Yukon Mining Incentive Program

Project 13-058

Geochemical, geophysical and geological report on the Donjek-Arch project

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 1-68	YE69001-68
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, 31-36
Jek 1-31, 32-137	YE69201-30, YE69069, 232-3347
Jek 140-155, 156-157	YD88002-YD87987, YD58911-912
Wolv 1-10, 12, 14, 16, 18, 20-21, 23	YB46972-81, 83, 85, 87, 89, 91-92, 94
Wolv 25-28	YC18509-12

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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 325 claims in the project covering 6770 hectares. The claims are centered on latitude 61° 29' 52" North and longitude 139°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 consists of 325 claims located in rocks of the Wrangellia terrane in southwestern Yukon. It is located in the same sequence of rocks that hosts the Wellgreen Deposit, 15km to the east. Known 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 3 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 surveys were tested over a known showing and will be applied to the overburden covered Donjek claims. The project was an orientation survey that tested 4 different sample media or methods on a grid across an ultramafic sill. Two methods of ground geophysics were tested over the same grid.

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. 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 layer 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° trend and then folded again along NE axes.

The field work started on August 7th, 2014 and finished on August 24th, 2014. A survey grid was flagged and cut around the Teck Showing. The location and grid design was chosen to cover a known showing in a mineralized ultramafic sill and to extend into non-mineralized ground on both sides of the showing. Four 800m long lines trending 030° were cut and flagged 200m apart. The orientation was orthogonal to the suspected orientation of the elongated sill. Prior to taking vegetation samples a reconnaissance survey was made of the forest and land cover to find consistent plant species and soil horizons on both the Arch and Donjek claims

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 sample media chosen. Humus was sampled twice, for the Soil Gas Hydrocarbon analysis method as well as for vegetation analysis. All of the methods have merit, but spruce bark is considered the most effective because of the ease of sampling and the ultratrace 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.

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 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.

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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 in spring 2014, 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 PGE-Ni-Cu exploration in the Kluane Ranges.

Conventional soil sampling has failed repeatedly on the Donjek claims. Airborne EM has 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. Additionally, survey results were applied to find targets and conduct exploration on the Arch claims.

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 to be evaluated include 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

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 claims straddle 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 within the Whitehorse Mining District and is covered by NTS maps 115G05 and 115G12. There are 325 claims in the project (see list in Appendix 1) covering 6770 hectares. The claims are centered on latitude 61° 29' 52" North and longitude 139°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.

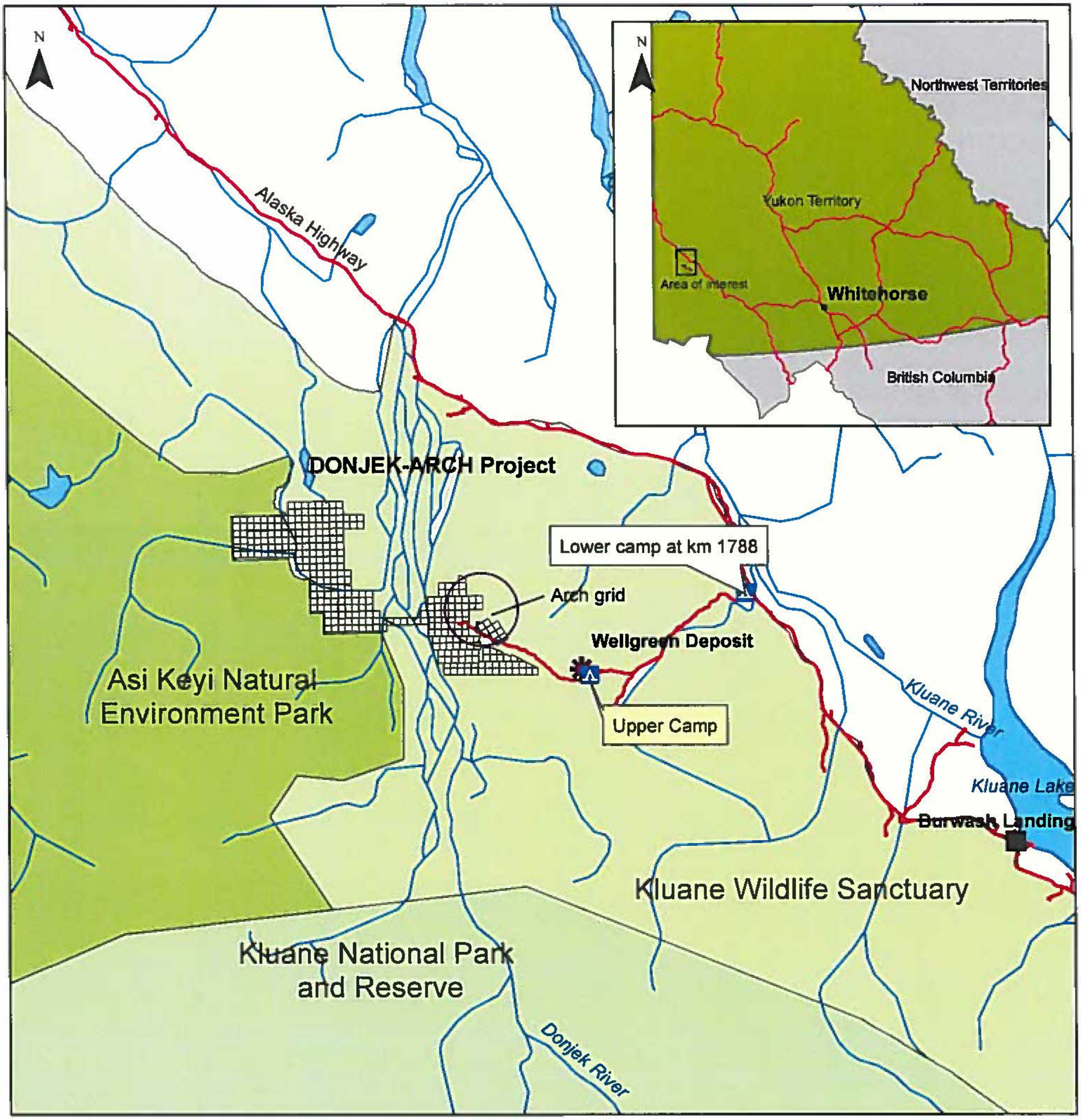


Figure 1
Location Map

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

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 Arch. 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 continue to use the name Donjek-Arch to refer to the claim blocks because that term was in common use while the fieldwork was taking place.

4.0 Access

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, following Arch Creek through the 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.

5.0 Physiography

The project is located where the Kluane Ranges meet the flat, wide Shakwak valley and the claim blocks are divided by the braided Donjek River that flows in a 1.5km wide, glaciated valley. The eastern claim block is on moderate to steep terrain, elevations range from 750 to 1900 metres. A significant depth of cover, dominated by glaciofluvial gravels is estimated to be 10 to 40m deep (figure 2).

Figure 2: 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.

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 Arch grid are along creeks, although outside of the grid, there is considerable outcrop in the Arch Creek canyon and on ridges and mountain peaks (figure 3).

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 4 Quaternary deposits). A seismic refraction survey at the mouth of Arch Creek found 40m of overburden (Power, 2004).

Figure 3: 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 on the Arch claims but the 2013 Arch grid was on a south facing slope and it may not be a true representation of the entire claim block. For comparison, in a 2012 soil sampling survey over part of the Wellgreen property closest to the Arch claims, samples could not be collected at over 50% of the sample sites, in large part due to permafrost.

6.0 Geology and 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 intrusion.

Topographically, the Kluane Ultramafic Belt is in the Kluane Ranges which are foothills to the St. Elias Mountains that stand 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° to 310°. Movement of Wrangellia northwards along the Denali Fault began in the Tertiary and continues today. The fault is steeply dipping and the order of displacement may be 100s of kilometres. The Duke River Fault is also near vertical and joins the Denali Fault southwest of Haines Junction. Between the major faults small scale faulting is common and faults increase in number to the southeast. Major fold axes are oriented in the same dominant northwest direction. The folds are tight and inclined to the southwest. A later episode has further folded the strata at right angles 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 layer 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.

The Chitistone limestone conformably overlies the Nikolai Group, varying in thickness from zero to several hundred metres. It contains a lens of gypsum and anhydrite.

The Kluane Range Suite of granitoid intrusions are found along the length of the ultramafic belt but are more prevalent in the north. The Kluane Range Suite consists of Late Early Cretaceous intrusions of granodiorite, quartz diorite, quartz monzonite and hornblende diorite.

The Amphitheatre Formation contains Tertiary freshwater clastic rocks dominated by sandstone, siltstone and conglomerate. The sediments are 60 to 575 metres thick and have a limited occurrence in the area.

Another extensive volcanic unit in the region is the Wrangell Lavas. These Miocene to Pliocene flows are volumetrically significant but are not associated with mineralization. They occur on the southwest side of Wrangellia overlapping onto the neighbouring Alexander Terrane. They are especially abundant west of the Donjek River and typically form piles 400-1000m thick. They are underlain by the Amphitheatre Formation

Table 1: Table of formations.

Q – Quaternary	Unconsolidated alluvium, colluvium and glacial deposits.
NW Miocene to Pliocene Wrangell Lavas	Mafic to felsic volcanic rock with local conglomerate.
OA Paleocene to Oligocene Amphitheatre	Clastic rocks, minor carbonaceous shale and thin coal seams, mostly fluvial and lacustrine deposits.
EKK or KD late Early Cretaceous Kluane Ranges Suite	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	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 of

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, ailiceous argillte, 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

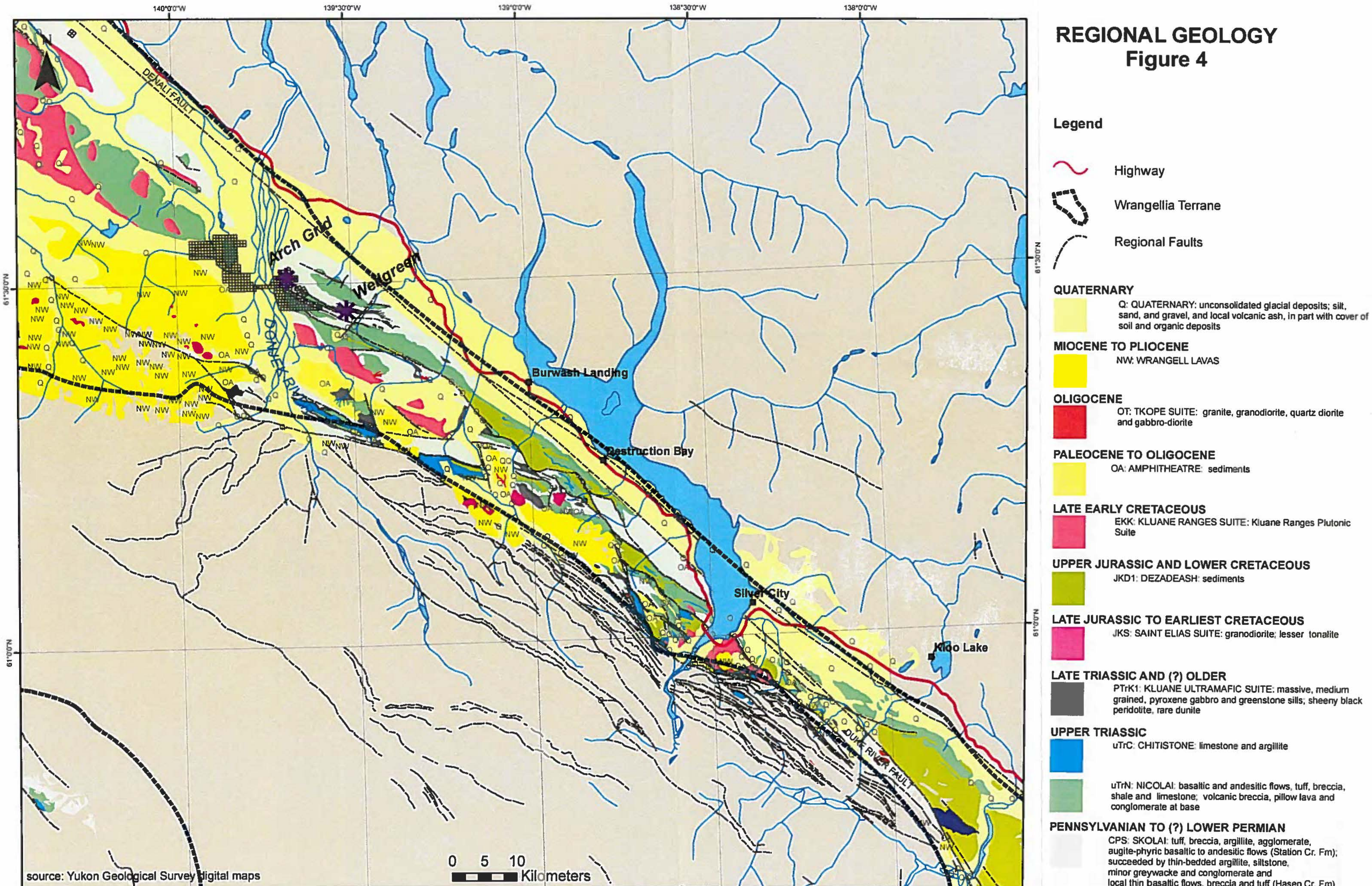
There are four main types of mineralization in the Kluane Ultramafic Belt found in all the mineralized sills from southeast Alaska to northern B.C. (Hulbert, 1997):

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. Massive sulphide Ni-Cu-PGE 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 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).



REGIONAL GEOLOGY
Figure 4

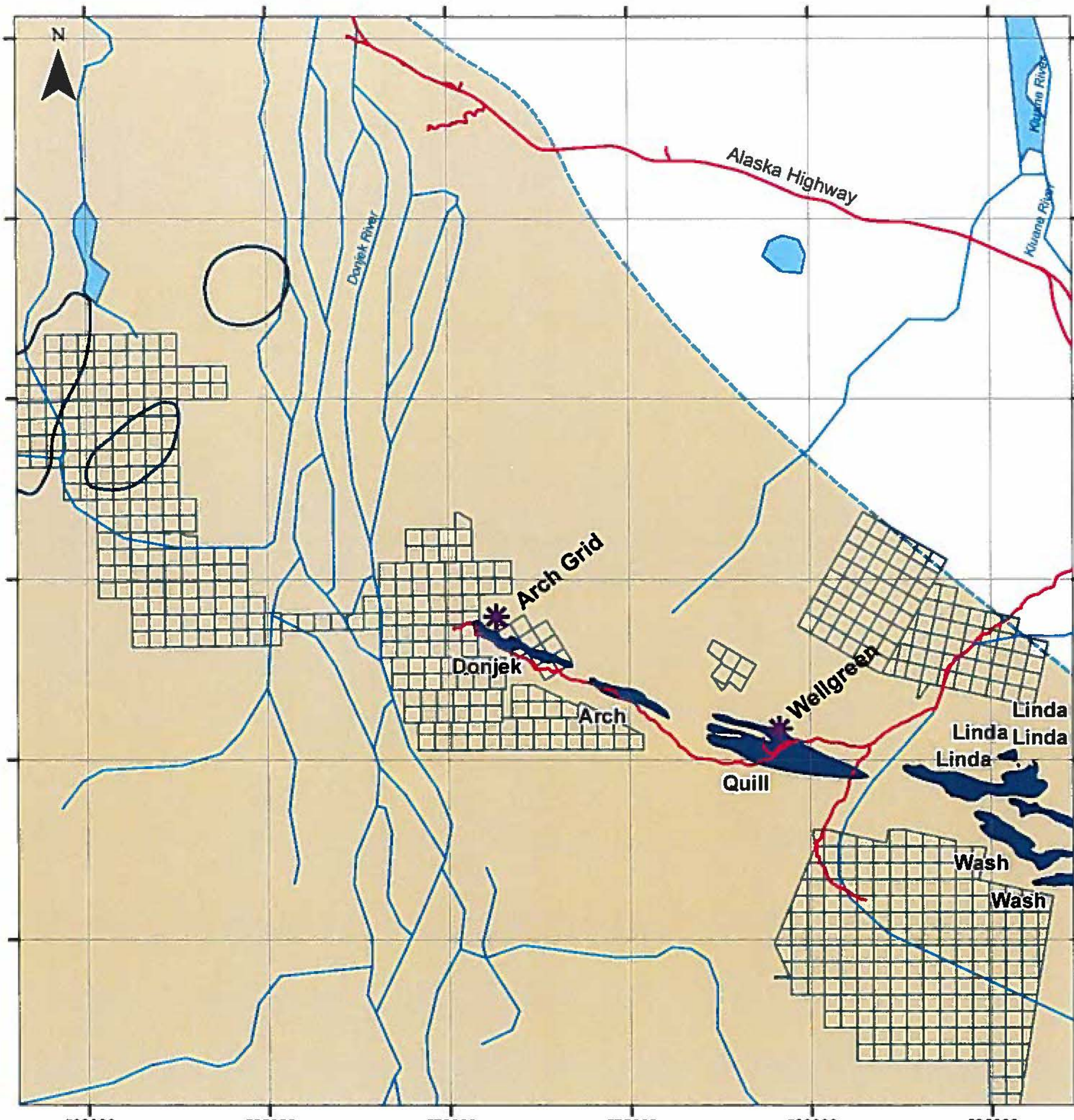


Figure 5
Ultramafic Complexes
North Central Kluane Ultramafic Belt

Legend

Kluane Ultramafic Complexes

mapped

inferred from aeromag

Wrangellia Terrane

Ashburton Claims

Roads

UTM Z7 NAD83

0 2.5 5 Kilometers

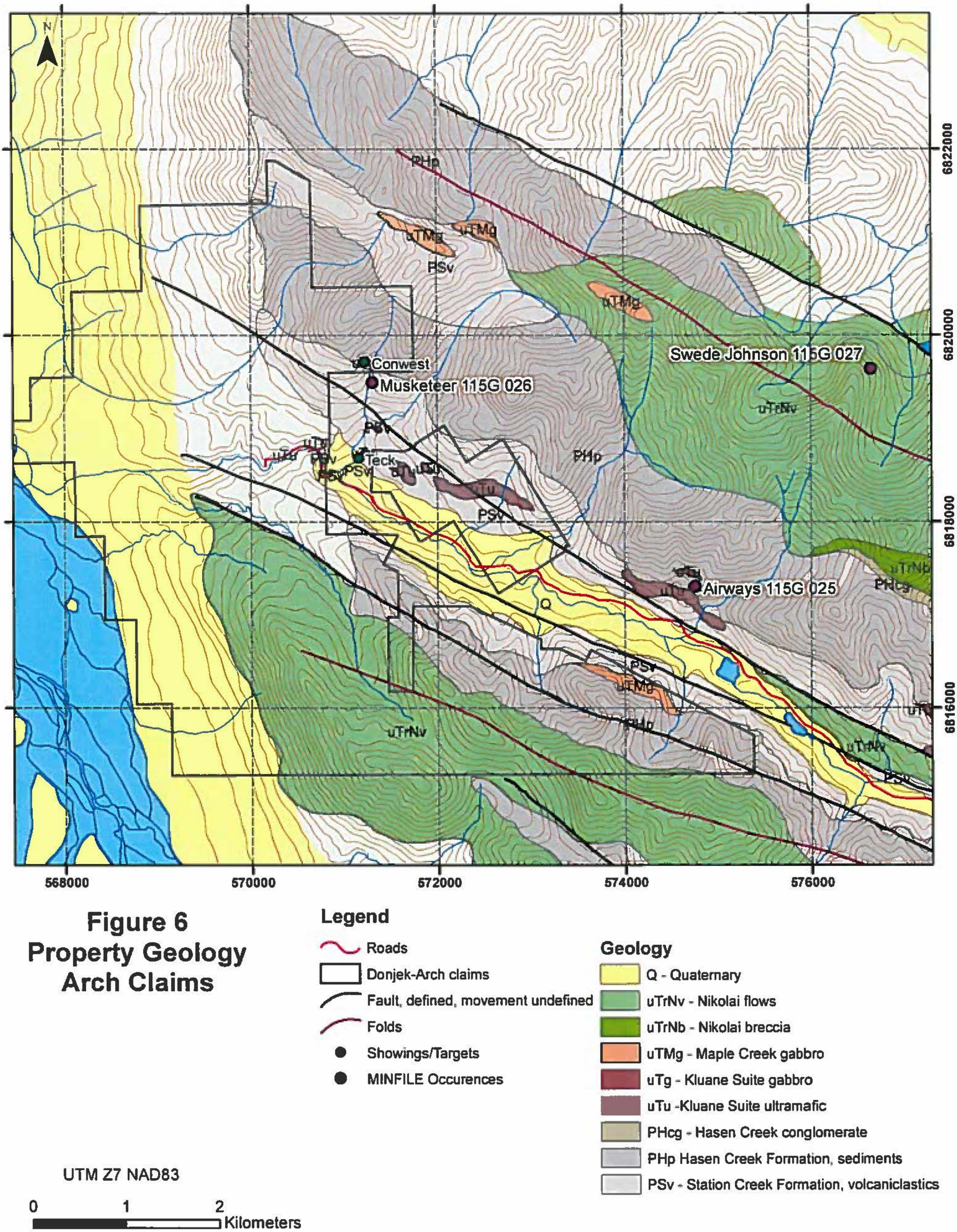


Figure 6
Property Geology
Arch Claims

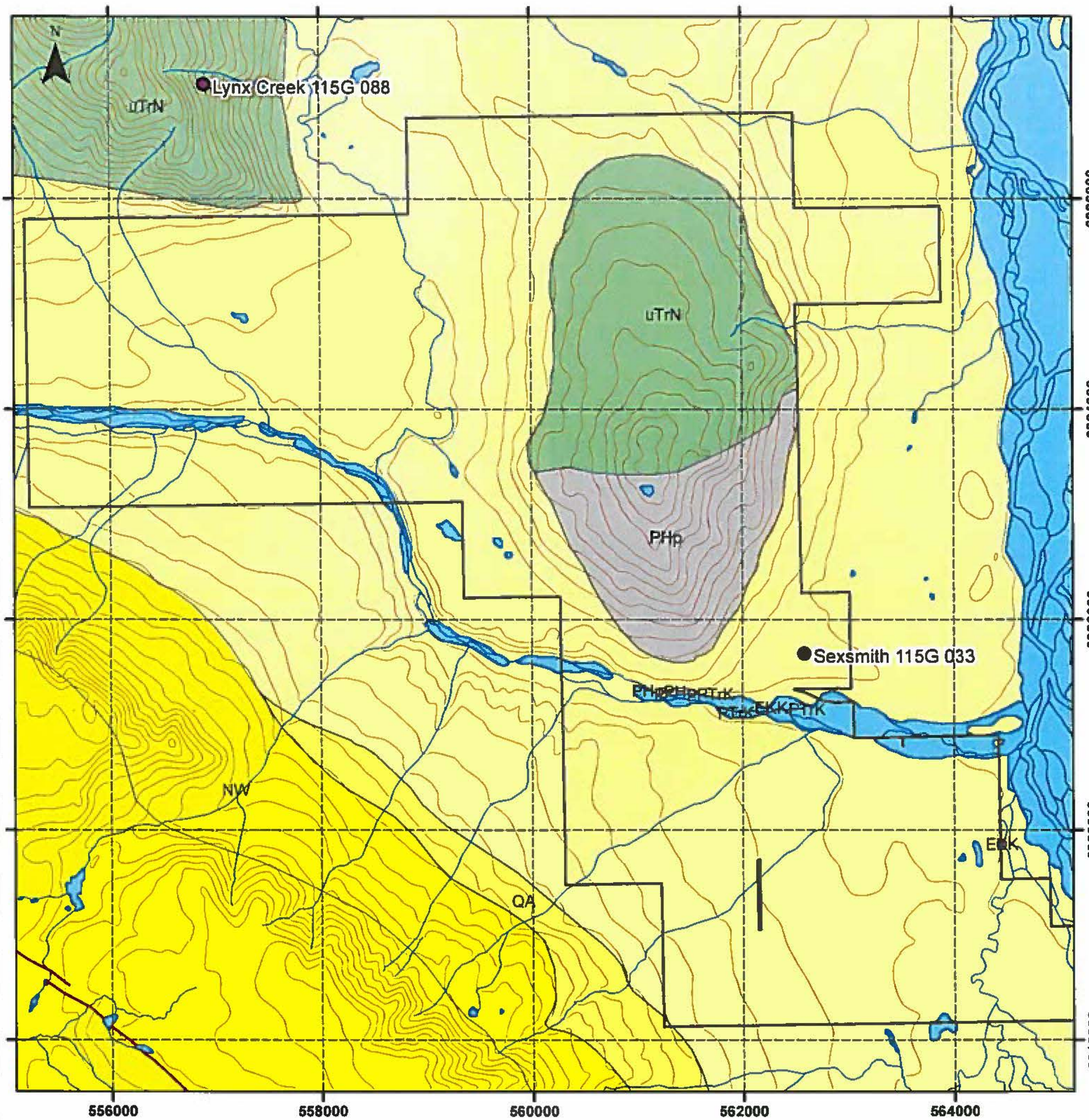


Figure 7
Property Geology
Donjek Claims

UTM Z7 NAD83

0 1 2 Kilometers

Legend

- Roads
- Donjek-Arch claims
- Folds
- MINFILE Occurences

Geology

- NW-Wrangell Lavas
- OA- Amphitheatre sediments
- EKK - Kluane Ranges Suite, intrusive
- uTrN -Nikolai volcanics undiff.
- PTrK - Kluane ultramafic suite
- PHp Hasen Creek Formation, sediments
- PSv - Station Creek Formation, volcaniclastics

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 called from west to east: Donjek, Arch, Quill Creek, Linda Creek and Wash (figure 5). 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 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° 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 6).

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 is located on the Arch claims on the north side of Arch Creek. The showing has been trenched and exposes Station Creek formation volcanics in contact with an ultramafic sill. The ultramafic 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. 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 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.

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 mouth of Arch Creek where it joins the Donjek River returned anomalous Au, Pd and Pt.

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.

6.4.2 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.

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 and Lynx Creek showing are also included because some of the work on those showing 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 and then trenched to find and sample outcrop in covered areas. An extensive soil survey from 1987 has been partially digitized and is discussed in section 11.0 of this report.

Table 2: Summary of soil sampling on the Arch claims.

Year	Soil sampling	Results
1987	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 repeatedly over the Teck showing to find buried ultramafic bodies. Both surveys are required because the intermediate to basic Nikola volcanics can produce magnetic anomalies but are not conductors unless faulted.

Table 3: 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
1987	Magnetometer and VLE-EM surveys by Kluane Joint Venture over large grid along the north side of Arch Creek.	EM conductors and linear magnetic features. Does 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.
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 has not been successful mainly due to poor soil development, permafrost and volcanic ash.

Table 4: 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 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 5: 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. 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 and 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, geologist and project manager, Cody Basset and Winston Billy, field technicians mobilized to camp on August 7th . On August 8th, Linda Lewis, geologist, spent 1 day on 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.

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 and 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 helped shape 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 (then Prophecy Platinum) from 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.
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.

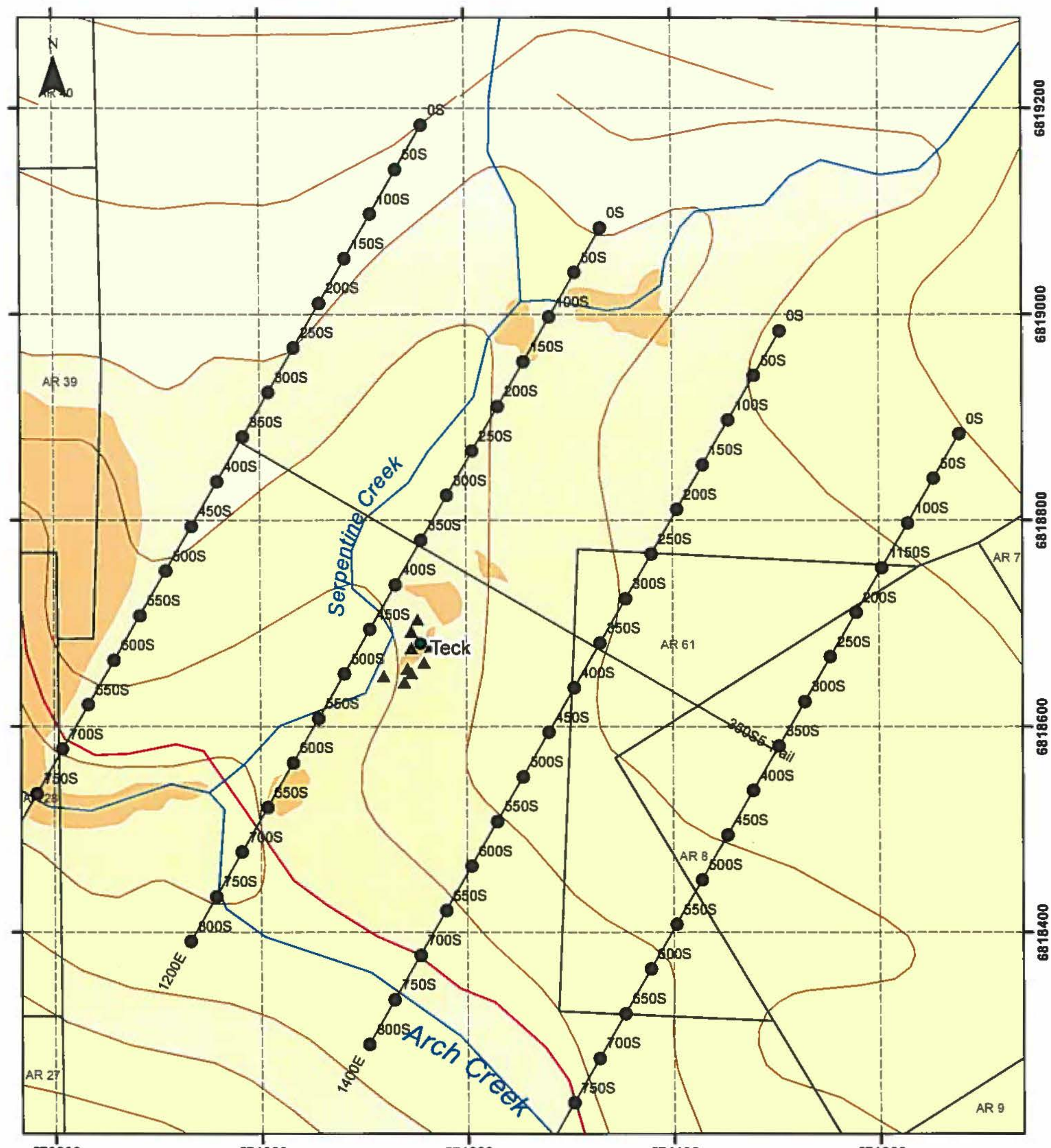


Figure 8
Bedrock exposure and 2013 grid location
Arch Claims

UTM Z7 NAD83

0 100 200 Meters

Road
Grid Station
Mini Grid Station
Donjek-Arch claims
Glaciofluvial or recent fluvial cover
Bedrock

9.2 Survey Grid

At the start of the program, a survey grid was flagged and cut around the Teck Showing. The grid was designed to center on an ultramafic sill, cover a known showing and to extend into non-mineralized ground on both sides of the showing. 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 when locating the lines and flagging stations. The grid has been slope corrected. Actual station locations may not be same as the computed locations, because GPS reception can be poor 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 well enough, or were not 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 and 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 both the Arch and Donjek claims. 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.

Prior to the start of the program, the Ah horizon (upper layer of mineral soil immediately below the organic layer) was going to be one of the sample media, but the reconnaissance survey showed that it was only reliably present in 7 out of 11 test pits. In 2 other test pits it was 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.

9.4 Geophysical surveys

Two orientation geophysical surveys were tested over the Arch grid. The original proposal was to test 3 methods, but VLF-EM was dropped because it had been done repeatedly in the past and it was not cost-effective to repeat the survey. 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 survey lines to be cut or transmitting loops. 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.

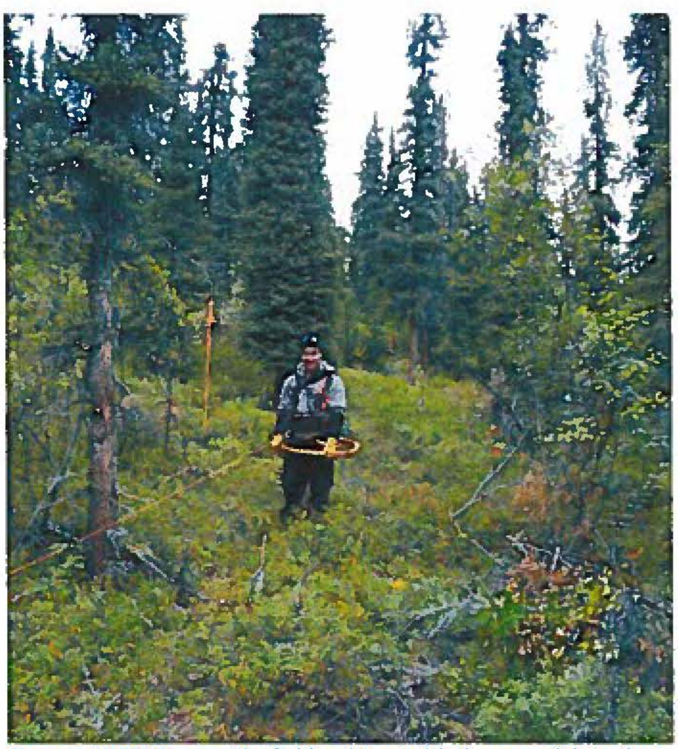


Figure 9: HLEM Survey. The field assistant with the second detecting coil waits at a station while the reading is recorded.

