensive to analyze that regular soil samples, they are faster and cheaper to collect than soil samples, as well as being lighter in weight. Human error is a factor is all sampling programs, whether mistaking volcanic ash for soil or confusing black and white spruce, but with proper training samplers can learn to recognize different tree and plant species. Biogeochemical samples fared well in this difficult terrain and good quality samples were taken at all sites.

1.0 Acknowledgements

Acknowledgements and thanks go to:

Prophecy Platinum (now Wellgreen Platinum) for providing soil sample and geophysical data, for allowing use of their camp, and for allowing work on their claims.

The Yukon Government's Yukon Mining Incentive Program for financial assistance.

The Kluane First Nation for offering the use of their camp for the second phase of the program.

Dale Sutherland of Actlabs, Shea Clark Smith of MEG and Larry Hulbert for suggestions on survey methodology.

Midnight Mines crew Cody Bassett and Winston Billy for work in rain and heat.

Linda Lewis for a crash course in Wellgreen lithologies, plant identification, test pit sampling and stream sediment sampling.

2.0 Introduction

The Donjek-Arch project was a field research project conducted with the assistance of the Yukon Mining Incentive program. The project is two phase and as of January 2014 only the first testing phase on the eastern claim block (Arch claims) has been completed. The second phase of the project, on the western claim block (Donjek claims), is expected to go ahead, contingent on funding.

The project was an orientation survey that tested different methods of ground geophysics surveys and biogeochemical sampling over the same grid. The methods are compared to each other then used to interpret underlying geology and mineralization. The targets are Ni-Cu-PGE mineralized mafic to ultramafic intrusive sills of the Kluane Ultramafic Suite.

Rock sampling and stream sediment sampling were a minor component of the program.

2.1 Purpose

The purpose of this project was to find efficient, simple, non-intrusive methods of soil sampling and ground geophysics that can be applied to buried Ni-Cu-PGE exploration in the Kluane Ranges.

Conventional soil sampling has failed repeatedly on the Donjek claims. Airborne electromagnetic (EM) surveys have been only partially successful because overburden masks the bedrock response and magnetic anomalies can be caused by Nikolai formation volcanics as well as the target ultramafic sills. The Arch claims, on the other hand, have seen work over both exposed and buried bedrock, so were used to test methods that will be applied to the Donjek claims. A small grid, centred on an exposed showing (Teck showing) over the largely drift covered Arch claims was used as a test area.

2.2 Approach

1. Find a sample medium or analysis method that does not require long term soil development to get consistent results.
   - Vegetation: White and black spruce are widespread in the boreal forest.
   - Humus is the upper organic layer that is the first stage in soil development. It is developed both in forests and in open wetlands.
   - The Soil Gas Hydrocarbon analysis method measures hydrocarbon flux from ore deposits and has detected blind deposits that were not detectable using conventional soil surveys. It is not impacted by permafrost and does not require a consistent sample medium.

2. Test the three different soil geochemical or biogeochemical methods over the Arch grid.
   - Factors evaluated included the ability of the method to locate anomalies through different cover, the ease and consistency of collection and cost.

3. Apply the best method to the Donjek claims (to be completed)

4. A similar approach was used with geophysics, testing 2 methods over the Arch grid.
   - Past geophysical surveys have located linear anomalies that can be used to efficiently test ground EM methods.
   - ELF survey (extremely low frequency). Cutlines are not needed and it is a small, easily portable system.
   - HLEM (high frequency horizontal loop). The survey involves dragging wires, so a cutline is required.

3.0 Project Location & Access

The Donjek-Arch Project is located in the Southwest corner of Yukon, 260 km due west of Whitehorse and 40 km northwest of Burwash Landing, the nearest community. The project straddles the Donjek River, 15 km south of the road bridge on the Alaska Highway. See location map (figure 1). The project is adjacent to the west end of Wellgreen Platinum's Wellgreen property.

The project is covered by NTS maps 115G05 and 115G12 and is centered at latitude 61^{o} 29' 52" North and longitude 139^{o}45'46" West. The claims are within the Kluane Wildlife Sanctuary, where mining is allowed, and the western claims border onto the Asi Keyi Natural Environment Park. Portions of the project are located in the traditional territory of the Kluane and White River First Nations.

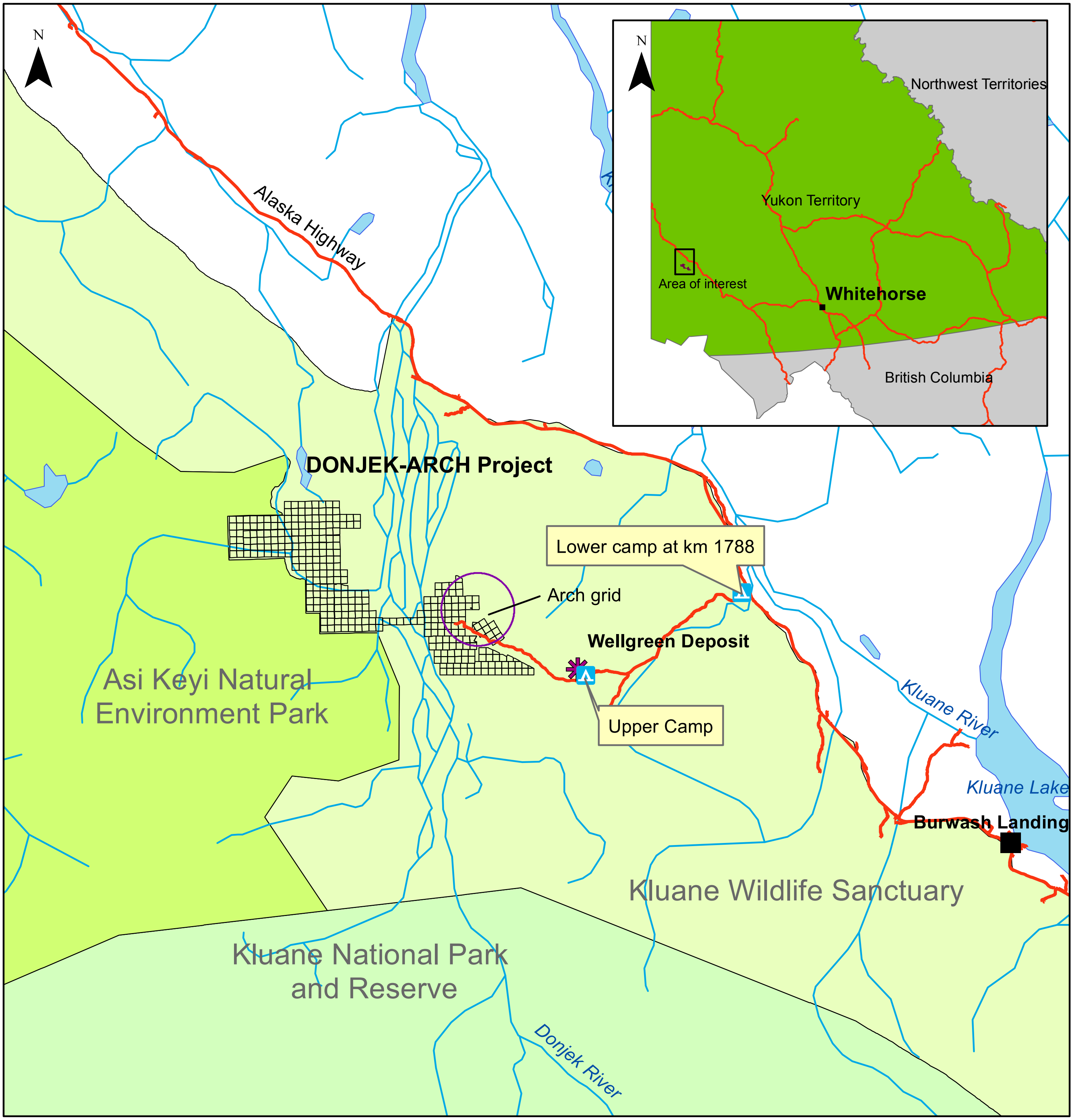


Figure 1
Location Map

0 10 20 Kilometers
UTM Z7 NAD83

Legend
Town/Village
Roads
Donjek Arch Claims

Protected Areas
National Park and Reserve
Natural Environment Park
Wildlife Sanctuary

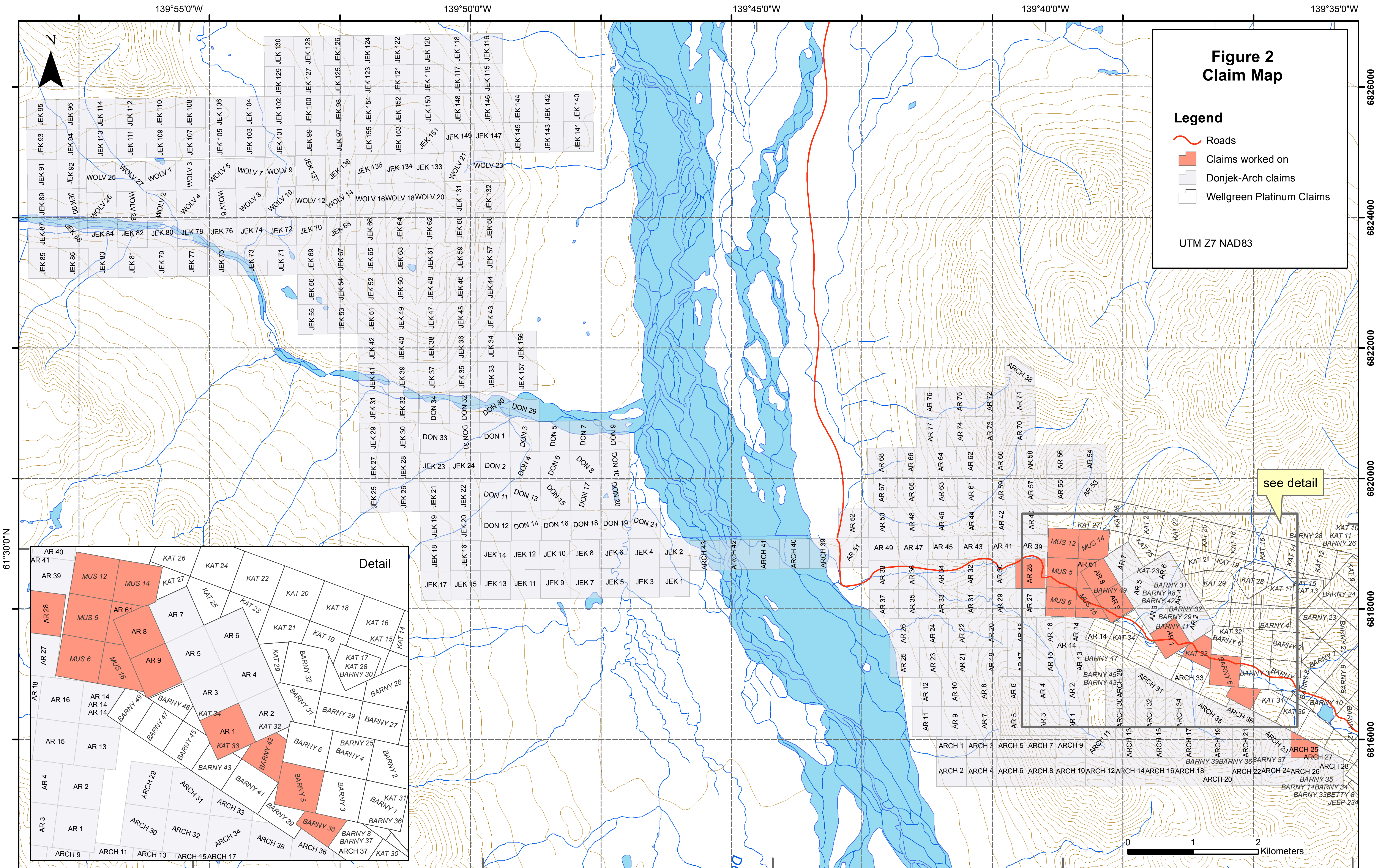


Figure 2
Claim Map
Legend
Roads
Claims worked on
Donjek-Arch claims
Wellgreen Platinum Claims
UTM Z7 NAD83
see detail
Detail
139°55'0"W
139°50'0"W
139°45'0"W
139°40'0"W
139°35'0"W
61°30'0"N
6826000
6824000
6822000
6820000
6818000
6816000
556000
558000
560000
562000
564000
566000
568000
570000
572000
574000
0
1
2
Kilometers
N

Access to the east side of the project area is by a road that leaves the Alaska Highway at kilometre 1788 where the old Wellgreen mill site and the current Wellgreen Platinum field office are located. From here, a 13km long maintained 2WD gravel road leads to Wellgreen's upper camp near the portal. From the upper camp, a gravel 4X4 road leads for 11 km to a placer operation owned by Russell Nelson on Arch Creek. The condition of this road is dependent on exploration and placer mining activity and is regularly washed out by flooding. A rough ATV trail continues west from the placer operation, following Arch Creek through a canyon down to the Donjek River. Prior to the program start in August 2013, spring flooding had made the trail through the canyon impassable. Access to the west side of the claim block is by helicopter or along a rough ATV trail down the west side of the Donjek River.

4.0 Legal Description

The Donjek-Arch project is made up of 332 contiguous claims covering approximately 6770 hectares in the Whitehorse Mining District. A summary of the claims with new expiry dates is in table 1 below. See figure 2 for a claim map and appendix 1 for a full listing of claims. The current program was carried out on claims AR 1, 8, 9, 28, 61, and ARCH 25 registered to Tom Morgan and Bill Harris and on claims MUS 5, 6, 12, 14, 16 and BARNY 5, 38 and 42 which are part of the Wellgreen claim group (registered owner 0905144 BC Ltd.). Bill Harris has an informal agreement with Wellgreen Platinum in which Wellgreen provide data and allow access over and work on their claims in exchange for results.

The mapped location of claim AR 61 is incorrect because the claim covers the Teck Showing on the ground but not on the map. The claim posts will be surveyed and the correct location sent to the mining recorder.

Table 1: Claim Summary

Claim name	Grant no.	No of claims	Registered owner	New expiry date
ARCH 41-43	YD58915-917	3	Bill Harris	Aug 22, 2015
AR 39-77	YE69039-077	39	Tom Morgan	Aug 22, 2015
WOLV 2,4	YB46973, 975	2	Stratagold Corporation	Jan 13, 2016
DON 1-6	YB46996-7001	6	Stratagold Corporation	Jan 13, 2016
DON 11-19	YB 70006-014	9	Stratagold Corporation	Jan 13, 2016
DON 29-34	YC18532-536	6	Stratagold Corporation	Mar 7, 2016
WOLV 1, 3	YB46972,974	2	Stratagold Corporation	Apr 13, 2016
DON 7-10	YB470002-005	4	Stratagold Corporation	Apr 13, 2016
DON 20	YB47015	1	Stratagold Corporation	Apr 13, 2016
DON 21	YC18523	1	Stratagold Corporation	Jun 7, 2016
ARCH 38	YD58910	1	Bill Harris	Aug 17, 2016
JEK 156-157	YD58911-912	2	Bill Harris	Aug 17, 2016
AR 1-38	YE69001-038	38	Tom Morgan	Aug 18, 2016
JEK 1-30	YE69201-230	30	Bill Harris	Aug 18, 2016
JEK 31	YE69069	1	Bill Harris	Aug 18, 2016
JEK 32-137	YE69232-337	106	Bill Harris	Aug 18, 2016

Claim name	Grant no.	No of claims	Registered owner	New expiry date
ARCH 1-37	YE69501-537	37	Bill Harris	Aug 18, 2016
ARCH 39-40	YD58913-914	2	Bill Harris	Aug 22, 2016
JEK 140-155	YD88002-7987	16	Gerald Asp	Oct 13, 2016
WOLV 6,8,10,12,14	YB46977,79,81,83,85	5	Stratagold Corporation	Jan 13, 2017
WOLV 27-28	YC18511-12	2	Stratagold Corporation	Mar 7, 2017
WOLV 5,7,9,18,20,21,23	YB46976,78,80,89,91, 92,94	7	Stratagold Corporation	Apr 13, 2017
WOLV 25-26	YC18509-510	2	Stratagold Corporation	Jun 7, 2017
AR 1-9	YD12517-525	9	Tom Morgan	Jun 22, 2017
AR 61	YC18892	1	Tom Morgan	Sep 20, 2017
TOTAL		**332**		

The claims on the western side of the Donjek are named DON, JEK and WOLV and are collectively referred to as the Donjek claims. The claims on the eastern side are named AR and ARCH and are collectively referred to as the Arch claims. During the course of the project, the property was acquired by Ashburton Ventures Inc. and the Arch-Donjek claims have been grouped with other claims bordering the Wellgreen property. The entire set of claims is now referred to as the Catalyst project. This report will use the name Donjek-Arch to refer to the claim blocks because that term was in common use while the fieldwork was taking place.

5.0 Physiography

Figure 3: Glaciofluvial gravels along the north side of Arch Creek. The creek runs at the base of the slope out of the photo to the right.

The project is located in the Kluane Ranges, foothills of the St. Elias Range, that border the flat, wide Shakwak valley. The claim blocks are divided by the braided Donjek River that flows in a 1.5km wide, glaciated valley.

The Arch claims are on moderate to steep terrain; elevations range from 750 to 1900 metres. A significant depth of cover, dominated by glaciofluvial terraces covers the Arch Creek valley (figure 3). The valley is a deep trough with thick McConnell glacial deposits estimated to be 10 to 40m deep. Since ice retreat (~10,300 ya) Arch Creek has been eroding down through the glaciofluvial material into bedrock.

Soils are young and consist of 5-60 cm of organic litter and humus developed on glaciofluvial material or recent fluvial deposits. The only bedrock exposures in the area covered by the orientation surveys are along creeks. Outside of the grid, there is considerable outcrop in the Arch Creek canyon and on ridges and mountain peaks (figure 4).

The Donjek claims on the western side of the claim block cover gentler terrain; elevation ranges from 750m to 1300m. Outcrop is scarcer than on the Arch claims (< 1%) and there is a wider range of overburden types: glacial deposits, alluvium, peat, boulders and the White River Ash. The extent of overburden is illustrated in the regional geology map (figure 5 see Quaternary deposits). A seismic refraction survey at the mouth of Arch Creek found 40m of overburden (Power, 2004).

Figure 4: Arch Creek canyon below the placer operation and west of the Arch grid.