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°).

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 6: 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, acid digestion, ICP MS finish	74	3 field duplicates	Polypropylene drawstring bag	Hung to dry
Spruce Bark	ALS Chemex VEG41 Wash, dry, macerate, randomize, acid digestion, ICP-MS 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 20^{th}. SGH sampled 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 mediums 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 acid 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.

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.

Figure 10: Vegetation samples air drying.

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.

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 thicker outer bark, and grow a deeper and wider root system. Older trees have thicker trunks 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:

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. Outer bark is 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 bar, 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

Figure 11: Sampling spruce bark.

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.

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. Labrador tea was prepped and analyzed by ALS Chemex using the same methods as for spruce bark. See appendix 7 for sample preparation, laboratory methodology, sample database, results and maps.

9.6 Rock Sampling

Twenty one rock samples were collected during the program. See figure 12 for locations, database and results are in appendix 9. 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.

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. Sites 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. Sample locations were photographed, and information was recorded about each site.

Silt samples were grab samples taken from creeks. Enough fine material was collected to fill a kraft paper soil bag. Information and GPs coordinates were recorded for each site. See figure 13 for locations and appendix 10 for laboratory methodology, results and maps.

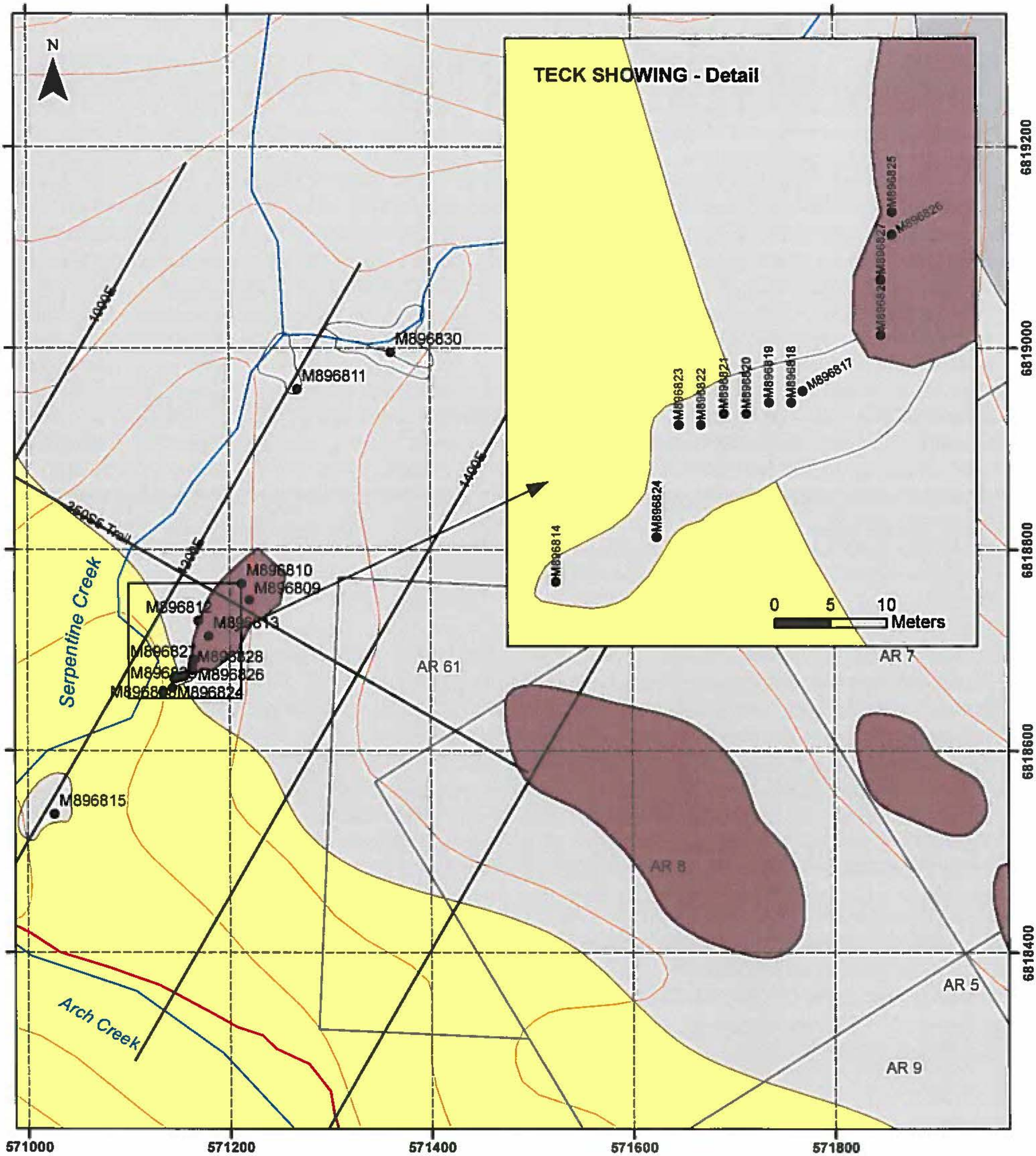


Figure 12
2013 Rock Samples
Arch Grid

UTM Z7 NAD83

0 100 200 Meters

Legend

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

Geology

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

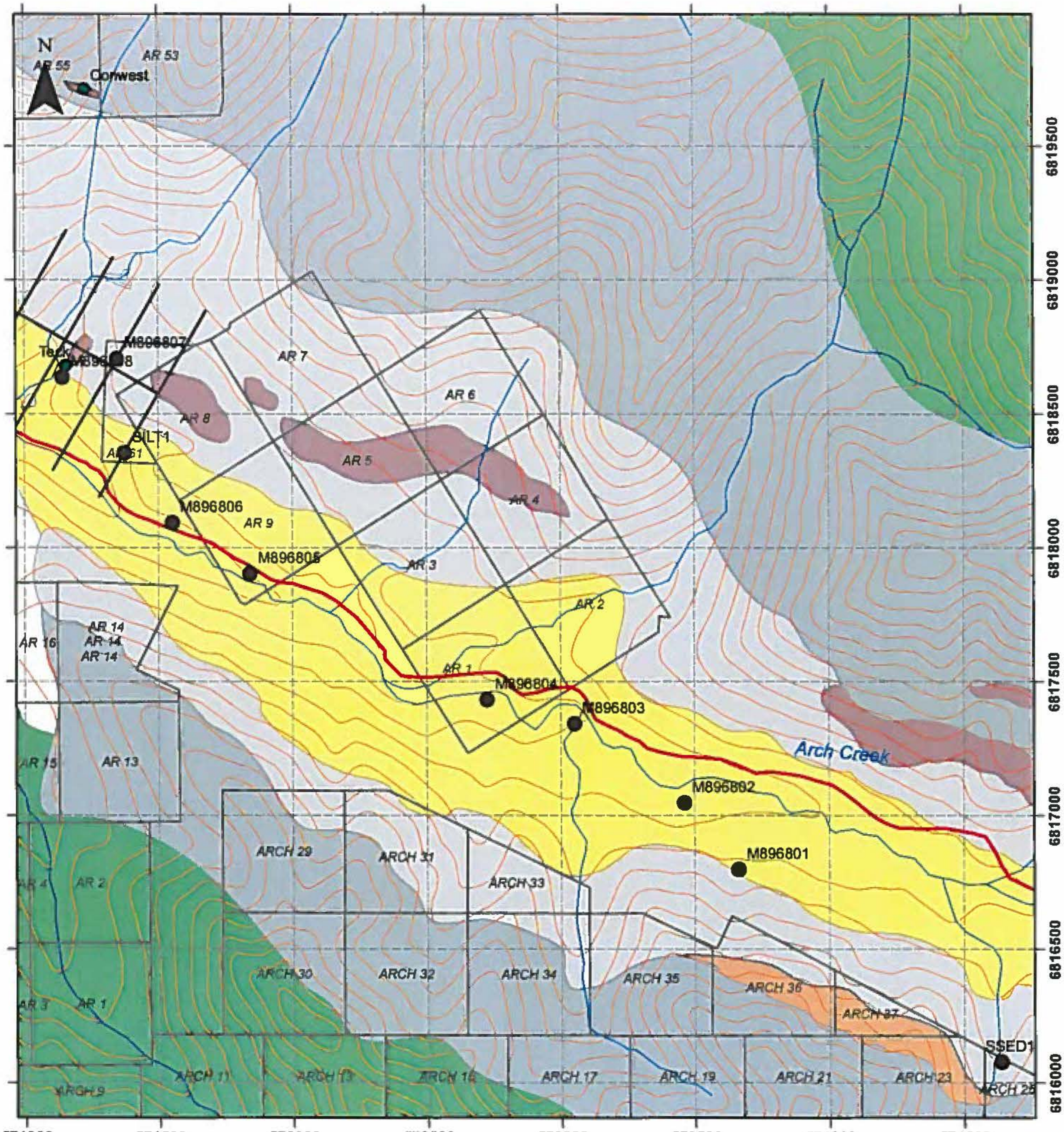


Figure 13
Stream Sediment & Silt Samples
Sample Locations

UTM Z7 NAD83

0 250 500 1,000 Meters

Legend

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

Geology

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

10.0 Results

10.1 Vegetation and Ground Cover Surveys

At the start of the program, 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.

10.2 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.

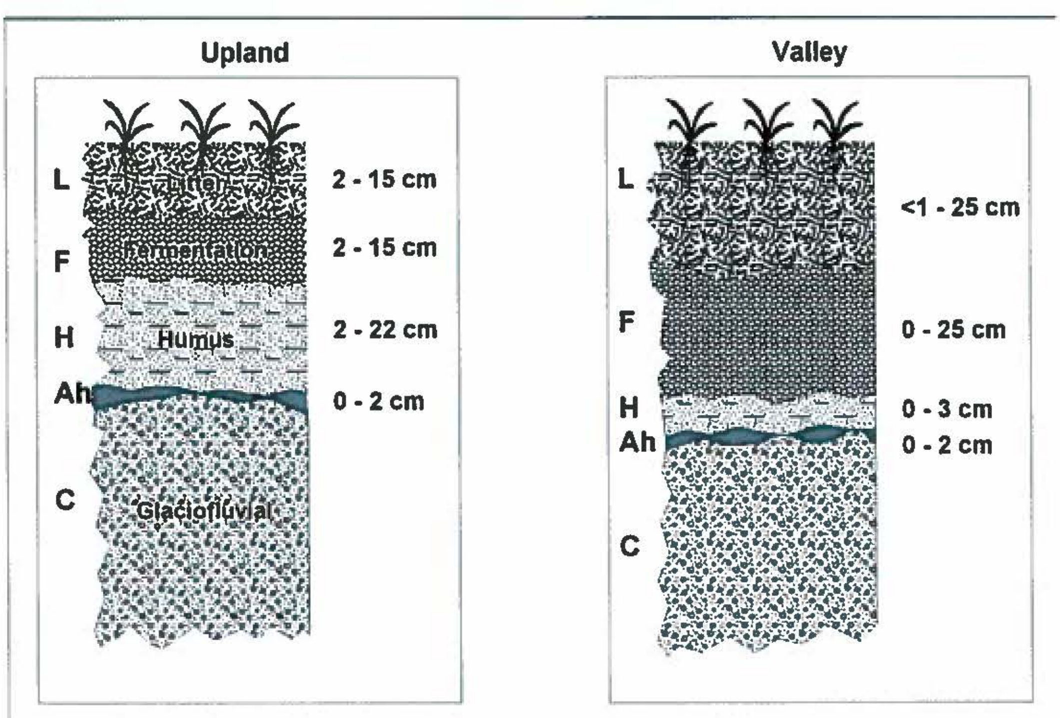


Figure 14: Typical soil profiles.

Figure 14 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 depth of the L, F and H layers is highly variable. In the upland soils the C horizon is consistently glaciofluvial gravels. One test pit on the top of Wolverine Hill on the Donjek claims had the only B horizon found during this project.

10.3 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.

10.3.1 HLEM

The HLEM results are presented as both in-phase and first quadrature images. Overall the data show significant variability in the sedimentary country rock relative to the Teck 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.

10.3.2 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.

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.

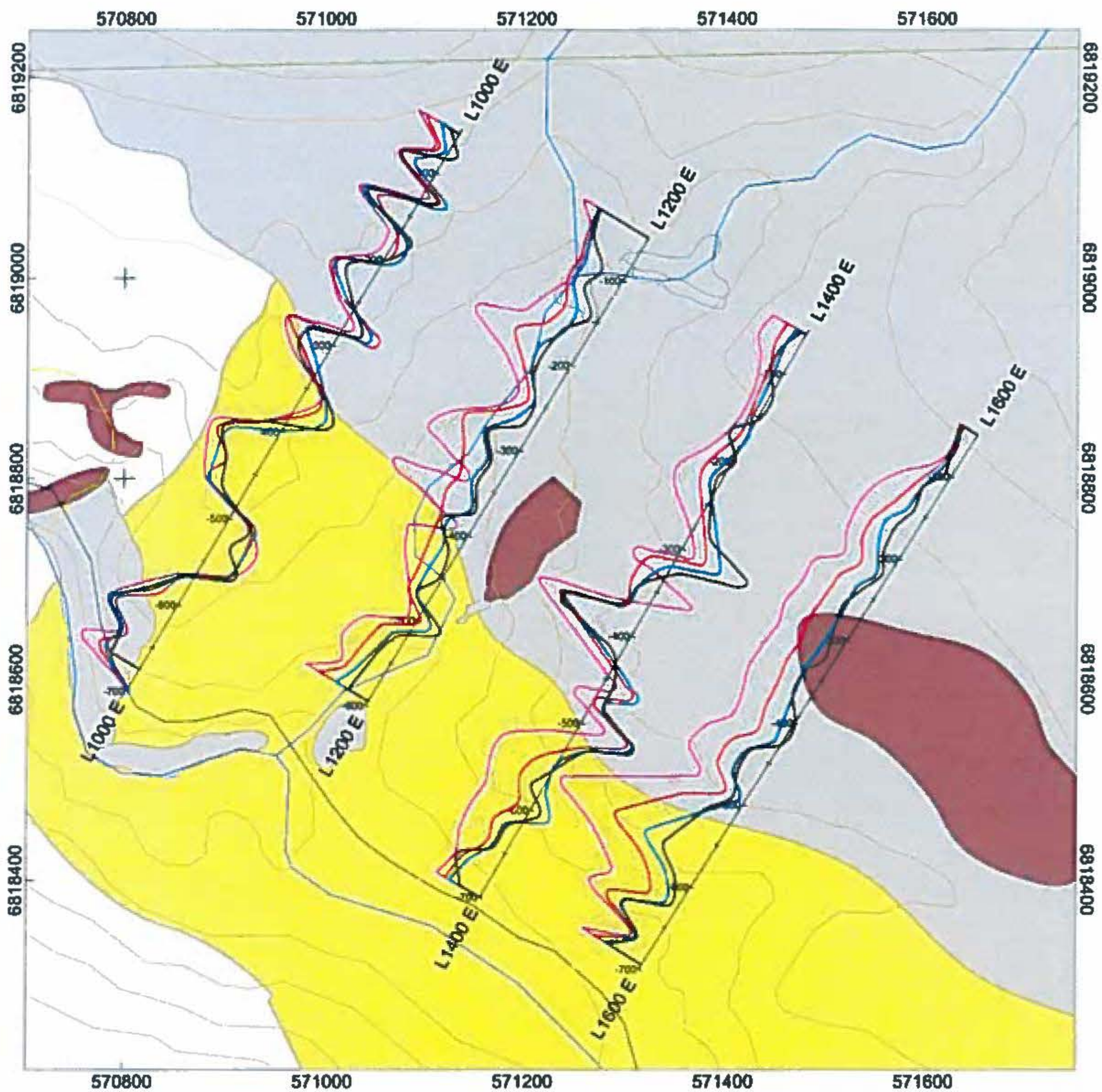
10.3.3 VLF-EM

The historic VLF-EM surveys from 1955 and 1987 show linear conductors trending northwest across the grid. The 1987 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 can explain 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 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 1987 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 1955 and 1987 surveys, but the 1987 survey grid did not cover the Teck Showing.



LEGEND

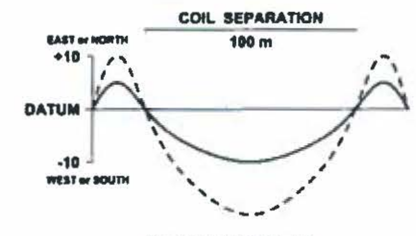
HORIZONTAL LOOP EM

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

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

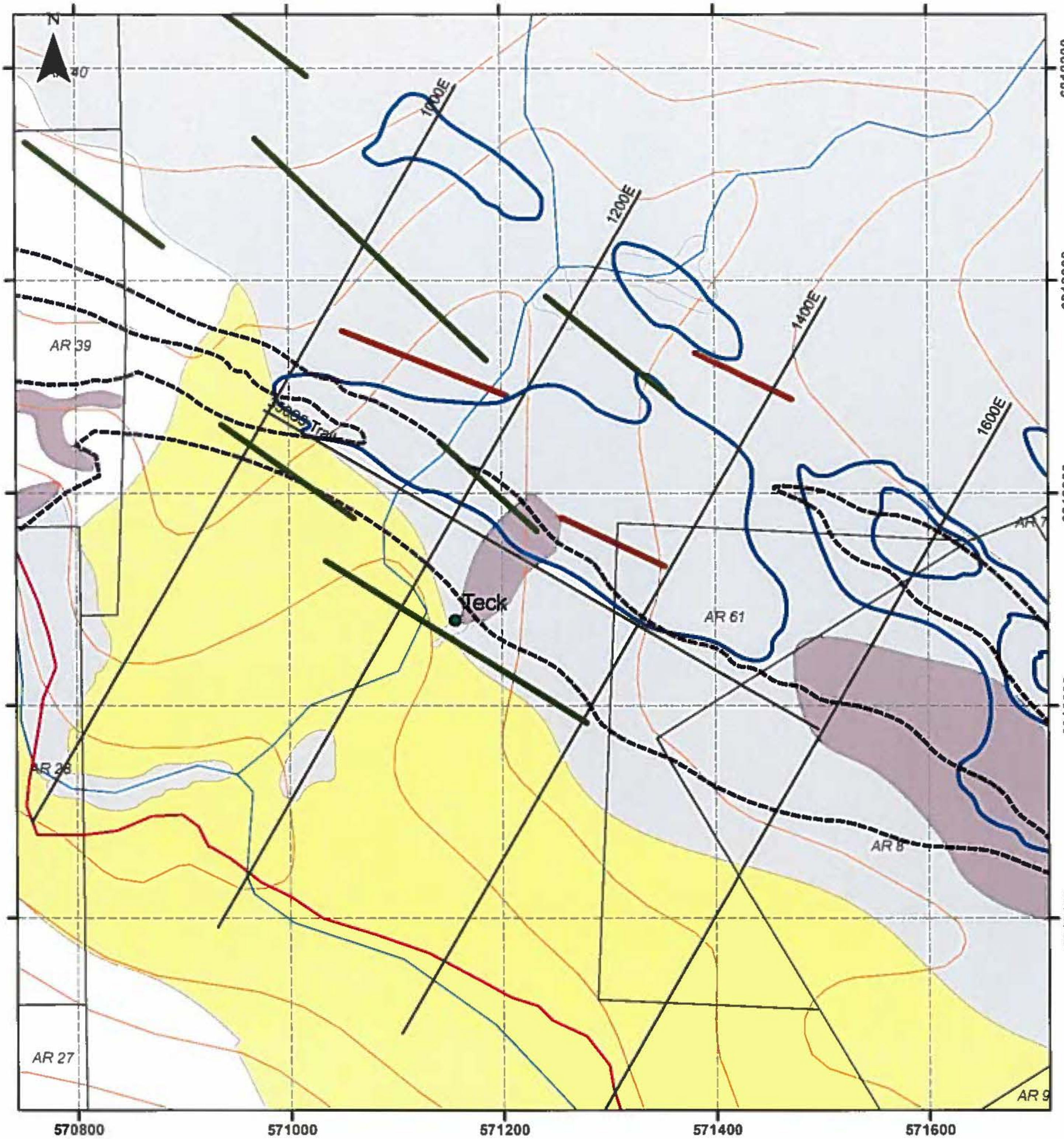


Figure 16
Historical Geophysics
Arch Grid
VLF-EM & Magnetic Highs

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
- Donjek Arch Claims

Geology

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

1988 surveys did not cover Teck Showing

10.4 Biogeochemistry

10.4.1 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 7: 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	14.5
Labrador Tea – ALS Chemex VEG41	2.5	3	1	1	1.5	8.5

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.

10.4.2 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 8: 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.

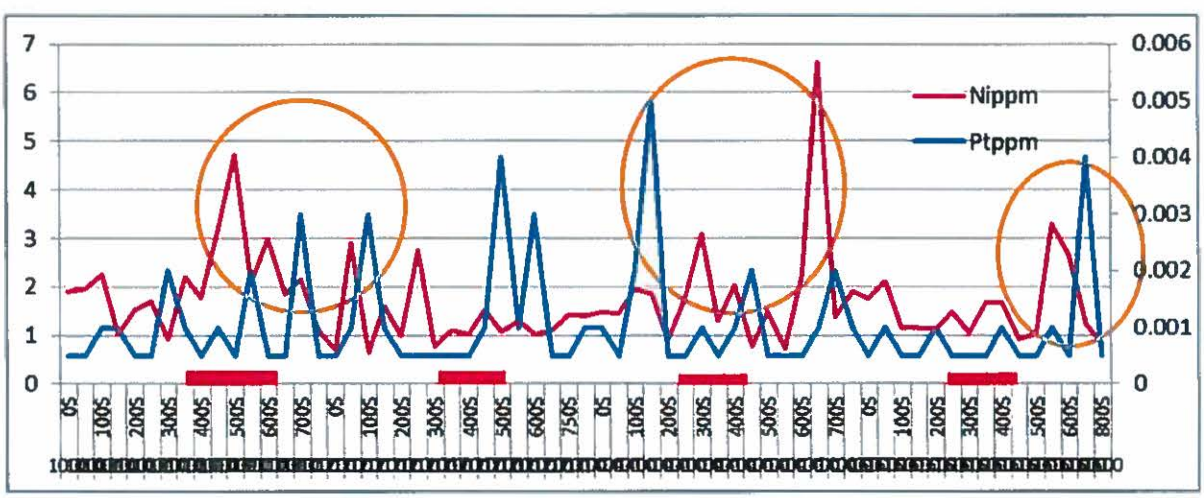


Figure 17: Chart illustrating offset between base (Nickel) and precious (Platinum) metal values over the Arch Grid. Red bars are the expected location of the ultramafic sill. Data source is spruce bark samples and does not include samples from the mini grid around the Teck Showing.

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.

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.

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.

Spruce bark 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.

10.4.3 New Anomalies

There are 4 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. There is 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 9: 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.

10.5 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.

Figure 19: 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 by 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 10: 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 LISTWANITE	1.8	0.168	0.288	6.44	441.0	104.00	637.00	586.00	1395.00	3.7
M896826	TUFF OR LISTWANITE	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

10.6 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.

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 recent fluvial material from a placer creek with known Au and PGE values. 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 11: 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

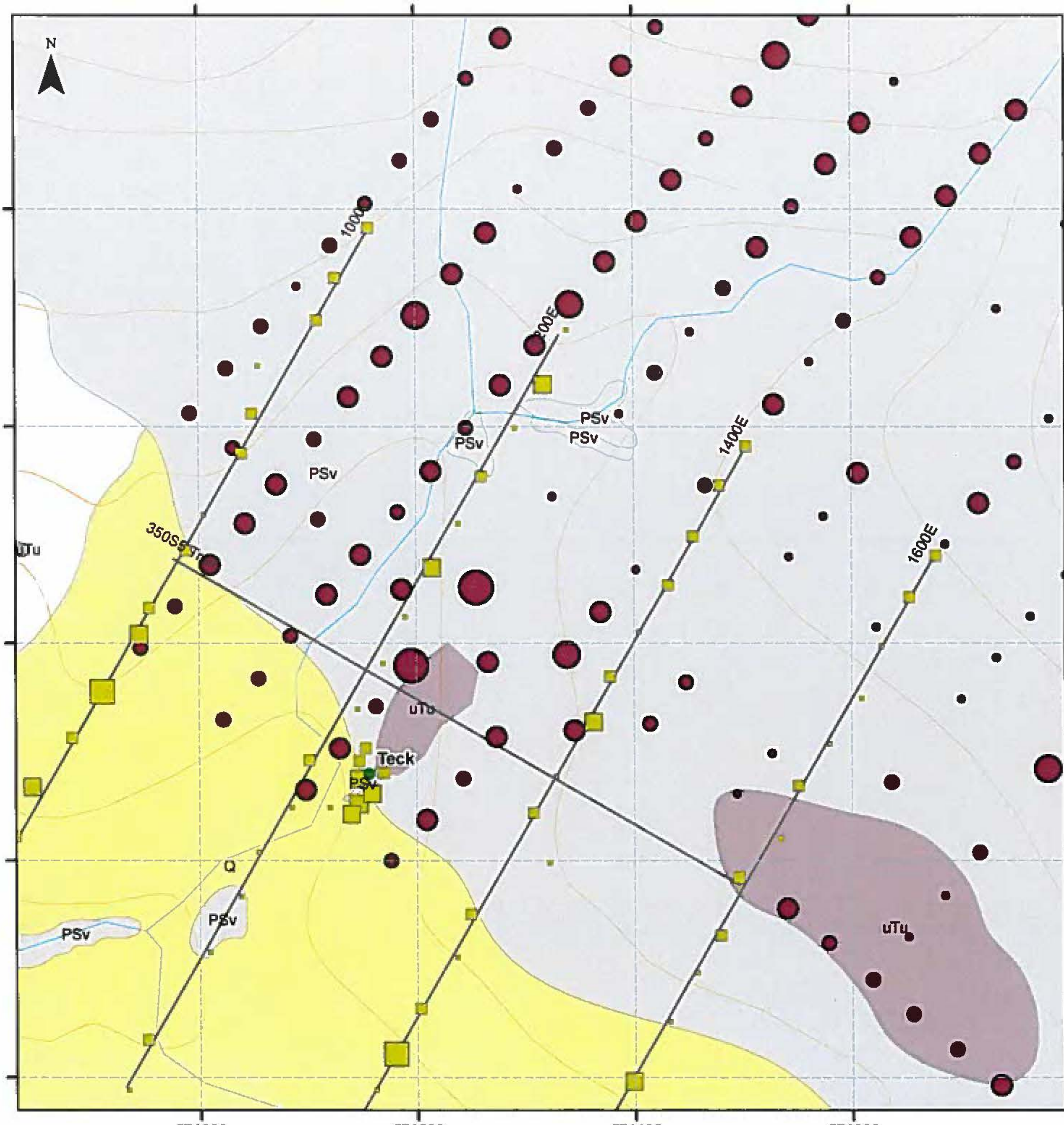


Figure 22
Soil Sample &
Spruce Bark Sample Comparison
Ni (ppm)

UTM Z7 NAD83

0 100 200 Meters

Legend

Showings/Targets

Bark Samples
- 0.640000 - 1.400000
- 1.400001 - 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
- PSv - Station Creek Formation, 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 or the overall distribution of anomalies should be used.

Partial results from a 1987 soil sampling program were digitized. The 1987 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.

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, 20012). 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 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 12: 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 13: 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 what would be expected from ultramafic sills: Co, Cu, Fe, Mg, Ni, Pt, Pd and Ag. The Arch grid samples show fewer correlations and 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. 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 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.

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. Further exposure of the Donjek sill is required in order to be definitive on the structure and orientation.

Table 14: Comparison of stratigraphy between the Arch and Donjek sills.

Sill	Showing	Stratigraphic position	PGE+Au	Cu	Ni	description
Arch	Airways	Country rock above sill	205 ppb	0.44%	1.25%	3.0m wide malachite stained fracture zone in tuff.
Arch		Top	4525 (no Au recorded)	0.76%	0.60%	1.0m wide disseminated mineralization in a pegmatitic gabbro.
Arch	Airways	Basal gabbro	4988 ppb	0.57%	2.51%	1.5m wide lens of massive pyrrhotite, pentlandite, chalcopyrite
Arch	FW	Basal gabbro	2330 ppb (no Au recorded)	0.80%	0.47%	2.0 wide of limonitic gabbro
Arch		Ultramafic core	537 ppb	0.25%	0.36%	Disseminated sulphides
Donjek	Teck	Country rock above sill?	543 ppb	0.10%	0.04%	0.80 m wide pyritic shear zone in tuff.
Donjek	Teck	Top	535 ppb	0.17%	0.21%	Calcite and limonite altered ultramafic
Donjek	Teck	Basal gabbro?	400 ppb*	?	?	Net-textured sulphides, chalcopyrite and pentlandite
Donjek	Conwest	Basal gabbro?	154 ppb (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 and 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 15: 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

Three 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.

- Supported by biogeochemical anomalies 2, 3 and possibly 4

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.

- Supported by biogeochemical anomalies 1, 2, 3 and 4.
- Supported by VLF-EM and ELF conductors across north side of grid.
- Supported by two separate magnetic highs on east side of grid.
- Outcrop in Arch canyon in different location than magnetic high.

Scenario 3: The Teck and Conwest showings are in the same sill but are offset along Serpentine Creek (right lateral) instead of being folded.

- 1 km of apparent movement required to explain this scenario.
- Does not explain ultramafic outcrop in the canyon.

12.0 Recommendations

12.1 Methodology

1. Continue using biogeochemical surveys where suitable to compliment traditional spoil 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.

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 be beneficial to work on the Donjek.
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 closer to the surface. Hand trench or use a small portable excavator to expose and sample new outcrop.
2. Hand trench or use a small portable excavator to follow the lower contacts of the ultramafic sill.
3. Starting at the Teck showing, trace and expose the top contact of the sill to the northwest and southeast.
4. 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.
5. 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.
6. Follow up anomalous stream sediment samples and prospect creeks for outcrops.

12.3.2 Arch Claims Longer Term Exploration

1. Continue tracing ultramafic sill to west into Arch Creek canyon and towards the Donjek River.
2. 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.

13.0 References

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Appendix 1: List of claims

Hard copy: claim list

Digital: Microsoft excel spreadsheet version of claim list

LIST OF CLAIMS

GRANT NUMBER	TYPE	STATUS	NAME AND NUMBE	OWNER	STAKING DATE	RECORDED DATE	EXPIRY DATE	DISTRICT
YB46972	Quartz	Active	WOLV 1	StrataGold Corporation - 100%*	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB46973	Quartz	Active	WOLV 2	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB46974	Quartz	Active	WOLV 3	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB46975	Quartz	Active	WOLV 4	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB46976	Quartz	Active	WOLV 5	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2017	Whitehorse
YB46977	Quartz	Active	WOLV 6	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2017	Whitehorse
YB46978	Quartz	Active	WOLV 7	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2017	Whitehorse
YB46979	Quartz	Active	WOLV 8	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2017	Whitehorse
YB46980	Quartz	Active	WOLV 9	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2015	Whitehorse
YB46981	Quartz	Active	WOLV 10	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2017	Whitehorse
YB46983	Quartz	Active	WOLV 12	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2017	Whitehorse
YB46985	Quartz	Active	WOLV 14	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2017	Whitehorse
YB46987	Quartz	Active	WOLV 16	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2017	Whitehorse
YB46989	Quartz	Active	WOLV 18	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2017	Whitehorse
YB46991	Quartz	Active	WOLV 20	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2017	Whitehorse
YB46992	Quartz	Active	WOLV 21	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2017	Whitehorse
YB46994	Quartz	Active	WOLV 23	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2017	Whitehorse
YB46996	Quartz	Active	DON 1	StrataGold Corporation - 100%*	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB46997	Quartz	Active	DON 2	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB46998	Quartz	Active	DON 3	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB46999	Quartz	Active	DON 4	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47000	Quartz	Active	DON 5	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47001	Quartz	Active	DON 6	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47002	Quartz	Active	DON 7	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB47003	Quartz	Active	DON 8	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB47004	Quartz	Active	DON 9	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB47005	Quartz	Active	DON 10	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YB47006	Quartz	Active	DON 11	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47007	Quartz	Active	DON 12	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47008	Quartz	Active	DON 13	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47009	Quartz	Active	DON 14	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47010	Quartz	Active	DON 15	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47011	Quartz	Active	DON 16	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47012	Quartz	Active	DON 17	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47013	Quartz	Active	DON 18	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47014	Quartz	Active	DON 19	StrataGold Corporation - 100%	7/3/1994	7/14/1994	1/13/2016	Whitehorse
YB47015	Quartz	Active	DON 20	StrataGold Corporation - 100%	7/3/1994	7/14/1994	4/13/2016	Whitehorse
YC18509	Quartz	Active	WOLV 25	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2017	Whitehorse
YC18510	Quartz	Active	WOLV 26	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2017	Whitehorse
YC18511	Quartz	Active	WOLV 27	StrataGold Corporation - 100%	2/26/2000	3/7/2000	3/7/2017	Whitehorse
YC18512	Quartz	Active	WOLV 28	StrataGold Corporation - 100%	2/26/2000	3/7/2000	3/7/2017	Whitehorse
YC18523	Quartz	Active	DON 21	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2016	Whitehorse
YC18531	Quartz	Active	DON 29	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2016	Whitehorse
YC18532	Quartz	Active	DON 30	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2016	Whitehorse
YC18533	Quartz	Active	DON 31	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2016	Whitehorse
YC18534	Quartz	Active	DON 32	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2016	Whitehorse
YC18535	Quartz	Active	DON 33	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2016	Whitehorse
YC18536	Quartz	Active	DON 34	StrataGold Corporation - 100%	2/26/2000	3/7/2000	6/7/2016	Whitehorse
YC18892	Quartz	Active	AR 61	Tom Morgan - 100%	9/18/2000	9/20/2000	9/20/2017	Whitehorse
YD58910	Quartz	Active	ARCH 38	Bill Harris - 100%	8/16/2012	8/17/2012	8/17/2016	Whitehorse
YD58911	Quartz	Active	JEK 156	Bill Harris - 100%	7/16/2012	8/17/2012	8/17/2016	Whitehorse
YD58912	Quartz	Active	JEK 157	Bill Harris - 100%	8/16/2012	8/17/2012	8/17/2016	Whitehorse
YD58913	Quartz	Active	ARCH 39	Bill Harris - 100%	8/16/2012	8/24/2012	8/22/2016	Whitehorse
YD58914	Quartz	Active	ARCH 40	Bill Harris - 100%	8/16/2012	8/24/2012	8/22/2016	Whitehorse
YD58915	Quartz	Active	ARCH 41	Bill Harris - 100%	8/16/2012	8/24/2012	8/22/2015	Whitehorse
YD58916	Quartz	Active	ARCH 42	Bill Harris - 100%	8/16/2012	8/24/2012	8/22/2015	Whitehorse
YD58917	Quartz	Active	ARCH 43	Bill Harris - 100%	8/16/2012	8/24/2012	8/22/2015	Whitehorse
YD87987	Quartz	Active	JEK 155	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87988	Quartz	Active	JEK 154	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87989	Quartz	Active	JEK 153	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87990	Quartz	Active	JEK 152	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87991	Quartz	Active	JEK 151	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87992	Quartz	Active	JEK 150	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87993	Quartz	Active	JEK 149	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87994	Quartz	Active	JEK 148	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87995	Quartz	Active	JEK 147	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87996	Quartz	Active	JEK 146	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87997	Quartz	Active	JEK 145	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse

GRANT NUMBER	TYPE	STATUS	NAME AND NUMBE	OWNER	STAKING DATE	RECORDED DATE	EXPIRY DATE	DISTRICT
YD87998	Quartz	Active	JEK 144	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD87999	Quartz	Active	JEK 143	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD88000	Quartz	Active	JEK 142	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD88001	Quartz	Active	JEK 141	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YD88002	Quartz	Active	JEK 140	Gerald Asp - 100%	9/21/2011	10/13/2011	10/13/2016	Whitehorse
YE69001	Quartz	Active	AR 1	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69002	Quartz	Active	AR 2	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69003	Quartz	Active	AR 3	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69004	Quartz	Active	AR 4	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69005	Quartz	Active	AR 5	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69006	Quartz	Active	AR 6	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69007	Quartz	Active	AR 7	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69008	Quartz	Active	AR 8	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69009	Quartz	Active	AR 9	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69010	Quartz	Active	AR 10	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69011	Quartz	Active	AR 11	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69012	Quartz	Active	AR 12	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69013	Quartz	Active	AR 13	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69014	Quartz	Active	AR 14	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69014	Quartz	Active	AR 14	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69014	Quartz	Active	AR 14	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69015	Quartz	Active	AR 15	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69016	Quartz	Active	AR 16	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69017	Quartz	Active	AR 17	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69018	Quartz	Active	AR 18	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69019	Quartz	Active	AR 19	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69020	Quartz	Active	AR 20	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69021	Quartz	Active	AR 21	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69022	Quartz	Active	AR 22	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69023	Quartz	Active	AR 23	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69024	Quartz	Active	AR 24	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69025	Quartz	Active	AR 25	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69026	Quartz	Active	AR 26	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69027	Quartz	Active	AR 27	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69028	Quartz	Active	AR 28	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69029	Quartz	Active	AR 29	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69030	Quartz	Active	AR 30	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69031	Quartz	Active	AR 31	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69032	Quartz	Active	AR 32	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69033	Quartz	Active	AR 33	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69034	Quartz	Active	AR 34	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69035	Quartz	Active	AR 35	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69036	Quartz	Active	AR 36	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69037	Quartz	Active	AR 37	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69038	Quartz	Active	AR 38	Tom Morgan - 100%	7/22/2011	8/18/2011	8/18/2016	Whitehorse
YE69039	Quartz	Active	AR 39	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69040	Quartz	Active	AR 40	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69041	Quartz	Active	AR 41	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69042	Quartz	Active	AR 42	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69043	Quartz	Active	AR 43	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69044	Quartz	Active	AR 44	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69045	Quartz	Active	AR 45	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69046	Quartz	Active	AR 46	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69047	Quartz	Active	AR 47	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69048	Quartz	Active	AR 48	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69049	Quartz	Active	AR 49	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69050	Quartz	Active	AR 50	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69051	Quartz	Active	AR 51	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69052	Quartz	Active	AR 52	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69053	Quartz	Active	AR 53	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69054	Quartz	Active	AR 54	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69055	Quartz	Active	AR 55	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69056	Quartz	Active	AR 56	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69057	Quartz	Active	AR 57	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69058	Quartz	Active	AR 58	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69059	Quartz	Active	AR 59	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69060	Quartz	Active	AR 60	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69061	Quartz	Active	AR 61	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69062	Quartz	Active	AR 62	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69063	Quartz	Active	AR 63	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse

GRANT NUMBER	TYPE	STATUS	NAME AND NUMBE	OWNER	STAKING DATE	RECORDED DATE	EXPIRY DATE	DISTRICT
YE69064	Quartz	Active	AR 64	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69065	Quartz	Active	AR 65	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69066	Quartz	Active	AR 66	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69067	Quartz	Active	AR 67	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69068	Quartz	Active	AR 68	Tom Morgan - 100%	7/22/2011	8/22/2011	8/22/2015	Whitehorse
YE69069	Quartz	Active	JEK 31	Bill Harris - 100%	7/24/2011	8/18/2011	8/22/2015	Whitehorse
YE69070	Quartz	Active	AR 70	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69071	Quartz	Active	AR 71	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69072	Quartz	Active	AR 72	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69073	Quartz	Active	AR 73	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69074	Quartz	Active	AR 74	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69075	Quartz	Active	AR 75	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69076	Quartz	Active	AR 76	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69077	Quartz	Active	AR 77	Tom Morgan - 100%	7/24/2011	8/22/2011	8/22/2015	Whitehorse
YE69201	Quartz	Active	JEK 1	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69202	Quartz	Active	JEK 2	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69203	Quartz	Active	JEK 3	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69204	Quartz	Active	JEK 4	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69205	Quartz	Active	JEK 5	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69206	Quartz	Active	JEK 6	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69207	Quartz	Active	JEK 7	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69208	Quartz	Active	JEK 8	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69209	Quartz	Active	JEK 9	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69210	Quartz	Active	JEK 10	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69211	Quartz	Active	JEK 11	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69212	Quartz	Active	JEK 12	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69213	Quartz	Active	JEK 13	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69214	Quartz	Active	JEK 14	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69215	Quartz	Active	JEK 15	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69216	Quartz	Active	JEK 16	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69217	Quartz	Active	JEK 17	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69218	Quartz	Active	JEK 18	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69219	Quartz	Active	JEK 19	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69220	Quartz	Active	JEK 20	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69221	Quartz	Active	JEK 21	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69222	Quartz	Active	JEK 22	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69223	Quartz	Active	JEK 23	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69224	Quartz	Active	JEK 24	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69225	Quartz	Active	JEK 25	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69226	Quartz	Active	JEK 26	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69227	Quartz	Active	JEK 27	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69228	Quartz	Active	JEK 28	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69229	Quartz	Active	JEK 29	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69230	Quartz	Active	JEK 30	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69232	Quartz	Active	JEK 32	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69233	Quartz	Active	JEK 33	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69234	Quartz	Active	JEK 34	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69235	Quartz	Active	JEK 35	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69236	Quartz	Active	JEK 36	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69237	Quartz	Active	JEK 37	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69238	Quartz	Active	JEK 38	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69239	Quartz	Active	JEK 39	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69240	Quartz	Active	JEK 40	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69241	Quartz	Active	JEK 41	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69242	Quartz	Active	JEK 42	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69243	Quartz	Active	JEK 43	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69244	Quartz	Active	JEK 44	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69245	Quartz	Active	JEK 45	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69246	Quartz	Active	JEK 46	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69247	Quartz	Active	JEK 47	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69248	Quartz	Active	JEK 48	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69249	Quartz	Active	JEK 49	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69250	Quartz	Active	JEK 50	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69251	Quartz	Active	JEK 51	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69252	Quartz	Active	JEK 52	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69253	Quartz	Active	JEK 53	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69254	Quartz	Active	JEK 54	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69255	Quartz	Active	JEK 55	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69256	Quartz	Active	JEK 56	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69257	Quartz	Active	JEK 57	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse

GRANT NUMBER	TYPE	STATUS	NAME AND NUMBE	OWNER	STAKING DATE	RECORDED DATE	EXPIRY DATE	DISTRICT
YE69258	Quartz	Active	JEK 58	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69259	Quartz	Active	JEK 59	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69260	Quartz	Active	JEK 60	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69261	Quartz	Active	JEK 61	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69262	Quartz	Active	JEK 62	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69263	Quartz	Active	JEK 63	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69264	Quartz	Active	JEK 64	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69265	Quartz	Active	JEK 65	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69266	Quartz	Active	JEK 66	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69267	Quartz	Active	JEK 67	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69268	Quartz	Active	JEK 68	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69269	Quartz	Active	JEK 69	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69270	Quartz	Active	JEK 70	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69271	Quartz	Active	JEK 71	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69272	Quartz	Active	JEK 72	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69273	Quartz	Active	JEK 73	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69274	Quartz	Active	JEK 74	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69275	Quartz	Active	JEK 75	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69276	Quartz	Active	JEK 76	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69277	Quartz	Active	JEK 77	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69278	Quartz	Active	JEK 78	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69279	Quartz	Active	JEK 79	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69280	Quartz	Active	JEK 80	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69281	Quartz	Active	JEK 81	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69282	Quartz	Active	JEK 82	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69283	Quartz	Active	JEK 83	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69284	Quartz	Active	JEK 84	Bill Harris - 100%	7/24/2011	8/18/2011	8/18/2016	Whitehorse
YE69285	Quartz	Active	JEK 85	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69286	Quartz	Active	JEK 86	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69287	Quartz	Active	JEK 87	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69288	Quartz	Active	JEK 88	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69289	Quartz	Active	JEK 89	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69290	Quartz	Active	JEK 90	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69291	Quartz	Active	JEK 91	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69292	Quartz	Active	JEK 92	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69293	Quartz	Active	JEK 93	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69294	Quartz	Active	JEK 94	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69295	Quartz	Active	JEK 95	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69296	Quartz	Active	JEK 96	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69297	Quartz	Active	JEK 97	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69298	Quartz	Active	JEK 98	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69299	Quartz	Active	JEK 99	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69300	Quartz	Active	JEK 100	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69301	Quartz	Active	JEK 101	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69302	Quartz	Active	JEK 102	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69303	Quartz	Active	JEK 103	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69304	Quartz	Active	JEK 104	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69305	Quartz	Active	JEK 105	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69306	Quartz	Active	JEK 106	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69307	Quartz	Active	JEK 107	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69308	Quartz	Active	JEK 108	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69309	Quartz	Active	JEK 109	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69310	Quartz	Active	JEK 110	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69311	Quartz	Active	JEK 111	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69312	Quartz	Active	JEK 112	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69313	Quartz	Active	JEK 113	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69314	Quartz	Active	JEK 114	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69315	Quartz	Active	JEK 115	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69316	Quartz	Active	JEK 116	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69317	Quartz	Active	JEK 117	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69318	Quartz	Active	JEK 118	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69319	Quartz	Active	JEK 119	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69320	Quartz	Active	JEK 120	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69321	Quartz	Active	JEK 121	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69322	Quartz	Active	JEK 122	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69323	Quartz	Active	JEK 123	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69324	Quartz	Active	JEK 124	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69325	Quartz	Active	JEK 125	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69326	Quartz	Active	JEK 126	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse
YE69327	Quartz	Active	JEK 127	Bill Harris - 100%	7/25/2011	8/18/2011	8/18/2016	Whitehorse

Appendix 2: Minfile Reports – Property history

YUKON GEOLOGICAL SURVEY

MINFILE DETAILS

Occurrence Number: 115G 026
Occurrence Name: MUSKETEER
Occurrence Type: Hard-rock
Status: Showing

Deposit Type(s): Gabbroid Cu-Ni-PGE
Location(s): 61°30'9" N - 139°39'37" W
NTS Mapsheet(s): 115G12

Work History

Date	Work Type	Comment
12/31/1967	Development, Surface	
12/31/2000	Development, Surface	
12/31/2000	Trenching	
12/31/1988	Geochemistry	
12/31/1989	Geochemistry	
12/31/2001	Geochemistry	
12/31/1988	Drilling	Number of holes drilled: 1 Amount of work done: 85.6 METRES Drilled on Amp claims, 2.35 km southeast of location marker for occurrence.
12/31/1953	Geology	
12/31/1967	Geology	
12/31/1972	Geology	
12/31/1987	Geology	
12/31/1953	Other	
12/31/1972	Other	
12/31/1986	Other	
12/31/1987	Other	
12/31/2000	Other	
12/31/1955	Geophysics	Magnetometer, EM and resistivity surveys.
12/31/1967	Geophysics	

12/31/1987	Geophysics	Magnetometer and VLF-EM surveys.
12/31/1988	Geophysics	Magnetic survey.
12/31/1989	Geophysics	
12/31/2001	Geophysics	

Capsule

Work History

Originally staked as Donjek cl 1-16 (63435) in Aug/52 by Conwest Exploration Company Ltd. Teck Exploration Company Ltd staked Musketeer cl 1-24 (63307) to the east and west at the same time. In 1953 both companies are reported to have carried out geological mapping and prospecting, as well as staking Donjek cl 17-27 (66049) and Musketeer cl 25-52 and 64-67 (66166) in Jul/53 and Musketeer cl 53-62 (66479) in Aug/53 contiguously with the original claims. In 1955, Teck carried out magnetometer, EM and resistivity geophysical surveying of the combined claim group and staked Ohm cl 1-4 (71070) to the southeast in Aug/55.
Restaked as Legacy cl 1-24 (Y12572) in Apr/67 by J.B. O¿Neil and C. Gibbons, who carried out magnetometer and EM-16 geophysical surveying and geological mapping of the claims later in the year in conjuction with work on their adjoining Jiffy and Tippy claims to the southeast (Minfile Occurrence #115G 025) which included road building. Optioned briefly in Feb/72 to the Nickel Syndicate (Canadian Superior Exploration Ltd, Aquitaine, Home Oil Company Ltd and Getty Mines Ltd), which carried out geological mapping, geochemical sampling, magnetometer and EM surveying later in the year.
Restaked as Mus cl 1-16 (YA94962) in Jun/86 by Kluane Joint Venture (All-North Resources Ltd and Chevron Minerals Ltd), which carried out geochemical sampling in 1986. G. Davidson staked Amp cl 1-10 (YA95100) to the southeast at the same time, before subsequently optioning the claims to Kluane Joint Venture which drilled one hole (85.6 m) 2.35 km southeast of the location marker for this occurrence in 1988.
The Oro cl 1-12 (YA96419) were tied on to the north by E. Parmentier in Nov/86 and sold to Fred Minerals Ltd in 1987. Other adjoining claims included Missy cl 1-28 (YA97660) and SF cl 1-84 (YA97576) to the southwest in Jun/87 by Harjay Exploration Company Ltd and Kluane Joint Venture; Jek cl 1-48 (YA96984) to the west in Mar/87 by Silverquest Resources Ltd and Pak-Man Resources Inc, which carried out geological mapping and geochemical sampling later in the year; and PC cl 1-50 (YA97796) to the south in May/87 by S. Ridgway.
In 1987 the Kluane Joint Venture claims were optioned by Rockridge Mining Corporation and Pak-Man Resources Inc, which carried out geological mapping, geochemical sampling and magnetometer and VLF-EM surveying later in the year. The PC claims were transferred to Gold City Resources Inc in Jun/88 and a 50% interest in the Oro claims was transferred to A-X Minerals in Oct/88. Harjay explored the SF and Missy claims with soil geochemical sampling and magnetometer surveying in Jun/88 and Jun/89.
Restaked as Ar cl 1-60 (YC18359) in Sep/99 by Cabin Creek Resources Management Inc (T. Morgan) which added Ar cl 61 (YC18892) in Sep/2000, before optioning the claims to Auterra Ventures Inc in Oct/2000. Auterra carried out geochemical sampling, road rehabilitation and blast trenching in 2000 and geochemical rock sampling and magnetometer and VLF-EM geophysical surveying in 2001.

Capsule Geology

Assessment work filed from 1953 to 1955 identified two small copper-nickel showings that were found on the Donjek cl 4 (Conwest showing, this occurrence) and approximately 1 km south on the Musketeer cl 32 (Teck showing). The area is largely drift-covered, but mapping and geophysics revealed that conformable Lower Triassic mafic to ultramafic sills are present in the Pennsylvanian to (?) Lower Permian Station Creek Formation which underlies the area and is comprised of intermediate to mafic volcanics and sediments.
No nickel mineralization was found during the earlier work, but Station Creek tuff containing disseminated and fracture filling chalcopyrite and malachite assayed up to 0.3% Cu.
The Conwest showing consists of 90 m of oxidized, medium grained gabbro lying east of and subparallel to a south-southeast trending fault. The intrusion occurs as two separate bodies, 15 m or more in width, that are flanked by quartz +/- calcite stringer stockwork zones within the volcanic host rock. Both the intrusion and stockwork zones are mineralized with interstitial and disseminated pyrite and chalcopyrite +/- pentlandite. Chip sampling in 2000 returned values up to 2

to intermediate feldspathic porphyry in proximity to a peridotitic sill. The fault zone is mineralized with pyrite, while the sill is locally serpentinized and variably mineralized with fine disseminated pyrite, magnetite and pyrrhotite. Chip samples collected from a carbonate altered section of the sill returned the best values from sampling of this showing, returning 0.11 g/t Pt, 0.11 g/t Pd, 1 581 ppm Ni, 709 ppm Cu and 0.14 g/t Au over 2 m.

Magnetometer surveying in 2001 identified anomalies in overburden covered areas in the vicinity of the Teck showing and the 1988 drill hole (DDH A-88-01). The anomaly in the vicinity of the Teck showing is located approximately 60 m northwest of the showing and measures 150 m along strike by 100 m wide and is open along strike in both directions. The anomaly in the vicinity of DDH A-88-01 is atleast 475 m long, varies in width from 30 to 150 m and is coincident with the axis of a relatively continuous VLF-EM conductor along its southeast edge.

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YUKON EXPLORATION 1987, p. 240.

YUKON EXPLORATION AND GEOLOGY 2000, p. 23; 2001, p. 24.

MINFILE DETAILS

Occurrence Number: 115G 033

Occurrence Name: SEXSMITH

Occurrence Type: Hard-rock

Status: Drilled Prospect

Aliases: DON
Deposit Type(s): Gabbroid Cu-Ni-PGE
Location(s): 61°31'25" N - 139°49'24" W
NTS Mapsheet(s): 115G12

Work History

Date	Work Type	Comment
12/31/1953	Drilling	Drill core in place on north side of Wolverine Creek.
12/31/2001	Geology	
12/31/1988	Ground Geophysics	With EM.
12/31/2001	Other	
12/31/2001	Other	
12/31/1996	Geophysics	Combined electromagnetic/resistivity/magnetic airborne survey.
12/31/1988	Geophysics	
12/31/1953	Geophysics	
12/31/2004	Geophysics	Reinterpreted total magnetic field data collected by Geological Survey of Canada 1965-66.

Capsule

Work History

Staked as Jay cl 1-32 and 37-172 (66138) in Jun/53 by Canalask Nickel Mines Ltd, a new company formed by Ontario Nickel Mines Ltd and Frobisher Ltd following an aeromagnetic survey conducted by Lundberg Exploration Ltd. Ground magnetic and self-potential surveys were completed to assist in ground acquisition and to outline areas for detailed study and exploratory drilling.
Restaked as Wol cl 1-6 (Y77254) in Sep/73 by the Nickel Syndicate (Canadian Superior Exploration Ltd, Aquitaine, Home Oil Ltd and Getty Minerals Ltd).
The area south of Wolverine Creek was staked as SF cl 1-84 (YA97576) and Missy cl 1-28 (YA976660) in Jun/87 by Harjay Exploration Ltd and Kluane Joint Venture (All-North Resources Ltd & Chevron Minerals Ltd). The Missy claims were in turn optioned to Lodestar Explorations Inc. Harjay and Lodestar carried out magnetometer and VLF-EM surveys on their respective claim groups in Jun/88.
In July/94 Expatriate Resources Ltd staked Don cl 1-20 (YB46996) on the south side of Wolverine Creek. The company also staked Wolv cl 1-24 (YB47972) 4 km to the northwest (Minfile Occurrence #115G 088) at the same time. A combined electromagnetic /resistivity /magnetic survey was flown over both claim blocks in Aug/96.
Expatriate expanded both claim blocks in Feb/2000, staking Wolv cl 25-38 (YC18509) and Don cl 21-34 (YC18523)

stream sediment sampling on both claim blocks on behalf of the Donjek Joint Venture (Expatriate Resources Ltd and Strategic Metals Ltd). In Oct/2002 Expatriate optioned the remaining Don claims, the neighboring Wolv claims and the Klux claims (Minfile Occurrence #115F 041) to Midnight Mines Ltd in return for a 1.0% net smelter return royalty and certain work commitments.
In May/2003 ownership of the remaining Don, Wolv and Klux claims was transferred to StrataGold Corporation as part of a reorganization of Expatriate Resources although Midnight Mines retained their option. In Oct/2004 Midnight Mines contracted Aurora Geosciences Ltd to reinterpret total magnetic field data collected by the Geological Survey of Canada between Nov/65 and Apr/66.

Capsule Geology

The area is centered over Wolverine Creek approximately 8 km west of the Donjek River. The area was mapped in the 1960¿s by Muller (1967) of the Geological Survey of Canada. S. Israel of the Yukon Geological Survey published a geological compilation of southwest Yukon in 2004 and began re-mapping the region in the same year. In 2004 Israel and Van Zeyl, published a 1:50 000 map of the Quill Creek area which covers the area immediately to the southeast. In addition Greene et al., (2005) began a study of flood basalts which erupted onto the Wrangellia terrane. Comparison between these geological investigations and field work completed by Canalask Nickel Mines, Harjay Exploration, Lodestar Explorations and Expatriate Resources allows one to draw the following conclusions.
The area is covered by extensive overburden which limits the usefulness of geological mapping. Based on their geophysical work Canalask Mines mapped diorite, volcanic and sedimentary rocks south of Wolverine Creek. Harjay Exploration reported that old drill core on the north side of Wolverine Creek contained black siltstone containing disseminated chalcopyrite, and fine to medium grained diorite. Further south on the Missy claims Lodestar Explorations noted interbedded limestone, siltstones and conglomerates intruded by dioritic dyke and gabbroic lenses. Limited geological mapping carried out by Expatriate noted the presence of mafic and ultramafic rocks on the Don claims including intrusive peridotite, gabbro and diorite and extrusive andesite flows.
Comparing these descriptions with Israel¿s mapping, it appears the occurrence is underlain by a sequence of sedimentary rocks assigned to the Pennsylvanian (?) and Permian in age, Upper Hansen Creek formation. These rocks are overlaid by volcanic rocks assigned to the Upper Triassic Nikolai formation and possibly McCarthy formation limestone. The sequence is in turn intruded by ultramafic rocks assigned to the Triassic age Kluane mafic-ultramafic complex and gabbroic rocks assigned to the Cretaceous age Kluane Ranges suite.
The occurrence covers a very strong regional aeromagnetic anomaly (approximately 5 km long), located in an area of deep overburden. The nearest outcrops are found on the north side of Wolverine Creek and consist of diorite, volcanic and sedimentary rock. The anomaly lies on trend with the nickel and copper-bearing ultramafic rocks of the Quill Creek Complex (part of the Kluane Mafic-Ultramafic Belt) exposed to the southeast in the Arch and Quill Creek valleys. Ground geophysics on the SF claims identified a northwest-trending VLF-EM anomaly coincident with the west edge of a strong magnetic high and appears to outline a contact between highly magnetic rocks and weakly magnetic units.
Detailed airborne geophysics completed in 1996 identified a well defined resistivity low associated with a strong magnetic high and several moderately weak or broad conductors on the Don claims. Geological mapping and sampling in 2001 identified pyritic mafic and ultramafic rocks, including peridotite, gabbro, diorite and andesite flows, underlying the claims. Five rock samples collected on the claims returned values of up to 424 ppm copper; 4 ppb platinum, 247 ppm chromium, 8.33% magnesium, 681 ppm nickel and 18 ppb gold.
Aurora Geosciences used a inversion algorithm and modeling software to re-analyze geophysical data previously collected by the Geological Survey of Canada. The results identified a large magnetic source on the claims which suggest the source is likely ultramafic rocks with the more susceptible areas ¿ possibly representing peridotite ¿ pyroxenite units located in the eastern portion of the block. The block appears to be folded across a north-south and an east-west axis. The culmination occurs in the center of the study area.

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YUKON EXPLORATION 1989, p. 107.

MINFILE DETAILS

Occurrence Number: 115G 088

Occurrence Name: LYNX CREEK

Occurrence Type: Hard-rock

Status: Anomaly

Deposit Type(s): Unknown
Location(s): 61°34'23" N - 139°55'42" W
NTS Mapsheet(s): 115G12

Work History

Date	Work Type	Comment
12/31/2000	Geochemistry	
12/31/2000	Geochemistry	
12/31/2000	Geology	
12/31/2000	Other	
12/31/1994	Geophysics	Electromagnetic, resistivity and magnetic surveys.
12/31/2004	Geophysics	Reinterpreted total field magnetic data collected by GSC between 1965 and 1966.

Capsule

Work History

Staked as Lynx cl 1-16 (YA78595) in Oct/83 by AGIP Canada Ltd.
Expatriate Resources staked the Wolv cl 1-24 (YB46972) 2.5 km to the south in July/94. The company carried out an airborne electromagnetic, resistivity and magnetic survey over the claim group in Aug/96.
The company added Wolv cl 25-38 (YC18509) in Mar/2000 and carried out two weeks of geological mapping, prospecting and stream and soil sampling in the summer of 2001. In Oct/2002 Expatriate optioned the remaining Wolv claims, the neighboring Don claims (Minfile Occurrence #115G 033) and the Klux claims (Minfile Occurrence #115F 041) to Midnight Mines Ltd in return for a 1.0% net smelter return royalty and certain work commitments.
In May/2003 ownership of the remaining Wolv claims were transferred to StrataGold Corporation as part of a reorganization of Expatriate Resources although Midnight Mines retained their option. In Oct/2004 Midnight Mines contracted Aurora Geosciences Ltd to reinterpret total magnetic field data collected by the Geological Survey of Canada between Nov/65 and Apr/66.

Capsule Geology

The area is centered over Wolverine Creek approximately 8 km west of the Donjek River. The area was mapped in the 1960¿s by Muller (1967) of the Geological Survey of Canada. S. Israel of the Yukon Geological Survey published a geological compilation of southwest Yukon in 2004 and began re-mapping the region in the same year. In 2004 Israel and Van Zeyl, published a 1:50 000 map of the Quill Creek area which covers the area immediately to the southeast. In addition Greene et al., (2005) began a study of flood basalts which erupted onto the Wrangellia terrane. Comparison between these geological investigations and field work completed by Expatriate Resources allows one to draw the following conclusions.

mapped amygdaloidal basalt, glassy andesite and mafic volcanic tuff-breccia on the east side of their claim group. Compared with Israel¿s geological map and work by Greene this suggests that the area is underlain by Upper Triassic flood basalts assigned to the Nikolai formation. Research by Greene and others shows that Nikolai formation flood basalts are commonly intercalated with thin, discontinuous lenses of marine sedimentary rocks and are capped by shallow-water limestone. Thus it is quite possible that some marine sediments occur in the area. A Cretaceous aged granitic intrusion assigned to the Kluane Range suite intrudes the sequence to the northwest.

It appears that AGIP did not carry out any substantial amount of exploration work. Expatriate¿s airborne survey identified at least one definite EM conductor on the Wolv claims which was attributed to possible massive sulphides or possibly graphite. Soil and silt sampling in 2001 returned two samples slightly anomalous in gold and platinum.

Aurora Geosciences used a inversion algorithm and modeling software to re-analyze data previously collected by the Geological Survey of Canada. The results identified a small, highly susceptible magnetic source centered over the Wolv claims which is interpreted to be a fault bounded slice of ultramafic rock.

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YUKON EXPLORATION AND GEOLOGY 1983, p. 247.

YUKON GEOLOGICAL SURVEY

MINFILE DETAILS

Occurrence Number: 115G 024

Occurrence Name: WELLGREEN

Occurrence Type: Hard-rock

Status: Past Producer

Economic Commodities: Cu, Ni, Pd, Pt
Deposit Type(s): Gabbroid Cu-Ni-PGE
Location(s): 61°27'55" N - 139°31'39" W
NTS Mapsheet(s): 115G05

Work History

Date	Work Type	Comment
12/31/1986	Trenching	
12/31/1987	Trenching	
12/31/1988	Trenching	
12/31/1986	Geochemistry	
12/31/1987	Geochemistry	
12/31/1989	Geochemistry	For metallurgical testing.
12/31/1955	Drilling	Number of holes drilled: 47 Amount of work done: 19815 METRES Surface and underground diamond drilling.
12/31/1969	Drilling	Number of holes drilled: 13 Amount of work done: 762 METRES Also completed feasability study.
12/31/1987	Drilling	Number of holes drilled: 45 Amount of work done: 4932 METRES
12/31/1988	Drilling	Number of holes drilled: 71 Amount of work done: 11573 METRES
12/31/1986	Geology	
12/31/1953	Other	
12/31/1954	Other	
12/31/1955	Other	Between 1953 and 1955 company completed 4 267 m of drifting and raises and 2 internal shafts.
12/31/1987	Other	
12/31/1952	Other	
12/31/1986	Other	
12/31/1972	Other	

12/31/1988	Underground	
12/31/1968	Geophysics	Turam survey.
12/31/1986	Geophysics	
12/31/1987	Geophysics	

Resource/Reserve

Date	Commodity	Amount	Resource/Reserve Type
	Cu	ounces/tonne	Inferred
	Cu	ounces/tonne	Indicated
	Cu	ounces/tonne	Inferred
	Ni	ounces/tonne	Inferred
	Ni	ounces/tonne	Indicated
	Ni	ounces/tonne	Inferred
	Pd	ounces/tonne	Inferred
	Pd	ounces/tonne	Indicated
	Pd	ounces/tonne	Inferred
	Pt	ounces/tonne	Inferred
	Pt	ounces/tonne	Indicated
	Pt	ounces/tonne	Inferred

Related References

Number	Reference Type	Document Type	Title
ARMC006844	Property File Collection	Drill Logs	Plan map of diamond drilling - Miles Creek
ARMC006850	Property File Collection	Geophysical Map	Crone Wedge EM map - Line 0-0 on Arch Ck claims at Discovery Ni-Cu showing
ARMC006851	Property File Collection	Geoscience Map (General)	Sketch map of Packsack drilling - Arch Ck claims
ARMC006764	Property File Collection	Drill Logs	Duplicates of drill logs - Holes S-1A to S-8 incl. - Miles Creek-Enger option
ARMC006774	Property File Collection	Drill Logs	D.D.H. log duplicates - Holes S-9 to 14 inc. - Miles Creek - Enger option

ARMC006775	Collection	(General)	Enger option - White River
ARMC006776	Property File Collection	Drill Logs	Summary of diamond drilling for April and May 1953 - Miles Creek-Enger option
ARMC006777	Property File Collection	Miscellaneous Company Documents	Correspondence Re: Newly acquired ground at White River

Capsule

Work History

Discovered in Jun/52 by W. Green, C.A. Aird and C.E. Hankins for Yukon Mining Company Ltd and optioned shortly afterward to Hudson Bay Mining and Smelting Ltd. The property was fringe staked in 1952 by Callinan Flin Flon Mines Ltd to the southwest (Bit, Bridgle, etc cl (63890)) and to the northeast by Snoline cl (63451); and by Teck Exploration Company Ltd to the north. Also to the north, E.M. Flynn staked Mars cl (63475), which were optioned to Jersey Yukon Mines Ltd and transferred to New Alger Mines Ltd. The Vic cl (68684) were staked nearby in Apr/54 by Brikon Exploration Ltd, a syndicate formed by Transcontinental Resources Ltd, Dome Mines Ltd, Timmins Corporation, Chemical Research Corporation, Sapphire Petroleum Ltd and Yellowknife Bear Mines Ltd.
Hudson Bay explored with 4 267 m of drifting and raising from 4 levels, 2 internal shafts and 19 815 m of surface and underground drilling from 1952-55; transferred the property in 1955 to a new company, Hudson-Yukon Mines Ltd; carried out Turam surveying in 1968; drilled 762 m and prepared a feasibility study in 1969; and arranged a marketing agreement with Sumitomo in 1970. Due to underground problems, initial production from the 544 tonne/day mill was delayed from Sep/71 to May/72 and was suspended in Jul/73 after treating only 171 652 tonnes. Total production was 33 853 tonnes of concentrate grading 7.4% Ni and 6.6% Cu.
The property was optioned in Jun/86 by Kluane Joint Venture (All-North Resources Ltd and Chevron Minerals Ltd), which carried out grid soil sampling, mapping, prospecting, bulldozer trenching and test geophysical surveys in 1986. Hudson-Yukon Mines Ltd was purchased by Galactic Resources Ltd in Jun/86 and merged with All-North Resources Ltd in Nov/86. Additional soil sampling, bulldozer trenching, geophysical surveying, underground rehabilitation and 4 932 m of diamond drilling in 45 holes was carried out in 1987. In 1988, the 4250 level was rehabilitated and 34 underground holes were drilled totalling 5 500 m. On surface, bulldozer trenching and 37 holes totalling 6 073 m were drilled. Metallurgical tests and a preliminary feasibility study were carried out in 1988/89.
J.P. Sheridan and Northern Platinum optioned the property in Jun/94.
In Jul/2005 Coronation Minerals Inc entered an agreement with Northern Platinum giving Coronation the right to purchase a 100% interest in the Wellgreen deposit for $25 million.