Permafrost is more common on the Donjek claims than on the Arch. Permafrost was only encountered in one sample during the 2013 program but the grid was on a south facing slope and may not be a true representation of the entire claim block. For comparison, in a 2012 soil sampling survey over part of the adjacent Wellgreen property, samples could not be collected at over 50% of the sample sites, in large part due to permafrost.

6.0 Geology & Mineralization

6.1 Regional Geology

The Donjek-Arch project is 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. 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 (black to dark brown or light green to pale grey when altered) and can be seen as distinctive linear features when driving northwest along the Alaska Highway.

The dominant structural direction, controlled by the major Duke River and Denali faults, ranges in orientation from 290^{o} to 310^{o}. 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 Skolai Group contains the oldest rocks in the ultramafic belt. The lowest formation is Station Creek which is a 1000m thick sequence of volcanic and volcaniclastics rocks with increasing sedimentary content in the upper half. In the upper 400m of the Station Creek formation, shale siltstone, limestone and argillite are 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 is a subaqueous sequence up to 800m thick. It 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 gabbros can be distinguished from Kluane gabbros 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 Wrangellia Terrane extends along the outer coast of B.C from the Yukon/Alaska border south to Vancouver Island and in all localities it is distinguished by thick layers of basalts capped with limestone. Nikolai rocks contain 10-35% vesicles or amygdules and show an increasing hematite content towards the top of the pile. The likely sources of the Nikolai volcanics are magma chambers represented by the Kluane ultramafic sills and feeders represented by the Maple Creek Gabbro.

Other units of less relevance to the Arch-Donjek project are found in the ultramafic belt and are described in the table of formations below.

Table 2: Table of formations.

Q – Quaternary	Unconsolidated alluvium, colluvium and glacial deposits.
NW Miocene to Pliocene Wrangell Lavas	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 local conglomerate.
OA Paleocene to Oligocene Amphitheatre	Tertiary freshwater clastic rocks 60 to 575 metres thick with a limited occurrence. Clastic rocks, minor carbonaceous shale and thin coal seams, mostly fluvial and lacustrine deposits.
EKK or KD late Early Cretaceous Kluane Ranges Suite	Found along the length of the ultramafic belt but are more prevalent in the north. Medium to coarse-grained, biotite-hornblende granodiorite, quartz diorite, quartz monzonite and hornblende diorite. Minor diorite and gabbro.
uTMg upper Triassic Maple Creek Gabbro	Fine to coarse grained diabase and gabbro sills and dykes. Intrudes the Skolai Group
uTrC upper Triassic Chitistone	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.
uTrN upper Triassic Nikolai formation	uTrNc – thinly bedded grey limestone and argillite. uTrNv – dark green to maroon amygdaloidal basalt and basaltic andesite flows, locally pyroxene and plagioclase phyric. uTrNb – light to dark green volcanic breccia; angular clasts
CPS Skolai formation Pennsylvanian Hasen Creek Formation	PHcg- coarse conglomerate, massive to graded beds several metres thick. PHc2 – limestone, fossilferous and often pebbly, commonly graded and cross=bedded. PHc1 –pale bioclastic limestone with local chert. PHp – dark to light grey/brown siltstone turbidites, siliceous argillite, chert and minor volcaniclastics sandstone and tuffs
PTrK upper Triassic Kluane Ultramafic Suite.	Preferentially intrudes at or near the Hasen Creek-Station Creek contact. uTg - coarse-grained and pegmatitic gabbro.
PTrK upper Triassic Kluane Ultramafic Suite.	uTu- peridotite, dunite and clinopyroxenite, layered intrusions, locally with gabbroic chilled margins.

CPS Skolai Formation Lower Permian Station Creek Formation	PSv - Dark to light green volcanic breccia, crystal tuff and tuffaceous sandstone; breccia clasts consist of basalt within tuffaceous matrix; minor basalt flow.

Units and descriptions after Israel and Van Zeyl, 2004 and Israel, 2004 with modifications from Hulbert, 1997. PTrK Ultramafic suite is out of sequence to emphasize location.

6.2 Regional Mineralization

There are four main types of Ni-Cu-PGE mineralization in the Kluane Ultramafic Belt found in all the mineralized sills from southeast Alaska to northern B.C. (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.
4. Disseminated and lesser net textured or massive sulphides in the ultramafic core of each sill.

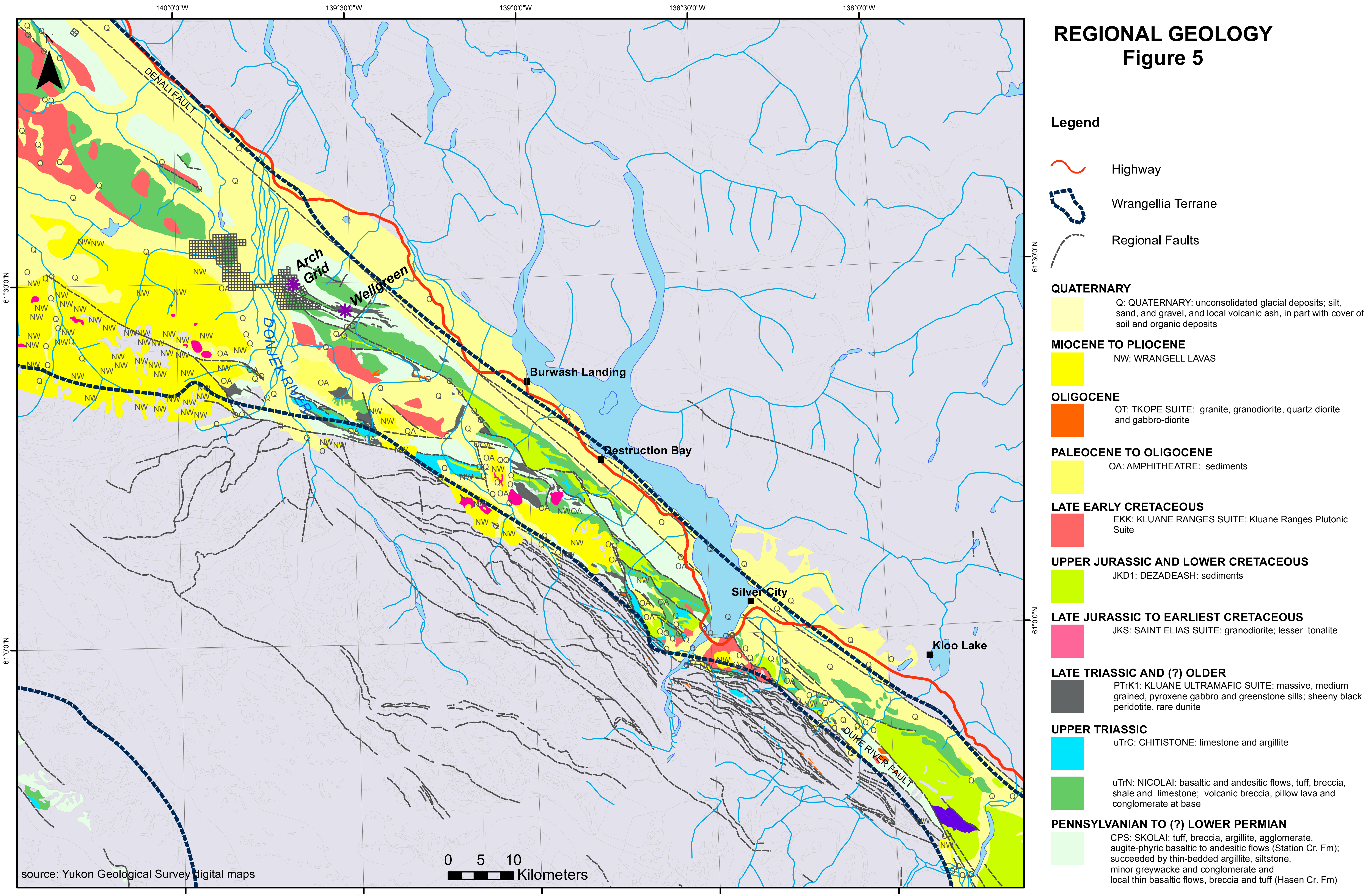
Two other types of mineralization have a limited range (Hulbert, 1997):

1. Skarn ores developed in Permian carbonates at Wellgreen.
2. Ni-rich ores within the footwall in the White River sill.

The most common sulphide minerals are pyrrhotite, pyrite, pentlandite and chalcopyrite; the common oxide minerals are magnetite and ilmenite.

The best known deposit and the sole producer in the belt is Wellgreen Platinum's Wellgreen Deposit (Minfile 115G024). Located 15 km to the east of the Donjek River, the deposit is in the economic assessment stage. There is an inferred resource on the deposit of 447 million tonnes of 0.31% Ni, 0.25% Cu, 0.87 g/t PGM+Au and an indicated resource of 0.68% Ni, 0.25% Cu, 0.87 g/t PGM+Au based on a 0.2% NiEq cutoff (www.prophecyplat.com). At Wellgreen the platinum group metals combine with As, Sb, Te, Bi, Ni, S, Co and Fe to form minerals and alloys. Sperrylite ($PtAs_2$) and Sudburyite (PdSb) are two of the more abundant (Hulbert, 1997). Results from the 2012 drilling at Wellgreen's Far East Zone have been a game changer for exploration in the district. Instead of targeting the sulphide rich basal gabbros and pods of net textured or massive sulphides within the ultramafic core, Wellgreen targeted board areas of mineralization beyond the previously defined tabular deposit. Hole 215 intersected 756m of 0.29% Ni, 0.15% Cu and 0.53 g/t PGE+Au (www.wellgreenplatinum.com November 21, 2013 news release).

REGIONAL GEOLOGY
Figure 5



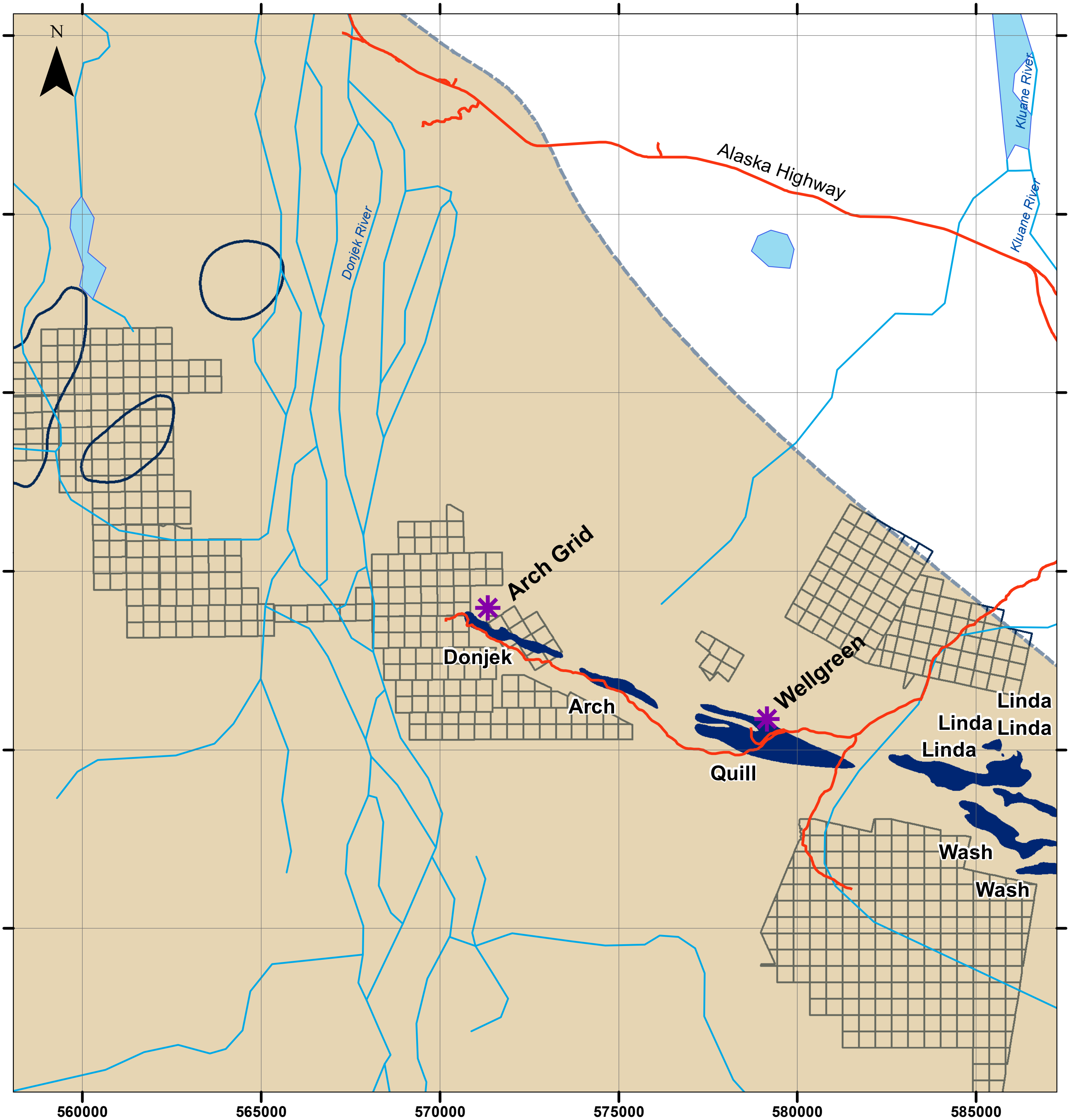


Figure 6
Ultramafic Complexes
North Central Kluane Ultramafic Belt

UTM Z7 NAD83

0 2.5 5 Kilometers

Legend

Kluane Ultramafic Complexes

mapped

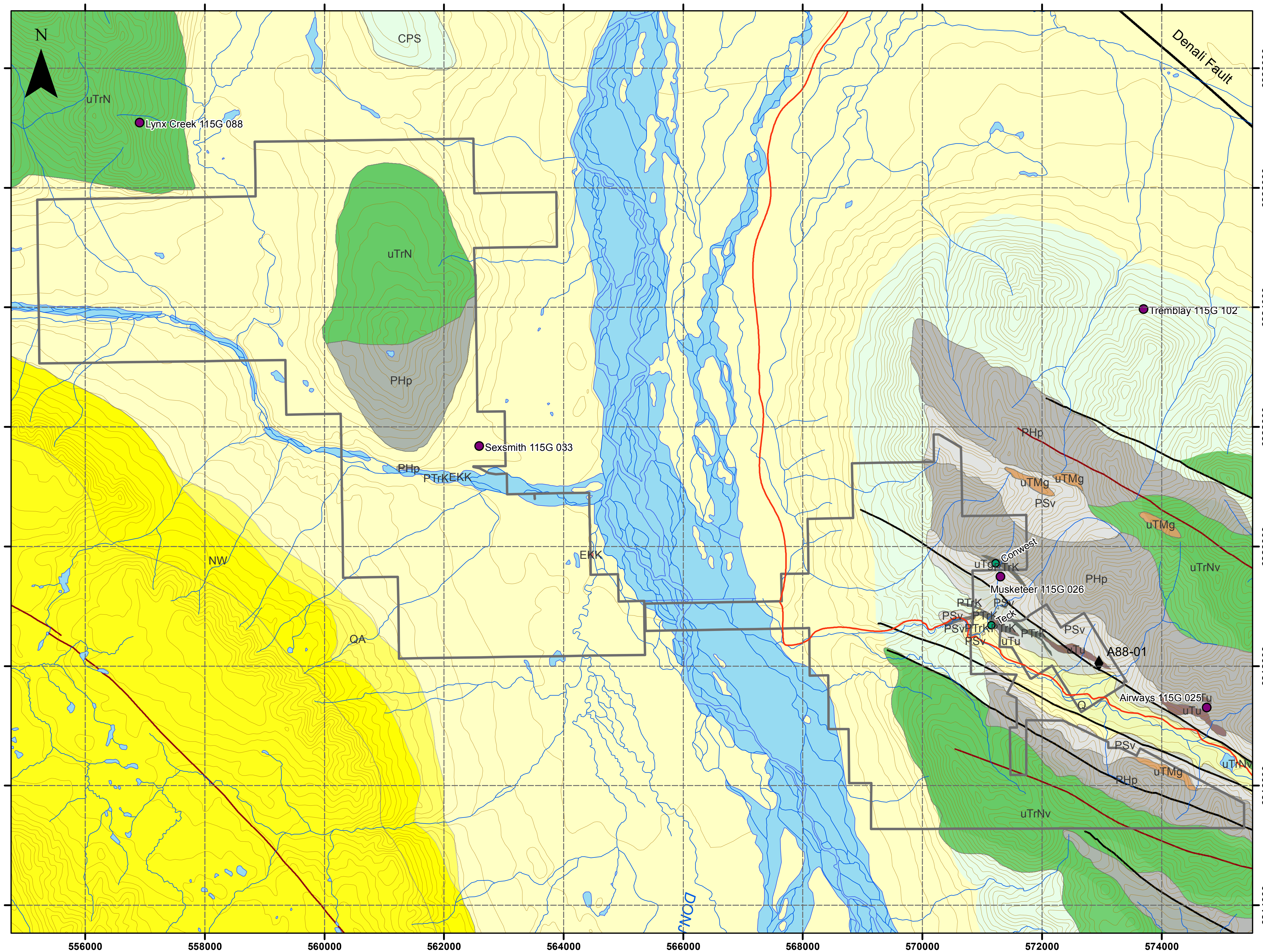
inferred from aeromag

Wrangellia Terrane

Ashburton Claims

Roads

Figure 7
Property Geology
Donjek-Arch Claims



Legend

- Drillhole
- Showings/Targets
- MINFILE Occurences
- Roads
- Donjek-Arch claims
- Fault, defined, movement undefined
- Fault, extrapolated, dextral
- Folds

Rock Units

- Q - Quaternary
- NW-Wrangell Lavas
- OA- Amphitheatre sediments
- EKK - Kluane Ranges Suite, intrusive
- uTrNv - Nikolai flows
- uTrN -Nikolai volcanics undiff.
- uTMg - Maple Creek gabbro
- uTg - Kluane Suite gabbro
- uTu -Kluane Suite ultramafic
- PTrK - Kluane ultramafic suite
- PHp Hasen Creek Formation, sediments
- PSv - Station Creek Formation, volcaniclastics
- CPS- Skolai - undifferentiated Station and Hasen

UTM Z7 NAD83

0 1 2 Kilometers

6.3 Property Geology

The Donjek-Arch Project is located in the north central section of the Kluane Ultramafic Belt. In this section there are five separate mafic-ultramafic intrusive complexes (or sills) called from west to east: Donjek, Arch, Quill Creek, Linda Creek and Wash (figure 6). The Donjek complex underlies the Arch claims, the Arch Complex is to the east of the Arch claims and the Quill complex hosts the Wellgreen deposit.