Capsule Geology

Nickel, copper and platinum group elements occur near the base of a Triassic layered mafic-ultramafic sill 600 m thick, which intrudes Pennsylvanian and Permian pyroclastic and sedimentary rocks. A study by Miller (1991) showed that the sill consists of a basal non-cumulus marginal gabbro, overlain by an olivine clinopyroxenite (wehrlite) cumulate, followed by cycles of olivine clinopyroxenite, peridotite and dunite cumulates, and a dunite cap. The layers formed by fractional crystallization of olivine from a basaltic melt. Sulphide mineralization occurs both as massive sulphides at the base of the marginal gabbro, and as disseminated sulphides within the marginal gabbro and olivine clinopyroxenites. Hudson Bay's early drilling outlined 669 150 tonnes grading 2.04% Ni, 1.42% Cu, 0.07% Co, 1.3 g/t Pt, 0.93 g/t Pd and 0.17 g/t Au, contained in massive sulphide lenses along the footwall contact. These reserves were partly mined underground in 1972 and 1973.
The 1987 and 1988 drilling by Kluane Joint Venture expanded the reserves to include disseminated sulphides in the basal gabbro and overlying peridotite, and probable reserves were calculated as 42 326 323 tonnes grading 0.36% Ni, 0.35% Cu, 0.51 g/t Pt and 0.34 g/t Pd. Metallurgical tests using conventional flotation techniques indicate recoveries of 80-85% for nickel, 95% for copper and 70% for platinum and palladium.
Massive sulphide lenses are fine grained and consist mostly of pyrrhotite with lesser amounts of chalcopyrite, pentlandite and magnetite. The pentlandite occurs as exsolution flames in pyrrhotite. Individual sulphide lenses vary from 1 to 18 m thick and are interpreted as magmatic segregation deposits. Assays as high as 4.57% Ni, 1.58% Cu, 0.10% Co, 4.14 g/t Pt and 3.08 g/t Pd over 6 m have been recorded, and a 9.8 m chip sample across the east zone lens gave a

proportion of the rarer platinum group elements, especially Os, Ir, Ru and Rh.
Net-textured and disseminated chalcopyrite, pyrrhotite and pentlandite occur in gabbro and peridotite above the massive sulphide lenses, and extend as high as 100 m above the gabbro-peridotite contact. 1986 assays of disseminated mineralization returned average values of 0.33% Ni, 0.56% Cu, 0.018% Co, 103 ppb Au, 800 ppb Pt and 833 ppb Pd.
Analyses by Fayek (1989) of skarn formed at the lower contact of the main Wellgreen sill showed that platinum is associated with nickel and palladium is associated with copper. Gold shows a strong inverse correlation with platinum and palladium, and correlates poorly with copper and nickel.
Miller (1991) found that the disseminated mineralization is preferentially enriched in copper, platinum, palladium and gold compared to the massive sulphides. Sulphur isotope data suggest that most of the sulphur was assimilated from deep crustal sources and was not derived from footwall rocks.
In 2004, chip sampling across a steeply dipping altered shear zone at the North Zone was completed. One interval (sample 112) returned 2.0 m of 0.70 opt Pt, 1.09 opt Pd, 0.07 opt Au, 0.11% Cu and 0.06% Ni. The North Zone is parallel to and 500 m north of the main Wellgreen deposit.

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Appendix 3: Geophysical Surveys

Crew log

Field Report

Original compilation ELF and HLEM figures from Aurora (digital version only)

Revised compilation ELF and HLEM figures (same as original, except for new geology overlay)

Geosoft database in .gdb format (digital version only)

AURORA GEOSCIENCES

MNM-13550-YT - Wellgreen EM Test

Weather Day	PERSONNEL : 10 Person-Days BAD WEATHER : 0 Person-Weather Days DAYS ON THE JOB : 5 days						
weather day *1/2 weather day*	Phil Jackson Crew Chief	Cole Plaskett					
Current Job	5	5	0	0	0	0	0
Aug 2013 Totals	5	5	0	0	0	0	0
Sep 2013 Totals	0	0	0	0	0	0	0
Tue 20-Aug-2013							
Wed 21-Aug-2013	Mobe to Wellgreen	Mobe to Wellgreen					
Thu 22-Aug-2013	HLEM Survey Lines 10 & 12	HLEM Survey Lines 10 & 12					
Fri 23-Aug-2013	HLEM & ELF Survey Lines 14 & 16	HLEM & ELF Survey Lines 14 & 16					
Sat 24-Aug-2013	ELF Survey Lines 10 & 12	ELF Survey Lines 10 & 12					
Sun 25-Aug-2013	Demobe to WH - 1/2 Day	Demobe to WH - 1/2 Day					
Mon 26-Aug-2013							

AURORA GEOSCIENCES

MNM-13550-YT - Wellgreen EM Test

Program	PF-13531-BC				
GRID/Target/line/Zone	Survey		Survey		
Survey/Hole	HLEM (lkm)	-enter grid/line here-	ELF (points)	-enter grid/line here-	
Current Job	2.5		63		
Tue 20-Aug-2013					
Wed 21-Aug-2013		Mobe to Wellgreen		Mobe to Wellgreen	
Thu 22-Aug-2013	1.2	HLEM Survey Lines 10 & 12		HLEM Survey Lines 10 & 12	
Fri 23-Aug-2013	1.3	HLEM Survey Lines 14 & 16	32	ELF Survey Lines 14 & 16	
Sat 24-Aug-2013			31	ELF Survey Lines 10 & 12	
Sun 25-Aug-2013		Demobe to WH - 1/2 Day		Demobe to WH - 1/2 Day	
Mon 26-Aug-2013					

AURORA GEOSCIENCES

MNM-13550-YT - Wellgreen EM Test

DATE:	August-21-13

PREPARED BY:

Phil Jackson

Comments

Weather
Hot and Sunny

LOGISTICS

Type	*Contractor*	*Hrs or units*
Truck	AGL	1
ATV	AGL	0
ATV Trailer	AGL	0

Notes (production comments, incidents, other)
Drove from Whitehorse to Wellgreen Upper Camp - safety orientation and reconnaisance trip out to grid area via ATV. Steep difficult ground.

AURORA GEOSCIENCES

MNM-13550-YT - Wellgreen EM Test

DATE:	August-22-13

PREPARED BY:

Phil Jackson

LOGISTICS

Type	*Contractor*	*Hrs or units*
Truck	AGL	1
ATV	AGL	0
ATV Trailer	AGL	0

Comments

Weather

Overcast - warm

Notes (production comments, incidents, other)

HLEM on lines 1000 & 1200 - Steep difficult terrain - lines cut with GPS guidance only no sight pickets (lines fairly crooked). Lines not tight chained and only 50m pickets located with handheld GPS.

AURORA GEOSCIENCES

MNM-13550-YT - Wellgreen EM Test

DATE:	August-23-13

PREPARED BY:

Phil Jackson

LOGISTICS

Type	*Contractor*	*Hrs or units*
Truck	AGL	1
ATV	AGL	0
ATV Trailer	AGL	0

Comments

Weather

Overcast then rain in afternoon

Notes (production comments, incidents, other)

HLEM on lines 1400 & 1600 in morning. ELF on lines 1400 & 1600 in afternoon - long day. Rain in afternoon.

AURORA GEOSCIENCES

MNM-13550-YT - Wellgreen EM Test

DATE:	August-24-13

PREPARED BY:

Phil Jackson

Comments

Weather

Overcast, wet but little to no rain throughout day.

LOGISTICS

Type	*Contractor*	*Hrs or units*
Truck	AGL	1
ATV	AGL	0
ATV Trailer	AGL	0

Notes (production comments, incidents, other)

Moved ATV to Lower camp. ELF on lines 1000 & 1200 in afternoon - done by ~ 7pm. Packed up gear for departure in morning.

AURORA GEOSCIENCES

MNM-13550-YT - Wellgreen EM Test

DATE:	August-25-13

PREPARED BY:

Phil Jackson

LOGISTICS

Type	*Contractor*	*Hrs or units*
Truck	AGL	1
ATV	AGL	0
ATV Trailer	AGL	0

Comments

Weather

Overcast - low ceiling - snow on mountain tops overnight.

Notes (production comments, incidents, other)

Drove from Camp to Whitehorse. 1/2 Day.

AURORA GEOSCIENCES

NORTHERN GEOLOGICAL & GEOPHYSICAL CONSULTANTS

YELLOWKNIFE - WHITEHORSE - JUNEAU

34A Laberge rd. Whitehorse, YT, Y1A 5Y9 (p) 867.668.7672

MEMORANDUM

To: Debbie James
Bill Harris
Midnight Mining Services

Date: 29 August 2013

From: Phil Jackson
Aurora Geosciences Ltd.

Re: Wellgreen EM Test – Donjek-Arch Project - Field Report

This memorandum is a field report describing the results of an HLEM and ELF test surveys conducted for Midnight Mining Services on the Donjek-Arch Project. Aurora Geosciences personnel were on site from August 21-25, 2013 and accessed the property daily by 4x4 truck from upper camp at the Wellgreen Project where the crew was based. The survey area comprised of four lines, each 800 meters in length. The grid was designed to be centered over the Teck showing, described as a small exposure of a 1m wide pyritic fault zone within a feldspar porphyry. Just to the north of the showing lies a linear magnetic high which follows a locally mineralized peridotite sill. A full survey log is attached to this memorandum.

a. Crew and equipment.

The following personnel conducted the surveys:

Phil Jackson	Project Manager	August 21-25, 2013
Cole Plaskett	Helper	August 21-25, 2013

The crew was equipped with the following instruments and equipment:

HLEM Survey :	1 - Apex Parametrics MaxMin I-10 system s/n 1038 1 - 100m reference cable 1 - Apex Parametrics MaxMin I-9+ system s/n 9022
ELF Survey:	1 – ELF system – sensor unit and computer
GPS receivers:	2 - Garmin 72sc non-differential receivers
Data processing:	1 - Laptop includes Geosoft and MMC software

Other:
1 – 4x4 Pick Up Truck
1 – Iridium SAT phone
2 – VHF radios
1 - Field office equipment
1 - Repairs & tool kit

b. Survey Location

The Donjek Arch Project is located 260 km due west of Whitehorse and 40 km northwest of Burwash Landing on NTS mapsheet 115G05. The survey described in this memo took place on a four 800m cut lines. Lines were cut with GPS guidance only and 50 station pickets located with a non-differential handheld GPS. All geophysical data collected were geo -referenced to UTM Zone 07N coordinates in the NAD83 datum. Daily access to the grid was by 4x4 truck from Prophecy Platinum's upper camp at the Wellgreen Project where the crew was based.

c. Survey specifications

The EM surveys were completed according to the following specifications:

Grid: 4 lines totaling 3.2 line-km

Line Spacing: 200 m

Station Spacing: 50 m pickets

ELF Survey:

Frequencies: 11,22,45,90,180,360,720 and 1440 Hz

Occupation Time: Typically 3 minutes

Registration: Data was registered to WGS84 geodetic coordinates using an onboard GPS receiver.

HLEM Survey:

Frequencies: *220, 880, 3520 and 7040 Hz*

Coil Spacing: *100 m*

Station Spacing: *25 m*

Terrain Corredctions: Slope chain method using coplanar coils. Short coil errors introduced by irregular topography were corrected for during data processing (MMCFIX1)

ELF Survey

The extremely low frequency electromagnetic system (ELF) is a ground geophysical technique that is very portable and cut lines are not necessary. The survey measures vertical and horizontal components of the natural time-varying geomagnetic field originating primarily from global lightning activity. The system calculates the tilt angle, or tipper, of the magnetic fields from 11 to 1440 Hz which are sensitive to 2D and 3D conductivity contrasts. Both real and quadrature components are measured at each frequency. It is designed to image resistivity from depths of 10 metres to 2 kilometers dependant on the host conductivity structure.

HLEM Survey

The HLEM method involves the use of a pair of separated horizontal coils. In this method, a sine wave of variable frequency is sent through one of the coils to create a time-varying vertical magnetic dipole source. The second coil is a receiver which detects both the primary signal from the transmitting coil and a secondary signal created by magnetic induction in a conductive target in the earth. The receiver removes the effect of the transmitter signal (primary field) and splits the remaining secondary field into two components. One component represents the portion of the secondary field which is synchronized or in-phase with the primary field (in-phase component). The second component is the portion of the secondary field which lags the primary field by one quarter cycle (90o) (quadrature component). The ratio of the in-phase to quadrature components is used to determine the electrical conductance of a target.

The HLEM method requires that the coils be held a constant distance apart and be coplanar. In steep irregular terrain, the coils will frequently be less than the nominal coil spacing (short coiling) and may not be coplanar. These variations in coil geometry produce strong in-phase errors and must be removed from the data before plotting and interpretation. The method used to mitigate these effects requires a slope chained grid and requires the operator to measure the station to station terrain slope in percent with a clinometer. This is normally done by the receiver operator who was in the lead position on the surveys. The correct slope required to maintain the coils coplanar is the arithmetic average of the station to station slopes in the interval between the two coils. The operators hold the coils coplanar during the surveys by holding their coils at this orientation which is calculated and displayed for each reading station by the Maxmin MMC. The effect of short coiling created by irregular topography was removed with Apex Parametrics data processing software (MMCFIX1).

HLEM data is displayed in stacked profile plots showing the survey grid and the in-phase and quadrature readings as solid and dashed line profiles. The zero level on each profile is coincident with the survey line. A scale of 10% Hz per cm was used in the plotting. The locations of the ends of the grid lines have been registered to UTM coordinates with the best data available at the time of writing and UTM registration marks are shown on all field plots.

c. Data Processing.

ELF Survey

The raw ELF tipper vectors were visually examined and irregular readings were ejected from the data set. The 1440 Hz data was extremely noisy and no effort was made to reject outliers; instead all the data from this frequency was ignored. Repeat readings were typically taken every 200 metres and after the irregular readings were eliminated, repeat readings were averaged.

The data were gridded with 50 metre cells, smoothed with a 5X5 Gaussian filter and the divergence was calculated and then displayed as a color grid on a figure for every frequency (in-phase and quadrature) with the tipper vectors. Compilation maps were produced with a geology underlay (based on rough field sketch provided by D. James). The 1440 Hz frequency data was not included in the compilation maps as the signal was frequently insufficient throughout the survey day and has been rejected from the final maps.

HLEM Survey

The HLEM data was downloaded daily and the raw, unedited data archived. A copy of the data was then processed using the APEX Parametrics software MMCREF, MMCFIX1 and MMCPRO87. Processing steps included editing station locations (if entered incorrectly), and the correction of short coil errors introduced by irregular topography. The reduced data were imported into Geosoft databases and geo referenced as UTM coordinates.

The inphase data was extremely noisy and is largely attributed to irregular lines and rugged terrain where cut lines were discontinued around steep terrain. The inphase noise is consistent between frequencies, the 220 Hz data was subtracted from the higher frequencies on the separate profile maps. Due to line and terrain conditions the inphase data has been largely rendered uninterpretable.

Separate profile plots for each frequency showing the survey grid lines and the in-phase and quadrature readings as solid and dashed line profiles were generated.

Stacked inphase and quadrature compilation maps show unfiltered inphase and quadarature data. Compilation maps also include the geology underlay generated from the field sketch provided by D. James.

d. Results and Recommendations.

Weak to moderate conductive features are seen in the ELF data (high divergence in the inphase and quadrature data) which run approximately parallel to the sketched ultramafic contact. HLEM quadrature troughs with a positive datum shift from the expected signature (possibly due to extensive overburden cover) also run parallel to either side of the ultramafic contact. Further notes on the known geology and access to previous magnetic data would be required to further interpret the test results.

Both surveys have detected weak to moderate conductors over the test area however the ELF system is recommended for future work in the area. Line cutting would not be required and ground magnetic data should also be acquired using GPS guidance, again eliminating the need for cut and chained survey lines.

e. Products.

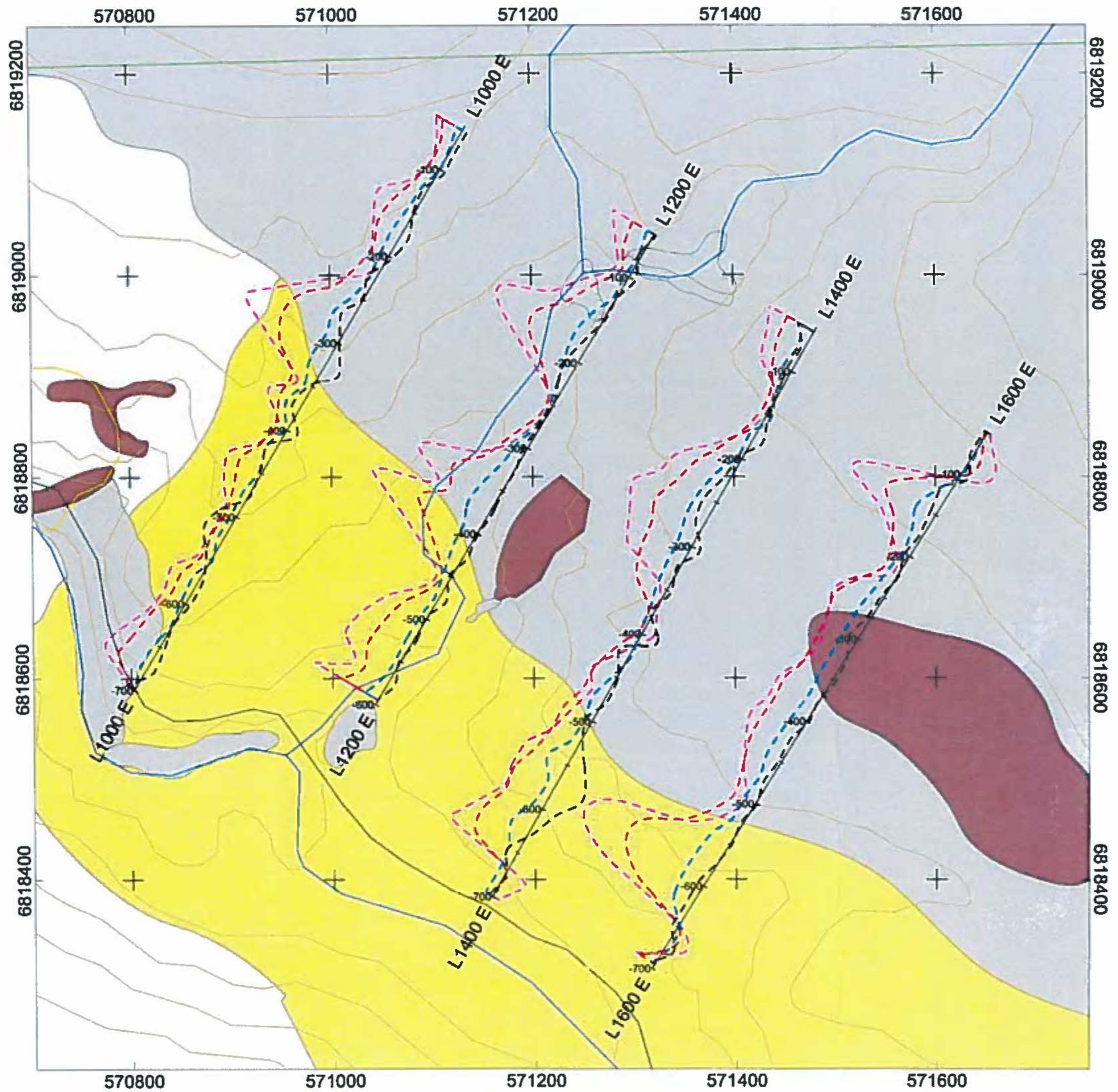
The following files are included in the digital version of this report:

File / Folder name	Description
\raw data\ELF\"Date".xyz \raw data\HLEM\MM"Date"P2.xyz	Raw xyz data files for ELF & HLEM surveys.
\Geosoft_ELF\ Maps & Databases \Geosoft_HLEM\ Maps & Databases	Contains the processed data in geosoft database (*.gdb) format as well as ASCII format (*.xyz). Packed Geosoft maps (*.map) with all layers that created the PDFs are included.
\Figures	Contains compilation maps in PDF format.
MNM-13550-YT Crewlog.pdf	A crew log describing daily operations.
MNM-13550-YT Field Report.pdf	This report in PDF format

Thank you for the opportunity to work with you on this project.

Respectfully submitted,
AURORA GEOSCIENCES LTD.

Phil Jackson, P.Geoph.



LEGEND

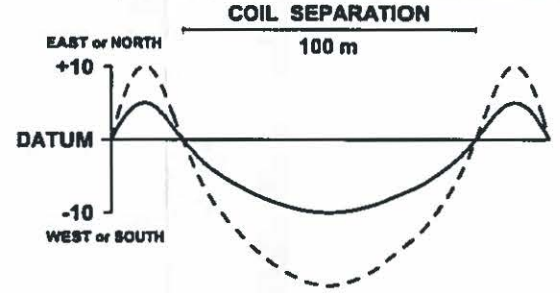
HORIZONTAL LOOP EM

STACKED QUADRATURE

INSTRUMENT : APEX PARAMETRICS MAX-MIN I-10

PROFILE SCALE : 1 cm = 10%

220 QUADRATURE :
880 QUADRATURE :
3520 QUADRATURE :
7040 QUADRATURE :



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

Revised Jan 14, 2014 by D. James.
Replaced old geology with new geology.

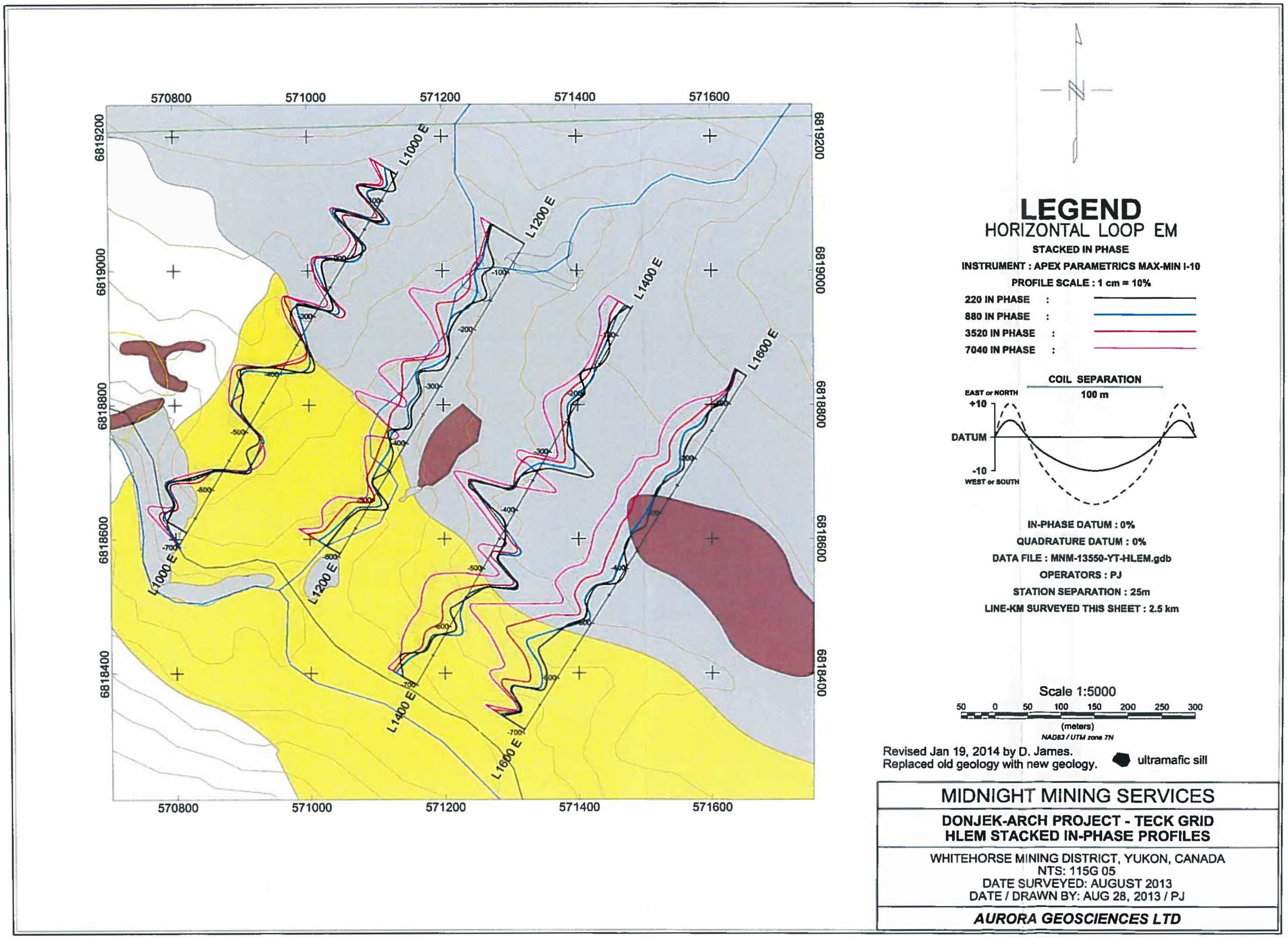
ultramafic sill

MIDNIGHT MINING SERVICES

DONJEK-ARCH PROJECT - TECK GRID
HLEM STACKED QUADRATURE PROFILES

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

AURORA GEOSCIENCES LTD



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

Appendix 4: Biogeochemistry – humus

Laboratory methodology

MS Excel Humus sample database

MS Excel results from laboratory (digital only)

Assay certificate from laboratory

Contoured maps of As, Ba, Bi+Te, Co, Cr, Cu, Ni, Ni/Cu, PGE+Au and Sb distribution

Close This Window

2E -Vegetation Ash for Au, Pt, Pd - ICP/MS

Samples are ashed at low temperature in dedicated ovens at 475 ° C for 24 hours. 0.25 g of ash is digested in aqua regia at 95 ° C for 2 hours. Digested ash samples are diluted and analyzed by Perkin Elmer Sciex ELAN 6000, 6100 or 9000 ICP/MS. A blank is run every 69 samples. Two digested controls are analyzed every 69 samples. Duplicates are digested and analyzed every 14 samples. Instrument is recalibrated every 69 samples. Results are reported on an ash weight basis. On request results can be computed on a dry weight basis.

Preparation code B3 - dry and ash at 475°C in dedicated vegetation kilns is required.

Code 2E Elements and Detection Limits (ppm)

Element	Detection Limit	Element	Detection Limit	Element	Detection Limit	Element	Detection Limit
Ag	0.2	Er	0.001	Na	0.01%	Sn	1
Al	2	Eu	0.001	Nb	0.005	Sr	0.1
As	3	Fe	0.01%	Nd	0.002	Ta	0.001
Au	2 ppb	Ga	0.1	Ni	5	Tb	0.001
B	5	Gd	0.01	Pb	0.1	Te	0.01
Ba	3	Ge	0.1	Pd	3 ppb	Ti	1
Be	0.08	Hf	0.01	Pr	0.002	Tl	0.001
Bi	0.05	Ho	0.001	Pt	2 ppb	Th	0.001
Ca	0.1%	In	1 ppb	Rb	0.01	Tm	0.001
Cd	0.01%	K	0.01%	Re	0.1 ppb	U	0.001
Ce	0.01	La	0.002	Ru	10 ppb	V	10
Co	0.01%	Li	0.5	Sb	0.02	W	0.5
Cr	10	Lu	0.001	Sc	0.5	Y	0.001
Cs	0.001	Mg	0.01%	Se	10	Yb	0.001
Cu	0.2	Mn	0.1	Si	0.2%	Zn	1
Dy	0.001	Mo	0.1	Sm	0.001	Zr	0.5

Quality Analysis ... Actlabs *Innovative Technologies*

Date Submitted:	05-Sep-13
Invoice No.:	A13-10754
Invoice Date:	24-Sep-13
Your Reference:	ARCH

Midnight Mining Services
27A MacDonald Road
Box 31347
Whitehorse YT Y1A 5P7
Canada

ATTN: Debbie James

CERTIFICATE OF ANALYSIS

77 Humus samples were submitted for analysis.

The following analytical package was requested: Code 2E Aqua Regia Digestion ICP/MS