On the Donjek-Arch project, rocks of the Skolai Group (Station Creek and Hasen Creek formations) and overlying Nikolai formation are intruded by ultramafic sills, close to the favourable unit contact. Younger Wrangell Lavas form mountains southwest of the project. All rocks have been folded into a series of anticlines and synclines along fold axis parallel to the dominant 290-310^{o} trend and then folded again along NE axes.

6.3.1 Arch Claims

On the Arch claims Skolai Group sediments outcrop on the south side of Arch Creek and extend northwards under the creek up to the height of land. Nikolai basalts form the top of ridges on both sides of the valley. Maple Creek gabbroic sills intrude Skolai Group rocks on both side of the Arch valley. The Donjek ultramafic complex outcrops along the north side of Arch Creek close to the valley bottom. The sill is largely covered with overburden but has been traced by mapping, trenching and geophysics for 2 km (figure 7). A fault or fold hinge trends northwest upstream of the fork in Serpentine Creek and the creek itself may follow a northeast trending fault.

6.3.2 Donjek Claims

On the Donjek claims the Nikolai and Hasen Creek formations form a resistant dome north of Wolverine Creek. Outcrops of Kluane Ultramafics and Skolai Group have been found along Wolverine Creek. The remainder of the claims is covered by Quaternary deposits. Topographic lineaments and geophysics anomalies on the Donjek claims follow the same structure trends and have a similar distribution to, faults, folds and contacts on the Arch claims. In 2002 Expatriate (Duncan and Tucker) mapped rocks of different ages on the north and south sides of Wolverine Creek, suggesting that it is a fault. See map in figure 7.

6.4 Property Mineralization

6.4.1 Arch Claims

The Musketeer minfile occurrence (115G026) on the Arch claims includes the both the Teck and Conwest showings. The recorded coordinates for the Musketeer occurrence are close to the location of the Conwest showing.

The Teck showing of Ni-Cu-PGE mineralization is located on the Arch claims on the north side of Arch Creek. The showing was trenched in 2001 to expose Station Creek formation volcanics in contact with an ultramafic sill. The ultramafic sill continues north for 100m before disappearing under overburden. The actual contact between the volcaniclastics and ultramafic is obscured by strong calcite alteration and limonite staining that has destroyed original textures. Below the contact is a 2m wide pyritic fault zone within Station Creek formation (variably identified as a feldspar porphyry or a tuff) that runs 0.543 ppm PGE + Au, 1005 ppm Cu and 389 ppm Ni over 0.8m. The ultramafic sill above the contact grades from strongly calcite and limonite altered to a dark greenish-black, serpentinized, magnetic peridotite with up 2% disseminated pyrrhotite. In outcrop the unit is resistant with a greasy-looking surface and calcite coated slickensides. The best value in the ultramafic from limited sampling in 2013 was a strongly altered sample just above the contact that assayed 0.535 ppm PGE+Au, 1660 ppm Cu and 2130 ppm Ni. Rock sampling results from the 2013 program are discussed in section 10.

The Conwest showing is located 1km north of the Teck showing on the western fork of Serpentine Creek. It consists of a 90m long pair of oxidized basal chilled olivine gabbros subparallel to a southeast trending fault. In 2012, the gabbro was found to extend for a further 115m to the northwest. The gabbro is hosted in volcanics that have stockwork quartz and calcite stringer zones at the contact. Both the gabbro and the stockwork volcanics are mineralized with disseminated and interstitial pyrite, chalcopyrite and lesser pentlandite (up to 7% total). A chip sample taken in 2000 returned 2015 ppm Ni, 5448 ppm Cu and 154 ppb Au. No work was done on the Conwest in 2013 and it has not been tested by ground geophysical or geochemical surveys.

In 1988 a single drillhole targeting a strong magnetic high and coincident VLF-EM conductor was drilled into the Donjek sill on the eastern side of the Arch claims (claim AR 4), 1.8 km east of the Teck showing. The hole intersected 25m of strongly serpentinized ultramafic sill with a weighted average of 0.03% Cu, 0.22% Ni, 0.004 oz/t Pt (0.137 g/t)and 0.004 oz/t Pd (.137 g/t).

Other mineralized showings associated with aeromagnetic highs and soil anomalies occur on the Arch claims in the canyons on the east side of the Donjek River and in 1988 a single line of soil samples south of the confluence of Arch Creek with the Donjek River returned anomalous Au, Pd and Pt.

6.4.1.1 Arch Creek Placer

Placer mining started on Arch Creek in 1904 and has continued intermittently since. Gold is the most commonly recovered metal, 70% of which consists of coarse grains and small nuggets, including a 3 oz nugget recovered in 1905 from the lower canyon. Total reported production is 860 oz of gold. The Yukon placer database records occasional grains and small rough nuggets of native silver and copper.

In 2004, Marcel Dulac ran some bulk tests on lower Arch creek. He tested a tributary 2.3km upstream from the creek's confluence with the Donjek River and found flakes of gold. This unnamed steep, creek drains claims AR 32 and 43 which are on strike with the Donjek sill. Dulac (2004) found a high number of copper nuggets in the proportion of 2.5 times the number of gold nuggets. He also found 10g of what he considered to be platinum nuggets.

6.4.2 Donjek Claims

The Donjek claims were first staked to cover aeromagnetic anomalies on trend with the Wellgreen Deposit. The Sexsmith minfile occurrence (115G033) is located on the east side of the claim block and north of Wolverine Creek. It is a Self-Potential anomaly that was drilled in 1953. No records are available from either the surveys or drilling, but three boxes of X-Ray (less than 1" in diameter) core remain on site. Chalcopyrite and malachite are present in the core and the host rocks are either siltstones or ultramafics.

Mapping and sampling along Wolverine Creek uncovered ultramafic, volcanic and sedimentary rocks mineralized with pyrite, pyrrhotite and chalcopyrite. In 2002 a gabbro and diorite on the south side of the creek returned 391 and 424 ppm Cu respectively. On the north side of the creek a pyroxenite sample returned 4 ppb Pt, 247 ppm Cr, and 681 ppm Ni. Two samples of a serpentinized ultramafic sill along Wolverine Creek returned 809 and 804 ppm Cu in 2011. The potential of the Donjek claims have not been adequately tested by previous work because exploration techniques were hampered by the extent and depth of overburden. Historically the claim block was smaller and broken into two parts, covering aeromagnetic highs.

6.4.3 Arch Ultramafic Complex

The Arch ultramafic complex is a sill located 2km east of the Teck showing that has been well exposed by trenching and tested by drilling (Eaton 1988). Although the sill is east of the Arch claims it provides a good model for the poorly exposed Donjek sill. The Arch sill is 80-100m wide, strikes northwest and dips 50 degrees to the Southwest, the same attitude as the sill at the Teck Showing. The northern contact (upslope) is the base of the sill and hosts intermittent Ni-Cu massive sulphides in a basal gabbro. The gabbro grades into a weakly mineralized peridotite that is dark greenish-black, highly serpentinized and contains 2-5% disseminated pyrrhotite. At one of the basal showings there is a 3m wide, malachite-stained fracture zone in the adjacent tuff that may have been caused by remobilization of metals into the country rock (Hulbert, 1997). At the top of the sill (southern, downslope contact) only one showing has been found, a 1m wide pegmatitic gabbro with disseminated mineralization.

6.4.4 Quill Creek Complex – West Zone

Another potential model for the Donjek sill is the West Zone of the Quill Creek Complex. The following description is taken from McCraken, 2011 and Hulbert, 1997. Discovered in 1987, the West Zone is the on the edge of the complex where the sills finger out into the country rock. It extends for 600m and the sills are up to 100m wide with chilled gabbro on both contacts. The sills dip near vertical and change from southward dipping to northward dipping and overturned at the west end. Complexity is increased by northeast trending reverse faults with shallow westward dips that offset sills horizontally on the order of tens of metres. Sulphide mineralization is developed in gabbro and ultramafic as well as volcanic-associated sulphide mineralization in the country rock. Highest grades are found in the ultramafic core and the marginal gabbro is weakly mineralized and devoid of massive sulphides.

7.0 Previous Work

The Arch claims have been worked on since 1952 when they were staked and explored as a possible extension to the Wellgreen deposit. Work by Conwest Exploration Company Ltd. and Teck Exploration Company Ltd. led to the discovery of the Conwest and Teck showings. The Arch claims have received considerably more work than the Donjek although both were staked around the same time. The Donjek claims were first staked in 1953 by Canalask Nickel Mines over three high, positive aeromagnetic anomalies.

Selected historical work pertaining to geophysics and soil sampling is discussed below and minfile reports with a complete history for the Musketeer (Teck and Conwest showings) and Sexsmith (Donjek claims) are included in appendix 2. Minfile reports for the Wellgreen deposit and Lynx Creek showing are also included because some of the work overlaps onto the Donjek and Arch claims.

7.1 Arch Claims

7.1.1 Soil Samples

Soil sampling has been underused as an exploration tool on the Arch claims, a reflection of bedrock exposure at higher elevations and the amount of glacial material in the valleys. Exploration has focused on areas with outcrop or used geophysics to find anomalies in covered areas which were then trenched to expose outcrop. A soil survey from 1988 has been partially digitized and is compared to the biogeochemical samples in section 11.0.

Table 3: Summary of soil sampling on the Arch claims.

Year	Soil sampling	Results
1988	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. Grid does not cover the Conwest Showing	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.
1988	30 soils taken in a single line along the east side of the Donjek River south of the mouth of Arch Creek	Anomalous Pt, Pd and Au. 7 samples >20ppb Au, 7 samples >50 ppb Pt and 12 samples >20ppb Pd.
2012	18 rock, 14 soil around Conwest showing	Anomalous Pb, Zn, Fe, Au and Cu

7.1.2 Geophysics

Magnetometer and EM geophysical surveys have been used over the area around the Teck showing to find buried ultramafic bodies. Both surveys are required because the Nikola volcanics can produce magnetic anomalies but are not conductors unless faulted.

Table 4: Summary of geophysics on the Arch claims.

Year	Work	Results
1955	Ground EM and Magnetic surveys over the Teck and Conwest Showings by Teck	Linear magnetic anomaly over buried ultramafic sill.
1967	Magnetometer and EM-16 surveys by J.B. O'Neil and C. Gibbons	
1972	Magnetometer and EM surveying by the Nickel Syndicate	Strong magnetic high and several weak or broad conductors
1988	Magnetometer and VLE-EM surveys by Kluane	EM conductors and linear magnetic features. Does

Year	Work	Results
	Joint Venture over large grid along the north side of Arch Creek.	not cover the Conwest or Teck Showing but does overlap part of the 2013 Arch grid. Part of the survey has been digitized and is discussed later in this report. One drillhole on coincident EM and mag anomaly.
1988	Ground magnetic survey close to mouth of Arch Creek by Lodestar	Linear magnetic anomaly coincident with anomalous soils.
2002	11 km of magnetic and VLF EM surveys for Auterra Resources 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.

7.2 Donjek Claims

7.2.1 Soil Samples

Conventional soil sampling programs have been few in number and have not been successful mainly due to poor soil development and the presence of permafrost and volcanic ash, all of which hamper collection of samples.

Table 5: Summary of soil sampling on the Donjek claims.

Year	Sampling	Results
2002	40 out of 58 samples collected south of Wolverine Creek over magnetic high.	Soil sampling returned few significant results largely due to the extensive overburden cover on the property and the concentration of sampling in a swamp area (Duncan and Tucker, 2002).
2002	45 out of 46 samples collected on the hill north of Wolverine Creek over magnetic high.	No anomalous values
2011	Mapping, prospecting and sampling along Wolverine Creek and over the hill to the north	Skolai Group rocks on the southern side of the hill north of Wolverine Creek.
2012	Soil sampling grid north of Wolverine Creek. Only 30% of attempted samples could be collected, so rest of grid was abandoned.	Max values of 16 ppb Au, 7 ppb Pt, 6 ppb Pd, 89 ppm Cu, 129 ppm Ni (Pautler, 2013b).

7.2.2 Geophysics

The Donjek claims were first staked on strongly anomalous aeromagnetic highs. GSC regional aeromagnetic surveys from 1965-1966 confirmed the presence of these anomalies. In 2004, inversions on the GSC magnetic data determined that these anomalies are coincident with what would be expected from ultramafic rocks. Rocks in the larger anomaly over Wolverine Creek appear to be folded across a north south axis and flexure folded about an east-west axis. Two smaller, round magnetic highs lie north of Wolverine Creek. They are interpreted to be small, highly susceptible magnetic source such as a fault bounded slice of ultramafic rock. A small ground VLF-EM survey over the magnetic high south of Wolverine Creek found an open ended northwest trending conductor (Davidson, 1988).

Table 6: Summary of geophysics on the Donjek claims.

Year	Work	Results
1953	Staked by Canalask Nickel Mines over aeromagnetic anomalies. Ground magnetics and self-potential surveys. Three shallow holes drilled on the Sexsmith occurrence.	Three high positive aeromagnetic anomalies staked. Self-potential anomaly was drilled. No report filed and no results Three boxes of core remain on site.
1988	Ground VLF-EM and magnetics surveys south of Wolverine Creek for Harjay Exploration	NW trending conductor 1km long. Small grid, conductor open on both ends.
1996	Airborne HEM and magnetic survey for Expatriate Resources. Mapping, prospecting and soil and stream sampling	Geophysics delineated strong magnetic high, and several conductors. Kluane ultramafic rocks found along Wolverine Creek. Later interpretation of airborne survey by Power (2000) found that the EM conductors and resistivity patterns were probably caused by surficial features within overburden
2004	Re-interpretation and inversions of the 1965 GSC airborne magnetic data.	Magnetic highs could be caused by folded ultramafic rocks

8.0 Program Logistics & Timing

For the duration of the Arch Project, Midnight Mining Services were housed in Wellgreen Platinum's upper camp on Nickel Creek.

On August 4th, Debbie James, geologist and project manager, and Bill Harris, prospector travelled to site for a one day orientation. The three-person Midnight Mining Services field crew consisting of D. James and Cody Basset and Winston Billy, field technicians, mobilized to camp on August 7th. On August 8th Linda Lewis, geologist, spent one day at the site. Two line cutters from All-In Exploration arrived on August 9th and left August 11th. The Midnight crew continued sampling until August 18th when all of the crew returned to Whitehorse. On August 21st, D. James returned to site with a two person Aurora Geophysics crew and remained on site until the Geophysics survey was finished on August 23rd and all crew demobilized on August 24th. See appendix 11 for cost statements, invoices, crew composition and daily activities.

Biogeochemical samples were delivered or shipped to laboratories on August 20th. Rock, silt and stream sediment samples were delivered at the end of the program on August 26th.

9.0 Methodology

9.1 Research & Planning

Research on biogeochemical and alternate-to-soil sampling methods was done prior to the start of the program. Key papers by Colin Dunn, R.R. Brooks and Dave Heberlein guided the choice of sample medium and sample methodology. Assistance on survey design was given by Dale Sutherlands at Actlabs, Shea Clark Smith at MEG and Larry Hulbert. Further input was gathered from Neil Froc and Greg Johnson from Wellgreen Platinum regarding recent geophysical and soil sampling programs on the Wellgreen property.

Spruce bark was chosen as the preferred vegetation sample medium because:

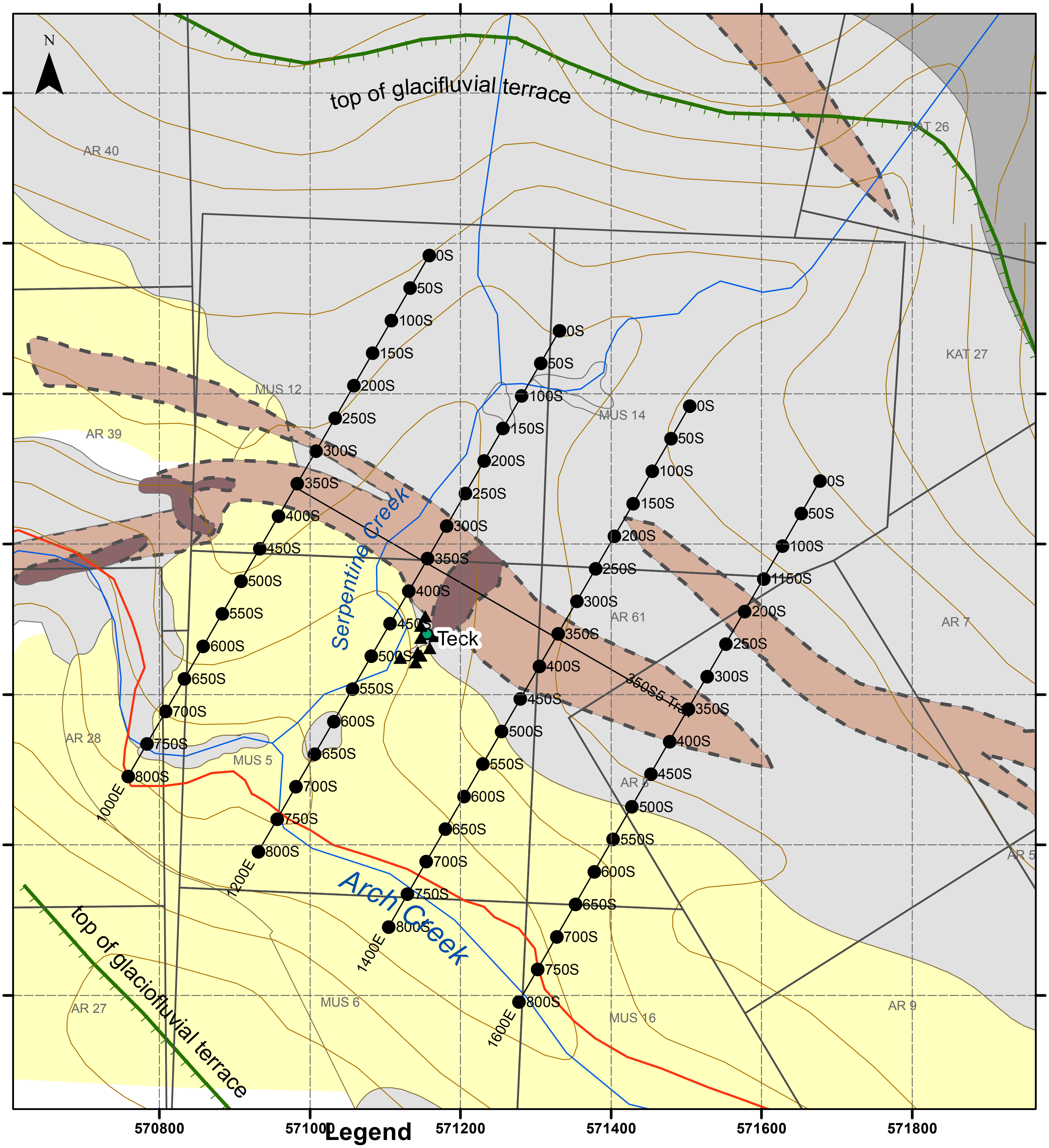
1. Spruce is widespread on the Donjek-Arch project and in the boreal forest.
2. Black spruce (especially bark) has an affinity for the PGEs and was successful in delineating the Rottenstone Ni-Cu-PGE deposit in northern Saskatchewan.
3. Tree bark is slow growing and is unaffected by seasonal changes in metal content.
4. Tree bark is the oldest part of the tree so has had a long time to extract metals from the ground.
5. All plants leach trace elements by using a selective leach of carbonic acid, formic acid and hydrogen peroxide (Dunn, 2007).
6. Trees collect metals from groundwater, organic and soil horizons, and underlying material over a wide area. A mature tree can sample a large area (~450m^2) because roots can reach out 12m from the trunk.
7. It is quick and easy to sample

Humus was chosen as the preferred organic soil sample medium because:

1. Humus is widespread on the Donjek-Arch project and elsewhere.
2. Humus is decayed vegetation that has been accumulating in one location since the glaciers retreated, up to 12,000 years ago in western Canada, up to 10,300 ya on Arch Creek.
3. The acidic and reducing conditions produced by decomposed vegetation can act as a chemical sink for some metals (Dunn, 2007).
4. It is relatively quick and easy to sample.
5. Samples are taken above the permafrost and volcanic ash layers that are a detriment to soil sampling.

SGH was chosen as an analysis method because:

1. The method is purported to read through cover (volcanic, glacial etc.) to bedrock.
2. A variety of sample types can be used in one survey.
3. The method had found blind mineralization in test studies.
4. Samples are taken above the permafrost and volcanic ash layers that are a detriment to soil sampling.



Legend

- ▲ Mini grid
- ● Stations
- Arch Grid lines
- Showings/Targets
- Roads
- claims
- Glaciofluvial terrace

Geology

- Q - Quaternary
- uTu -Kluane Suite ultramafic
- ultramafic sill - projected location
- PHp - Hasen Creek Fm, sediments
- PSv - Station Creek Fm, volcaniclastics

Figure 8
Arch Grid location
Arch Claims

UTM Z7 NAD83

0 100 200 Meters

9.2 Arch Grid (Linecutting)

At the start of the program, a survey grid was flagged and cut around the Teck Showing. The grid centers on the projected location of the ultramafic sill, covers a known showing and extends into non-mineralized ground. See figure 8 for grid layout.

Four 800m long lines trending 030° were cut and flagged 200m apart. The orientation was orthogonal to the suspected orientation of the elongated sill. Pickets were placed and numbered at 50m intervals along the lines and a trail was cut connecting station 350 on each line. Short access trails were cut from the gravel road along Arch Creek to the start of the lines.

Station locations were computed using a GIS program and the line cutters used those coordinates to locate lines and stations. The grid has been slope corrected. Actual station locations may not be same as the computed locations, because GPS reception was spotty on the steep, forested slopes. Cutline width and tree clearing were kept to the minimum required for the surveys and in some cases lines were not cleared sufficiently or cut straight enough to provide an adequate line of sight for the HLEM geophysical survey.

A mini grid (10 stations at approx 25m intervals) was set up around the Teck Showing outcrop. No lines were cut and stations were marked with flags instead of pickets. This grid was used only for biogeochemical sampling.

9.3 Vegetation & Ground Cover Surveys

Prior to taking vegetation samples a reconnaissance survey was made of forest and land cover to find consistent plant species and soil horizons. On the Arch grid, the survey was on foot and involved digging test pits and inventorying vegetation. On the Donjek claims, the survey was by helicopter. Three landing sites were chosen and test pits were dug at those sites. The remainder of the claims was visually mapped during the helicopter overflight.

At the start of the program, spruce trees were misidentified as black spruce (*Picea mariana*). Ongoing research into ecosystems and vegetation during the program revealed that white spruce (*Picea glauca*) was the dominant species. Identification improved by using a 10X hand lens on fresh twigs to determine the presence or absence of reddish “hairs” and by checking cone size and shape. Early sample sites were revisited to check which species had been sampled.

9.3.1 Soil Profiles

Soils in the areas are classified as eutric Brunisols (Smith et al, 2004). Brunisols have sufficient development to exclude them from the Regosolic Order but do not have well developed horizons as seen in other soil orders. A Brunisol is a mildly weathered forest soil with a B horizon at least 5cm thick which a Regosol lacks. Regosols are young soils with no recognizable B horizon that form on active sites such as talus, colluvium or unweathered alluvial material.

Observations during this project suggest that soils on the Arch grid lack a B horizon and appear to be intermediate between Regosols and Brunisols. Some of the soils have permafrost within 1m of the surface and would be classed as Cryosols (station 14350). Permafrost was noted in test pits on the Donjek claims and at 43 out of 123 sites on the Donjek claims during 2012 soil sampling, indicating Cryosols are more widespread elsewhere on the claim block.

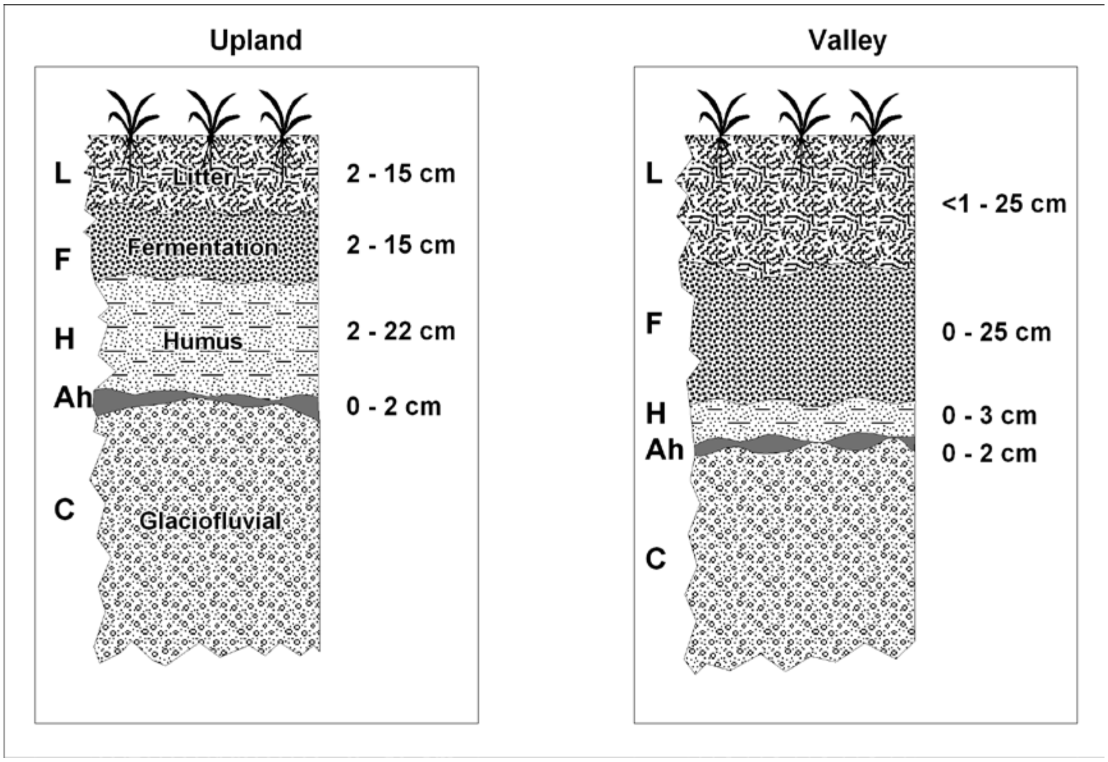


Figure 9: Typical soil profiles.

Figure 9 illustrates typical soil profiles. Upland soils, above the active floodplain, have a more consistent profile than soils in the valleys close to Arch, Serpentine and Wolverine creeks. In valley soils the C horizon is composed of recent fluvial gravel, sand and silt and the development of the L, F and H layers is highly variable. In the upland soils the C horizon is consistently glaciofluvial gravels and the L, F and H layers are older and more developed. The only B horizon found was in a test pit on the top of Wolverine Hill on the Donjek claims.

In the planning stage of the program, the Ah horizon (upper layer of mineral soil immediately below the organic layer) was chosen as one of the sample media, but the reconnaissance survey showed that it was only reliably present in 7 out of 11 test pits. In two other test pits an Ah horizon was present, but mixed with humus and volcanic ash. Where an unmixed horizon was present it was of uneven thickness, varying from 0 to 2cm thick. These factors would make it difficult to collect a sufficient amount of material to sample, and contamination from mixing with other layers and volcanic ash would reduce the quality of the sample. Humus was substituted for the Ah horizon. During the reconnaissance survey Labrador tea was noted at many sites. It was added as a sample medium but only sampled over a limited area.

9.4 Geophysical Surveys

Two orientation geophysical surveys were tested over the Arch grid. The original proposal was to test three methods, but the VLF-EM survey was dropped because it had been done repeatedly in the past and it was not cost-effective to repeat the survey. A summary of the methodology follows and refer to the geophysical field report in appendix 3 for detailed survey methodology.

9.4.1 Extremely Low Frequency Electromagnetic system (ELF)

The ELF system is a relatively new ground geophysical technique that is highly portable and does not require transmitting loops or survey lines to be cut. It is a passive system relying on natural source fields that primarily originate from lightning discharges. The technique measures vertical and horizontal components of the natural time-varying magnetic field. The ratio between the vertical and horizontal magnetic fields is defined as the Tipper or tilt angle. At each frequency both real and quadrature components are measured. The system is sensitive to 2D and 3D lateral changes in the subsurface conductivity. Depending on the host rock resistivity structure the system is capable of imaging resistivities from depths of 10m to 2km. The ELF survey was conducted over the entire Arch grid requiring 1.5 days from August 23rd to 24th.

9.4.2 Horizontal Loop Electromagnetic Survey (HLEM)

The HLEM survey was conducted using two Apex Parametrics MaxMin instruments: a MaxMin 1-10 system and a MaxMin 1-9+. A 100m separation was used between the transmitter and receiving coils. The transmitter and receiver are connected by a reference cable in order to separate primary and secondary EM fields. The system measured both in-phase and quadrature components of the secondary EM field at the following frequencies: 220, 880, 3520 and 7040 Hz. Data were collected at 25m intervals. Terrain corrections consisted of the slope chain method using coplanar coils. Coil separation can vary from the nominal 100m separation in areas of irregular topography. These effects were corrected for during data processing.

Figure 10: HLEM Survey. The field assistant with the receiving coil waits at a station while the reading is recorded.

Data measurements consist of measuring the induced secondary EM earth response generated from an initial transmitted primary EM signal. In the presence of a conductive source the secondary EM signal/field is measured as two components: the in-phase and quadrature. In-phase is defined as the component of the secondary signal that is in-phase with the transmitted primary signal. Quadrature represents the portion of the secondary signal that is not in phase with the primary and lags it by one quarter cycle (90^o).

Electrical conductance of a target can be determined from the ratio of the in-phase to quadrature components.

The HLEM survey was started on August 22nd and finished on August 23rd.

9.5 Biogeochemical Surveys

Three types of biogeochemical orientation surveys were completed over the entire grid. A fourth was tested in a limited area.

Sample media were humus, spruce tree bark and Labrador tea stems with leaves and flowers attached. Two hundred and forty three samples were collected plus 10 field duplicates. Two samples of humus were collected at each station, one for Soil Gas Hydrocarbon analysis and the other for vegetation analysis. All samples were collected over a nine day span at each of the 68 stations in the Arch grid. Thirty four samples were taken over a 10 station (25m spacing) mini grid around the Teck Showing outcrop.

Field crews took GPS readings at all sample sites and recorded data about site characteristics, soil type and vegetation on a standard form. The actual GPS coordinates of the sample at the time of collection were used to plot sample locations instead of the station coordinates because the humus and bark samples could be up to 10m apart. Humus and SGH samples were taken from the same pit and samples were taken from within 5m of the station picket unless a suitable tree or site was not available. If a suitable candidate was not found within 5m, the radius was extended to 10m.

Table 7: Sample collection summary

Medium	Lab and method	No of samples	QAQC	Sample bag	Field preparation
Humus +/- clay	Actlabs Soil Gas Hydrocarbons (SGH) Dry, sieve, measure heavy hydrocarbons, interpret.	77	2 field duplicates	Ziploc brand plastic bags	none
Humus	Actlabs 2E Vegetation Dry, ash, aqua regia digestion, ICP MS finish	74	3 field duplicates	Polypropylene drawstring bag	Hung to dry
Spruce Bark	ALS Chemex VEG41 Wash, dry, macerate, randomize, nitric acid/HCl digestion, ICP-MS and ICP-AES finish.	76	5 field duplicates. At prep lab samples were randomized and 5 standards were inserted.	Kraft soil bags	none
Labrador Tea	Same as spruce bark	16	No field duplicates. Rest as for spruce bark	Polypropylene	Hung to dry

Following collection, humus samples for 2E analysis and Labrador tea samples were air dried and then all samples were packed into rice bags for shipping and delivery. Humus and bark samples were delivered to ALS Chemex's preparation facility in Whitehorse on August 20th. SGH samples were shipped to Actlabs in Ancaster, Ontario on the same day.

After the fieldwork was completed information from the sample form was entered into an MS Excel spreadsheet. Once results were received they were added to the spreadsheet. The different media and methods are stored in separate worksheets and were reviewed and plotted independently. See appendix 4 for humus, appendix 5 for SGH, appendix 6 for spruce bark and appendix 7 for Labrador tea. Each appendix contains laboratory methodology, sample databases, results and maps.

9.5.1 Humus – Soil Gas Hydrocarbon and 2E

Humus was the chosen medium for two test methods because of its widespread occurrence and because it was buried (SGH samples cannot be exposed to air so vegetation cannot be used). Actlabs Vegetation Ash 2E method prepped the sample by ashing and then analyzed it by aqua regia digestion and ICP-MS. Actlabs SGH method air dried the sample and then used their proprietary method of hydrocarbon analysis and interpretation to locate reduction-oxidation (redox) electrochemical cells formed by ore deposits.

The preferred material for humus sampling was the H horizon, the oldest and most decomposed layer of organic material which rests directly on glaciofluvial sediments. At a few stations on recently deposited material, the oldest layer of humus had not formed and then the F horizon (middle layer, consisting of partially decomposed vegetation) was collected. Sample depth varied from 5 to 55 cm with an average depth of 25cm. At most sites the humus was mostly made up of decomposed moss.

Figure 11: Vegetation samples air drying.

A garden trowel or geotul was used to cut through the moss and humus down to the underlying material. The samples were taken directly above the underlying material at the base of the humus layer. This method ensured that the correct horizon was sampled, allowed observation of the underlying material and revealed volcanic ash. The plug of humus and underlying material was brought up to the surface where it was inspected and a sample placed in the appropriate sample bag. The plug of humus was returned to the hole and two pieces of flagging with the SGH and 2E sample numbers were tied to vegetation close to the hole. Site observations were entered on the field form. Field duplicates were taken every 20 samples from the same hole as the original samples. Duplicates were identified with an “A” following the station number.

Samples were taken for SGH at all but one station on the grid. Where there was no humus (active creek floodplain), a sample was collected from whatever material was present at least 10cm below the surface. All SGH samples were put into a Ziploc brand freezer bag that had been pre-labelled with a sample number and already contained a sample tag. A sample tag book was used to number SGH samples. A generous fist size sample was collected. Two field duplicates samples were taken.

Humus samples for 2E analysis were put into polypropylene drawstring sample bags. These bags allowed for air circulation and field drying of samples prior to delivery to the laboratory. The station number preceded by an “H” was used to identify samples. Samples were larger than the SGH samples in order to provide ample sample material. Where there was no organic material, no sample was taken for 2E analysis.

Humus samples for 2E analysis were first delivered to ALS Chemex where they were to be prepared and analyzed at the same facilities and by the same methods as the vegetation samples. The samples could not be shipped to the preparation facility in Nevada, USA because recently changed US Department of Agriculture regulations forbade entry of mixed soil and vegetation into the USA. ALS Chemex were unable to resolve this issue and the samples were eventually shipped to Actlabs preparation facility in Kamloops B.C for analysis. This resolved the border crossing issue by keeping the samples within Canada, but added the complication of a different preparation and analysis method with higher detection limits for platinum, palladium and gold.

9.5.2 Spruce Bark

Bark samples were collected from older white spruce (*Picea glauca*) trees. Older trees were chosen because the older tree had more time to collect metals, produce a thick outer bark, and grow a wide root system. Also, older trees have thicker trunks with coarse bark and could be easily identified by field crews. One tree was sampled in all but one location where two thin trees close together were sampled because no large tree was present. The criteria for selecting a tree in descending order of importance were:

Figure 12: Sampling spruce bark.

1. Correct species
2. Moderate or good health
3. Mature (>30 cm diameter at breast height). Trunk diameter ranged from 8 to 55cm with an average of 28cm.
4. Within 5 m of station picket
5. Within 10m of station picket

A paint scraper was used to collect a sample of outer bark, the grey to brown, brittle layer on the outside of the trunk. The inner bark is a younger, softer layer with an orange or yellow tint. It was easy to distinguish inner from outer bark and keep samples consistent. The bark was collected in a dustpan that had been shaped to fit the curve of the trunk to keep the bark contained. Once a sufficient amount of bark was collected it was inspected and any inner bark, sap, needles or twigs were discarded. The bark was then placed in a standard kraft paper soil bag and identified with the station number preceded by an “S” for spruce. Duplicates were identified by adding an “A” to the station number and were taken every 20 samples. A piece of flagging tied to the tree identified the sample location. Samples were sent to MEG laboratory in Nevada for preparation, randomization and the insertion of standards, and then returned to ALS Chemex in Vancouver, BC for analysis.

9.5.3 Labrador Tea

During the reconnaissance survey Northern Labrador tea (*Ledum decumbens or L. palustre var. decumbens*) was observed at many of the test pits sites and it is a common species around the Yukon. It provides a valuable medium to sample in areas where are no trees and in Newfoundland is found growing on serpentine (altered ultramafic) barrens.