REPORT **A13-10754**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

ISO/IEC 17025
SCC Accredited
LAB 266
LAB 266
Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Li	Be	B	Na	Mg	Al	Si	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Rb
Unit Symbol	ppm	ppm	ppm	%	%	ppm	%	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.5	0.08	5	0.01	0.01	2	0.2	0.01	0.1	0.5	1	10	10	0.1	0.01	0.01	5	0.2	1	0.1	0.1	3	10	0.01
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
H10000	10.1	0.51	10	0.04	0.88	> 10000	< 0.2	0.09	2.0	5.3	711	50	30	934	2.90	14.4	44	40.3	110	5.2	0.1	12	< 10	9.14
H10050	7.3	0.34	8	0.05	0.86	> 10000	< 0.2	0.13	0.9	4.8	829	50	10	394	2.68	13.1	42	26.8	77	5.1	< 0.1	8	< 10	7.16
H10100	7.1	0.34	9	0.05	0.82	> 10000	< 0.2	0.13	1.5	5.3	732	70	20	270	2.78	12.3	37	24.7	72	5.4	< 0.1	8	< 10	14.0
H10150	8.6	0.39	10	0.06	1.09	> 10000	< 0.2	0.15	1.8	6.0	751	60	30	377	2.89	15.1	43	30.0	96	5.5	0.1	8	< 10	12.3
H10200	8.5	0.30	13	0.06	0.96	> 10000	< 0.2	0.17	1.7	4.9	708	50	20	490	2.72	13.5	42	33.7	88	4.8	0.1	6	< 10	15.6
H10250	9.3	0.50	6	0.04	0.94	> 10000	< 0.2	0.11	1.3	5.7	702	50	20	930	3.23	17.9	53	32.7	133	5.5	0.1	8	< 10	11.0
H10350	8.5	0.34	10	0.05	0.98	> 10000	< 0.2	0.14	1.5	5.7	775	60	30	356	3.10	14.3	49	37.9	70	5.1	0.1	8	< 10	8.59
H10400	11.4	0.35	15	0.05	1.31	> 10000	< 0.2	0.19	2.5	5.7	688	50	40	727	3.27	19.6	88	43.0	95	5.3	0.1	10	< 10	31.4
H10450	10.1	0.44	11	0.05	1.21	> 10000	< 0.2	0.12	1.1	5.8	685	50	40	466	3.43	20.1	99	38.6	90	5.7	0.1	6	< 10	11.6
H10500	9.3	0.25	11	0.04	1.66	> 10000	< 0.2	0.15	1.7	5.0	553	50	50	347	3.16	18.3	104	43.7	59	4.8	0.1	7	< 10	7.62
H10550	7.2	0.32	7	0.03	0.71	> 10000	< 0.2	0.07	1.0	4.4	619	50	20	197	2.48	10.7	40	22.8	53	5.0	0.1	6	< 10	5.21
H10600	9.9	0.43	14	0.04	0.98	> 10000	< 0.2	0.13	2.2	5.7	687	50	30	753	3.09	15.9	53	37.9	166	5.3	0.1	12	< 10	14.6
H10650	8.2	0.37	14	0.04	0.71	> 10000	< 0.2	0.12	3.6	5.0	650	40	< 10	208	2.43	8.06	44	32.1	70	4.8	< 0.1	10	< 10	10.3
H10700	11.9	0.41	20	0.06	1.24	> 10000	< 0.2	0.16	3.4	7.4	760	60	30	634	3.20	18.8	63	45.3	105	6.0	0.1	11	< 10	12.8
H10800A	13.6	0.48	17	0.06	1.37	> 10000	< 0.2	0.13	2.8	8.1	850	70	30	676	3.47	21.7	63	53.7	121	6.5	0.1	8	< 10	7.22
H10800	12.8	0.42	15	0.05	1.42	> 10000	< 0.2	0.11	2.3	7.8	884	70	30	600	3.45	19.9	63	53.0	108	6.2	0.1	7	< 10	8.36
H12000	8.1	0.45	6	0.05	0.81	> 10000	< 0.2	0.15	0.8	5.9	694	60	20	523	3.23	16.5	50	33.6	80	5.8	< 0.1	4	< 10	9.58
H12050	8.5	0.38	13	0.07	0.80	> 10000	< 0.2	0.28	1.4	6.1	649	50	20	376	3.16	16.6	46	31.8	72	5.4	0.1	7	< 10	10.5
H12100	12.6	0.38	16	0.07	2.08	> 10000	< 0.2	0.22	1.1	8.9	721	100	100	670	4.17	25.3	67	60.4	95	7.6	0.1	8	< 10	9.80
H12200	7.4	0.38	9	0.05	0.78	> 10000	< 0.2	0.13	1.4	5.0	594	50	10	621	2.75	14.8	37	31.1	113	5.2	< 0.1	6	< 10	10.7
H12250	12.1	0.40	10	0.05	1.25	> 10000	< 0.2	0.13	2.2	8.3	668	50	40	562	2.84	17.2	53	52.9	88	5.9	< 0.1	3	< 10	9.70
H12300	11.2	0.46	10	0.06	1.36	> 10000	< 0.2	0.16	2.1	8.1	680	70	50	523	3.22	17.7	57	44.6	97	6.4	0.1	9	< 10	10.3
H12350	10.9	0.37	17	0.05	1.19	> 10000	< 0.2	0.28	2.4	5.6	618	50	30	601	3.10	15.6	49	38.9	126	5.1	< 0.1	7	< 10	18.2
H12400	11.4	0.33	11	0.05	0.98	> 10000	< 0.2	0.21	2.1	5.0	663	50	10	499	2.88	13.5	44	34.6	161	5.1	0.1	7	< 10	10.9
H12450	10.3	0.42	13	0.05	1.01	> 10000	< 0.2	0.17	2.7	6.4	733	50	20	574	2.97	16.2	50	38.3	121	5.5	0.1	8	< 10	15.2
H12500	9.4	0.36	9	0.05	0.87	> 10000	< 0.2	0.18	1.1	5.2	783	50	10	358	2.77	13.2	41	27.5	88	4.9	0.1	4	< 10	13.1
H12550	10.2	0.32	14	0.05	0.91	> 10000	< 0.2	0.17	2.3	4.6	683	40	< 10	546	2.65	13.2	40	33.0	107	4.8	0.1	5	< 10	18.1
H12600	12.6	0.36	34	0.07	1.34	> 10000	< 0.2	0.49	4.4	6.1	760	60	30	863	3.18	16.6	55	54.4	97	5.4	0.1	13	< 10	18.3
H12650	12.2	0.37	13	0.05	1.09	> 10000	< 0.2	0.16	2.0	6.0	712	50	10	504	3.15	15.2	49	30.4	108	5.5	0.1	9	< 10	10.7
H12750	10.6	0.43	9	0.05	0.99	> 10000	< 0.2	0.16	1.4	6.2	633	50	< 10	439	2.94	16.0	48	32.8	73	5.7	< 0.1	4	< 10	9.15
H12800	12.2	0.42	15	0.04	1.02	> 10000	< 0.2	0.13	2.5	7.1	659	50	10	509	3.09	14.7	61	63.7	114	5.3	0.1	15	< 10	11.0
H14000	9.1	0.57	11	0.06	0.88	> 10000	< 0.2	0.14	3.0	6.7	604	50	< 10	1290	3.08	14.7	49	62.8	107	5.3	0.1	10	< 10	12.6
H14050	8.5	0.36	11	0.05	0.86	> 10000	< 0.2	0.19	1.8	5.0	632	50	< 10	428	2.76	15.0	39	26.0	147	4.9	0.1	7	< 10	26.1
H14050A	8.7	0.32	11	0.05	0.88	> 10000	< 0.2	0.20	1.8	5.0	663	50	< 10	449	2.69	15.4	40	26.9	159	5.1	< 0.1	6	< 10	24.8
H14100	10.7	0.44	9	0.05	0.98	> 10000	< 0.2	0.16	1.7	4.9	651	50	< 10	1210	3.00	16.7	40	26.9	119	5.6	0.1	5	< 10	17.4
H14150	12.1	0.49	7	0.05	0.92	> 10000	< 0.2	0.12	1.4	5.7	771	60	10	808	3.29	19.6	43	28.7	96	6.2	< 0.1	7	< 10	13.8
H14200	11.2	0.51	9	0.05	0.95	> 10000	< 0.2	0.15	2.3	5.8	771	50	10	1200	3.12	16.9	51	46.6	120	5.8	< 0.1	5	< 10	16.2
H14250	11.5	0.46	10	0.06	1.06	> 10000	< 0.2	0.17	2.6	6.2	787	60	20	1200	3.45	17.4	50	31.7	135	6.1	0.1	11	< 10	18.3
H14300	11.7	0.63	11	0.05	1.15	> 10000	< 0.2	0.16	2.1	6.8	710	60	30	459	3.29	16.1	58	36.3	86	5.9	< 0.1	11	< 10	10.4
H14350	12.0	0.43	20	0.05	1.06	> 10000	< 0.2	0.13	3.2	6.7	718	50	10	530	2.91	15.6	61	52.9	96	5.4	< 0.1	9	< 10	13.4
H14450	10.3	0.49	6	0.05	0.85	> 10000	< 0.2	0.14	1.1	5.5	724	40	10	208	2.39	7.47	34	27.3	59	6.2	< 0.1	< 3	< 10	9.81
H14550	7.7	0.43	10	0.05	0.76	> 10000	< 0.2	0.21	1.7	5.4	534	50	20	200	3.03	13.6	42	29.8	63	5.1	< 0.1	9	< 10	10.3
H14600	9.1	0.40	11	0.06	1.08	> 10000	< 0.2	0.19	2.4	6.1	641	50	20	541	2.99	15.5	46	33.6	141	5.3	< 0.1	6	< 10	15.5
H14650	11.5	0.49	16	0.05	1.06	> 10000	0.2	0.16	4.1	6.0	608	50	20	466	2.71	11.1	47	44.9	111	5.1	0.1	10	< 10	12.7
H14700	10.9	0.42	9	0.05	0.98	> 10000	< 0.2	0.16	1.2	5.9	684	50	20	459	3.07	16.2	41	24.3	70	5.9	0.1	6	< 10	16.7
H14700A	11.4	0.44	8	0.05	0.95	> 10000	< 0.2	0.15	1.0	5.4	725	50	20	364	2.92	16.9	38	20.3	68	5.7	0.1	6	< 10	14.2
H14800	9.9	0.32	23	0.05	0.96	> 10000	< 0.2	0.18	3.4	6.0	709	50	20	360	2.87	15.4	46	40.7	107	5.2	0.1	8	< 10	20.4
H16000	9.8	0.48	10	0.08	1.10	> 10000	< 0.2	0.21	2.1	7.4	782	60	30	519	2.95	17.1	43	33.4	96	6.6	0.1	7	< 10	18.0
H16050	9.5	0.47	11	0.06	0.86	> 10000	< 0.2	0.16	2.9	6.1	690	50	10	457	2.76	13.1	40	35.7	87	5.7	0.1	6	< 10	14.5
H16100	10.4	0.37	12	0.05	0.89	> 10000	< 0.2	0.18	2.6	5.2	706	50	< 10	481	2.55	13.8	40	30.0	117	4.9	< 0.1	5	< 10	17.5
H16150	9.8	0.40	8	0.05	0.85	> 10000	< 0.2	0.17	1.8	5.6	724	50	10	284	2.86	15.4	39	24.9	74	5.6	< 0.1	6	< 10	14.3
H16200	12.1	0.46	10	0.05	1.04	> 10000	< 0.2	0.16	2.3	5.9	732	50	10	576	3.08	14.4	49	49.2	111	5.4	0.1	10	< 10	15.6

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Analyte Symbol	Li	Be	B	Na	Mg	Al	Si	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Rb
Unit Symbol	ppm	ppm	ppm	%	%	ppm	%	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.5	0.08	5	0.01	0.01	2	0.2	0.01	0.1	0.5	1	10	10	0.1	0.01	0.01	5	0.2	1	0.1	0.1	3	10	0.01
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
H16250	13.1	0.52	12	0.05	1.08	> 10000	< 0.2	0.15	2.2	8.5	869	50	30	651	2.78	14.4	54	59.7	127	5.5	0.1	3	< 10	14.3
H16300	12.9	0.61	13	0.05	1.10	> 10000	< 0.2	0.15	2.9	7.0	672	60	30	2210	3.63	22.7	61	54.4	128	5.7	0.1	14	< 10	11.9
H16350	10.7	0.46	10	0.05	0.98	> 10000	< 0.2	0.16	2.7	6.4	860	50	10	1390	3.30	18.4	45	31.9	156	5.7	0.1	9	< 10	14.0
H16400	10.4	0.50	9	0.05	0.89	> 10000	< 0.2	0.14	2.0	5.2	708	50	30	570	3.02	18.3	39	26.7	81	5.7	0.1	9	< 10	13.1
H16450	11.5	0.49	12	0.05	1.05	> 10000	< 0.2	0.17	3.1	6.1	700	50	20	643	3.08	15.9	52	38.1	107	5.7	0.1	11	< 10	18.0
H16500	10.8	0.50	12	0.06	1.01	> 10000	< 0.2	0.22	1.9	6.1	697	60	20	825	3.16	16.1	51	34.4	93	5.7	< 0.1	10	< 10	19.0
H16550	12.9	0.46	25	0.08	1.47	> 10000	< 0.2	0.29	2.5	9.8	697	80	40	872	3.71	21.7	81	53.4	141	6.6	0.1	13	< 10	20.2
H16600	8.8	0.40	17	0.06	1.47	> 10000	< 0.2	0.16	1.9	7.4	832	70	30	539	3.08	17.0	50	36.6	75	5.9	< 0.1	3	< 10	10.1
H16650	10.0	0.36	21	0.04	1.07	> 10000	< 0.2	0.14	2.3	6.1	749	50	20	493	3.00	16.0	48	34.9	109	5.3	0.1	10	< 10	11.8
H16700	10.0	0.40	17	0.05	1.11	> 10000	< 0.2	0.22	1.8	6.3	711	60	20	709	3.21	16.7	53	38.1	69	5.6	0.1	9	< 10	21.6
H16800	12.7	0.44	25	0.07	1.43	> 10000	< 0.2	0.24	3.2	9.7	698	70	50	783	3.82	24.6	92	57.0	93	6.2	0.1	21	< 10	18.9
HOE30S	14.1	0.40	27	0.05	1.28	> 10000	< 0.2	0.16	4.6	6.9	738	60	30	797	3.29	16.4	57	50.3	77	5.6	0.1	13	< 10	15.3
HOE15S	10.6	0.30	16	0.05	0.93	> 10000	< 0.2	0.22	3.2	4.6	637	40	< 10	383	2.61	11.7	43	37.0	118	4.7	< 0.1	6	< 10	16.9
HOE	10.8	0.52	14	0.04	0.85	> 10000	< 0.2	0.13	4.2	7.1	790	60	20	318	3.18	19.8	53	35.4	78	6.0	0.1	8	< 10	11.2
HOE15N	8.7	0.30	9	0.04	0.70	> 10000	< 0.2	0.13	1.9	5.1	657	50	< 10	169	2.57	10.2	38	22.5	56	4.8	< 0.1	7	< 10	10.5
HOE30N	11.8	0.47	9	0.05	1.15	> 10000	< 0.2	0.15	1.4	5.9	740	50	20	434	3.23	19.0	84	37.0	81	5.5	0.1	9	< 10	7.67
HOW30S	9.7	0.38	10	0.05	1.08	> 10000	< 0.2	0.15	1.7	7.1	875	60	30	516	3.04	16.4	49	41.3	79	5.4	0.1	5	< 10	9.14
HOW15S	13.5	0.57	22	0.06	1.29	> 10000	< 0.2	0.21	3.6	7.5	699	60	40	778	3.38	18.6	64	46.9	111	6.3	0.1	12	< 10	14.3
HOW	11.3	0.35	32	0.05	1.32	> 10000	< 0.2	0.25	4.5	6.5	724	60	20	531	3.11	16.8	58	47.5	144	5.3	< 0.1	10	< 10	16.9
HOW15N	11.2	0.45	20	0.07	1.64	> 10000	< 0.2	0.25	2.3	8.1	756	70	60	624	3.53	22.1	88	54.2	116	6.2	0.1	8	< 10	12.1
HOW30N	11.8	0.42	18	0.05	1.27	> 10000	< 0.2	0.21	2.1	6.0	684	50	20	543	3.18	15.7	55	43.9	117	5.5	0.1	8	< 10	11.5
H10300	9.9	0.37	7	0.05	1.00	> 10000	< 0.2	0.12	1.1	5.8	705	50	20	382	2.90	13.5	46	28.9	78	5.2	< 0.1	7	< 10	8.84
H12150S	10.3	0.33	34	0.04	1.01	> 10000	< 0.2	0.14	3.8	6.2	582	50	20	424	2.76	14.6	46	42.9	90	5.0	< 0.1	9	< 10	18.6
H14500S	9.1	0.42	12	0.04	0.91	> 10000	< 0.2	0.12	2.3	5.9	566	50	10	1050	3.07	16.7	58	39.2	120	4.9	0.1	11	< 10	9.26
H14400S	9.5	0.47	7	0.04	0.84	> 10000	< 0.2	0.11	1.2	5.9	649	50	20	820	3.01	16.4	42	25.5	63	5.7	< 0.1	8	< 10	8.02

Analyte Symbol	Sr	Y	Zr	Nb	Mo	Ru	Pd	Ag	Cd	In	Sn	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.1	0.001	0.5	0.005	0.1	10	3	0.2	0.01	1	1	0.02	0.01	0.001	3	0.002	0.01	0.002	0.002	0.001	0.001	0.01	0.001	0.001
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
H10000	71.8	10.9	7.3	0.316	3.3	< 10	6	0.4	0.52	25	1	1.52	0.21	0.845	193	14.1	27.0	3.56	13.5	3.19	0.885	2.70	0.408	2.13
H10050	38.0	6.78	5.4	0.296	3.8	< 10	< 3	0.3	1.12	22	< 1	1.39	0.06	0.686	93	10.4	20.5	2.41	9.05	2.11	0.445	1.79	0.268	1.42
H10100	46.7	6.40	6.8	0.296	4.4	< 10	< 3	0.3	1.05	21	< 1	1.32	0.15	0.979	97	10.1	19.5	2.40	8.87	2.08	0.448	1.74	0.264	1.40
H10150	50.3	8.39	7.4	0.249	2.6	10	< 3	0.3	1.00	24	< 1	1.02	0.13	0.924	73	11.0	21.6	2.70	10.5	2.42	0.542	2.18	0.333	1.78
H10200	57.6	7.00	6.3	0.250	3.5	< 10	< 3	0.3	1.36	18	< 1	1.15	0.10	1.06	189	9.75	19.2	2.34	8.94	2.05	0.446	1.79	0.271	1.41
H10250	44.5	10.1	8.7	0.303	2.7	< 10	< 3	0.3	0.49	27	< 1	1.27	0.13	0.958	162	14.0	26.6	3.43	13.1	3.05	0.664	2.58	0.395	2.07
H10350	37.7	7.47	7.1	0.242	3.6	< 10	< 3	0.2	0.56	24	< 1	1.27	< 0.01	0.729	63	10.4	20.6	2.55	9.35	2.24	0.491	1.96	0.297	1.56
H10400	75.3	9.06	7.8	0.274	3.8	20	< 3	0.5	1.74	24	< 1	1.52	0.10	2.60	179	12.4	24.5	3.12	11.7	2.67	0.587	2.31	0.358	1.84
H10450	34.9	9.20	7.9	0.218	2.6	< 10	< 3	0.3	1.38	28	< 1	1.16	0.09	1.07	150	11.9	23.8	2.97	11.3	2.77	0.591	2.37	0.351	1.85
H10500	41.7	6.26	5.8	0.185	2.8	< 10	< 3	0.3	0.53	20	< 1	1.10	0.08	0.857	53	8.64	17.0	2.11	7.91	1.85	0.395	1.55	0.243	1.29
H10550	37.4	7.56	6.6	0.298	2.4	< 10	< 3	0.2	0.35	20	< 1	1.17	0.08	0.791	57	11.2	22.0	2.71	10.1	2.35	0.500	1.99	0.304	1.57
H10600	73.4	10.8	8.0	0.295	2.6	20	< 3	0.5	0.62	27	< 1	1.27	0.05	1.23	230	14.9	27.5	3.54	13.3	3.13	0.684	2.69	0.414	2.14
H10650	100.0	5.81	7.3	0.352	2.3	< 10	< 3	0.3	0.65	22	< 1	1.22	0.14	0.817	195	8.69	17.5	2.11	7.69	1.79	0.397	1.57	0.241	1.25
H10700	87.0	8.85	8.5	0.238	2.7	< 10	< 3	0.3	0.76	28	< 1	1.16	< 0.01	1.43	153	10.9	22.4	2.74	10.5	2.56	0.582	2.20	0.343	1.81
H10800A	67.6	12.2	8.7	0.227	1.5	10	< 3	0.4	0.37	30	< 1	1.07	0.09	1.01	208	12.9	25.4	3.24	12.9	3.12	0.747	2.81	0.438	2.36
H10800	55.0	11.4	8.1	0.217	1.2	20	< 3	0.3	0.31	29	< 1	0.95	0.07	0.887	179	11.3	22.6	2.97	11.8	2.96	0.704	2.59	0.415	2.22
H12000	30.8	8.13	7.4	0.317	3.4	10	< 3	0.3	0.65	28	< 1	1.49	0.05	0.946	90	12.1	24.2	2.90	11.0	2.57	0.557	2.18	0.331	1.70
H12050	48.1	8.62	7.5	0.322	6.4	10	< 3	0.2	1.23	24	< 1	1.73	0.04	1.38	79	12.5	24.1	2.98	11.1	2.60	0.575	2.20	0.334	1.69
H12100	49.5	9.48	5.9	0.151	2.0	10	< 3	0.3	0.79	30	< 1	0.83	0.07	0.946	73	8.32	17.0	2.18	8.85	2.38	0.636	2.13	0.348	1.93
H12200	56.6	8.58	8.4	0.289	3.2	10	< 3	0.3	0.29	22	< 1	1.11	0.09	0.962	202	12.4	24.4	3.05	11.6	2.65	0.588	2.21	0.341	1.74
H12250	55.2	10.2	8.7	0.176	1.1	20	< 3	0.5	0.41	26	< 1	0.68	0.09	0.871	110	10.3	19.7	2.67	10.4	2.65	0.682	2.34	0.373	2.03
H12300	56.1	8.75	9.2	0.209	1.9	20	< 3	0.3	0.54	26	< 1	1.03	0.03	0.961	118	9.68	18.8	2.49	9.74	2.39	0.597	2.03	0.321	1.73
H12350	78.2	7.09	7.1	0.242	3.3	< 10	< 3	0.4	0.72	21	< 1	1.36	0.10	1.14	118	9.92	19.7	2.36	9.05	2.11	0.457	1.83	0.282	1.50
H12400	57.2	7.72	7.5	0.276	3.3	< 10	< 3	0.3	2.00	23	< 1	1.45	0.10	1.04	113	11.1	22.0	2.72	10.2	2.33	0.489	2.01	0.312	1.60
H12450	85.8	9.38	8.7	0.304	3.1	< 10	< 3	0.3	1.68	28	< 1	1.31	0.06	1.10	149	12.3	23.2	3.03	11.4	2.70	0.616	2.35	0.365	1.91
H12500	40.0	7.01	7.5	0.280	2.8	< 10	< 3	0.3	1.26	22	< 1	1.20	< 0.01	0.917	59	10.1	19.7	2.39	8.90	2.07	0.470	1.80	0.272	1.43
H12550	72.4	7.22	7.8	0.321	3.5	< 10	< 3	0.3	2.12	22	< 1	2.12	0.13	1.26	104	11.2	21.9	2.68	9.73	2.23	0.477	1.94	0.293	1.49
H12600	102	8.87	7.5	0.339	4.8	< 10	< 3	0.4	1.61	23	< 1	1.61	0.09	1.70	106	11.7	23.4	2.89	11.0	2.62	0.568	2.25	0.345	1.81
H12650	57.9	8.68	8.0	0.261	3.5	20	< 3	0.2	0.58	27	< 1	1.60	0.03	1.18	120	12.6	24.9	3.11	11.8	2.72	0.587	2.32	0.354	1.86
H12750	43.8	10.3	6.8	0.216	1.9	< 10	< 3	0.2	0.29	27	< 1	1.17	0.05	0.869	154	12.7	23.1	3.08	11.7	2.76	0.647	2.44	0.378	2.02
H12800	58.0	13.1	9.7	0.258	3.1	< 10	< 3	0.3	0.87	28	< 1	1.71	0.07	1.16	194	14.1	24.7	3.48	13.0	3.28	0.781	2.92	0.470	2.44
H14000	112	14.7	12.5	0.283	4.3	10	< 3	0.4	0.73	30	< 1	1.79	0.18	1.17	275	18.0	33.8	4.56	17.4	4.08	0.926	3.55	0.551	2.98
H14050	80.0	7.45	8.4	0.275	4.3	10	< 3	0.3	0.87	28	< 1	1.81	0.10	1.60	163	11.5	22.0	2.63	9.80	2.30	0.496	2.00	0.311	1.60
H14050A	82.8	7.46	7.9	0.303	4.4	10	< 3	0.3	0.86	28	< 1	1.84	0.05	1.50	171	11.8	22.7	2.77	10.3	2.40	0.503	2.03	0.307	1.58
H14100	56.7	9.45	8.3	0.269	4.6	< 10	< 3	0.3	1.17	28	< 1	1.35	< 0.01	1.26	144	13.7	29.2	3.42	12.9	3.04	0.614	2.51	0.390	1.98
H14150	56.0	9.08	9.7	0.329	4.3	10	< 3	0.3	0.39	32	< 1	1.38	0.07	1.21	179	13.7	27.4	3.47	13.2	3.02	0.633	2.44	0.382	1.95
H14200	80.1	11.3	9.5	0.333	3.8	10	< 3	0.3	0.92	29	< 1	1.59	0.11	1.30	240	15.7	30.6	3.82	14.5	3.43	0.737	2.91	0.435	2.22
H14250	88.0	9.89	9.6	0.317	3.8	20	< 3	0.3	0.56	31	< 1	1.66	0.09	1.37	275	14.5	27.9	3.45	12.8	2.97	0.643	2.58	0.396	2.00
H14300	48.8	9.48	7.7	0.251	3.7	20	< 3	0.3	0.90	26	< 1	1.59	< 0.01	1.15	127	12.3	23.5	3.00	11.5	2.75	0.590	2.28	0.365	1.95
H14350	81.0	9.28	8.4	0.298	3.8	< 10	< 3	0.3	0.71	28	< 1	1.72	0.02	1.44	181	12.0	22.8	2.93	10.8	2.63	0.601	2.26	0.357	1.91
H14450	44.5	8.63	10.0	0.301	2.5	< 10	< 3	0.3	0.19	26	< 1	1.08	0.02	1.20	161	13.2	24.7	3.13	11.9	2.72	0.595	2.33	0.334	1.74
H14550	55.0	8.17	6.4	0.246	4.4	< 10	< 3	< 0.2	1.53	28	< 1	1.78	< 0.01	0.799	140	12.1	22.9	2.84	10.7	2.48	0.545	2.08	0.316	1.64
H14600	74.4	7.47	8.6	0.204	3.0	< 10	< 3	0.3	1.87	23	< 1	1.05	0.05	1.24	118	9.27	19.0	2.40	9.24	2.23	0.494	1.88	0.292	1.55
H14650	118	12.5	10.2	0.281	2.4	< 10	< 3	0.3	1.18	27	< 1	1.32	0.06	1.26	186	15.6	28.1	3.69	15.2	3.59	0.777	3.06	0.470	2.47
H14700	43.4	8.69	9.0	0.288	2.9	10	< 3	0.2	0.26	26	< 1	1.20	0.09	1.16	109	12.3	23.7	2.97	10.9	2.52	0.579	2.24	0.338	1.75
H14700A	37.0	8.87	8.2	0.308	3.1	< 10	< 3	0.2	0.28	28	< 1	1.31	0.05	1.03	84	12.6	24.5	3.09	11.6	2.67	0.582	2.29	0.339	1.83
H14800	78.7	7.72	8.2	0.284	3.2	10	< 3	0.3	0.47	23	< 1	1.45	0.07	2.18	154	10.2	19.2	2.45	9.35	2.31	0.517	1.96	0.300	1.54
H16000	82.4	9.21	10.4	0.315	3.4	< 10	< 3	0.3	0.86	29	< 1	1.29	0.06	1.59	120	13.3	25.9	3.25	12.0	2.89	0.664	2.46	0.379	1.97
H16050	89.4	8.75	9.0	0.302	3.3	< 10	< 3	0.3	0.52	27	< 1	1.44	0.10	1.16	161	12.4	23.1	2.93	11.0	2.61	0.579	2.23	0.334	1.71
H16100	79.1	7.38	8.6	0.320	3.4	10	< 3	0.2	1.11	25	< 1	1.44	0.04	1.32	159	11.1	21.4	2.70	10.0	2.30	0.495	1.94	0.298	1.52
H16150	56.0	8.52	8.3	0.314	4.3	20	< 3	0.2	0.61	27	< 1	1.61	0.02	1.09	81	13.0	25.2	3.15	11.9	2.79	0.585	2.33	0.360	1.84
H16200	76.9	9.31	9.8	0.285	3.6	20	< 3	0.3	0.65	27	< 1	1.58	0.04	1.24	153	12.6	25.5	3.17	12.2	2.82	0.613	2.41	0.368	1.93

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Analyte Symbol	Sr	Y	Zr	Nb	Mo	Ru	Pd	Ag	Cd	In	Sn
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppm	ppm	ppb	ppm
Detection Limit	0.1	0.001	0.5	0.005	0.1	10	3	0.2	0.01	1	1
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
H16250	71.6	11.8	9.4	0.220	2.2	10	< 3	0.3	1.09	26	< 1
H16300	63.7	13.5	11.8	0.236	4.0	10	< 3	0.4	0.78	29	< 1
H16350	67.9	10.9	10.2	0.262	5.0	< 10	< 3	0.3	0.68	30	< 1
H16400	56.7	10.0	9.1	0.293	3.5	< 10	< 3	0.3	0.38	30	< 1
H16450	106	11.3	10.2	0.313	3.3	< 10	< 3	0.5	0.56	29	< 1
H16500	61.2	8.49	8.2	0.231	3.9	10	< 3	0.5	0.72	28	< 1
H16550	75.6	11.2	8.6	0.203	2.3	< 10	< 3	0.3	0.67	31	< 1
H16600	56.6	7.71	7.5	0.154	1.4	10	< 3	0.2	0.69	23	< 1
H16650	68.7	7.86	8.5	0.244	3.6	20	< 3	0.3	0.43	25	< 1
H16700	55.0	8.56	7.7	0.247	3.7	< 10	< 3	0.3	0.34	26	< 1
H16800	61.5	10.1	8.6	0.237	3.2	10	< 3	0.5	0.92	31	< 1
HOE30S	104	10.1	9.6	0.271	5.0	10	< 3	0.3	0.67	28	< 1
HOE15S	55.2	8.94	7.2	0.259	4.4	10	< 3	0.3	4.02	32	< 1
HOE	98.0	11.3	8.8	0.376	4.1	20	< 3	0.3	1.29	29	< 1
HOE15N	54.8	5.98	7.1	0.365	3.6	< 10	< 3	0.2	0.69	23	< 1
HOE30N	39.1	9.27	8.8	0.273	3.4	10	< 3	0.3	0.59	27	< 1
HOW30S	49.3	9.23	8.3	0.232	1.8	10	< 3	0.2	0.75	26	< 1
HOW15S	107	9.91	9.0	0.266	3.3	< 10	< 3	0.3	0.83	28	< 1
HOW	153	8.68	8.2	0.251	3.9	< 10	< 3	0.4	2.11	26	< 1
HOW15N	56.1	9.92	8.6	0.211	2.8	10	< 3	0.4	1.75	28	< 1
HOW30N	76.6	9.47	8.1	0.253	3.4	< 10	< 3	0.3	1.30	25	< 1
H10300	42.3	6.83	7.2	0.244	2.9	< 10	< 3	0.2	0.56	22	< 1
H12150S	90.8	6.94	7.3	0.254	3.4	10	< 3	0.3	0.42	24	< 1
H14500S	74.1	9.23	8.3	0.191	2.7	10	< 3	0.3	0.91	24	< 1
H14400S	45.4	10.7	8.0	0.262	3.9	< 10	< 3	0.2	0.91	29	< 1

Analyte Symbol	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.02	0.01	0.001	3	0.002	0.01	0.002	0.002	0.001	0.001	0.01	0.001	0.001
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
H16250	1.09	0.04	1.09	182	14.4	24.0	3.56	13.6	3.19	0.743	2.78	0.423	2.27
H16300	1.58	< 0.01	1.20	225	16.3	29.1	4.00	15.3	3.74	0.841	3.25	0.492	2.66
H16350	1.49	0.05	1.16	221	14.3	27.1	3.47	13.3	3.15	0.694	2.73	0.412	2.22
H16400	1.47	0.74	1.29	207	14.9	28.5	3.54	13.5	3.05	0.653	2.64	0.394	2.02
H16450	1.48	0.10	1.47	292	15.2	28.9	3.71	13.7	3.24	0.710	2.72	0.427	2.22
H16500	1.48	0.01	1.30	328	12.3	24.5	2.99	11.1	2.66	0.546	2.15	0.344	1.76
H16550	1.35	0.07	1.70	252	11.3	22.1	2.93	11.6	2.96	0.758	2.67	0.415	2.23
H16600	0.70	< 0.01	0.925	116	8.16	17.5	2.12	8.43	2.07	0.479	1.84	0.298	1.60
H16650	1.49	< 0.01	0.911	129	10.7	20.9	2.61	9.98	2.37	0.541	2.03	0.313	1.72
H16700	1.43	0.03	1.40	146	10.5	21.2	2.64	10.3	2.49	0.575	2.17	0.328	1.76
H16800	1.76	0.08	1.85	190	11.3	22.4	2.85	11.0	2.84	0.673	2.44	0.390	2.09
HOE30S	1.58	0.07	1.58	141	13.1	25.4	3.26	12.7	3.02	0.653	2.53	0.396	2.11
HOE15S	1.49	< 0.01	1.49	90	10.3	20.2	2.50	9.57	2.17	0.470	1.88	0.275	1.48
HOE	1.71	0.06	1.28	108	15.0	28.6	3.70	14.0	3.28	0.726	2.83	0.436	2.30
HOE15N	1.44	0.06	0.961	81	9.62	18.9	2.32	8.51	1.94	0.439	1.64	0.253	1.32
HOE30N	1.59	0.09	0.919	86	12.8	25.0	3.13	11.6	2.81	0.615	2.41	0.367	1.92
HOW30S	0.90	0.02	0.745	104	10.5	21.7	2.71	10.6	2.51	0.559	2.22	0.349	1.87
HOW15S	1.42	0.06	2.32	216	12.5	24.6	3.05	11.9	2.89	0.682	2.44	0.382	2.01
HOW	1.58	0.07	1.51	236	11.0	22.3	2.81	10.7	2.59	0.582	2.19	0.351	1.85
HOW15N	1.24	0.07	1.19	101	11.2	21.6	2.82	11.2	2.68	0.645	2.48	0.387	2.04
HOW30N	1.56	0.10	0.933	108	12.0	22.5	2.95	11.5	2.81	0.607	2.35	0.363	1.91
H10300	1.31	0.03	0.708	98	9.93	19.4	2.44	8.97	2.06	0.449	1.73	0.269	1.43
H12150S	1.34	0.09	0.971	127	9.19	18.4	2.34	8.61	2.12	0.494	1.76	0.283	1.49
H14500S	1.43	0.09	0.796	330	11.9	24.6	3.01	11.4	2.79	0.618	2.42	0.378	1.92
H14400S	1.30	0.95	0.753	216	14.3	27.9	3.58	13.6	3.20	0.708	2.72	0.414	2.22