Labrador tea was collected at 12 sites on the Arch grid and at 4 sites on the mini grid around the Teck Showing. A pair of garden pruners was used to cut stems from around the sample site. Samples were identified using the station number preceded by an “L.” Samples were put into polypropylene drawstring bags and air dried prior to delivery to the preparation facility. Samples were sent to MEG laboratory in Nevada for preparation, randomization and the insertion of standards, and then returned to ALS Chemex in Vancouver, BC for analysis. Labrador tea was prepped and analyzed using the same methods as for spruce bark.

9.6 Rock Sampling

Twenty one rock samples were collected during the program. All samples were collected at the Teck Showing or along line 1200 where bedrock was exposed along Serpentine Creek. The Teck Showing samples were grab samples over a length. They are not true chip samples because the exposure was not consistent enough to produce an unbiased chip sample. Other samples were grab samples from outcrops discovered while traversing the grid or prospecting. Brief rock descriptions and GPS coordinates were recorded for each sample. Rock samples were packaged in numbered plastic bags, secured with plastic zap straps and packed into a rice bag for delivery to the preparation facility in Whitehorse. See figure 13 for locations, database and results are in appendix 9.

9.7 Stream Sampling

Stream sampling was a minor part of the program, fitted in when there was time available. Seven stream samples and 3 silt samples were collected from streams. Streams were chosen that drained Donjek-Arch claims and were out of the area disturbed by placer mining on Arch Creek and its tributaries.

Stream samples were collected by sieving a large quantity of material through a #12 mesh sieve (1680 microns). If there was sufficient water in the creek it was used to wash material through the sieve. If the creek was dry, the sample was dry sieved. Wet samples were allowed to settle and clear water was drained off. Samples were collected in large plastic sample bags and air dried prior to delivery to the preparation facility in Whitehorse. Silt samples were grab samples taken from creeks. Enough fine material was collected to fill a kraft paper soil bag.

Sample locations were photographed and site information and GPs coordinates were recorded for each site. See figure 14 for locations and appendix 10 for laboratory methodology, results and maps.

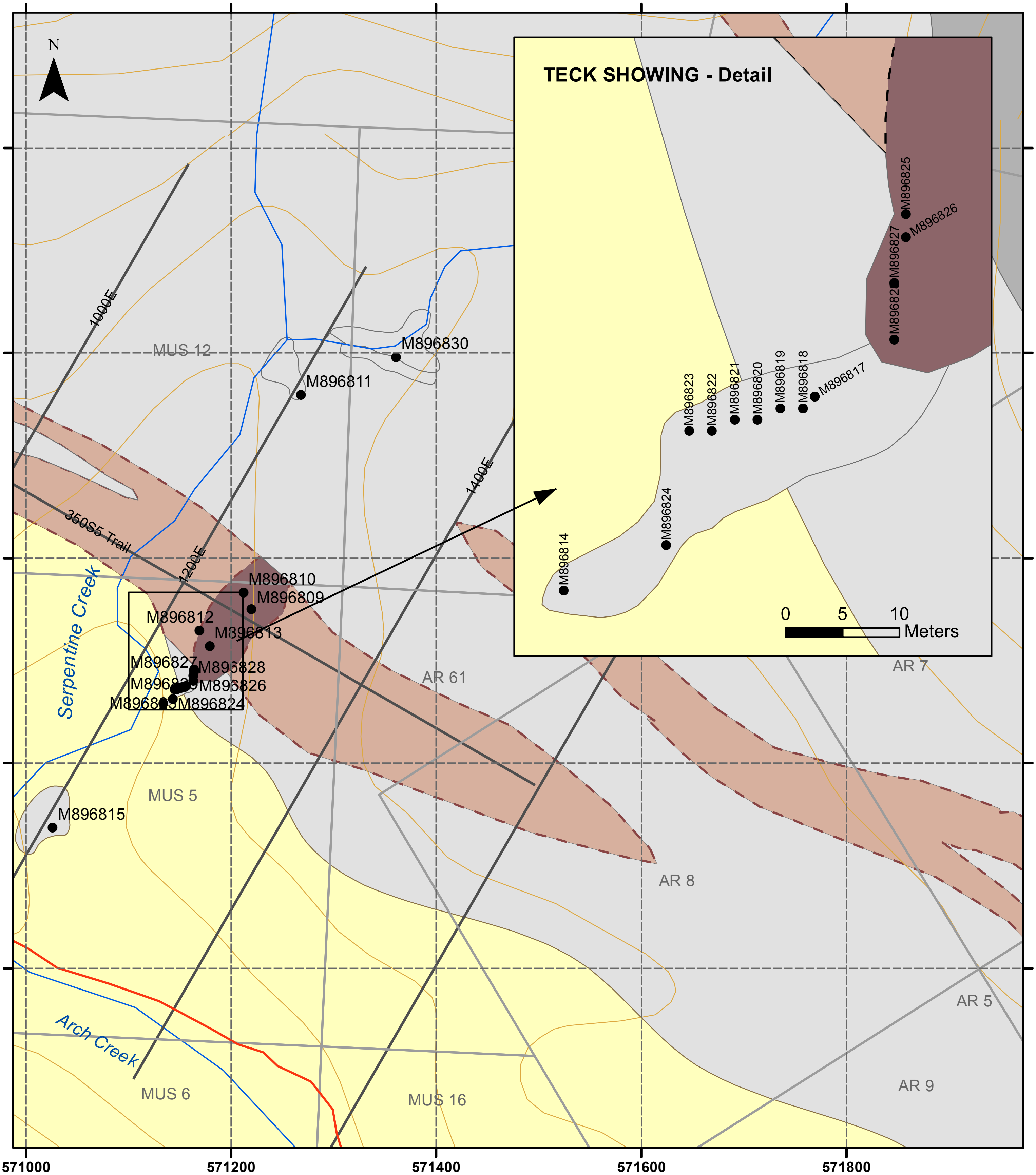


Figure 13
2013 Rock Samples
Arch Grid

UTM Z7 NAD83

0 100 200 Meters

Legend

- 2013 Rock Samples
- Donjek Arch Claims
- Prophecy Platinum
- 2013 Arch Grid
- Roads

Geology

- Q - Quaternary
- uTu -Kluane Suite ultramafic
- projected ultramafic sill
- PHp Hasen Creek Formation, sediments
- PSv - Station Creek Formation, volcaniclastics

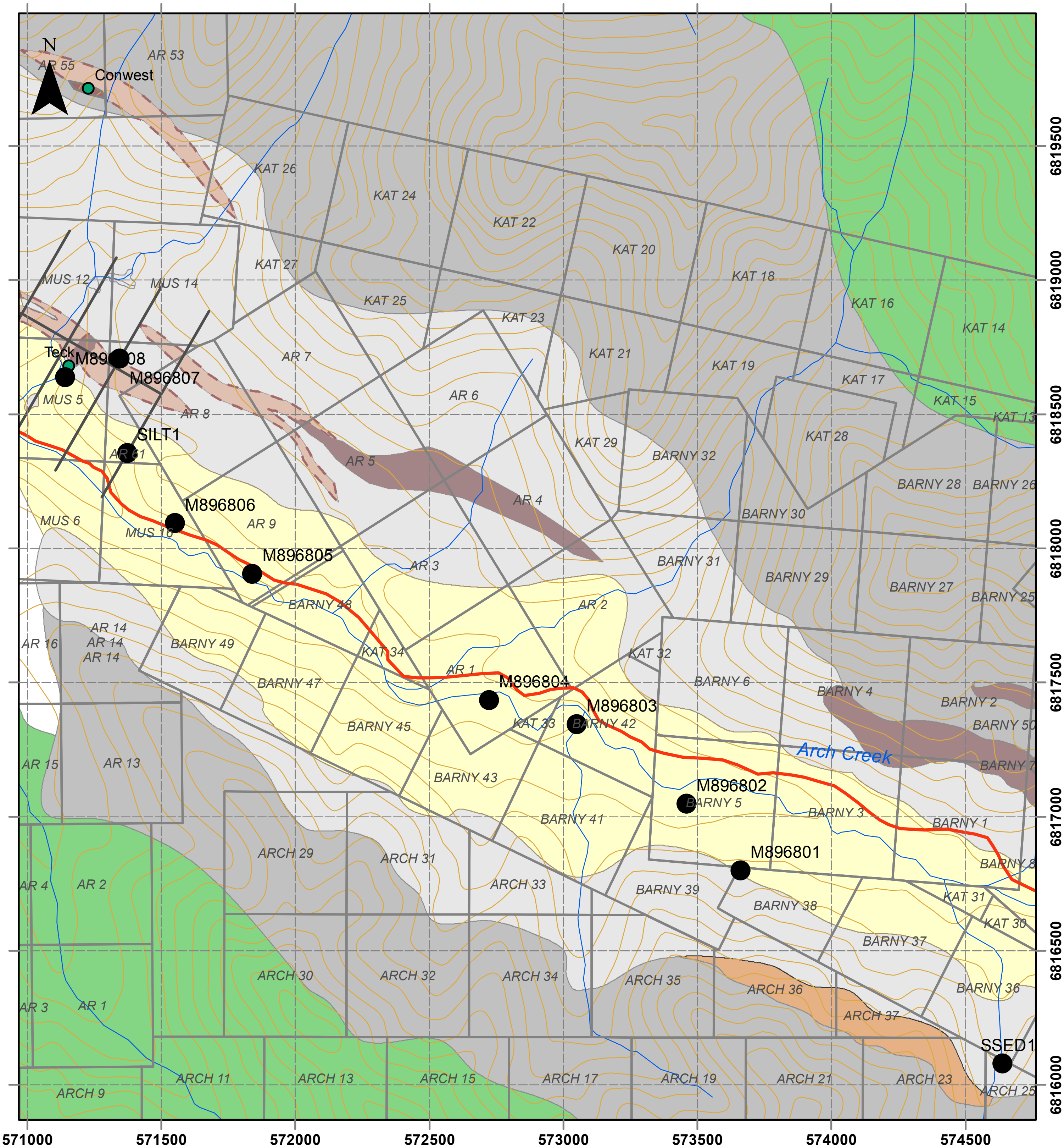


Figure 14
Stream Sediment & Silt Samples
Sample Locations

UTM Z7 NAD83

0 250 500 1,000 Meters

Legend

- Silt & Stream Samples
- Arch Grid
- Roads
- Claims

Geology

- Q - Quaternary
- uTrNv - Nikolai flows
- uTMg - Maple Creek gabbro
- uTg - Kluane Suite gabbro
- uTu -Kluane Suite ultramafic
- projected ultramafic sill
- PHp Hasen Creek Formation, sediments
- PSv - Station Creek Formation, volcaniclastics

10.0 Results

10.1 Geophysical Surveys

Due to budget limitations, the geophysical surveys have not been fully interpreted, i.e. with respect to geophysical inversion modelling. The following observations are preliminary and are based on maps in located in appendix 3.

10.1.1 HLEM

The HLEM results are presented as both in-phase and first quadrature images. Overall the data show significant variability in the Station Creek volcanic and sedimentary country rock relative to the ultramafic unit. Some of the variability could be due to irregular topography in the survey area that may not have been fully corrected for in the final data reduction. With respect to contrasting the Teck showing against country rock, stacked quadrature results exhibit a greater contrast particularly along lines L1200E and L1400E where an outcrop of the ultramafic sill is known to occur. The stacked in-phase results best correlate with the projection of the Teck showing under fluvial/alluvial cover (yellow on maps), with a broader signature along line L1000E, but nevertheless with similar amplitude to the country rock along the same line. See figure 15.

10.1.2 ELF

The ELF results are contoured as Tipper Divergence in units of m^{-1}, for several frequencies ranging from 11 Hz to 720 Hz. The northwest-trending nature of sedimentary rocks in the vicinity of the Teck showing is detected in the higher frequency data (90 Hz and greater), but the showing itself is characterized by both positive and negative divergence values over these same ranges. It is only in the lower frequencies that the showing begins to be resolved as a largely positive divergence feature, particularly in the 11 Hz results. See maps in appendix 3.

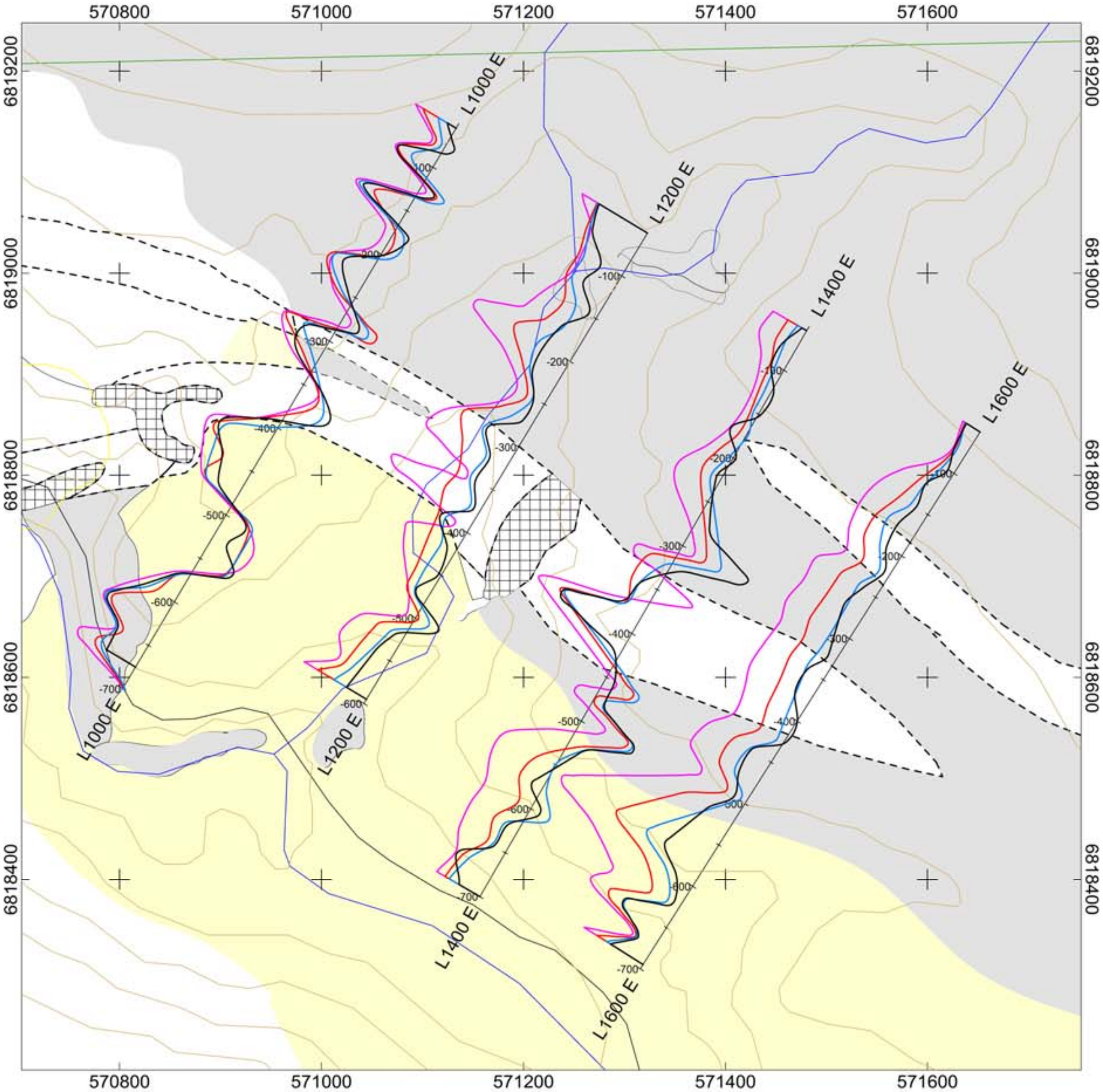
In summary, both the HLEM and ELF surveys detected weak to moderate conductors over the Arch grid test area. The ELF system revealed better-resolved features compared to HLEM, although in the case of the latter, the extreme relief in the area may have limited the effectiveness of the method. Aurora Geosciences, who performed the survey work, recommend the ELF method for future surveys because line cutting is not required and the survey is effective in rugged terrain. The ELF survey itself is more expensive, but savings are realized when line cutting is not required. Prior to conducting further geophysical surveying the conceptual target model, with respect to physical rock properties should be reassessed in order to best plan future geophysical work.

10.1.3 VLF-EM

The historic VLF-EM surveys from 1955 and 1988 show linear conductors trending northwest across the grid. The 1988 grid did not extend far enough south to cover the Teck showing so the 1955 survey is more representative. The two surveys are consistent and show conductors in similar locations; errors in mapping and digitizing are likely responsible for the minor differences. The conductors are not continuous across the grid; they are interrupted and displaced with respect to each other. One of the displacements follows Serpentine Creek and may be represent a northeast fold axis or fault that has cracked and offset strata.

The 1955 magnetic survey shows a distinctive linear magnetic feature trending across the grid for 1km. It is coincident with outcrops of the ultramafic sill at the Teck showing and in Arch creek canyon. On the east side of the Arch grid the magnetic high pinches out and another linear magnetic high is located north of the first, also trending northwest. Magnetic anomalies from the 1988 survey are more diffuse than the 1955 anomalies but have the same northwest trend.

The northwest trending EM conductors could be sulphide layers in the ultramafic sill, unit contacts, faults or fold. They parallel the dominant structural trend and are coincident with the linear magnetic highs, although they diverge away from the magnetic anomaly on the far west side of the grid. The 1955 magnetic high matches well with the mapped location of the ultramafic sill. Figure 16 shows results from the surveys.



LEGEND

HORIZONTAL LOOP EM

STACKED IN PHASE

INSTRUMENT : APEX PARAMETRICS MAX-MIN I-10

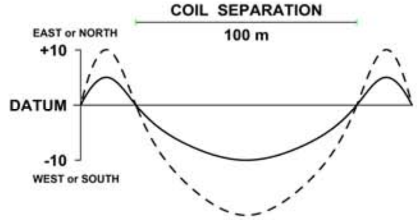
PROFILE SCALE : 1 cm = 10%

220 IN PHASE :

880 IN PHASE :

3520 IN PHASE :

7040 IN PHASE :



IN-PHASE DATUM : 0%

QUADRATURE DATUM : 0%

DATA FILE : MNM-13550-YT-HLEM.gdb

OPERATORS : PJ

STATION SEPARATION : 25m

LINE-KM SURVEYED THIS SHEET : 2.5 km

Scale 1:5000

50 0 50 100 150 200 250 300

(meters)

NAD83 / UTM zone 7N

Figure 15

ultramafic outcrop

projected ultramafic sill

Revised Feb 7, 2014 by D. James. Replaced old geology with new geology.