Analyte Symbol	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Pt	Au	Tl	Pb	Bi	Th	U	Ash Yield
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.5	0.1	2	5	0.001	0.1	0.05	0.001	0.001	
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
H10000	0.397	1.15	0.147	0.965	0.147	0.16	0.005	0.7	1.4	< 2	< 5	0.143	8.8	0.20	3.57	1.34	59.4
H10050	0.263	0.733	0.093	0.611	0.091	0.13	0.003	< 0.5	0.4	< 2	< 5	0.153	7.8	0.16	3.07	1.07	56.8
H10100	0.260	0.718	0.090	0.585	0.087	0.15	0.006	< 0.5	0.4	< 2	< 5	0.169	7.3	0.14	2.89	1.05	58.1
H10150	0.331	0.897	0.115	0.723	0.109	0.17	0.005	< 0.5	0.8	< 2	< 5	0.168	9.7	0.13	3.26	1.07	63.4
H10200	0.260	0.727	0.093	0.586	0.091	0.14	0.003	< 0.5	0.6	< 2	< 5	0.180	8.9	0.14	2.45	0.949	48.9
H10250	0.380	1.07	0.138	0.879	0.141	0.19	0.005	< 0.5	0.4	< 2	< 5	0.151	8.4	0.17	3.81	1.27	67.9
H10350	0.286	0.796	0.104	0.639	0.099	0.16	0.003	< 0.5	0.6	< 2	< 5	0.148	7.8	0.17	3.14	0.900	65.9
H10400	0.345	0.979	0.123	0.776	0.121	0.15	0.003	< 0.5	0.8	< 2	< 5	0.187	8.7	0.14	3.29	1.08	51.3
H10450	0.353	0.969	0.125	0.822	0.120	0.17	0.004	< 0.5	0.4	< 2	< 5	0.191	12.7	0.15	3.29	0.810	83.1
H10500	0.235	0.661	0.085	0.529	0.079	0.12	0.002	< 0.5	1.0	< 2	< 5	0.171	6.0	0.15	2.57	0.849	41.5
H10550	0.289	0.823	0.100	0.650	0.098	0.15	0.006	< 0.5	0.3	< 2	< 5	0.102	8.0	0.15	3.00	1.12	61.8
H10600	0.407	1.13	0.141	0.915	0.142	0.16	0.006	< 0.5	0.9	< 2	< 5	0.194	8.5	0.14	3.56	1.28	50.6
H10650	0.233	0.639	0.086	0.560	0.085	0.16	0.011	< 0.5	1.5	< 2	< 5	0.179	7.3	0.14	3.31	1.41	53.0
H10700	0.338	0.948	0.124	0.799	0.120	0.18	0.005	< 0.5	1.4	< 2	< 5	0.202	8.0	0.12	3.07	1.05	60.8
H10800A	0.445	1.23	0.161	1.03	0.157	0.20	0.005	< 0.5	1.9	< 2	< 5	0.143	7.8	0.12	3.12	1.00	57.5
H10800	0.422	1.19	0.152	0.946	0.146	0.17	0.004	< 0.5	1.0	< 2	< 5	0.115	8.1	0.12	3.02	0.914	67.3
H12000	0.317	0.877	0.115	0.721	0.110	0.16	0.004	< 0.5	0.5	< 2	< 5	0.204	9.2	0.16	3.59	1.26	60.3
H12050	0.319	0.894	0.114	0.749	0.111	0.16	0.006	< 0.5	1.1	< 2	< 5	0.230	20.5	0.16	3.39	1.32	37.5
H12100	0.353	0.974	0.124	0.774	0.118	0.13	0.001	< 0.5	1.3	< 2	< 5	0.107	7.6	0.10	1.88	0.604	69.0
H12200	0.327	0.922	0.117	0.774	0.117	0.18	0.008	< 0.5	1.0	< 2	< 5	0.238	7.9	0.12	3.04	1.24	57.0
H12250	0.390	1.07	0.140	0.892	0.138	0.20	0.006	< 0.5	0.4	< 2	< 5	0.158	7.3	0.11	2.58	0.846	62.7
H12300	0.333	0.912	0.120	0.760	0.121	0.19	0.006	< 0.5	1.3	< 2	< 5	0.182	7.2	0.11	2.53	0.896	62.6
H12350	0.283	0.775	0.099	0.637	0.093	0.14	0.003	< 0.5	0.5	< 2	< 5	0.158	9.6	0.13	2.87	1.15	52.4
H12400	0.302	0.854	0.105	0.653	0.100	0.15	0.004	< 0.5	5.5	< 2	< 5	0.192	8.5	0.18	3.48	1.68	38.3
H12450	0.357	0.997	0.128	0.838	0.129	0.16	0.005	< 0.5	1.0	< 2	< 5	0.204	8.3	0.13	3.51	1.22	49.7
H12500	0.262	0.753	0.099	0.622	0.093	0.15	0.002	< 0.5	1.0	< 2	89	0.142	7.3	0.13	2.81	0.938	60.1
H12550	0.277	0.762	0.101	0.643	0.096	0.15	0.004	< 0.5	1.3	< 2	< 5	0.215	8.6	0.14	3.61	1.47	38.2
H12600	0.335	0.939	0.119	0.760	0.115	0.14	0.004	< 0.5	1.5	< 2	< 5	0.165	11.5	0.14	3.26	1.33	26.1
H12650	0.339	0.971	0.125	0.766	0.120	0.17	0.003	< 0.5	1.2	< 2	< 5	0.195	9.9	0.16	3.73	1.56	44.6
H12750	0.378	1.03	0.134	0.854	0.126	0.15	0.005	< 0.5	1.1	< 2	< 5	0.175	8.2	0.16	3.68	1.21	59.6
H12800	0.479	1.32	0.167	1.06	0.167	0.21	0.006	< 0.5	0.9	< 2	< 5	0.220	7.9	0.17	3.68	1.52	51.5
H14000	0.564	1.53	0.205	1.34	0.210	0.25	0.009	< 0.5	2.1	< 2	< 5	0.284	6.9	0.15	3.58	1.91	49.9
H14050	0.268	0.788	0.103	0.646	0.102	0.17	0.005	< 0.5	0.8	< 2	< 5	0.215	7.6	0.17	3.13	1.28	45.4
H14050A	0.291	0.802	0.104	0.666	0.105	0.17	0.006	< 0.5	1.6	< 2	< 5	0.236	58.0	0.17	3.27	1.28	42.5
H14100	0.374	1.06	0.131	0.814	0.122	0.16	0.004	< 0.5	0.5	< 2	< 5	0.272	8.9	0.16	3.33	1.46	50.4
H14150	0.367	1.01	0.131	0.840	0.125	0.21	0.005	< 0.5	0.7	< 2	< 5	0.210	9.9	0.17	3.88	1.51	64.4
H14200	0.421	1.19	0.150	0.953	0.148	0.19	0.006	< 0.5	0.7	< 2	< 5	0.265	8.2	0.17	3.75	1.52	54.9
H14250	0.374	1.06	0.136	0.916	0.141	0.19	0.006	< 0.5	1.2	< 2	< 5	0.249	8.1	0.18	4.15	1.48	51.5
H14300	0.366	1.00	0.124	0.804	0.122	0.16	0.003	< 0.5	1.0	< 2	< 5	0.191	8.8	0.14	3.54	1.13	58.2
H14350	0.341	0.966	0.127	0.797	0.129	0.17	0.004	< 0.5	0.7	< 2	< 5	0.215	7.9	0.13	3.35	1.19	38.0
H14450	0.332	0.894	0.117	0.781	0.115	0.22	0.007	< 0.5	0.4	< 2	< 5	0.235	7.0	0.15	3.35	1.42	65.5
H14550	0.304	0.846	0.112	0.759	0.114	0.09	0.006	< 0.5	0.8	< 2	< 5	0.197	8.4	0.18	3.48	1.50	32.8
H14600	0.287	0.785	0.109	0.687	0.105	0.19	0.006	< 0.5	1.1	< 2	< 5	0.196	7.1	0.13	2.69	0.940	48.4
H14650	0.463	1.31	0.163	1.06	0.167	0.19	0.006	< 0.5	0.7	< 2	< 5	0.213	7.2	0.15	3.63	1.34	40.1
H14700	0.330	0.929	0.116	0.726	0.115	0.19	0.006	< 0.5	0.7	14	< 5	0.198	7.6	0.15	3.22	1.13	68.8
H14700A	0.340	0.961	0.124	0.789	0.115	0.18	0.006	< 0.5	0.6	37	< 5	0.198	8.6	0.16	3.40	1.26	65.3
H14800	0.294	0.815	0.110	0.709	0.111	0.17	0.007	< 0.5	1.1	4	< 5	0.216	9.6	0.14	3.36	1.28	42.9
H16000	0.361	0.997	0.125	0.821	0.124	0.22	0.010	< 0.5	0.7	< 2	< 5	0.254	8.1	0.18	3.38	1.39	46.5
H16050	0.325	0.911	0.118	0.755	0.113	0.18	0.010	< 0.5	1.6	< 2	< 5	0.226	7.8	0.16	3.20	1.25	48.0
H16100	0.290	0.808	0.102	0.668	0.103	0.18	0.005	< 0.5	0.7	< 2	< 5	0.216	7.9	0.14	3.08	1.23	41.5
H16150	0.341	0.920	0.122	0.775	0.117	0.16	0.006	< 0.5	1.6	< 2	236	0.201	8.6	0.18	3.66	1.31	44.4
H16200	0.351	0.992	0.127	0.820	0.123	0.20	0.004	< 0.5	1.8	< 2	< 5	0.199	8.1	0.16	3.49	1.21	50.0

Analyte Symbol	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Pt	Au	Tl	Pb	Bi	Th	U	Ash Yield
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.5	0.1	2	5	0.001	0.1	0.05	0.001	0.001	
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
H16250	0.428	1.18	0.157	0.993	0.158	0.19	0.004	< 0.5	2.0	< 2	< 5	0.237	228	0.13	3.02	1.02	50.7
H16300	0.497	1.43	0.179	1.14	0.182	0.23	0.005	< 0.5	7.2	< 2	< 5	0.257	7.8	0.17	3.61	1.46	57.2
H16350	0.392	1.12	0.150	0.944	0.150	0.20	0.006	< 0.5	1.7	< 2	< 5	0.221	11.6	0.18	3.64	1.53	54.2
H16400	0.373	1.02	0.132	0.860	0.128	0.20	0.007	< 0.5	0.6	< 2	< 5	0.237	8.1	0.17	3.76	1.39	43.7
H16450	0.398	1.16	0.150	0.991	0.153	0.20	0.008	< 0.5	0.9	< 2	< 5	0.283	7.7	0.16	4.04	1.45	43.5
H16500	0.330	0.924	0.112	0.738	0.113	0.16	0.002	< 0.5	1.4	< 2	< 5	0.209	8.1	0.16	3.34	1.08	56.4
H16550	0.411	1.13	0.146	0.948	0.146	0.18	0.003	< 0.5	0.4	< 2	< 5	0.193	8.1	0.13	2.59	0.817	52.0
H16600	0.291	0.795	0.107	0.673	0.102	0.17	0.002	< 0.5	2.0	< 2	< 5	0.139	5.7	0.09	2.16	0.996	58.6
H16650	0.310	0.839	0.111	0.728	0.109	0.18	0.004	< 0.5	0.5	< 2	< 5	0.164	9.2	0.14	3.28	1.32	43.0
H16700	0.333	0.914	0.120	0.745	0.114	0.16	0.005	< 0.5	0.3	< 2	< 5	0.164	7.6	0.14	2.84	1.08	61.1
H16800	0.378	1.04	0.132	0.866	0.135	0.18	0.005	< 0.5	1.7	< 2	< 5	0.179	8.2	0.13	2.90	1.17	50.2
HOE30S	0.389	1.08	0.138	0.889	0.135	0.18	0.003	< 0.5	1.8	< 2	< 5	0.195	7.8	0.14	3.55	1.68	38.5
HOE15S	0.266	0.751	0.097	0.621	0.091	0.15	0.003	< 0.5	0.7	< 2	< 5	0.276	8.3	0.18	3.18	0.970	34.9
HOE	0.434	1.18	0.153	0.971	0.148	0.19	0.011	< 0.5	0.8	< 2	< 5	0.179	8.6	0.23	3.89	1.52	47.1
HOE15N	0.240	0.672	0.087	0.556	0.086	0.16	0.008	< 0.5	0.5	< 2	< 5	0.183	6.5	0.14	3.48	1.27	46.5
HOE30N	0.362	0.999	0.124	0.782	0.123	0.18	0.004	< 0.5	0.9	< 2	25	0.151	8.5	0.16	3.73	1.31	69.6
HOW30S	0.352	0.968	0.131	0.766	0.120	0.18	0.002	< 0.5	0.9	< 2	< 5	0.147	7.0	0.11	2.78	0.814	84.8
HOW15S	0.375	1.03	0.135	0.857	0.135	0.20	0.003	< 0.5	1.0	< 2	< 5	0.165	9.5	0.16	3.61	0.973	51.8
HOW	0.350	0.959	0.126	0.809	0.124	0.17	0.003	< 0.5	1.3	< 2	< 5	0.155	8.1	0.12	2.65	1.09	44.5
HOW15N	0.387	1.06	0.138	0.876	0.130	0.19	0.003	< 0.5	1.4	< 2	< 5	0.155	8.3	0.11	2.45	0.879	71.1
HOW30N	0.364	1.00	0.125	0.806	0.122	0.17	0.003	< 0.5	1.2	< 2	< 5	0.186	8.5	0.14	3.48	1.17	46.7
H10300	0.261	0.730	0.095	0.594	0.092	0.15	0.001	< 0.5	0.5	< 2	< 5	0.171	7.8	0.13	3.31	0.673	63.3
H12150S	0.281	0.779	0.096	0.655	0.098	0.16	0.006	< 0.5	0.5	< 2	< 5	0.190	7.1	0.16	2.80	1.05	41.2
H14500S	0.361	1.01	0.131	0.832	0.130	0.18	0.002	0.7	0.2	< 2	< 5	0.141	7.8	0.14	3.45	1.12	64.9
H14400S	0.408	1.14	0.149	0.920	0.142	0.17	0.005	< 0.5	0.6	8	< 5	0.161	8.1	0.16	3.65	1.35	64.3

Quality Control

Analyte Symbol	Li	Be	B	Na	Mg	Al	Si	K	Ca	Sc	Ti
Unit Symbol	ppm	ppm	ppm	%	%	ppm	%	%	%	ppm	ppm
Detection Limit	0.5	0.08	5	0.01	0.01	2	0.2	0.01	0.1	0.5	1
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
New Ash Meas	8.7	0.15	294	0.12	2.35	3910	0.5	> 10.0	24.6	1.7	113
New Ash Cert	9.3	0.11	411.00	0.12	2.57	4161.00	0.40	13.08	20.2	2.30	126.00
H10700 Orig	11.7	0.39	20	0.06	1.24	> 10000	< 0.2	0.16	3.3	7.5	723
H10700 Dup	12.2	0.42	19	0.06	1.24	> 10000	< 0.2	0.16	3.4	7.3	797
H12600 Orig	13.1	0.38	32	0.07	1.34	> 10000	< 0.2	0.49	4.2	6.1	779
H12600 Dup	12.5	0.35	36	0.07	1.35	> 10000	< 0.2	0.49	4.5	6.1	740
H14550 Orig	8.1	0.44	11	0.05	0.81	> 10000	< 0.2	0.22	2.0	5.8	572
H14550 Dup	7.4	0.42	9	0.05	0.70	> 10000	< 0.2	0.20	1.4	4.9	496
H16400 Orig	10.8	0.52	8	0.05	0.93	> 10000	< 0.2	0.15	2.1	5.3	715
H16400 Dup	10.0	0.48	10	0.05	0.84	> 10000	< 0.2	0.14	1.9	5.2	701
H14400S Orig	10.0	0.47	8	0.04	0.83	> 10000	< 0.2	0.11	1.2	5.9	641
H14400S Dup	9.1	0.47	7	0.04	0.85	> 10000	< 0.2	0.11	1.2	6.0	657
Method Blank	< 0.5	< 0.08	< 5	< 0.01	< 0.01	< 2	< 0.2	< 0.01	< 0.1	< 0.5	< 1

Analyte Symbol	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Rb
Unit Symbol	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	10	10	0.1	0.01	0.01	5	0.2	1	0.1	0.1	3	10	0.01
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
New Ash Meas			257	0.19	1.29	7	124	200	1.4	0.2	33		95.8
New Ash Cert			235.70	0.20	1.33	7.00	155.20	250.00	1.30	0.40	19		98.16
H10700 Orig	60	30	630	3.27	18.5	62	45.1	104	6.0	0.1	12	< 10	12.9
H10700 Dup	60	30	639	3.14	19.1	64	45.5	106	6.1	0.1	10	< 10	12.7
H12600 Orig	50	40	854	3.10	16.8	55	54.0	96	5.4	0.1	13	< 10	18.4
H12600 Dup	60	30	873	3.26	16.7	55	54.8	97	5.4	0.1	12	< 10	18.2
H14550 Orig	50	20	213	3.21	14.3	45	31.6	87	5.4	< 0.1	10	< 10	10.8
H14550 Dup	50	20	186	2.85	12.8	40	28.0	79	4.7	< 0.1	9	< 10	9.78
H16400 Orig	50	30	585	3.13	19.1	41	27.0	83	5.9	0.1	9	< 10	13.6
H16400 Dup	50	20	558	2.92	17.4	37	26.4	79	5.5	0.1	9	< 10	12.7
H14400S Orig	50	20	800	2.81	16.3	41	25.3	82	5.6	< 0.1	8	< 10	5.90
H14400S Dup	60	20	841	3.11	16.4	43	25.8	84	5.8	0.1	8	< 10	6.14
Method Blank	< 10	< 10	< 0.1	< 0.01	< 0.01	< 5	< 0.2	< 1	< 0.1	< 0.1	< 3	< 10	< 0.01

Quality Control

Analyte Symbol	Sr	Y	Zr	Nb	Mo	Ru	Pd	Ag	Cd	In	Sn
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppm	ppm	ppb	ppm
Detection Limit	0.1	0.001	0.5	0.005	0.1	10	3	0.2	0.01	1	1
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
New Ash Meas	2610	1.15	4.8	0.374	2.1				0.61	6	
New Ash Cert	2176.80	1.09	2.20	0.35	1.70				0.53	6	
H10700 Orig	85.7	8.71	8.7	0.231	2.7	< 10	< 3	0.3	0.74	26	< 1
H10700 Dup	88.3	8.98	8.4	0.244	2.7	< 10	< 3	0.3	0.78	26	< 1
H12600 Orig	101	8.97	7.6	0.355	4.6	< 10	< 3	0.4	1.61	24	< 1
H12600 Dup	103	8.78	7.3	0.322	4.9	< 10	< 3	0.4	1.61	23	< 1
H14550 Orig	60.7	9.04	8.7	0.256	4.6	< 10	< 3	< 0.2	1.58	29	< 1
H14550 Dup	49.4	7.29	8.2	0.236	4.1	< 10	< 3	< 0.2	1.48	27	< 1
H16400 Orig	57.8	10.4	9.3	0.274	3.7	20	< 3	0.3	0.40	30	< 1
H16400 Dup	55.6	9.68	8.9	0.313	3.4	< 10	< 3	0.3	0.38	30	< 1
H14400S Orig	44.9	10.5	8.0	0.272	3.9	20	< 3	0.2	0.91	26	< 1
H14400S Dup	45.8	10.9	8.1	0.251	3.9	< 10	< 3	0.3	0.91	30	< 1
Method Blank	< 0.1	< 0.001	< 0.5	< 0.005	< 0.1	< 10	< 3	< 0.2	< 0.01	< 1	< 1

Analyte Symbol	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.02	0.01	0.001	3	0.002	0.01	0.002	0.002	0.001	0.001	0.01	0.001	0.001
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
New Ash Meas	0.30	2.42	0.261	238	2.19	3.93	0.468	1.64	0.381	0.079	0.31	0.044	0.215
New Ash Cert	0.29	1.42	0.27	215.00	2.20	4.15	0.47	1.71	0.34	0.08	0.30	0.04	0.19
H10700 Orig	1.16	< 0.01	1.42	153	10.6	21.9	2.69	10.1	2.50	0.572	2.17	0.342	1.80
H10700 Dup	1.17	< 0.01	1.45	154	11.2	22.8	2.78	10.8	2.63	0.592	2.23	0.344	1.83
H12600 Orig	1.50	0.09	1.72	101	11.8	23.5	2.87	11.0	2.58	0.556	2.24	0.339	1.79
H12600 Dup	1.72	0.10	1.87	110	11.6	23.2	2.91	10.9	2.66	0.580	2.26	0.351	1.82
H14550 Orig	1.82	< 0.01	0.847	152	13.1	24.3	3.03	11.4	2.66	0.583	2.24	0.341	1.77
H14550 Dup	1.74	< 0.01	0.751	128	11.1	21.5	2.64	9.99	2.31	0.507	1.93	0.291	1.51
H16400 Orig	1.48	0.79	1.30	215	15.2	29.1	3.54	13.6	3.10	0.660	2.75	0.405	2.05
H16400 Dup	1.45	0.70	1.28	200	14.7	28.0	3.53	13.4	3.00	0.647	2.53	0.382	1.99
H14400S Orig	1.29	0.89	0.751	215	14.3	27.4	3.53	13.5	3.14	0.695	2.72	0.408	2.21
H14400S Dup	1.31	1.02	0.755	217	14.4	28.4	3.63	13.7	3.27	0.720	2.72	0.421	2.23
Method Blank	< 0.02	< 0.01	< 0.001	< 3	< 0.002	< 0.01	< 0.002	< 0.002	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001

Quality Control

Analyte Symbol	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Pt	Au	Tl	Pb	Bi	Th	U	Ash Yield
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.5	0.1	2	5	0.001	0.1	0.05	0.001	0.001	
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
New Ash Meas	0.040	0.108	0.016	0.109	0.019	0.08			9.6			0.042	10.7	0.14	0.456	0.187	
New Ash Cert	0.03	0.09	0.01	0.08	0.01	0.04			1.10			0.04	12.40	0.07	0.41	0.18	
H10700 Orig	0.335	0.947	0.123	0.776	0.119	0.18	0.004	< 0.5	1.4	< 2	< 5	0.204	8.0	0.12	3.03	1.05	60.8
H10700 Dup	0.340	0.948	0.125	0.821	0.122	0.17	0.005	< 0.5	1.4	< 2	< 5	0.201	8.0	0.12	3.10	1.05	60.8
H12600 Orig	0.328	0.917	0.119	0.748	0.111	0.14	0.004	< 0.5	1.8	< 2	< 5	0.159	11.3	0.13	3.34	1.45	28.1
H12600 Dup	0.341	0.960	0.119	0.771	0.118	0.14	0.004	< 0.5	1.2	< 2	< 5	0.171	11.6	0.14	3.18	1.21	28.1
H14550 Orig	0.329	0.908	0.120	0.838	0.125	0.10	0.006	< 0.5	0.9	< 2	< 5	0.201	9.0	0.18	3.64	1.46	32.8
H14550 Dup	0.279	0.784	0.104	0.680	0.104	0.09	0.005	< 0.5	0.6	< 2	< 5	0.194	7.6	0.18	3.32	1.54	32.8
H16400 Orig	0.386	1.02	0.131	0.872	0.129	0.20	0.007	< 0.5	0.4	< 2	< 5	0.247	8.2	0.17	3.99	1.41	43.7
H16400 Dup	0.359	1.02	0.133	0.849	0.126	0.19	0.007	< 0.5	0.8	< 2	< 5	0.227	8.0	0.16	3.54	1.36	43.7
H14400S Orig	0.401	1.11	0.148	0.900	0.140	0.17	0.005	< 0.5	0.3	9	< 5	0.160	8.0	0.16	3.43	1.33	64.3
H14400S Dup	0.415	1.17	0.151	0.941	0.144	0.17	0.004	< 0.5	1.0	3	< 5	0.163	8.2	0.16	3.67	1.37	64.3
Method Blank	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.5	< 0.1	< 2	< 5	< 0.001	< 0.1	< 0.05	< 0.001	< 0.001	

line	station	map_easting	map_northing	ELEVATION	date_sampled	sampler	sample_no	humus_dup	humus_easting	humus_northing	site_drainage	slope	aspect	vegetation
	Biogeochemistry - Humus sampling Arch Grid. August 2013													
1000	0S	571158	6819184		AUG 14/13	DEB, WINSTON, CODY	H10000		571157	6819183	MODERATE	SLOPE	SW	SPRUCE, MOSSBERRY, LAB TEA, BLUEBERRY, DWARF BIRCH
1000	50S	571133	6819141	1219	AUG 16/13	DEB AND CODY	H10050		571127	6819134	GOOD TO MODERATE	SLOPED RIDGETOP	S	WHITE SPRUCE, WILLOW, DWARF BIRCH
1000	100S	571108	6819098	1196	AUG 16/13	DEB AND CODY	H10100		571104	6819102	GOOD	RIDGE TOP TO SLOPE	S	SPRUCE, WILLOW, ALDER, ROSE, VETCH, FIREWEED, LAB TEA, GRASS
1000	150S	571083	6819054	1197	AUG 16/13		H10150		571055	6819056	MODERATE	RIDGE TOP - RIM	SW	SPRUCE, ALDER, WILLOW, ROSE, FIREWEED, LAB TEA, BLUEBERRY
1000	200S	571058	6819011	1191	AUG 16/13	DEB, WINSTON, CODY	H10200		571049	6819012		RIDGE TOP TO SLOPE	S	SPRUCE, WILLOW, CRANBERRY, LAB TEA, ASPEN, SOAPBERRY, HORSETAILS, ROSE
1000	250S	571033	6818968	1182	AUG 16/13	DEB, WINSTON, CODY	H10250		571045	6818967	GOOD	SLOPE	S	SPRUCE, ASPEN, WILLOW, ROSE, FIREWEED, LAB TEA, SOAPBERRY, CRANBERRY
1000	300S	571008	6818924	1151	AUG 16/13	DEB, WINSTON, CODY	H10300		570997	6818933	GOOD	SLOPE	S	SPRUCE, WILLOW, PEA, ALDER, SOAPBERRY
1000	350S	570983	6818881	1160	AUG 16/13	DEB, WINSTON, CODY	H10350		570982	6818892	GOOD	SLOPE	SE	SPRUCE, ALDER, ROSE, FIREWEED, WINTERGREEN, FIREWEED, ASPEN, SOAPBERRY
1000	400S	570958	6818838		AUG 16/13	DEB AND WINSTON	H10400		570954	6818833	GOOD	RIDGE TOP TO SLOPE	S	W/ SPRUCE, WILLOW, JUNIPER, ASPEN,
1000	450S	570933	6818795	1144	AUG 16/13	DEB AND WINSTON	H10450		570945	6818809	GOOD	SLOPE	S	SPRUIVE, WILLOW, SOAPBERRY, WINTERGREEN, ROSE, JUNIPER
1000	500S	570908	6818751	1135	AUG 16/13	DEB AND WINSTON	H10500		570911	6818756	GOOD	SLOPE	W	SPRUCE, WILLOW, ASPEN, SOAPBERRY, JUNIPER
1000	550S	570883	6818708	1130	AUG 16/13	DEB AND WINSTON	H10550		570874	6818712	GOOD	RIDGE TOP	NW	SPRUCE, WILLOW, LAB TEA, ALDER, ROSE, CRANBERRY, MOSS BERRY
1000	600S	570858	6818665	1102	AUG 16/13	DEB AND WINSTON	H10600		570846	6818668	MODERATE	SLOPE	W	SPRUCE, ALDER, LAB TEA, ROSE, CRANBERRY
1000	650S	570833	6818621		AUG 16/13	DEB AND WINSTON	H10650		570830	6818622	GOOD	SLOPE	W	W>B SPRUCE, FIREWEED, ROSE, CRANBERRY, JUNIPER, WINTERGREEN
1000	700S	570808	6818578		AUG 16/13	DEB AND WINSTON	H10700		570807	6818581	GOOD	SLOPE	W	SPRUCE, WILLOW, SOAPBERRY, ROSE, W>B SPRUCE
1000	800S	570758	6818491	1042	AUG 10 AND 16/13	DEB AND WINSTON	H10800	H10800A	570760	6818500	MODERATE	SLOPE	NE	ALDER, MINOR W. SPRUCE, FIREWEED, GRASS, WINTERGREEN
1200	0S	571331	6819084	1169	AUG 14/13	DEB AND WINSTON	H12000		571338	6819089	GOOD	SLOPE	W	SPRUCE, ALDER, JUNIPER, FIREWEED, GRASS, WINTERGREEN, MOSSBERRY
1200	50S	571306	6819041	1152	AUG 14/13	DEB	H12050		571317	6819039	GOOD	SLOPE	W	SRUCE, JUNIPER, ALDER, GRASS, WILLOW
1200	100S	571281	6818998	1129	AUG 14/13	DEB	H12100		571291	6818999	MODERATE	VALLEY BOTTOM	W	BLACK>WHITE SPRUCE, WILLOW, ALDER, FIREWEED, WINTERGREEN
1200	150S	571256	6818954		AUG 14/13	DEB AND WINSTON	H12150		571260	6818954	MODERATE	SLOPE	NW	BLACK>WHITE SPRUCE, WILLOW, ALSER, LAB TEA, CRANBERRY, MOSS BERRY
1200	200S	571231	6818911	1116	AUG 14/13	DEB AND WINSTON	H12200		571239	6818911	GOOD	SLOPE	W	SPRUCE, WILLOW, GRASS, WINTERGREEN, SOAPBERRY, LAB TEA
1200	250S	571206	6818868	1105	AUG 14/13	DEB AND WINSTON	H12250		571215	6818870	MODERATE	VALLEY BOTTOM	SW	SPRUCE, WILLOW, LAB TEA, WINTERGREEN, HORSETAIL, ALDER, GRASS, CRANBERRY
1200	300S	571181	6818824	1098	AUG 14/13	DEB AND WINSTON	H12300		571190	6818825	MODERATE	SLOPE	SW	SPRUCE, ALDER, WILLOW, ROSE, WINTERGREEN, LAB TEA, GRASS, CRANBERRY, FIEWEED
1200	350S	571156	6818781	1090	AUG 14/13	DEB AND WINSTON	H12350		571169	6818793	MODERATE	VALLEY BOTGTOM	SW	SPRUCE, WILLOW, ALDER, JUMIPER, WINTERGREEN, SOAPBERRY, CRANBERRY
1200	400S	571131	6818738	1093	AUG 14/13	DEB AND WINSTON	H12400		571146	6818740	MODERATE	SLOPE	SW	SPRUCE, WILLOW, SOAPBERRY, GRASS, JUNIPER, ALDER
1200	450S	571106	6818695	1088	AUG 14/13	DEB AND WINSTON	H12450		571101	6818693	MODERATE	SLOPE	S	SPRUCE, WILLOW, HORSETAIL, MOSS BERRY, WILLOW, ROSE, FIREWEED, ALDER, LAB TEA, CRANBERRY
1200	500S	571081	6818651	1085	AUG 14/13	DEB AND WINSTON	H12500		571085	6818649	MODERATE	SLOPE	SW	SPRUCE, ROSE, LAB TEA, WILLOW, ALDER, FIREWEED, CRANBERRY
1200	550S	571056	6818608		AUG 14/13	DEB AND WINSTON	H12550		571054	6818608	MODERATE	SLOPE	SW	BLACK.WHITE SPRUCE, OPEN FOREST, SPRUCE DOMINANT, MIXED AGE. MOD HEALTH STAND.
1200	600S	571031	6818565	1054	AUG 14/13	DEB AND WINSTON	H12600		571042	6818567	MODERATE	VALLEY BOTTOM	W	SPRUCE, WILLOW, ALDER, POPLAR, SOAPBERRY, GRASS
1200	650S	571006	6818521	1043	AUG 14/13	DEB AND WINSTON	H12650		571009	6818516	MODERATE	SLOPE	W	SPRUCE, ALDER, SOAPBERRY, CRANBERRY, WINTERGREEN.
1200	750S	570956	6818435	1055	AUG 14/13	DEB, WINSTON, CODY	H12750		570952	6818435	MODERATE	SLOPE	NE	B AND W SPRUCE, WILLOW, MOSSBERRY, ALDER, LAB TEA, CRANBERRY
1200	800S	570931	6818391		AUG 10 AND 14/13	DEB, WINSTON, CODY	H12800		570939	6818391	POOR	VALLEY BOTTOM	N	SPRUCE, WILLOW, ALDER, LAB TEA, SUB ALPINE, DWARF BIRCH, WINTERGREEN, CRANBERRY, MOSS BERRY, BLUE BERRY
1400	0S	571505	6818984		aug 11/13 AND 18	DEB, WINSTON, CODY	H14000		571506	6818985	MODERATE TO POOR	RIDGE TOP TO SLOPE	W	SPRUCE, WILLOW, LOTS OF DWARF BIRCH, SUB ALPINE, GRASS, LOW BUSH CRANBERRY, BLUEBERRY, MOSSBERRY, LAB TEA
1400	50S	571480	6818941	1200	aug 11/13 AND 18	DEB, WINSTON, CODY	H14050	H14050A	571481	6818942	MODERATE TO POOR	RIDGE TOP	N	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, MOSSBERRY, LOWBUSH CRANBERRY, SOAPBERRY, BLUEBERRY
1400	100S	571455	6818898	1193	aug 11/13 and 18/13	DEB, WINSTON, CODY	H14100		571455	6818895	POOR TO MOD	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, BOGGY, GRASS, BLUEBERRY, LOW BUSH CRANBERRY, HORSETAIL
1400	150S	571430	6818854	1191	aug 11/13 AND 18/13	DEB, WINSTON, CODY	H14150		571431	6818854	POOR TO MOD	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, MOSSBERRY, BLUEBERRY, GRASS, LOW BUSH CRANBERRY
1400	200S	571405	6818811	1185	aug 11/13 AND 18/13	DEB, WINSTON, CODY	H14200		571404	6818811	MODERATE TO POOR	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, GRASS, BLUEBERRY, MOSSBERRY, BOGGY, LOW BUSH CRANBERRY
1400	250S	571380	6818768	1176	aug 11/13 AND 18/13	DEB, WINSTON, CODY	H14250		571378	6818770	MODERATE	SLOPE	SW	SPRUCE, LAB TEA, ROSE, WILLOW, SUB ALPINE, BOGGY, WINTERGREEN, BIG OVAL, LOW BUSH CRANBERRY, PEA, DWARF BIRCH, MOSSBERRY, GRASS

line	station	map_easting	map_northing	ELEVATION	date_sampled	sampler	sample_no	humus_dup	humus_easting	humus_northing	site_drainage	slope	aspect	vegetation
1400	300S	571355	6818724	1161	aug 11/13 AND 18/13	DEB, WINSTON, CODY	H14300		571362	6818728	MODERATE TO GOOD	SLOPE	NW	SPRUCE, WILLOW, ALDER, LESSER LAB TEA, SOAPBERRY, MOSSBERRY, LOW BUSH CRANBERRY, BIG OVAL
1400	350S	571330	6818681		aug 11/13 AND 18/13	DEB AND WINSTON	H14350		571328	6818678	MODERATE TO POOR	SLOPE	N	SPRUCE, ALDER, WILLOW, SUB-ALPINE, SOME LAB TEA, CRANBERRY, HORSETAIL, BLUEBERRY
1400	400S	571305	6818638		aug 11/13 AND 18/13	DEB, WINSTON, CODY	H14400		571308	6818649	POOR	RIDGE TOP	FLAT	SPRUCE, LAB TEA, DWARF BIRCH, SUB ALPINE, LOW BUSH CRANBERRY, BIG OVAL, GRASS, HORSETAIL
1400	450S	571280	6818595		AUG 18/13	DEB, WINSTON, CODY	H14450		571322	6818598	MODERATE	RIDGE TOP	FLAT	SPRUCE, DWARF BIRCH, LAB TEA, GRASS, STUNTED TREES, BLUBERRY, WILLOW
1400	500S	571255	6818551		AUG 11/13 AND 18/13	DEB, WINSTON, CODY	H14500		571249	6818551	GOOD	RIDGETOP	S	SPRUCE, POPLAR, ALDER, BIG OVAL, SOAPBERRY
1400	550S	571230	6818508	1136	AUG 11/13 and 18/13	DEB, WINSTON, CODY	H14550		571236	6818513	GOOD	SLOPE	S	SPRUCE, WILLOW, ALDER, GRASS, POPLAR, LAB TEA, BIG OVAL, FIREWEED. TREE DOMINANT
1400	600S	571205	6818465	1085	AUG 10/13 AND AUG 11/13	DEB	H14600		571202	6818463	MODERATE TO POOR	SLOPE	S	SPRUCE, MINOR WILLOW, LAB TEA, ALDER
1400	650S	571180	6818421		AUG 10 AND 11/13	DEB	H14650		571175	6818416	POOR	SLOPE TO VALLEY BOTTOM	S	SPRUCE, ALDER, WILLOW, LAB TEA, MOSS
1400	700S	571155	6818378	1065	AUG 10/13 13/13	DEB	H14700	H14700A	571150	6818389	MODERATE	SLOPE	SW	SPRUCE, WILLOW, LAB TEA, CRANBERRY
1400	800S	571105	6818291	1062	AUG 13/13	DEB	H14800		571104	6818290	MODERATE	SLOPE	NE	SPRUCE, WILLOW, ALDER, LAB TEA
1600	0S	571678	6818884	1236	AUG 13/13	DEB, WINSTON, CODY	H16000		571677	6818881	MODERATE TO GOOD	SLOPE	SW	SPRUCE, WILLOW, ALDER, LAB TEA, CRANBERRY, HORSETAIL, GRASS
1600	50S	571653	6818841	1224	AUG 12/13	DEB, WINSTON, CODY	H16050		571643	6818838	MODERATE	SLOPE	SW	SPRUCE, WILLOW, BLUEBERRY, ALDER, LAB TEA, CRANBERRY, MOSSBERRY
1600	100S	571628	6818798	1211	AUG 12/13	DEB, WINSTON, CODY	H16100		571627	6818798	MODERATE	SLOPE	SW	SPRUCE, WILLOW, ALDER, LAB TEA, CRANBERRY, BLUEBERRY
1600	150S	571603	6818754	1190	AUG 12/13	DEB, WINSTON, CODY	H16150		571608	6818759	MODERATE	SLOPE	SW	SPRUCE, WILLOW, CRANBERRY, GRASS, HORSETAIL, ALDER, JUNIPER
1600	200S	571578	6818711	1180	AUG 12/13	DEB, WINSTON, CODY	H16200		571580	6818708	POOR	SLOPE	SW	SPRUCE, WILLOW, DWARF BIRCH, MOSSBERRY, LAB TEA, GRASS, HORSETAIL
1600	250S	571553	6818668	1180	AUG 12/13	DEB, WINSTON, CODY	H16250		571554	6818663	POOR	SLOPED RIDGETOP	W	SPRUCE, GRASS, LAB TEA MUTANT, DWARF BIRCH, HORSETAIL, LAB TGEA,
1600	300S	571528	6818625	1179	AUG 12/13	DEB, WINSTON, CODY	H16300		571534	6818626	POOR	SLOPING RIDGE TOP	W	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, "RED MOSS"
1600	350S	571503	6818581	1179	AUG 12/13	DEB, WINSTON, CODY	H16350		571499	6818585	MODERATE	RIDGE TOP	W	SPRUCE, WILLOW, SUB ALPING, DWARF BIRCH, LAB TEA, GRASS, MOSSBERRY, LOW BUSH CRANBERRY
1600	400S	571478	6818538	1176	AUG 13/13	DEB, WINSTON, CODY	H16400		571476	6818538	MODERATE	RIDGE TOP TO SLOPE	W	SPRUCE, WILLOW, DWARF BIRCH, GRASS, BLUEBERRY, CRANBERRY, MINOR LAB TEA
1600	450S	571453	6818495	1166	AUG 13/13	DEB, WINSTON, CODY	H16450		571456	6818498	POOR TO MODERATE	RIDGE TOP	W	SPRUCE, WILLOW, LAB TEA, BLUEBERRY, SAUB ALPINE
1600	500S	571428	6818451	1155	AUG 13/13	DEB, WINSTON, CODY	H16500		571432	6818451	GOOD	SLOPE	S	SPRUCE, WILLOW, ROSE, FIREWEED, CRANBERRY, SOAPBERRY
1600	550S	571403	6818408	1110	AUG 12/13	DEB, WINSTON, CODY	H16550		571398	6818397	GOOD	SLOPE	S	SPRUCE, ALDER, CRANBERRY, ROSE, GRASS
1600	600S	571378	6818365	1108	AUG 12/13	DEB, WINSTON, CODY	H16600		571375	6818361	MODERATE TO POOR	SLOPE	S	SPRUCE, WILLOW, ALDER, GRASS, HORSETAIL, SPARSE LAB TEA
1600	650S	571353	6818321	1130	AUG 12/13	DEB, WINSTON, CODY	H16650		571352	6818332	MODERATE	SLOPE	NW	SPRUCE, ALDER, WILLOW, LAB TEA, CRANBERRY
1600	700S	571328	6818278	1135	AUG 12/13	DEB, WINSTON, CODY	H16700		571334	6818287	MODERATE TO GOOD	SLOPE FOR SGH, RIDGETOP FOR HUMUS	SW	WILLOW, ALDER FOR SGH - WILLOW, ALDER, POPLAR, LAB TEA, FIREWEED FOR HUMUS
1600	800S	571278	6818191	1076	AUG 13/13	DEB, WINSTON, CODY	H16800		571278	6818188	MODERATE	VALLEY BOTTOM	FLAT, N	SPRUCE, ALDER, POPLAR
0E	30S	571139	6818634	1085	AUG 18/13	DEB, WINSTON, CODY	H0E30S		571139	6818634	MODERATE	VALLEY BOTTOM	N	SPRUCE, WILLOW, ALDER
0E	15S	571147	6818652	1089	AUG 18/13	DEB, WINSTON, CODY	H0E15S		571147	6818652	MODERATE	SLOPE	NW	SPRUCE, WILLOW, ALDER
0E		571159	6818662	1091	AUG 18/13	DEB, WINSTON, CODY	H0E		571159	6818662	MODERATE	SLOPE	NW	SPRUCE, ALDER, LAB TEA, CRANBERRY, WILLOW, MOSSBERRY, BLUEBERRY, GRASS
0E	15N	571166	6818678		AUG 18/13	DEB, WINSTON, CODY	H0E15N		571166	6818678	MODERATE	SLOPE	N	SPRUCE, ALDER, CRANBERRY, LAB TEA, WINTERGREEN
0E	30N	571170	6818681		AUG 18/13	DEB, WINSTON, CODY	H0E30N		571170	6818681	MODERATE TO GOOD	SLOPE	NW	SPRUCE, WILLOW, JUNIPER, ROSE, ALDER, WINTERGREEN, FIREWEED, SOAPBERRY
0W	30S	571120	6818649		AUG 18/13	DEB, WINSTON, CODY	H0W30S		571120	6818649	MODERATE	VALLEY BOTTOM	S	SPRUCE, WILLOW, ALDER, FIREWEED, SOAPBERRY, ROSE
0W	15S	571143	6818656		AUG 18/13	DEB, WINSTON, CODY	H0W15S		571143	6818656	MODERATE	SLOPE	N	SPRUCE, WILLOW, WINTERGREEN, LAB TEA, OVAL LEAF
0W		571147	6818676		AUG 18/13	DEB, WINSTON, CODY	H0W		571147	6818676	MODERATE	SLOPE	W	SPRUCE, WILLOW, ALDER, FIREWEED
0W	15N	571147	6818692		AUG 18/13	DEB, WINSTON, CODY	H0W15N		571147	6818692	MODERATE	VALLEY BOTTOM	SW	SPRUCE, WILLOW, POPLAR, OVAL LEAF, ROSE
0W	30N	571156	6818707		AUG 18/13	DEB, WINSTON, CODY	H0W30N		571156	6818707	MODERATE TO POOR	VALLEY BOTTOM	SW	SPRUCE, WILLOW, ALDER, VETCH, OVAL LEAF, WINTERGREEN

line	station	sample_horizon	texture	colour	sample_depth	rock_chips	round_angular	ash	ash_location	nearby_disturb	notes	COMMENTS	Sample#	Li_ppm	Be_ppm
1000	0S	HUMUS	ORGANIC, DAMP	DARK BROWN	55			Y	BENEATH		OPEN FOREST, MODERATE HEALTH, DWARF BIRCH		H10000	10.1	0.51
1000	50S	HUMUS - MIDDLE	ORGANIC +/- ASH	BROWN	15			Y	BENEATH		DRY, RIDGE AND SOUTH ASPECT SLOPE. OPEN FOREST, MIXED AGE, MOD TO GOOD HEALTH		H10050	7.3	0.34
1000	100S	HUMUS - LOWER	ORGANIC	DARK BROWN	40			Y	BENEATH		SILT/CLAY UNDERNEATH SAMPLE. W. SPRUCE DOMIN ANT, OPEN MOD HEALTH.		H10100	7.1	0.34
1000	150S	HUMUS	ORGANIC, MIXED WITH MIDDLE LAYER	DARK BROWN	40			N			MODERATELY OPEN, MODERATELY HEALTHY, WILLOW DOMINANT		H10150	8.8	0.39
1000	200S	HUMUS - MIDDLE	ORGANIC +/- ASH	BROWN	25			Y	TINY BIT IN SAMPLE		MOSTLY SPRUCE, MIXED AGE, FAIRLY OPEN, GOOD TO MODERATE HEALTH	ORGANIC +/- ASH	H10200	8.5	0.3
1000	250S	HUMUS	ORGANIC	DARK BROWN	25			Y	UNDERNEATH		MOSTLY SPRUCE AND WILLOW, MIXED AGE, FAIRLY OPEN, MODERATE HEALTH		H10250	9.3	0.5
1000	300S	HUMUS	ORGANIC	BROWN	17			N			NEARBY CREEK DRAW, CLOSE FOREST, MIXED AGE, MODERATE HEALTH, MOSTLY SPRUCE		H10300	9.9	0.37
1000	350S	HUMUS	ORGANIC	DARK BROWN	13			N			CLOSED FOREST, MOSTLY SPRUCE OR ALDER, MIXED AGE, MODERATE HEALTH		H10350	8.5	0.34
1000	400S	HUMUS - MIDDLE	ORGANIC, DEAD MOSS	RED BROWN	9			Y	BENEATH		SPRUCE DOMINANT, MIXED AGE. DRY CANYON RIM		H10400	11.4	0.35
1000	450S	HUMUS - MIDDLE	ORAGANIC + SILT/CLAY	BROWN	19			Y	MIXED IN SAMPLE		RIM OF CANYON. ACTUAL STATION IN SPACE. HUMUS SAMPLE MIX OF HUMUS, CLAY, ASH AND SILT.SPRUCE AND ASPEN AT RIM, SPRUCE BELOW.		H10450	10.1	0.44
1000	500S	HUMUS - MIDDLE	ORGANIC +/- SILT	BROWN	36			N			CANYON RIM. DRY SITE. NO BLACK SPRUCE. SPRUCE ON LOWER SLOPELS, ASPEN ABOVE.		H10500	9.3	0.25
1000	550S	HUMUS - LOWER	ORGANIC - DAMP	BROWN	36			Y	BENEATH		CANYON RIM, MOD HEALTH, MOD OPEN FOREST, SPRUCE DOMINANT.		H10550	7.2	0.32
1000	600S	HUMUS	ORGANIC	BLACK	31			Y	BENEATH		MOD OPEN FOREST, MIXED AGE. W SPRUCE DOMINANT.		H10600	9.9	0.43
1000	650S	HUMUS - LOWER	ORGANIC	DARK BROWN	30			Y	BENEATH		SPRUCE DOMINANT, MIXED AGE, MOD HEALTH		H10650	8.2	0.37
1000	700S	HUMUS	ORGANIC	DARK BROWN	32			N			CLAY UNDERNEATH HUMUS. MIXED AGE FOREST. SPRUCE DOMINANT.		H10700	11.9	0.41
1000	800S	HUMUS - LOWER	ORGANIC - DAMP	BLACK	5 AND 33	BENEATH	SUBROUNDED	N		PLACER ROAD BELOW	UNSTABLE SLOPE WITH LOTS OF ALDER, MOD HEALTH OVERALL.		H10800	12.8	0.42
1200	0S	JUMUS - MIDDLE AND SILT	ORGANICS AND SILT	DARK GREY BROWN	15			N		CUTLINE NEARBY	MIXED AGE. STAND HEALTH MOD TO GOOD.		H12000	8.1	0.45
1200	50S	HUMUS - MIDDLE	DEAD MOSS AND PEAT	DARK BROWN	20			Y	NENEATH		MIDDLE TO OLD AGED FOREST. MOD CLOSED, MOD HEALTH. STEEP SLOPE ON TILLABOVE CREEK.		H12050	8.5	0.38
1200	100S	HUMUS -MIDDLE	ORGANIC MIXED WITH SILT	BROWN GREY	5			N			OPEN FOREST ALONG CREEK. MATURE SPRUCE WITH ALDER. MOD TO GOOD FOREST HEALTH. PERIODIC INUNDATIONS OF SILT.		H12100	12.6	0.38
1200	150S	HUMUS-LOWER	PEAT	DARK BROWN	45			Y	BENETH	LINE OF OLD FLAGGING	OPEN FOREST, MODERATE HEALTH, SIDE OF VALLEY		H12150S	10.3	0.33
1200	200S	JUMUS - MIDDLE AND LOWER	ORGANIC	DARK BROWN	32			Y	A LITTLE IN SAMPLE		ENCLOSED FOREST, STEEP SLOPE, DOMINANT SPRUCE AND ALDER, MODERATELY HEALTHY, MIXED AGE TREES		H12200	7.4	0.38
1200	250S	HUMUS	ORGANIC, CLAY	DARK BROWN	25			N			CLOSING FOREST, MIXED AGE, DOMINANTLY ALDER, MODERATE HEALTH		H12250	12.1	0.4
1200	300S	HUMUS - MIDDLE	ORGANIC	DARK BROWN	30			Y	BENEATH AND MIXED		MODERATELY OPEN, MIXED AGE, MODERATELY HEALTHY		H12300	11.2	0.46
1200	350S	JUMUS - MIDDLE		BROWN	15	BENEATH	SUBANGULAR	N		OLD CUT LINE	TIGHT GROWTH, MIXED AGE, MODERATELY HEALTHY, SPRUCE AND ALDER DOMINANT		H12350	10.9	0.37
1200	400S	HUMUS - MIDDLE	ORGANIC, DEAD MOSS	BROWN	15	BEANEATH	SUBANGULAR	N			MODERATELY OPEN, MIXED AGE, MODERATE HEALTH, SPRUCE DOMINANT		H12400	11.4	0.33
1200	450S	HUMUS	PEATY	DARK BROWN	25			Y		CLAIM LINE	MODERATELY OPEN, SPRUCE DOMINANT, MODERATE HEALTH		H12450	10.3	0.42
1200	500S	HUMUS - MIDDLE	ORGANIC AND CLAY	DARK BROWN	20	BENEATH	SUBANGULAR	N			MOD OPEN FOREST OF BLACK SPRUCE. MIXED AGE, MOD HEALTH.		H12500	9.4	0.36
1200	550S	HUMUS - MIDDLE	DEAD MOSS AND ROOTS	BROWN	27			Y	BENEATH		OPEN FOREST, SPRUCE DOMINANTSTAND HEALT MOD.		H12550	10.2	0.32
1200	600S	HUMUS - UPPER AND MIDDLE	DEAD MOSS AND ROOTS	BROWN	12	BENEATH	ANGULAR	N			OPEN SPRUCE AND POPLAR FOREST. BENCH ABOVE CREEK, BESIDE SECONDARY CHANNEL.		H12600	12.8	0.36
1200	650S	HUMUS - MIDDLE	DEAD MOSS	BROWN	15	BENEATH	ANGULAR	N		WATERLINE FOR PLACEDR DOWN CREEK	MOD OPEN FOREST, MIXED AGE. MOD HEALTH.		H12650	12.2	0.37
1200	750S	HUMUS	ORGANIC AND CLAY	DARK BROWN	35			Y	BENEATH	NEARBY PLACER MINING	MODERATLEY OPEN FOREST, MODERATE HEALTH		H12750	10.8	0.43
1200	800S	HUMUS	PEAT + CLAY	DARK BROWN	20	BENEATH	SUBANGULAR TO ROUNDED PEBBLES, SAND, GRAVEL	N		15M FROM PPLACER	SPRUCE>LAB TEA>ALDER>DWARF BIRCH. YOUNG TO MIDDLE AGED STAND. OPEN, BOGGY, HIUMMOCKY. MOD OPEN STAND. SGH TAKEN SEPARATELY FROM OTHERS.		H12800	12.2	0.42
1400	0S	HUMUS MAYBE Ah	ORGANIC - WET	BLACK	25			Y	BENEATH	OLD CUTLINE, SQUARED POST	DWARF BIRCH DOMINANT. OPEN STUNTED SPRUCE GIVING WAY TO SHRUBS. MIXED AGE	SGH SAMPLED LATER	H14000	9.1	0.57
1400	50S	HUMUS AND Ah?	PEAT AND SILT-CLAY	DARK BROWN	25			Y	BENEATH		SUB ALPINE, BOG FOREST, SHRUBS INCREASING. OPEN SPRUCE, STUNTED, MOD HEALTH, MOSTLY SPRUCE, MIXED AGE	SGH SAMPLED LATER	H14050	8.5	0.36
1400	100S	HUMUS - LOWER, MAYBE Ah	organic, silt and clay	BLACK	35			Y	BENEATH		OPEN SPRUCE FOREST, SUB ALPINE RIDGE TOP. HUMMOCKY, MIXED AGE. MOD HEALTH. Lots of willow and birch.		H14100	10.7	0.44
1400	150S	HUMUS - LOWER, MAYBE Ah	organic, silt and clay	black	25			Y	BENEATH		OPEN SPRUCE FOREST, SUB ALPINE, BOGGY, MIXED AGE, MOD HEALTH.		H14150	12.1	0.49
1400	200S	HUMUS	PEATY	BLACK	25			Y	BENEATH	OLD CUTLINE TO NW	HUMMOCKY RIDGETOP. SPRUCE DOMINANT, OPEN FOREST, MIXED AGE. SOME DEAD, REST MOD HEALTH.		H14200	11.2	0.51
1400	250S	HUMUS - LOWER, MAYBE A	PEAT, SILT CLAY	BLACK	30			Y	BENEATH		AT EDGE OF BENCH. NEAR TOP OF GLACIAL OVERBURDEN? MOD TO GOOD HEALTH STAND, OPEN FOREST, SPRUCE DOMINANT, MIXED AGE.	SGH SAMPLED LATER	H14250	11.5	0.46

line	station	sample_horizon	texture	colour	sample_depth	rock_chips	round_angular	ash	ash_location	nearby_disturb	notes	COMMENTS	Sample#	Li_ppm	Be_ppm
1400	300S	HUMUS - MIDDLE	MOSSY TO PEATY	BROWN	15			Y	BENEATH	LINE OF OLD FLAGGING	SPRUCE DOMINANT, VARIABLY OPEN, MIXED AGE SPRUCE, SOME DEAD, MAJORITY MOD HEALTH.	SGH SAMPLED LATER	H14300	11.7	0.63
1400	350S	HUMUS - LOWER	PEATY	BLACK-DARK BROWN	35	BENEATH		N		OLD FLAGGING	HUMMOCKY, SOLIFLUCTION SLOPE OF SIDE OF DRAW. MOD HEALTH, STUNTED OR SUB ALPINE. PERMAFROST BELOW SAMPLE. SPRUCE AND ALDER DOMINANT, FAIRLY OPEN.		H14350	12	0.43
1400	400S	HUMUS	ORGANIC, PEATY	BROWN	40			Y	BENEATH		FLAT, HUMMOCKY, SLIGHTLY BOGGY, SPRUCE, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE		H14400S	9.5	0.47
1400	450S	HUMUS	ORGANIC	DARK BROWN	25			Y	BENEATH		MOVED 36M EAST OFF LINE TO SAMPLE. STAKE IN MIDDLE OF STEEP DRAW. ON TOP OF GRAVEL BOWL, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE.		H14450	10.3	0.49
1400	500S	HUMUS	PEAT, ORGANIC	DARK BROWN/BLACK	30			Y	BENEATH AND SOME IN SAMPLE		ON EDGE OF BIG GRAVEL BOWL, SPRUCE DOMINANT, OLD GROWTH FOREST, LIMITED VEGT UNDER CANOPY, GOOD HEALTH, VERY DRY		H14500S	9.1	0.42
1400	550S	HUMUS	ORGANIC - PEAT	DARK BROWN	20			N			MATURE FOREST, MODERATE HEALTH. OLD GROWTH, SPRUCE DOMINANT, CLOSED CANOPY		H14550	7.7	0.43
1400	600S	HUMUS	ORGANIC +/- SILTY	DARK BROWN	25			Y	UNDERNEATH		MANY TREES IN POOR HEALTH OR DYING.		H14600	9.1	0.4
1400	650S	HUMUS	PEAT AND ORGANIC	BLACK	25			N			MIXED AGE STAND, SOME DEAD, OTHERS WITH DEAD BRANCHES. YOUNG SPRUCE.		H14650	11.5	0.49
1400	700S	HUMUS	PEATY, SOME CLAY	DARK BROWN	30			Y	BENEATH	AT EDGE OF NEW ROAD	POOR HEALTH FOREST. LOTS OF LAB TEA AND CRANBERRY. MODERATELY OPEN FOREST NEAR CREEK.		H14700	10.9	0.42
1400	800S	HUMUS	ORGANIC - PEAT	BROWN - DARK BROWN	40			N			MOD OPEN FOREST, POOR HEALTH. PERMAFRSOT BENEATH SAMPLE. 15M AWAY FROM CREEK.		H14800	9.9	0.32
1600	0S	HUMUS	PEAT +/- ASH	BROWN	25			Y	SOME MIXED IN		OPEN FOREST, ALDER DOMINANT, MODERATE HEALTH. SLOPE AT BASE OF MOUNTAIN.		H16000	9.8	0.48
1600	50S	HUMUS	PEATY, CLAY	DARK BROWN	20			N			CLOSING CANOPY, SPRUCE DOMINANT, A FEW ALDER, MODERATE HEALTH		H16050	9.5	0.47
1600	100S	HUMUS	PEATY	DARK BROWN	30			Y	BENEATH		OPEN, MODERATE HEALTH, MIXED AGE, LAB TEA DOMINANT		H16100	10.4	0.37
1600	150S	HUMUS	PEATY, DAMP	DARK BROWN	20			Y	BENEATH		CANOPY CLOSING, MODERATE HEALTH, MIXED AGE, SPRUCE DOMINANT		H16150	9.8	0.4
1600	200S	HUMUS	PEATY, DAMP	DARK BROWN	15			Y	BENEATH	OLD FLAGGING NEARBY	OPEN, MODERATE HEALTH, MIXED AGE, SPRUCE DOMINANT		H16200	12.1	0.46
1600	250S	HUMUS	ORGANIC	DARK BROWN	35			Y	BENEATH		OPEN, MODERATE HEALTH BOG FOREST, SMALL STANDING WATER, MIXED AGE, DWARF BIRCH DOMINANT		H16250	13.1	0.52
1600	300S	HUMUS	ORGANIC	DARK BROWN	30			Y	BENEATH		OPEN, MILDLY UNHEALTHY, BOGGY		H16300	12.9	0.61
1600	350S	HUMUS	ORGANIC	DARK BROWN	25			N			SMALL Ah MIXED IN. DWARF BIRCH DOMINANT, MIXED AGE STAND, VERY OPEN FOREST, SOMEWHAT UNHEALTHY		H16350	10.7	0.46
1600	400S	HUMUS	ORGANIC	DARK BROWN	40			Y	BENEATH	BASELINE OF OLD GRID. 56 +50N	SLIGHT SLOPE OUT OF BOGGY AREA. STAND OF OLD SPRUCE. MORE CLOSED IN THAN BOG. DWARF BIRCH DOMINANT. MOD TO POOR HEALTH.		H16400	10.4	0.5
1600	450S	HUMUS	ORGANIC	DARK BROWN BLACK	45			Y	BENEATH		FLATTISH, SEMI-BOGGY, LOTS OF MOSS, OPEN FOREST, SMALLER TREES.		H16450	11.5	0.49
1600	500S	HUMUS	PEATY	BROWN	15			N			MATURE FOREST, MOD HEALTH, WELL DRAINED SLOPE, SPRUCE DOMINANT		H16500	10.6	0.5
1600	550S	HUMUS - DEAD MOSS	MOSSY, PEATY	BROWN	10			Y	UNDERNEATH AND MIXED IN		WELL DRAINE DSLOPE ABOVE CREEK, MOD FOREST CANOPY, MOD HEALTH.		H16550	12.9	0.46
1600	600S	HUMUS	ORGANIC	DARK BROWN	25			N			CLOSE TO CREEK. SPRUCE UNHEALTHY, DECIDUOUS HEALTHY, MOD CLOSED, MIXED AGE SPRUCE		H16600	8.8	0.4
1600	650S	HUMUS	ORGANIC	DARK BROWN	30			N			SPRUCE AND ALDER OPEN FOREST, MIXED AGE, UNHEALTHY TREES. ABOVE CREEK		H16650	10	0.36
1600	700S	CLAY +/- ORGANICS FOR SGH, HUMUS FOR HUMUS	ORGANIC	BROWN GREY FOR SGH, BROWN FOR HUMUS	5 FOR SGH, 10 FOR HUMUS			Y	ASH IN HUMUS, NOT IN SGH	ROAD BELOW	ON GRAVEL/CALY BANK ABNOVE ROAD. DIFF LOCATION FOR SGH AND HUMUS SAMPLES.		H16700	10	0.4
1600	800S	HUMUS	ORGANIC	BROWN	30			Y	BENEATH		GOOD-MODERATE HEALTH STAND, MIXED OLDER FOREST. LOCATED ON BENCH 2M ABOVE CREEK.		H16800	12.7	0.44
0E	30S	HUMUS - LOWER	ORGANIC	DARK BROWN	23			N		ABOVE TECK SHOWING	MINI GRID AROUND TECK SHOWING. BESIDE INTERMITTENT CREEK. ALDER DOMINANT. WHITE SPRUCE POOR HEALTH.		HOE30S	14.1	0.4
0E	15S	HUMUS-MIDDLE	PEAT- DEAD MOSS	BROWN	25			N		OLD FLAGGING. ABOVE TECK SHOWING	MINI GRID AROUND TECK SHOWING. MODERATELY OPEN, MOD TO GOOD EHALTH.		HOE15S	10.6	0.3
0E		HUMUS	ORGANIC	DARK BROWN	52	BENEATH SAMPLE		N		OLD FLAGGING L8+25E 9+25N. ABOVE TECK SHOWING O/C	MINI GRID AROUND TECK SHOWING. FAIRLY OPEN, MIXED AGE, MODERATE HEALTH, ALDER AND SPRUCE DOMINANT		HOE	10.8	0.52
0E	15N	HUMUS - LOWER	ORGANIC	DARK BROWN	25			N		OLD FLAGGING 8+25E 9+40N	MINI GRID AROUND TECK SHOWING. ALDER DOMINANT. CLAY AND GRAVEL UNDER SAMPLE. OPEN FOREST.		HOE15N	8.7	0.3
0E	30N	HUMUS-LOWER	ORGANIC	DARK BROWN	20	YES	ANGULAR TO SUBROUNDED	N		ABOVE TECK TRENCH	MOD OPEN FOREST, SPRUCE DOMINANT	MINI GRID AROUND TECK SHOWING	HOE30N	11.8	0.47
0W	30S	HUMUS - MIDDLE	PEATY, DEAD MOSS	BROWN	15	Y	SUBROUNDED, SUBANGULAR	Y		ON OLD CAT TRACK	BENCH ABOVE CREEK. WILLOW AND ALDER ON OLD CAT ROAD. MIXED AGE, MOD HEALTH.		HOW30S	9.7	0.38
0W	15S	HUMUS - MIDDLE	PEATY	BROWN	24			N		O/C ABOVE	MINI GRID AROUND TECK SHOWING. MIXED AGE, MOD HEALTH. ON SLOPE ABOVE CREEK.		HOW15S	13.5	0.57
0W		HUMUS - MIDDLE	PEATY	BROWN	15	BENEATH	SUBANGULAR	N		BELOW TECK TRENCH	ON SIDE OF CREEK. MOD HEALTH STAND, ALDERA ND SPRUCE STAND ON BENCH ABOVE CREEK.		HOW	11.3	0.35
0W	15N	HUMUS - MIDDLE +/- ASH, SILT	PEATY AND SILT	BROWN	10	YES	SUBROUNDED	Y	IN SAMPLE	5M AWAY FROM TRENCH	MINI GRID AROUND TECK SHOWING. FLOODPLAIN, SILT AND ASHJ MIXED WITH HUMUS. MIXED ALDER>POPLAR AND WHITE SPRUCE, CLOSED FOREST.		HOW15N	11.2	0.45
0W	30N	HUMUS - MIDDLE	PEATY	DARK BROWN	20			N		TRENCH AND O/C	BENCH ABOVE CREEK. LESS INUDATION THAN 15N		HOW30N	11.8	0.42