MIDNIGHT MINING SERVICES

DONJEK-ARCH PROJECT - TECK GRID
HLEM STACKED IN-PHASE PROFILES

WHITEHORSE MINING DISTRICT, YUKON, CANADA
NTS: 115G 05
DATE SURVEYED: AUGUST 2013
DATE / DRAWN BY: AUG 28, 2013 / PJ

AURORA GEOSCIENCES LTD

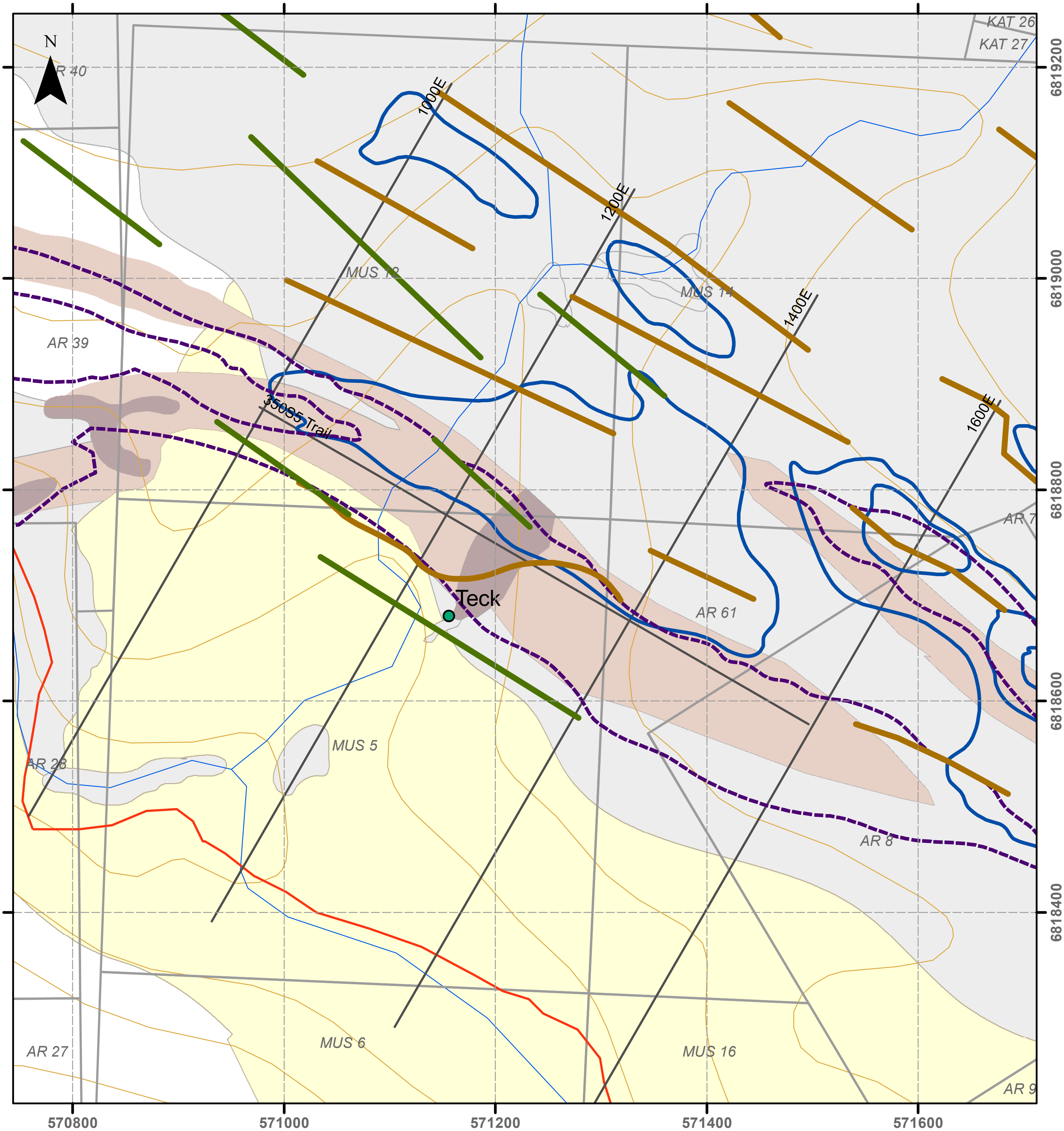


Figure 16
Historical Geophysics
Arch Grid
VLF-EM Conductors
& Magnetic Highs

UTM Z7 NAD83

0 100 200 Meters

Legend

- Showings/Targets
- 1955 VLF-EM Conductors
- 1988 VLF-EM Conductors
- 1955 Magnetic Anomalies
- 1988 Magnetic Anomalies
- 2013 Arch Grid
- Roads
- Claims

Geology

- Q - Quaternary
- uTu -Kluane Suite ultramafic
- projected ultramafic sill
- PSv - Station Creek Formation, volcaniclastics

1988 surveys did not cover Teck Showing

10.2 Biogeochemistry

10.2.1 Comparison

The 4 biogeochemical sample media were compared to each other and scored on cost, analytical methodology, collection accuracy and suitability for use on other Ni-Cu-PGE projects in the Kluane Ranges. The spruce bark media scored the highest. A summary of the scoring follows, see Appendix 8 for details.

Table 8: Score card for biogeochemical sample methods. Each category was scored out of 10 with the highest value being the best in each category.

Sample Media and Method	Cost	Analysis methodology	Collection	Accuracy	Flexibility	Total score
Humus – SGH	1	3	3.5	3.5	1.5	12.5
Humus – Actlabs 2E	4	1	2	2	3.5	12.5
Bark – ALS Chemex VEG41	2.5	3	3.5	3.5	3.5	16
Labrador Tea – ALS Chemex VEG41	2.5	3	1	1	1.5	9

Other than Labrador tea, which was not tested thoroughly in this orientation survey, the scores are relatively close for the different media. SGH is difficult to compare directly because it needs specialized interpretation and it detects redox cells instead of element concentrations. No one method stands out as a clear favourite, although spruce bark is preferred because of the ease of sampling and the ultratrace analysis methods.

Biogeochemical samples are a worthwhile addition to the explorationist's toolbox. SGH is a good choice for larger, well-funded programs that will be collecting samples on grids that cover varied terrain. Vegetation sampling is a better choice for small programs where the number of samples is limited or the sampling is not on a grid format.

All methods were non-intrusive and although more expensive to analyze, they are faster and cheaper to collect than soil samples, as well as being lighter in weight. Human error is a factor is all sampling programs, whether mistaking volcanic ash for soil or confusing black and white spruce, but with proper training samplers can learn to recognize different tree and plant species. Biogeochemical samples fared well in this difficult terrain and good quality samples were taken at all sites.

10.2.2 Observations – all media

Observations are made on the distribution of the economic elements, Au, Ni, Cu, Co and Cr and the PGEs as well as possible indicator minerals As, Ba, Bi and Te. For the purpose of contouring, Au and the PGEs are combined together on one map and Bi and Te are combined together on another map. See figures 18, 19 and 20. Complete results and maps are in appendices 4-7.

Compared to the average range for plants worldwide, values on the Arch grid for Ni, Pt, Au and Pd are above average and Cu is close to average. This may suggest that Cu should only be interpreted in conjunction with other elements because it may be mapping plants rather than rocks and the samples may not be truly anomalous. Cu is used by plants and is preferentially taken up. A Ni to Cu ratio map was produced to reduce the impact of Cu.

Table 9: sample ranges for selected elements.

Sample Media and Method	Au range	Pt Range	Pd Range	Cu Range	Ni Range
Humus – SGH	Not applicable				
Humus – Actlabs 2E	Trace to 236 ppb	Trace to 14 ppb	Trace to 6 ppb	22.5-63.7 ppm	31-104 ppm
Bark – ALS Chemex VEG41	Trace to 0.6 ppb	Trace to 5 ppb	Trace to 5 ppb	3.56 - 8.15 ppm	0.64 - 6.63 ppm
Labrador Tea – ALS Chemex VEG41	Trace to 0.2 ppb	Trace to 4 ppb	Trace to 1 ppb	5.45 - 7.46 ppm	0.71 - 2.72 ppm
Worldwide averages of element abundances in plants (Dunn, p.15)	***0.2 ppb***	***0.005 ppb***	***0.1 ppb***	***5-8 ppm***	***1.5 ppm***

Overall there is an offset of base and precious metal values. The higher values are loosely grouped together, but the peaks are offset by 1 to 2 stations. This may represent differing element mobility or may reflect the zoning within the sill and adjacent altered country rock. See profile plot example below where orange circles show areas with higher values in Ni and Pt. Red bars are the expected location of the ultramafic sill.

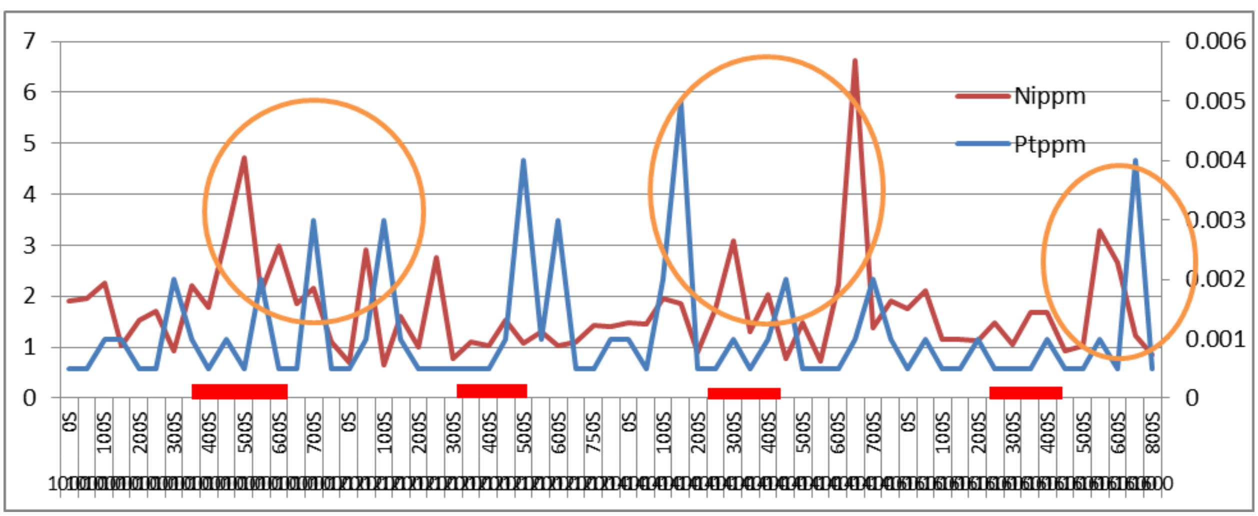


Figure 17: Chart illustrating offset between base (Nickel) and precious (Platinum) metal values over the Arch Grid. Red bars are the expected location of the ultramafic sill. Data source is spruce bark samples and does not include samples from the mini grid around the Teck Showing.

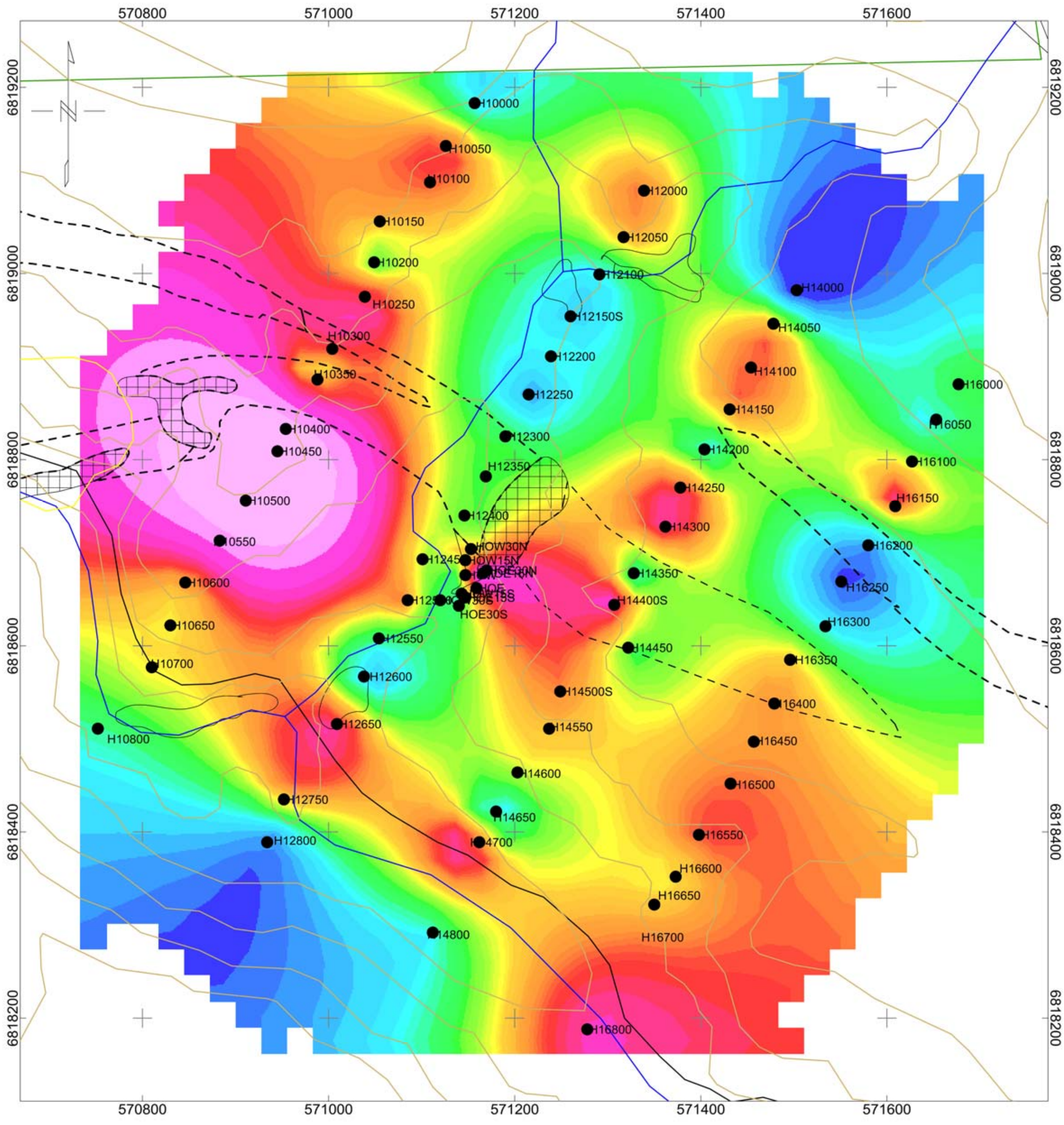


Figure 18
Contoured Humus Biogeochemistry
Ni/Cu

0.833 1.110 1.236 1.310 1.372 1.424 1.478 2.476

100 0 100
(meters)
NAD83 / UTM zone 7N

ultramafic outcrop

projected ultramafic sill

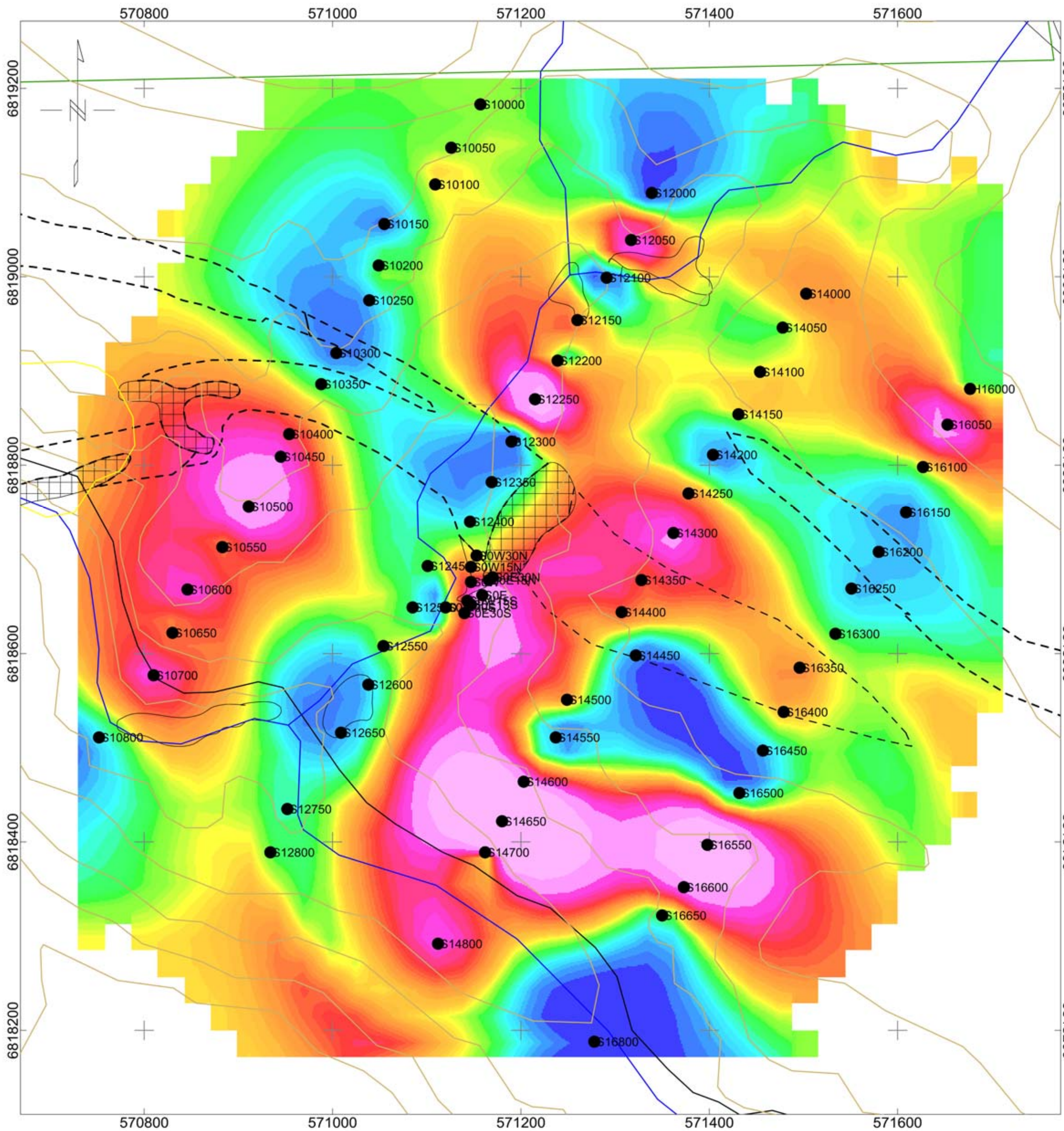
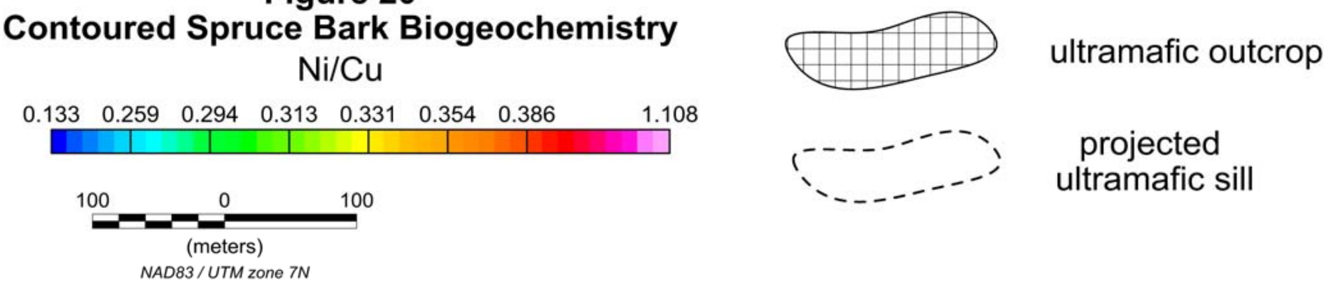


Figure 20
Contoured Spruce Bark Biogeochemistry
Ni/Cu



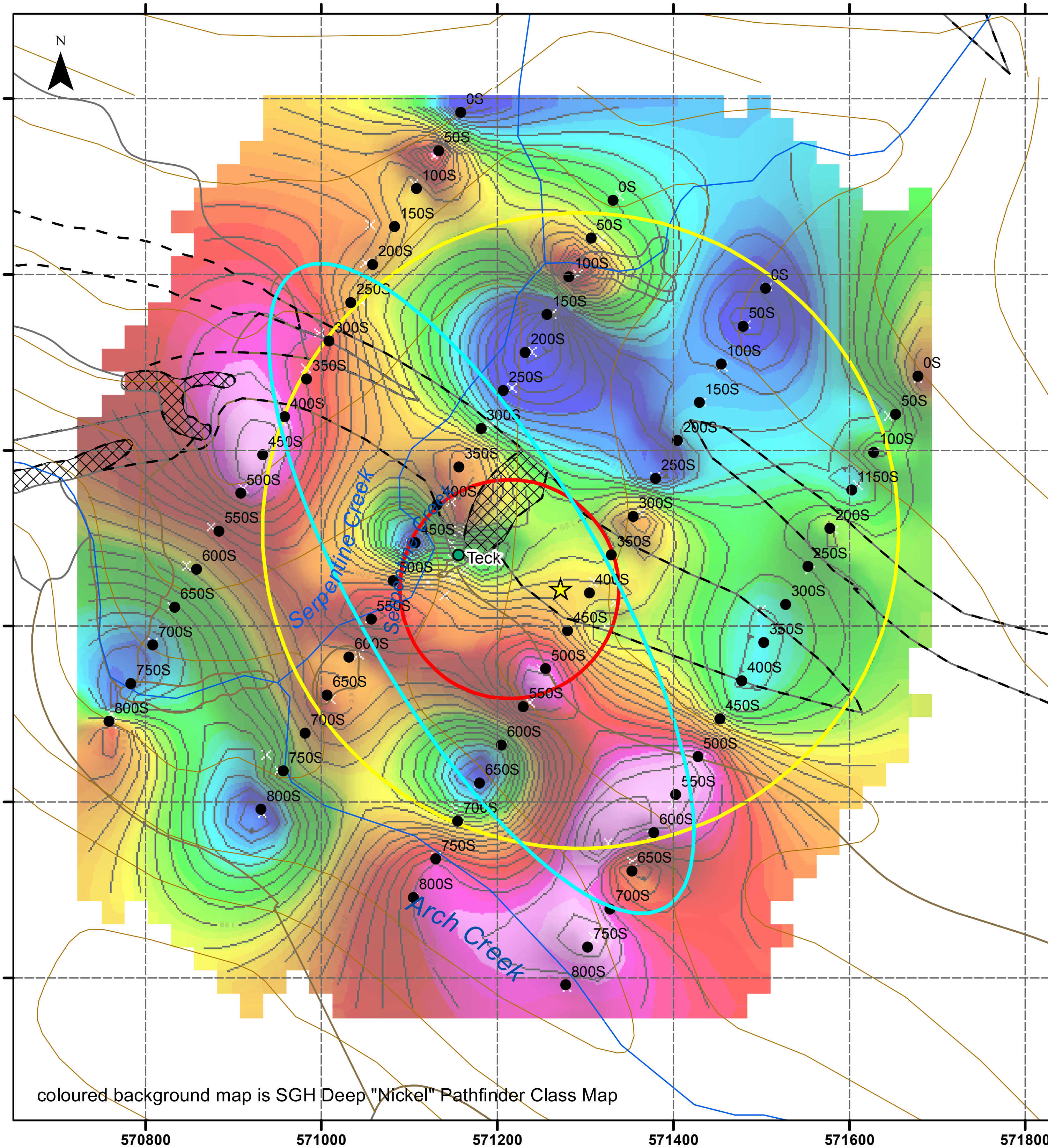


Figure 20
Compilation of SGH Anomalies
Deep Nickel Pathfinder Class
Arch Grid

UTM Z7 NAD83

0 50 100 Meters

☆ Vertical projection of the highest possibility of Ni-Cu PGE mineralization. Estimated 50-100m deep.

SGH Anomalies

Cu Redox Cell

Deep Ni Trend

Ni Redox Cell

projected ultramafic sill

ultramafic sill outcrop

There are anomalous Pd and Pt values close to Arch Creek and the road. These are likely manmade anomalies from the small amounts of Pt and Pd released into the air from catalytic converters on vehicles. Also, Arch Creek is a placer creek which produces gold and lesser PGEs. Sample sites close to the creek (stations 700 to 800) are on sites which are in the active floodplain and may have been enriched with placer precious metals. The same may occur on Serpentine Creek along line 1200 where stations 100, 350 and 600 are periodically inundated.

The Teck Showing is the only known mineralized outcrop of the ultramafic sill that crosses the Arch grid. The sill also outcrops in the Arch Creek canyon 100m west of line 1000. The trace of the sill between and beyond the 2 known outcrops is predicted from historical magnetic surveys. Rock sampling indicates that Ni and Cu values should be higher directly over middle of the sill and precious metal values should increase towards the edge and in the altered wallrock on either side. All values should be higher on the north side of the sill where the richer basal sulphides are typically hosted.

A linear anomaly is seen in most elements in both bark and humus that trends NW across the grid, parallel to the ultramafic sill, either underneath, or more commonly, along the northeast side of the sill. Generally the linear anomaly does not stretch across the entire grid. Once it reaches line 1200 the anomaly weakens, is offset or disappears. This may be caused by erosion from Serpentine Creek or the creek valley may be a NE trending fault or fold hinge that has weakened and/or offset the ultramafic.

The SGH survey maps a Cu redox cell that is bisected by the ultramafic sill and a smaller Ni redox cell inside the Cu redox sill. The Cu redox sill covers most of the Arch grid with a nested anomaly at 14300 to 14400. The Ni redox cell is slightly offset from the centre of the Cu redox cell and is centred between stations 12450 and 14450 just east of the Teck showing. A Cu-Ni drill target is pinpointed 50m west of station 14400. SGH further indicates a deep Ni trend cutting NNW across the grid from 16650 to 10450, at a steeper angle than the ultramafic sill. See figure 20 for an SGH compilation map showing the deep nickel trend and appendix 5 for more maps.

Spruce bark contains lower concentrations of all elements than humus but, in part due to lower detection limits, there is more contrast in the data. Bark distribution is not as strongly influenced by the northwest direction of grid as humus or conversely humus is reflecting the northwest trend of the underlying geology. Spruce bark samples shows a tendency to elevated values along line 1000E that is not observed in humus. The elevated values may be reflecting an underlying anomaly or may be due to the proximity of bedrock, because line 1000E traces the eastern edge of Arch canyon.

10.2.3 New Anomalies

There are four anomalous areas shown in the bark and humus surveys that are not related to the known location of the ultramafic sill. Not all elements are anomalous in each area but overall there is a recurring trend.

1. Discontinuous anomaly along the 1000E line, north or south of the sill location.
2. Anomaly near the fork of Serpentine Creek, lines 1200 and 1400, stations 000 to 100.
3. Anomaly on north side of ultramafic sill on lines 1200 and 1400, stations 100 to 250.

4. An anomalous area towards the south end of the grid from line 1600 to 1400, stations 500 to 700. It fades out along the 1200 line and may continue on the 1000 line between stations 600-700.

Table 10: New anomalies

Anomaly	Spruce bark	Humus	SGH
1. L1000	10 elements As, Ba(spotty), Bi+ Te, Co, Cr, Cu, Ni, Ni/Cu, PGE+Au, Sb	4 elements As, Bi+Te, Cr, Ni/Cu (spotty),	Deep Ni trend, edge of Cu redox cell
2. Serp. Ck. fork	6 elements As, Ba, Ni (spotty), Ni/Cu, PGE+Au, Sb (weak)	7 elements Ba, Bi+Te, Co, Cr, Cu, PGE+Au, Sb	Edge of Cu redox cell
3. North of sill	9 elements As, Ba, Bi+Te (weak), Co, Cr, Cu, Ni, Ni/Cu, Au+PGE	7 elements Ba, Bi+Te, Co, Cu, Ni/Cu (weak), PGE+Au, Sb	Within Cu redox cell
4. South of sill	7 elements As, Ba, Co, Cr, Cu (spotty), Ni, Au+PGE	5 elements As, Ba, Co (weak), Cr, Ni/Cu	Edge of Ni redox cell, within deep Ni trend.

10.3 Rock Samples

Rock sampling was a secondary activity in the 2013 program, undertaken after the biogeochemical sampling was finished. Sampling concentrated on the Teck Showing and vicinity. Twenty one rock samples were collected, 12 from the Teck Showing and the remainder were outcrops in or close to Serpentine Creek. Samples M896816-824 were in Station Creek formation volcanics at the Teck Showing and 825-828 were in calcite altered ultramafic at the Teck showing. Maps, sample spreadsheets and certificates are in Appendix 9, sample locations in figure 13.

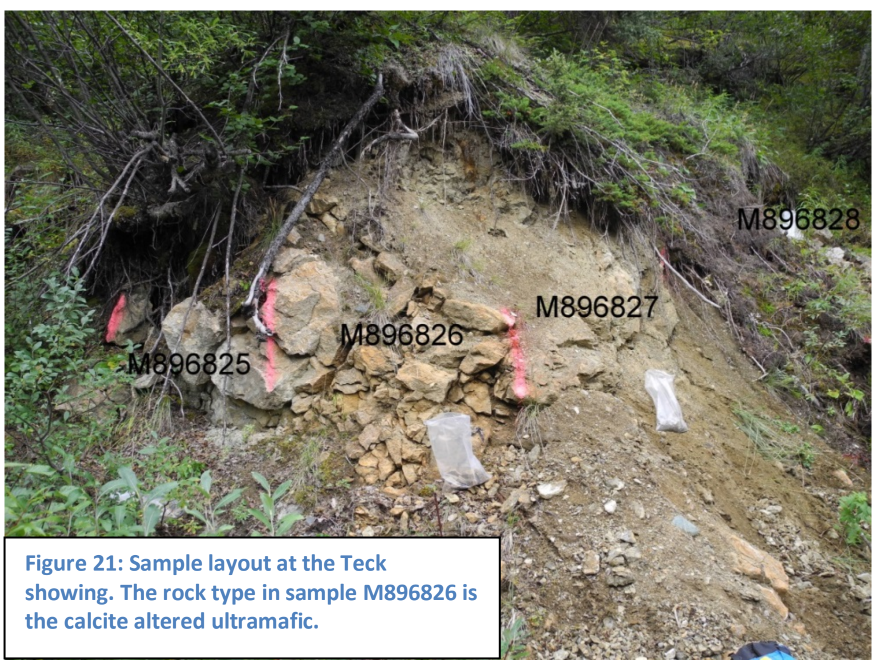


Figure 21: Sample layout at the Teck showing. The rock type in sample M896826 is the calcite altered ultramafic.

In 2001 the Teck Showing was trenched, mapped and sampled (Vanwermeskerken, 2001). 2013 sampling has returned similar values to those from the 2001 program. Samples M896826-27 of calcite altered ultramafic have similar values and are close to the location of a historic sample with 0.36 g/t PGE+Au, 1581 ppm Ni and 709 ppm Cu. Samples M896818-821 cover a previous sample also taken in 2001 of the pyritic shear zone which graded 0.096 ppm

PGE+Au, 764 ppm Ni and 1116 ppm Cu. The 2013 sampling returned higher PGE+ Au values but similar Ni and Cu values.

Limited sampling did not find any new showings but it did confirm previous results and is useful as a benchmark to which the biogeochemical samples could be compared. It also provides a geochemical signature of the different lithologies which can be used to distinguish between altered Station Creek and ultramafic rocks.

Table 11: Summary of 2013 rock samples results

			Element or combination of elements (all values in ppm)								
SAMPLE #	**ROCK TYPE**	**LENGTH m**	**PGE+Au**	**Bi+Te**	**As**	**Ba**	**Co**	**Cr**	**Cu**	**Ni**	**Se**
M896809	ULTRAMAFIC	0	0.103	0.133	0.81	19.3	**133.00**	375.00	381.00	1440.00	1.1
M896810	ULTRAMAFIC	0	0.117	0.148	2.46	55.8	124.50	395.00	324.00	**2080.00**	0.6
M896811	ANDESITE?	0	0.008	0.018	11.85	67.4	21.30	118.50	41.00	28.20	0.6
M896812	ULTRAMAFIC	0	0.070	0.065	0.53	66.2	117.00	335.00	104.00	1320.00	0.9
M896813	ULTRAMAFIC	0	0.102	0.134	0.46	55.8	127.00	365.00	344.00	1380.00	1.1
M896814	ANDESITE?	0	0.028	0.009	6.47	119.5	35.50	44.00	195.50	46.60	0.9
M896815	TUFF	0	0.002	0.118	48.00	48.9	24.10	31.40	40.80	46.00	0.4
M896816	TUFF	1.3	0.085	0.244	12.35	195.5	53.20	478.00	287.00	756.00	0.8
M896817	TUFF	0.8	0.070	0.253	82.10	**732.0**	59.40	788.00	313.00	649.00	0.6
M896818	TUFF	0.7	0.247	1.810	45.00	254.0	118.50	**937.00**	**1290.00**	1375.00	15.2
M896819	TUFF	0.5	0.082	0.434	38.80	343.0	73.30	688.00	496.00	762.00	0.9
M896820	TUFF	0.8	**0.543**	**5.630**	21.00	129.5	31.90	115.50	1005.00	389.00	**23.2**
M896821	TUFF	0.6	**0.397**	**4.760**	**306.00**	501.0	31.10	103.50	1080.00	673.00	**22.5**
M896822	TUFF	1.1	0.054	0.262	33.70	**771.0**	28.30	434.00	103.50	286.00	0.9
M896823	TUFF	1.9	0.001	0.031	2.62	577.0	1.74	3.33	5.96	5.47	0.1
M896824	TUFF	0	0.000	0.012	0.62	177.5	1.45	2.92	1.77	1.95	0.1
M896825	TUFF OR UM	1.8	0.168	0.288	6.44	441.0	104.00	637.00	586.00	1395.00	3.7
M896826	TUFF OR UM	1.5	0.202	0.174	6.00	39.9	102.50	629.00	508.00	1545.00	1.5
M896827	ULTRAMAFIC	0	**0.535**	0.564	15.40	49.9	**154.50**	554.00	**1660.00**	**2130.00**	3.3
M896828	TUFF OR UM	0	0.155	0.186	3.00	122.5	90.00	**1040.00**	451.00	1295.00	0.7
M896830	ARGILLITE	0	0.036	0.191	46.40	21.4	25.70	58.70	111.00	49.60	4.1

10.4 Stream Sediment Samples

Four samples from the 2013 program show anomalous values in a range of indicator elements associated with Ni-Cu-PGE mineralization in the Kluane ultramafic belt. In addition, creeks are good locations for outcrops. Complete results for all elements and maps are in Appendix 10, sample locations in figure 14.

M896803 – this creek drains a large basin on the south side of Arch Creek, cutting through Hasen and Station Formation rocks and the fertile contact zone. The sample is low in PGE + Au but is high in indicator elements of Bi, Te, As, Sb and Se.

M896805 – this creek drains the north side of Arch Creek below a mapped location of ultramafic rocks. Note that this site is close to the road and Arch Creek and could be contaminated with placer material. Continued sampling upstream would be out of the potentially contaminated area.

M89606 – this creek drains the north side of Arch Creek below the mapped locations of ultramafic rocks. Although close to the road, the sample site was raised above the road so there was less risk of sample contamination from recent fluvial sediments.

SILT1 - The creek is located on the east side of the Arch grid and drains mapped locations of ultramafic rocks. This creek should be traced upstream and checked carefully for outcrop.

Table 12: Summary of stream and silt sample results

		Element or combination of elements (all values in ppm)									
SAMPLE #	**TYPE**	**PGE+Au**	**Bi+Te**	**As**	**Ba**	**Co**	**Cr**	**Cu**	**Ni**	**Sb**	**Se**
SSED1	STREAM SED	0.0194	0.112	17.75	146.5	24.3	102	106	96.5	1.215	1.5
M896801	STREAM SED	0.0124	0.132	31.8	146.5	19.15	48.8	79.2	42.5	1.79	1.8
M896802	STREAM SED	0.0058	0.096	24	206	23.7	76.1	62.2	49.1	1.015	1
M896803	STREAM SED	0.0122	**0.137**	**44**	**372**	23.6	52.4	76.9	73.5	**2.07**	**4.3**
M896804	STREAM SED	0.024	0.121	22.2	307	26.1	96.2	**143.5**	96.7	1.46	2.2
M896805	STREAM SED	**0.0282**	0.13	21.9	136.5	**26.9**	**116.5**	93.3	**149**	1.28	1.1
M896806	STREAM SED	0.021	**0.172**	**44.9**	**371**	29.5	76.9	**113**	93.6	**3.3**	**4.9**
SILT1	SILT	**0.0358**	0.087	17.95	112	24.9	**107**	85.5	**130**	1.125	0.8
M896807	SILT	0.018	0.093	14.15	97.1	21.1	88	72.1	92.7	0.971	0.9
M896808	SILT	0.0096	0.083	8.37	70.9	16	60	46.6	43.4	0.537	1

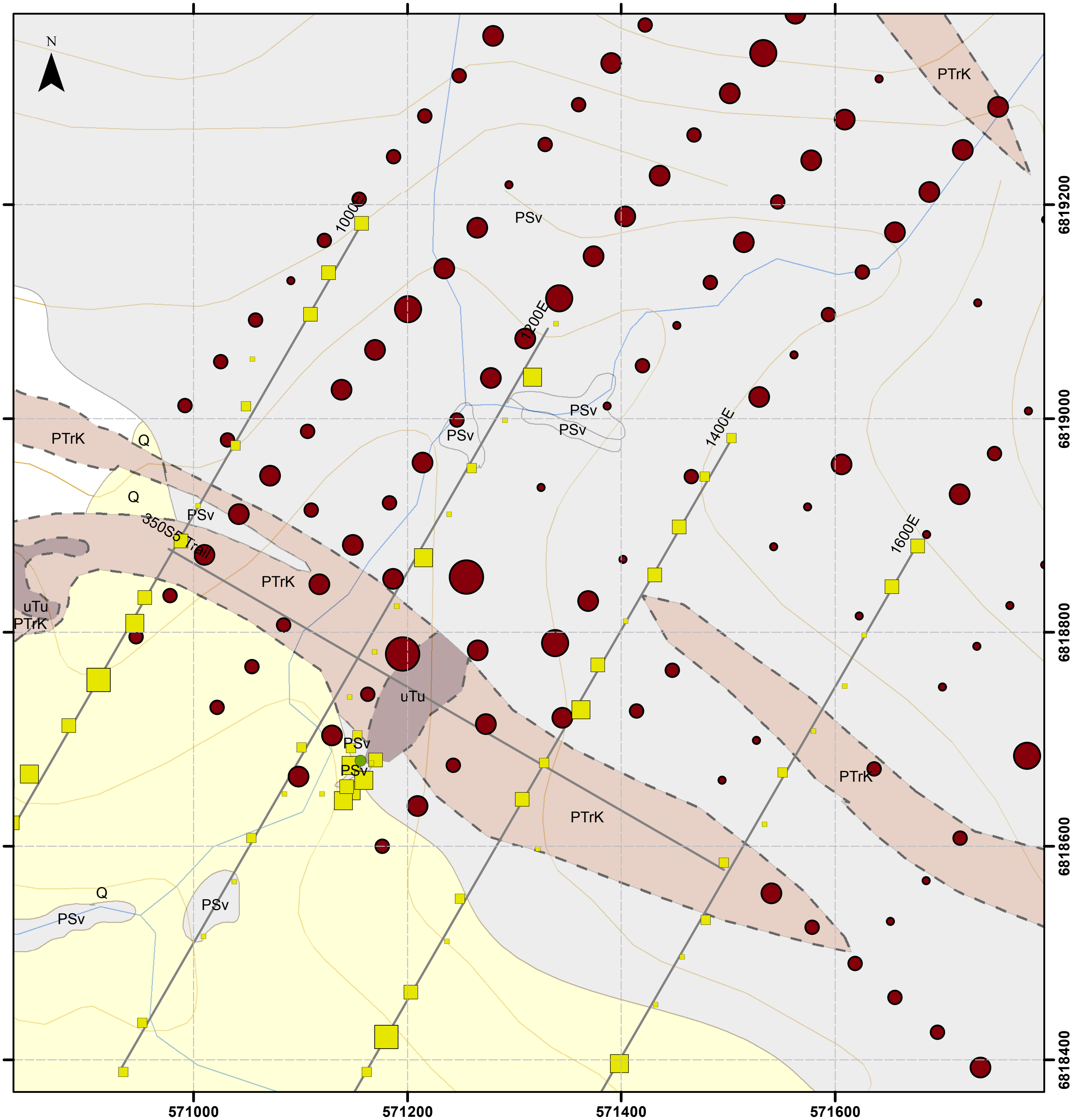


Figure 22
Soil Sample &
Spruce Bark Sample Comparison
Ni (ppm)

UTM Z7 NAD83
0 100 200 Meters

Legend

Showings/Targets

Bark Samples
- 0.640000 - 1.220000
- 1.220001 - 1.710000
- 1.710001 - 2.250000
- 2.250001 - 4.080000
- 4.080001 - 6.630000

1987 Soil Samples
- 14 - 38
- 39 - 60
- 61 - 96
- 97 - 152
- 153 - 1100

2013 Grid

Geology
- Q - Quaternary
- uTu -Kluane Suite ultramafic
- projected ultramafic sill
- PSv - Station Creek Fm, volcaniclastics

11.0 Discussion

11.1 Biogeochemical Surveys & Historic Soil Surveys

Comparing biogeochemical surveys results directly to soil surveys results or combining results from the different surveys into one database is not a worthwhile exercise. Element values are lower in biogeochemical samples so they cannot be compared directly to soil samples. Instead, grid patterns, percentiles or the overall distribution of anomalies for each dataset should be used.

Partial results from a 1988 soil sampling program were digitized. The samples were collected along grid lines 100m apart with samples at 50m intervals along the lines. Poor sampling conditions (permafrost and deep overburden) made for spotty sample coverage and poor sample quality. In most cases the samples must have been of the underlying glaciofluvial material. Figure 22 compares Ni values in spruce bark to Ni values in soil.

There are similarities between the two surveys.

- A cluster of anomalous values in soil between lines 1200E and 1400E, north of the Teck Showing outlines the ultramafic sill. Bark anomalies bracket this cluster.
- A cluster of soil anomalies close to the fork of Serpentine Creek match with a single bark anomaly at the end of line 1200E.

The linear nature of ultramafic sills is better displayed in biogeochemical samples while the soils samples have a clustered display. Some of the clustering could be due to the tighter grid spacing on the 1988 survey and the many missing samples.

11.2 Biogeochemical Surveys & Wellgreen Soil Samples

Wellgreen Platinum collected B, C, and locally A, horizon soil samples in 2012 over the Wellgreen property. On the part of the property closest to the Arch claims, 963 sites were visited, but only 450 samples were collected. The remaining 513 sites could not be sampled because of permafrost, high organic content, or lack of soil horizons due to fluvial material and roads (Gronsdahl, 2012). Close to half of the samples were over mineralized ultramafic sills providing a good measure of soil geochemical characteristics over the mineralized Quill Creek Complex.

11.2.1 Element Correlation Tables

Pearson element correlation coefficients were calculated on the Wellgreen soil sample data and the Arch grid spruce bark data. The Wellgreen data can be used as a guide to indicator elements and element grouping that define different lithologies, because the large number of samples (1097) is statistically valid. The full correlation table and a map of sample locations are in Appendix 12.

Table 13: Positive (>/ =0.5) correlation coefficients for 2012 soil sampling on the Wellgreen project. High positive correlations (>0.75) are highlighted in bold.

	Ag	*As*	*B*	*Co*	*Cr*	*Cu*	*Fe*	*Mg*	*Ni*	*Pt*
Co	0.58		0.60							
Cr				0.63						
Cu	**0.76**			**0.77**						
Fe	0.60			0.72	0.58	0.66				
Mg			0.67	**0.84**	**0.77**		0.61			
Ni	0.56		0.64	**0.92**		0.77		**0.87**		
Sb		0.71								
Pt	0.65			0.73		**0.89**	0.64		**0.75**	
Pd	0.63		0.50	**0.78**	0.58	**0.80**	0.61		**0.87**	**0.82**

Table 14: Positive (>/ =0.5) correlation coefficients for 2013 spruce bark sampling on the Arch grid. High positive correlations (>0.75) are highlighted in bold.

	Ag	*As*	*B*	*Co*	*Cr*	*Cu*	*Fe*	*Mg*	*Ni*	*Pt*
Co		**0.76**								
Cr										
Cu										
Fe		0.60								
Mg		0.68		**0.75**						
Ni				0.67						
Sb		0.74		0.72			0.54	0.58		
Se										0.55

The positive correlations in the Wellgreen data are typical for ultramafic sills: Co, Cu, Fe, Mg, Ni, Pt, Pd and Ag. The Arch grid samples show fewer correlations and have lower correlation coefficients which may be explained by fewer samples (68 versus 1097) and the smaller area underlain by mineralized sills.

Surprisingly, Au does not correlate well with any element in either dataset. The highest correlation between Au and other elements in the Wellgreen data is 0.41 with Ag and 0.40 with Pt, while in the Arch data the highest correlations are with B at 0.33, Se at 0.31 and Pt at 0.25.

Barium (Ba) does not correlate well in either data set; at Wellgreen it even has weak negative correlations with Co, Cr, Ni, Au, Pt and Pd (-0.20 to -0.36). A high concentration of Ba in both mineralized and nonmineralized rocks of the Quill Creek Complex was noted by Hulbert (1997) as a diagnostic trait.

As and Sb correlate with other elements at on the Arch claims but only correlate with each other at Wellgreen. These two elements are common indicator elements in many deposit types and it would be expected to find them at Wellgreen.

11.3 Targets

11.3.1 Exploration Model

Observations and results from the adjacent Arch sill were used to construct an exploration model for the Donjek sill. Both sills have the same orientation and stratigraphy with the top of the sill downslope of the basal gabbro. This suggests that the Teck showing is equivalent to the country rock mineralization at the Airways showing and that the Conwest showing is basal gabbro. Vanwermeskerken (2001) postulates an anticline with a hinge trending NW just north of the Arch grid; one limb containing the Teck and the other the Conwest, a similar structure to the Arch sill. If this is true, the richer basal gabbro located below the Teck showing in a stratigraphic sense should be situated between stations 200 to 350 on line 1200E. Tom Morgan, prospector and claim owner, sampled net textured sulphides near the edge of the ultramafic outcrop north of the Teck Showing. The exact location needs to be confirmed but this could be a sample of basal gabbro.

Table 14 summarizes values, rock types and mineralization from the Arch and Donjek sills at different stratigraphic location. So far, with very limited exposure, the Donjek sill has lower values than the Arch but the distributions and orientations appear to be the same. Drillhole A88-01 exposed a cross section of the Donjek sill at its eastern end but the sill was composed mostly of clay gouge and did not have any discernible marginal gabbro or sulphide enrichment. Values were consistent across the intersection. Further exposure of the Donjek sill is required in order to be definitive on the structure and orientation.

Table 15: Comparison of stratigraphy between the Arch and Donjek sills.

Sill	Showing	Stratigraphic position	PGE+Au (ppb)	Cu (%)	Ni (%)	description
Arch	Airways	Country rock above sill	205	0.44	1.25	3.0m wide malachite stained fracture zone in tuff.
Arch		Top	4525 (no Au)	0.76	0.60	1.0m wide disseminated mineralization in a pegmatitic gabbro.
Arch	Airways	Basal gabbro	4988	0.57	2.51	1.5m wide lens of massive pyrrhotite, pentlandite, chalcopyrite
Arch	FW	Basal gabbro	2330 (no Au recorded)	0.80	0.47	2.0 wide of limonitic gabbro
Arch		Ultramafic core	537	0.25	0.36	Disseminated sulphides
Donjek	DDH A88-01 (east end)	Entire sill	274 (no Au recorded)	0.03	0.22	Strongly sheared and serpentinized, nearly 100% clay gouge. Millerite (NiS) on fractures.
Donjek	Teck	Country rock above sill?	543	0.10	0.04	0.80 m wide pyritic shear zone in tuff.
Donjek	Teck	Top	535	0.17	0.21	Calcite and limonite altered ultramafic
Donjek	Teck	Basal gabbro?	400*	?	?	Net-textured sulphides, chalcopyrite and pentlandite
Donjek	Conwest	Basal gabbro?	154 (no Pd or Pt recorded)	0.54	0.20	Gabbro with clots of sulphides up to 10%. Pyrite, chalcopyrite, pyrrhotite, +/- pentlandite.

*(Pers. Comm. Tom Morgan). Tom collected a sample upstream from the Teck showing at the end of the ultramafic outcrop. Location and results to be confirmed.

11.3.1 Biogeochemical & Geophysical Anomalies

Some of the anomalous biogeochemical values and geophysics anomalies support the exploration model and others need further explanation or require an adjustment of the model.

Table 16: Targets from the vegetation surveys

Anomaly	Possible source	Comments
1 L1000E	Shallow glaciofluvial cover, bedrock is close, reading may be reflecting bedrock source. Anomalies at north end of line could be downslope movement from Conwest.	Coincides with VLF-EM conductors, less with magnetic highs. Coincides with NNW trend of SGH deep Ni trend Is there a buried ultramafic sill under here? The ELF survey shows a conductor across the north end of L1000E.
2 Serp. Ck. fork	Fault or fold hinge. Migration of elements along structure?	Coincides with magnetic high Coincides with fault on YGS maps Fits with exploration model.
3 North of sill	Basal section of ultramafic sill and mineralized country rock.	Coincides with VLF-EM conductors, ELF conductors and magnetic highs. Fits with exploration model.
4 South of sill	Downslope migration of elements from ultramafic sill.	This is a larger anomaly than would be expected from downslope migration. Is there another sill buried in this area? Does country rock mineralization extend further south?
SGH "drill here star"	Ultramafic sill. Steep terrain where bedrock is close.	Coincides with middle of ultramafic sill where highest Ni and Cu values are expected. Fits with exploration model.

11.3.2 Target Scenarios

Four possible scenarios to explain the anomalies are presented below with the mostly likely scenario first.

Scenario 1: The Teck and Conwest Showing are in a single sill that has been folded into an antiform along a NW hinge located just north of the Arch grid. In the SW limb, the 50^{o} dip is subparallel to topography and the surface of the sill may be close to the surface producing anomalies south of the Teck showing

- Explains biogeochemical anomalies 2, 3 and 4.
- Supported by VLF-EM and ELF conductors across north side of grid (basal sulphides and contact).

Scenario 2: The Teck and Conwest showings are in the same folded sill but the SW limb is split into a series of smaller sills or there may be a series of fold axes instead of one single axis.

- Explains biogeochemical anomalies 1, 2, 3 and 4.
- Supported by VLF-EM and ELF conductors across north side of grid (basal sulphides and contact).

- Supported by separate magnetic highs.
- The West zone in the Quill Complex splits into different sills.
- Projected location of Donjek Complex shows multiple sills that divide and pinch out.

Scenario 3: The Teck and Conwest showings are in 2 subparallel sills.

- The West zone in the Quill Complex splits into different sills.
- Projected location of sill containing Conwest Showing indicates it continues to the east.
- Projected location of Donjek Complex shows multiple sills that divide and pinch out.

Scenario 4: The Teck and Conwest showings are in the same sill but are offset along Serpentine Creek (right lateral) instead of being folded.

- Serpentine Creek is parallel to faults in the West Zone of the Quill Creek Complex, but 1 km of apparent movement is required to explain this scenario and the other faults only offset tens of metres.
- Does not explain ultramafic outcrop in the canyon.

12.0 Recommendations

12.1 Methodology

1. Continue using biogeochemical surveys where suitable to compliment traditional soil surveys. Spruce bark is a reliable medium, but make sure to note species.
2. Use VLF-EM and/or ELF surveys on the Donjek claims. VLF-EM is a cheap method and is good for an initial survey. Anomalies can be surveyed in more detail using the ELF to delineate drill targets.
3. Educate field crews on soil and plant identification. Sample quality is important, especially with the higher analytical costs of vegetation samples.
4. Collect more information when doing vegetation or soil surveys:
    - Take photos at each sample site and of any outcrops found on the grid.
    - Observe plant health when sampling. Look for evidence of chlorosis (yellowing of normally green leaves) dead branches or tops because this may indicate underlying mineralization.
5. Collect pH data on all soil samples.
6. Reanalyze higher grade rock samples for other PGEs (Ir, Os, Re, Rh, Ru).

12.2 Research & Compilation

1. Produce 2D sections from the ELF survey. Complete geophysical interpretation of surveys using geology, historic magnetic and VLF-EM surveys, and airborne electromagnetic surveys.

2. Plot other elements from the biogeochemistry survey which may help map geology such as the major elements Ca, K, Mg, Fe, P and Ti. Try different element ratios. The Wellgreen soil data can be used as a test set.
3. Review normalizing data using Carbon to reduce signatures that are produced by organic media and not underlying geology.
4. Compile geology, geophysics and geochemistry from reports including that cover the Arch complex (AR092007). The Arch complex is similar to the Donjek sill, so an understanding of its geological characteristics and signatures would assist exploration on the Donjek sill.
5. Review research into serpentine/ultramafic flora. There is a distinctive flora or change in flora associated with outcrops of ultramafic rocks that could be identified in the field.

12.3 Exploration Work

12.3.1 Arch Claims Immediate Followup

1. Prospect north of the Teck Showing to find the base of the ultramafic sill. Between grid lines 1200 and 1400, north of the Teck showing the land rises steeply and outcrop should be close to the surface. Hand trench or use a small portable excavator to expose and sample new outcrop and trace the lower contact to the northwest and southeast.
2. Starting at the Teck showing, trace and expose the top contact of the sill to the northwest and southeast.
3. Prospect the area between the top of the lines 1000 and 1200 and the Conwest showing in the vicinity of the west fork of Serpentine Creek.
4. Prospect west of the Conwest Showing to trace the base of the sill. Prospect north of the Conwest showing to find the middle and top of the sill.
5. Follow up anomalous stream sediment samples and prospect creeks for outcrops.

12.3.2 Arch Claims Longer Term Exploration

5. Continue tracing ultramafic sill to west-northwest into Arch Creek canyon and east towards drillhole A88-01.
6. If surface sample results warrant, start drill testing the sill.
7. Prospect for offshoots and parallel sills.
8. Expand vegetation and soil sampling over claims AR 1 to 9 as needed to trace ultramafic sill.

12.3.3 Donjek Claims

1. Complete the proposed phase 2 part of this project and do vegetation and soil sampling on the Donjek claims.
2. Use VLF-EM and ELF on the hillside north of Wolverine Creek where recent mapping uncovered Skolai Formation rocks.

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