line	station	B_ppm	Na_%	Mg_%	Al_ppm	Si_%	K_%	Ca_%	Sc_ppm	Ti_ppm	V_ppm	Cr_ppm	Mn_ppm	Fe_%	Co_ppm	Ni_ppm	Cu_ppm	Zn_ppm	Ga_ppm	Ge_ppm	As_ppm	Se_ppm	Rb_ppm	Sr_ppm	Y_ppm	Zr_ppm	Nb_ppm
1000	0S	10	0.04	0.88	> 10000	<0.2	0.09	2	5.3	711	50	30	934	2.9	14.4	44	40.3	110	5.2	0.1	12	<10	9.14	71.8	10.9	7.3	0.316
1000	50S	8	0.05	0.86	> 10000	<0.2	0.13	0.9	4.8	629	50	10	394	2.88	13.1	42	26.8	77	5.1	<0.1	8	<10	7.16	38	6.78	5.4	0.296
1000	100S	9	0.05	0.82	> 10000	<0.2	0.13	1.5	5.3	732	70	20	270	2.78	12.3	37	24.7	72	5.4	<0.1	8	<10	14	46.7	6.4	6.6	0.296
1000	150S	10	0.06	1.09	> 10000	<0.2	0.15	1.8	6	751	60	30	377	2.89	15.1	43	30	96	5.5	0.1	8	<10	12.3	50.3	8.39	7.4	0.249
1000	200S	13	0.06	0.96	> 10000	<0.2	0.17	1.7	4.9	708	50	20	490	2.72	13.5	42	33.7	88	4.8	0.1	6	<10	15.6	57.6	7	6.3	0.25
1000	250S	6	0.04	0.94	> 10000	<0.2	0.11	1.3	5.7	702	50	20	930	3.23	17.9	53	32.7	133	5.5	0.1	8	<10	11	44.5	10.1	8.7	0.303
1000	300S	7	0.05	1.00	> 10000	<0.2	0.12	1.1	5.8	705	50	20	382	2.9	13.5	46	28.9	78	5.2	<0.1	7	<10	8.84	42.3	6.83	7.2	0.244
1000	350S	10	0.05	0.98	> 10000	<0.2	0.14	1.5	5.7	775	60	30	356	3.1	14.3	49	37.9	70	5.1	0.1	8	<10	8.59	37.7	7.47	7.1	0.242
1000	400S	15	0.05	1.31	> 10000	<0.2	0.19	2.5	5.7	688	50	40	727	3.27	19.8	88	43	95	5.3	0.1	10	<10	31.4	75.3	9.06	7.6	0.274
1000	450S	11	0.05	1.21	> 10000	<0.2	0.12	1.1	5.8	685	50	40	466	3.43	20.1	99	38.6	90	5.7	0.1	6	<10	11.8	34.9	9.2	7.9	0.218
1000	500S	11	0.04	1.66	> 10000	<0.2	0.15	1.7	5	553	50	50	347	3.16	18.3	104	43.7	59	4.8	0.1	7	<10	7.62	41.7	6.26	5.8	0.165
1000	550S	7	0.03	0.71	> 10000	<0.2	0.07	1	4.4	619	50	20	197	2.48	10.7	40	22.8	53	5	0.1	6	<10	5.21	37.4	7.56	6.6	0.298
1000	600S	14	0.04	0.98	> 10000	<0.2	0.13	2.2	5.7	687	50	30	753	3.09	15.9	53	37.9	166	5.3	0.1	12	<10	14.6	73.4	10.8	8	0.295
1000	650S	14	0.04	0.71	> 10000	<0.2	0.12	3.6	5	650	40	<10	206	2.43	8.06	44	32.1	70	4.8	<0.1	10	<10	10.3	100	5.81	7.3	0.352
1000	700S	20	0.06	1.24	> 10000	<0.2	0.16	3.4	7.4	760	60	30	634	3.2	18.8	63	45.3	105	6	0.1	11	<10	12.8	87	8.85	8.5	0.238
1000	800S	15	0.05	1.42	> 10000	<0.2	0.11	2.3	7.8	884	70	30	600	3.45	19.9	63	53	108	6.2	0.1	7	<10	6.36	55	11.4	8.1	0.217
1200	0S	6	0.05	0.81	> 10000	<0.2	0.15	0.8	5.9	694	60	20	523	3.23	16.5	50	33.6	80	5.8	<0.1	4	<10	9.58	30.8	8.13	7.4	0.317
1200	50S	13	0.07	0.80	> 10000	<0.2	0.28	1.4	6.1	649	50	20	376	3.16	16.6	46	31.8	72	5.4	0.1	7	<10	10.5	48.1	8.62	7.5	0.322
1200	100S	16	0.07	2.08	> 10000	<0.2	0.22	1.1	8.9	721	100	100	670	4.17	25.3	67	60.4	95	7.6	0.1	8	<10	9.8	49.5	9.46	5.9	0.151
1200	150S	34	0.04	1.01	> 10000	<0.2	0.14	3.8	6.2	582	50	20	424	2.76	14.6	46	42.9	90	5	<0.1	9	<10	18.6	90.8	6.94	7.3	0.254
1200	200S	9	0.05	0.78	> 10000	<0.2	0.13	1.4	5	594	50	10	621	2.75	14.8	37	31.1	113	5.2	<0.1	6	<10	10.7	56.6	8.58	8.4	0.289
1200	250S	10	0.05	1.25	> 10000	<0.2	0.13	2.2	8.3	668	50	40	562	2.84	17.2	53	52.9	88	5.9	<0.1	3	<10	9.7	55.2	10.2	8.7	0.178
1200	300S	10	0.06	1.36	> 10000	<0.2	0.16	2.1	8.1	680	70	50	523	3.22	17.7	57	44.6	97	6.4	0.1	9	<10	10.3	56.1	8.75	9.2	0.209
1200	350S	17	0.05	1.19	> 10000	<0.2	0.28	2.4	5.6	618	50	30	601	3.1	15.6	49	38.9	126	5.1	<0.1	7	<10	18.2	78.2	7.09	7.1	0.242
1200	400S	11	0.05	0.98	> 10000	<0.2	0.21	2.1	5	663	50	10	499	2.88	13.5	44	34.6	161	5.1	0.1	7	<10	10.9	57.2	7.72	7.5	0.276
1200	450S	13	0.05	1.01	> 10000	<0.2	0.17	2.7	6.4	733	50	20	574	2.97	16.2	50	38.3	121	5.5	0.1	8	<10	15.2	85.8	9.38	8.7	0.304
1200	500S	9	0.05	0.87	> 10000	<0.2	0.18	1.1	5.2	783	50	10	358	2.77	13.2	41	27.5	88	4.9	0.1	4	<10	13.1	40	7.01	7.5	0.28
1200	550S	14	0.05	0.91	> 10000	<0.2	0.17	2.3	4.8	683	40	<10	548	2.65	13.2	40	33	107	4.8	0.1	5	<10	18.1	72.4	7.22	7.6	0.321
1200	600S	34	0.07	1.34	> 10000	<0.2	0.49	4.4	6.1	760	60	30	863	3.18	16.8	55	54.4	97	5.4	0.1	13	<10	18.3	102	8.87	7.5	0.339
1200	650S	13	0.05	1.09	> 10000	<0.2	0.16	2	6	712	50	10	504	3.15	15.2	49	30.4	108	5.5	0.1	9	<10	10.7	57.9	8.68	8	0.261
1200	750S	9	0.05	0.99	> 10000	<0.2	0.16	1.4	6.2	633	50	<10	439	2.94	16	48	32.8	73	5.7	<0.1	4	<10	9.15	43.8	10.3	6.8	0.216
1200	800S	15	0.04	1.02	> 10000	<0.2	0.13	2.5	7.1	659	50	10	509	3.09	14.7	61	63.7	114	5.3	0.1	15	<10	11	58	13.1	9.7	0.258
1400	0S	11	0.06	0.88	> 10000	<0.2	0.14	3	6.7	604	50	<10	1290	3.08	14.7	49	62.8	107	5.3	0.1	10	<10	12.8	112	14.7	12.5	0.283
1400	50S	11	0.05	0.86	> 10000	<0.2	0.19	1.8	5	632	50	<10	428	2.76	15	39	26	147	4.9	0.1	7	<10	26.1	60	7.45	8.4	0.275
1400	100S	9	0.05	0.98	> 10000	<0.2	0.16	1.7	4.9	651	50	<10	1210	3	16.7	40	26.9	119	5.6	0.1	5	<10	17.4	56.7	9.45	8.3	0.269
1400	150S	7	0.05	0.92	> 10000	<0.2	0.12	1.4	5.7	771	60	10	808	3.29	19.8	43	28.7	96	6.2	<0.1	7	<10	13.8	56	9.06	9.7	0.329
1400	200S	9	0.05	0.95	> 10000	<0.2	0.15	2.3	5.8	771	50	10	1200	3.12	16.9	51	46.6	120	5.8	<0.1	5	<10	16.2	80.1	11.3	9.5	0.333
1400	250S	10	0.06	1.08	> 10000	<0.2	0.17	2.6	6.2	787	60	20	1200	3.45	17.4	50	31.7	135	6.1	0.1	11	<10	18.3	88	9.89	9.6	0.317

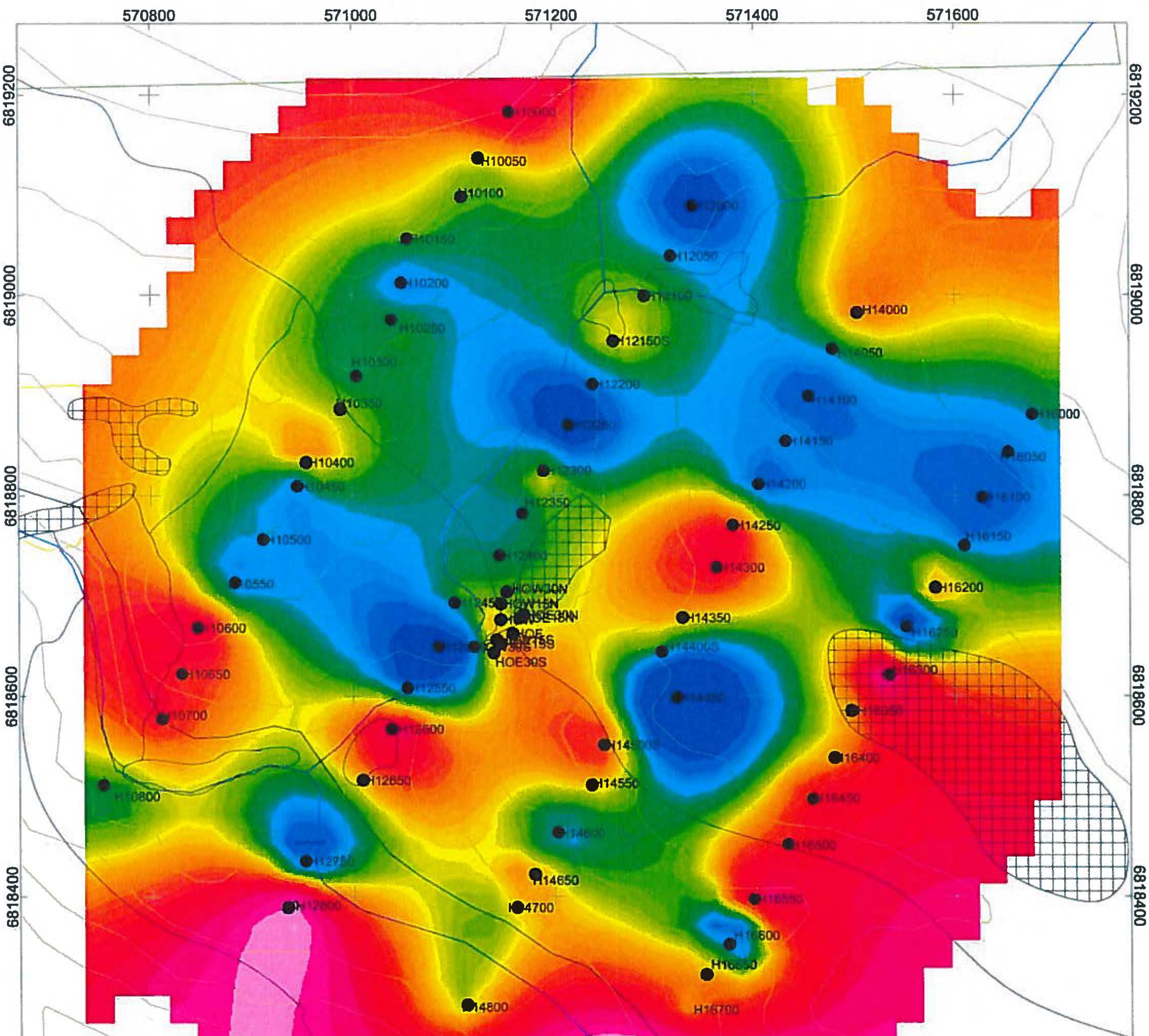
line	station	B_ppm	Na_%	Mg_%	Al_ppm	Si_%	K_%	Ca_%	Sc_ppm	Ti_ppm	V_ppm	Cr_ppm	Mn_ppm	Fe_%	Co_ppm	Ni_ppm	Cu_ppm	Zn_ppm	Ga_ppm	Ge_ppm	As_ppm	Se_ppm	Rb_ppm	Sr_ppm	Y_ppm	Zr_ppm	Nb_ppm
1400	300S	11	0.05	1.15	> 10000	<0.2	0.16	2.1	6.8	710	60	30	459	3.29	16.1	58	36.3	86	5.9	<0.1	11	<10	10.4	48.8	9.48	7.7	0.251
1400	350S	20	0.05	1.06	> 10000	<0.2	0.13	3.2	6.7	718	50	10	530	2.91	15.6	61	52.9	96	5.4	<0.1	9	<10	13.4	81	9.26	8.4	0.298
1400	400S	7	0.04	0.84	> 10000	<0.2	0.11	1.2	5.9	649	50	20	820	3.01	16.4	42	25.5	83	5.7	<0.1	8	<10	6.02	45.4	10.7	8	0.262
1400	450S	8	0.05	0.85	> 10000	<0.2	0.14	1.1	5.5	724	40	10	208	2.39	7.47	34	27.3	59	6.2	<0.1	<3	<10	9.61	44.5	8.63	10	0.301
1400	500S	12	0.04	0.91	> 10000	<0.2	0.12	2.3	5.9	566	50	10	1050	3.07	16.7	58	39.2	120	4.9	0.1	11	<10	9.26	74.1	9.23	8.3	0.191
1400	550S	10	0.05	0.76	> 10000	<0.2	0.21	1.7	5.4	534	50	20	200	3.03	13.6	42	29.8	83	5.1	<0.1	9	<10	10.3	55	8.17	6.4	0.246
1400	600S	11	0.06	1.08	> 10000	<0.2	0.19	2.4	6.1	641	50	20	541	2.99	15.5	46	33.6	141	5.3	<0.1	6	<10	15.5	74.4	7.47	8.6	0.204
1400	650S	16	0.05	1.08	> 10000	<0.2	0.16	4.1	6	608	50	20	466	2.71	11.1	47	44.9	111	5.1	0.1	10	<10	12.7	118	12.5	10.2	0.261
1400	700S	9	0.05	0.98	> 10000	<0.2	0.16	1.2	5.9	684	50	20	459	3.07	16.2	41	24.3	70	5.9	0.1	8	<10	16.7	43.4	8.69	9	0.288
1400	800S	23	0.05	0.96	> 10000	<0.2	0.18	3.4	6	709	50	20	360	2.87	15.4	46	40.7	107	5.2	0.1	8	<10	20.4	76.7	7.72	8.2	0.284
1600	0S	10	0.08	1.10	> 10000	<0.2	0.21	2.1	7.4	782	60	30	519	2.95	17.1	43	33.4	96	6.6	0.1	7	<10	18	62.4	9.21	10.4	0.315
1600	50S	11	0.06	0.86	> 10000	<0.2	0.16	2.9	6.1	690	50	10	457	2.76	13.1	40	35.7	87	5.7	0.1	6	<10	14.5	89.4	8.75	9	0.302
1600	100S	12	0.05	0.89	> 10000	<0.2	0.18	2.6	5.2	706	50	<10	481	2.55	13.8	40	30	117	4.9	<0.1	5	<10	17.5	79.1	7.38	8.6	0.32
1600	150S	8	0.05	0.85	> 10000	<0.2	0.17	1.8	5.6	724	50	10	284	2.86	15.4	39	24.9	74	5.6	<0.1	6	<10	14.3	56	8.52	8.3	0.314
1600	200S	10	0.05	1.04	> 10000	<0.2	0.16	2.3	5.9	732	50	10	576	3.08	14.4	49	49.2	111	5.4	0.1	10	<10	15.6	76.9	9.31	9.6	0.285
1600	250S	12	0.05	1.08	> 10000	<0.2	0.15	2.2	6.5	669	50	30	651	2.78	14.4	54	59.7	127	5.5	0.1	3	<10	14.3	71.6	11.8	9.4	0.22
1600	300S	13	0.05	1.10	> 10000	<0.2	0.15	2.9	7	672	60	30	2210	3.63	22.7	61	54.4	128	5.7	0.1	14	<10	11.9	83.7	13.5	11.8	0.236
1600	350S	10	0.05	0.98	> 10000	<0.2	0.16	2.7	6.4	660	50	10	1390	3.3	18.4	45	31.9	156	5.7	0.1	9	<10	14	87.9	10.9	10.2	0.262
1600	400S	9	0.05	0.89	> 10000	<0.2	0.14	2	5.2	708	50	30	570	3.02	18.3	39	26.7	81	5.7	0.1	9	<10	13.1	56.7	10	9.1	0.293
1600	450S	12	0.05	1.05	> 10000	<0.2	0.17	3.1	6.1	700	50	20	843	3.08	15.9	52	36.1	107	5.7	0.1	11	<10	18	106	11.3	10.2	0.313
1600	500S	12	0.06	1.01	> 10000	<0.2	0.22	1.9	6.1	697	60	20	825	3.16	16.1	51	34.4	93	5.7	<0.1	10	<10	19	61.2	8.49	8.2	0.231
1600	550S	25	0.08	1.47	> 10000	<0.2	0.29	2.5	9.8	697	80	40	872	3.71	21.7	81	53.4	141	6.6	0.1	13	<10	20.2	75.6	11.2	8.6	0.203
1600	600S	17	0.06	1.47	> 10000	<0.2	0.18	1.9	7.4	832	70	30	539	3.08	17	50	36.6	75	5.9	<0.1	3	<10	10.1	56.8	7.71	7.5	0.154
1600	650S	21	0.04	1.07	> 10000	<0.2	0.14	2.3	6.1	749	50	20	493	3	16	48	34.9	109	5.3	0.1	10	<10	11.8	68.7	7.86	8.5	0.244
1600	700S	17	0.05	1.11	> 10000	<0.2	0.22	1.8	6.3	711	60	20	709	3.21	16.7	53	36.1	69	5.6	0.1	9	<10	21.6	55	8.56	7.7	0.247
1600	800S	25	0.07	1.43	> 10000	<0.2	0.24	3.2	9.7	698	70	50	763	3.82	24.6	92	57	93	6.2	0.1	21	<10	18.9	81.5	10.1	8.6	0.237
0E	30S	27	0.05	1.28	> 10000	<0.2	0.18	4.6	6.9	738	60	30	797	3.29	16.4	57	50.3	77	5.6	0.1	13	<10	15.3	104	10.1	9.6	0.271
0E	15S	16	0.05	0.93	> 10000	<0.2	0.22	3.2	4.6	637	40	<10	383	2.61	11.7	43	37	118	4.7	<0.1	6	<10	16.9	55.2	6.94	7.2	0.259
0E		14	0.04	0.85	> 10000	<0.2	0.13	4.2	7.1	790	60	20	318	3.18	19.8	53	35.4	78	6	0.1	8	<10	11.2	98	11.3	8.8	0.376
0E	15N	9	0.04	0.70	> 10000	<0.2	0.13	1.9	5.1	657	50	<10	169	2.57	10.2	36	22.5	56	4.8	<0.1	7	<10	10.5	54.8	5.98	7.1	0.365
0E	30N	9	0.05	1.15	> 10000	<0.2	0.15	1.4	5.9	740	50	20	434	3.23	19	84	37	81	5.5	0.1	9	<10	7.67	39.1	9.27	8.8	0.273
0W	30S	10	0.05	1.08	> 10000	<0.2	0.15	1.7	7.1	875	60	30	516	3.04	16.4	49	41.3	79	5.4	0.1	5	<10	9.14	49.3	9.23	8.3	0.232
0W	15S	22	0.06	1.29	> 10000	<0.2	0.21	3.6	7.5	699	60	40	778	3.38	18.6	64	46.9	111	6.3	0.1	12	<10	14.3	107	9.91	9	0.266
0W		32	0.05	1.32	> 10000	<0.2	0.25	4.5	6.5	724	60	20	531	3.11	16.8	58	47.5	144	5.3	<0.1	10	<10	16.9	153	8.88	8.2	0.251
0W	15N	20	0.07	1.64	> 10000	<0.2	0.25	2.3	8.1	756	70	60	624	3.53	22.1	88	54.2	116	6.2	0.1	8	<10	12.1	56.1	9.92	8.6	0.211
0W	30N	18	0.05	1.27	> 10000	<0.2	0.21	2.1	6	684	50	20	543	3.18	15.7	55	43.9	117	5.5	0.1	8	<10	11.5	76.6	9.47	8.1	0.253

line	station	Mo_ppm	Ru_ppb	Pd_ppb	Ag_ppm	Cd_ppm	In_ppb	Sn_ppm	Sb_ppm	Te_ppm	Cs_ppm	Ba_ppm	La_ppm	Ce_ppm	Pr_ppm	Nd_ppm	Sm_ppm	Eu_ppm	Gd_ppm	Tb_ppm	Dy_ppm	Ho_ppm	Er_ppm	Tm_ppm	Yb_ppm	Lu_ppm	Hf_ppm
1000	0S	3.3	<10	6	0.4	0.52	25	1	1.52	0.21	0.845	193	14.1	27	3.56	13.5	3.19	0.685	2.7	0.408	2.13	0.397	1.15	0.147	0.965	0.147	0.16
1000	50S	3.8	<10	<3	0.3	1.12	22	<1	1.39	0.06	0.686	93	10.4	20.5	2.41	9.05	2.11	0.445	1.79	0.268	1.42	0.263	0.733	0.093	0.611	0.091	0.13
1000	100S	4.4	<10	<3	0.3	1.05	21	<1	1.32	0.15	0.979	97	10.1	19.5	2.4	8.87	2.08	0.448	1.74	0.264	1.4	0.26	0.718	0.09	0.585	0.087	0.15
1000	150S	2.6	10	<3	0.3	1	24	<1	1.02	0.13	0.924	73	11	21.6	2.7	10.5	2.42	0.542	2.18	0.333	1.78	0.331	0.897	0.115	0.723	0.109	0.17
1000	200S	3.5	<10	<3	0.3	1.36	18	<1	1.15	0.1	1.06	189	9.75	19.2	2.34	8.94	2.05	0.446	1.79	0.271	1.41	0.26	0.727	0.093	0.586	0.091	0.14
1000	250S	2.7	<10	<3	0.3	0.49	27	<1	1.27	0.13	0.958	162	14	26.6	3.43	13.1	3.05	0.664	2.58	0.395	2.07	0.38	1.07	0.138	0.879	0.141	0.19
1000	300S	2.9	<10	<3	0.2	0.56	22	<1	1.31	0.03	0.708	98	9.93	19.4	2.44	8.97	2.06	0.449	1.73	0.269	1.43	0.261	0.73	0.095	0.594	0.092	0.15
1000	350S	3.6	<10	<3	0.2	0.56	24	<1	1.27	<.01	0.729	63	10.4	20.6	2.55	9.35	2.24	0.491	1.96	0.297	1.56	0.286	0.796	0.104	0.639	0.099	0.16
1000	400S	3.8	20	<3	0.5	1.74	24	<1	1.52	0.1	2.6	179	12.4	24.5	3.12	11.7	2.67	0.587	2.31	0.358	1.84	0.345	0.979	0.123	0.776	0.121	0.15
1000	450S	2.6	<10	<3	0.3	1.38	26	<1	1.16	0.09	1.07	150	11.9	23.8	2.97	11.3	2.77	0.591	2.37	0.351	1.85	0.353	0.969	0.125	0.822	0.12	0.17
1000	500S	2.8	<10	<3	0.3	0.53	20	<1	1.1	0.08	0.857	53	8.64	17	2.11	7.91	1.85	0.395	1.55	0.243	1.29	0.235	0.661	0.085	0.529	0.079	0.12
1000	550S	2.4	<10	<3	0.2	0.35	20	<1	1.17	0.08	0.791	57	11.2	22	2.71	10.1	2.35	0.5	1.99	0.304	1.57	0.289	0.823	0.1	0.65	0.096	0.15
1000	600S	2.6	20	<3	0.5	0.82	27	<1	1.27	0.05	1.23	230	14.9	27.5	3.54	13.3	3.13	0.684	2.69	0.414	2.14	0.407	1.13	0.141	0.915	0.142	0.16
1000	650S	2.3	<10	<3	0.3	0.85	22	<1	1.22	0.14	0.817	195	8.69	17.5	2.11	7.69	1.79	0.397	1.57	0.241	1.25	0.233	0.639	0.086	0.56	0.085	0.16
1000	700S	2.7	<10	<3	0.3	0.76	26	<1	1.16	<.01	1.43	153	10.9	22.4	2.74	10.5	2.56	0.582	2.2	0.343	1.81	0.338	0.948	0.124	0.799	0.12	0.18
1000	800S	1.2	20	<3	0.3	0.31	29	<1	0.95	0.07	0.887	179	11.3	22.6	2.97	11.8	2.96	0.704	2.59	0.415	2.22	0.422	1.19	0.152	0.946	0.146	0.17
1200	0S	3.4	10	<3	0.3	0.65	26	<1	1.49	0.05	0.946	90	12.1	24.2	2.9	11	2.57	0.557	2.18	0.331	1.7	0.317	0.877	0.115	0.721	0.11	0.16
1200	50S	6.4	10	<3	0.2	1.23	24	<1	1.73	0.04	1.38	79	12.5	24.1	2.98	11.1	2.6	0.575	2.2	0.334	1.69	0.319	0.894	0.114	0.749	0.111	0.16
1200	100S	2	10	<3	0.3	0.79	30	<1	0.83	0.07	0.946	73	8.32	17	2.18	8.85	2.38	0.636	2.13	0.348	1.93	0.353	0.974	0.124	0.774	0.118	0.13
1200	150S	3.4	10	<3	0.3	0.42	24	<1	1.34	0.09	0.971	127	9.19	18.4	2.34	8.61	2.12	0.494	1.78	0.283	1.49	0.281	0.779	0.098	0.655	0.098	0.16
1200	200S	3.2	10	<3	0.3	0.29	22	<1	1.11	0.09	0.982	202	12.4	24.4	3.05	11.6	2.65	0.588	2.21	0.341	1.74	0.327	0.922	0.117	0.774	0.117	0.18
1200	250S	1.1	20	<3	0.5	0.41	26	<1	0.68	0.09	0.871	110	10.3	19.7	2.67	10.4	2.65	0.682	2.34	0.373	2.03	0.39	1.07	0.14	0.892	0.136	0.2
1200	300S	1.9	20	<3	0.3	0.54	26	<1	1.03	0.03	0.961	118	9.68	18.8	2.49	9.74	2.39	0.597	2.03	0.321	1.73	0.333	0.912	0.12	0.78	0.121	0.19
1200	350S	3.3	<10	<3	0.4	0.72	21	<1	1.36	0.1	1.14	118	9.92	19.7	2.36	9.05	2.11	0.457	1.83	0.282	1.5	0.283	0.775	0.099	0.637	0.093	0.14
1200	400S	3.3	<10	<3	0.3	2	23	<1	1.45	0.1	1.04	113	11.1	22	2.72	10.2	2.33	0.489	2.01	0.312	1.6	0.302	0.854	0.105	0.653	0.1	0.15
1200	450S	3.1	<10	<3	0.3	1.68	26	<1	1.31	0.06	1.1	149	12.3	23.2	3.03	11.4	2.7	0.616	2.35	0.365	1.91	0.357	0.997	0.128	0.838	0.129	0.18
1200	500S	2.8	<10	<3	0.3	1.26	22	<1	1.2	<0.01	0.917	59	10.1	19.7	2.39	8.9	2.07	0.47	1.8	0.272	1.43	0.262	0.753	0.099	0.622	0.093	0.15
1200	550S	3.5	<10	<3	0.3	2.12	22	<1	2.12	0.13	1.26	104	11.2	21.9	2.68	9.73	2.23	0.477	1.94	0.293	1.49	0.277	0.762	0.101	0.643	0.096	0.15
1200	600S	4.8	<10	<3	0.4	1.61	23	<1	1.61	0.09	1.7	106	11.7	23.4	2.89	11	2.62	0.568	2.25	0.345	1.81	0.335	0.939	0.119	0.76	0.115	0.14
1200	650S	3.5	20	<3	0.2	0.58	27	<1	1.6	0.03	1.18	120	12.6	24.9	3.11	11.8	2.72	0.587	2.32	0.354	1.86	0.339	0.971	0.125	0.766	0.12	0.17
1200	750S	1.9	<10	<3	0.2	0.29	27	<1	1.17	0.05	0.869	154	12.7	23.1	3.08	11.7	2.76	0.647	2.44	0.378	2.02	0.378	1.03	0.134	0.854	0.126	0.15
1200	800S	3.1	<10	<3	0.3	0.67	26	<1	1.71	0.07	1.16	194	14.1	24.7	3.48	13	3.28	0.781	2.92	0.47	2.44	0.479	1.32	0.167	1.06	0.167	0.21
1400	0S	4.3	10	<3	0.4	0.73	30	<1	1.79	0.18	1.17	275	18	33.8	4.56	17.4	4.08	0.926	3.55	0.551	2.98	0.564	1.53	0.205	1.34	0.21	0.25
1400	50S	4.3	10	<3	0.3	0.87	26	<1	1.61	0.1	1.6	163	11.5	22	2.63	9.8	2.3	0.496	2	0.311	1.6	0.268	0.788	0.103	0.646	0.102	0.17
1400	100S	4.6	<10	<3	0.3	1.17	28	<1	1.35	<0.01	1.26	144	13.7	29.2	3.42	12.9	3.04	0.614	2.51	0.39	1.98	0.374	1.06	0.131	0.814	0.122	0.16
1400	150S	4.3	10	<3	0.3	0.39	32	<1	1.38	0.07	1.21	179	13.7	27.4	3.47	13.2	3.02	0.633	2.44	0.382	1.95	0.367	1.01	0.131	0.84	0.125	0.21
1400	200S	3.8	10	<3	0.3	0.92	29	<1	1.59	0.11	1.3	240	15.7	30.6	3.82	14.5	3.43	0.737	2.91	0.435	2.22	0.421	1.19	0.15	0.953	0.146	0.19
1400	250S	3.8	20	<3	0.3	0.56	31	<1	1.66	0.09	1.37	275	14.5	27.9	3.45	12.8	2.97	0.643	2.58	0.396	2	0.374	1.06	0.138	0.916	0.141	0.19

line	station	Mo_ppm	Ru_ppb	Pd_ppb	Ag_ppm	Cd_ppm	In_ppb	Sn_ppm	Sb_ppm	Te_ppm	Cs_ppm	Ba_ppm	La_ppm	Ce_ppm	Pr_ppm	Nd_ppm	Sm_ppm	Eu_ppm	Gd_ppm	Tb_ppm	Dy_ppm	Ho_ppm	Er_ppm	Tm_ppm	Yb_ppm	Lu_ppm	Hf_ppm
1400	300S	3.7	20	<3	0.3	0.9	26	<1	1.59	<0.01	1.15	127	12.3	23.5	3	11.5	2.75	0.59	2.28	0.365	1.95	0.366	1	0.124	0.804	0.122	0.16
1400	350S	3.8	<10	<3	0.3	0.71	28	<1	1.72	0.02	1.44	181	12	22.6	2.93	10.8	2.63	0.601	2.26	0.357	1.91	0.341	0.966	0.127	0.797	0.129	0.17
1400	400S	3.9	<10	<3	0.2	0.91	29	<1	1.3	0.95	0.753	216	14.3	27.9	3.58	13.6	3.2	0.708	2.72	0.414	2.22	0.408	1.14	0.149	0.92	0.142	0.17
1400	450S	2.5	<10	<3	0.3	0.19	26	<1	1.08	0.02	1.2	161	13.2	24.7	3.13	11.9	2.72	0.595	2.33	0.334	1.74	0.332	0.894	0.117	0.781	0.115	0.22
1400	500S	2.7	10	<3	0.3	0.91	24	<1	1.43	0.09	0.796	330	11.9	24.6	3.01	11.4	2.79	0.618	2.42	0.378	1.92	0.361	1.01	0.131	0.832	0.13	0.18
1400	550S	4.4	<10	<3	<0.2	1.53	28	<1	1.78	<0.01	0.799	140	12.1	22.9	2.84	10.7	2.48	0.545	2.08	0.316	1.64	0.304	0.846	0.112	0.759	0.114	0.09
1400	600S	3	<10	<3	0.3	1.87	23	<1	1.05	0.05	1.24	118	9.27	19	2.4	9.24	2.23	0.494	1.88	0.292	1.55	0.287	0.785	0.109	0.687	0.105	0.19
1400	650S	2.4	<10	<3	0.3	1.18	27	<1	1.32	0.06	1.26	186	15.6	28.1	3.89	15.2	3.59	0.777	3.06	0.47	2.47	0.463	1.31	0.163	1.06	0.167	0.19
1400	700S	2.9	10	<3	0.2	0.26	26	<1	1.2	0.09	1.16	109	12.3	23.7	2.97	10.9	2.52	0.579	2.24	0.338	1.75	0.33	0.929	0.118	0.726	0.115	0.19
1400	800S	3.2	10	<3	0.3	0.47	23	<1	1.45	0.07	2.18	154	10.2	19.2	2.45	9.35	2.31	0.517	1.96	0.3	1.54	0.294	0.815	0.11	0.709	0.111	0.17
1600	0S	3.4	<10	<3	0.3	0.86	29	<1	1.29	0.06	1.59	120	13.3	25.9	3.25	12	2.89	0.664	2.46	0.379	1.97	0.361	0.997	0.125	0.821	0.124	0.22
1600	50S	3.3	<10	<3	0.3	0.52	27	<1	1.44	0.1	1.16	161	12.4	23.1	2.93	11	2.61	0.579	2.23	0.334	1.71	0.325	0.911	0.118	0.755	0.113	0.18
1600	100S	3.4	10	<3	0.2	1.11	25	<1	1.44	0.04	1.32	159	11.1	21.4	2.7	10	2.3	0.495	1.94	0.296	1.52	0.29	0.808	0.102	0.668	0.103	0.18
1600	150S	4.3	20	<3	0.2	0.61	27	<1	1.61	0.02	1.09	81	13	25.2	3.15	11.9	2.79	0.585	2.33	0.36	1.84	0.341	0.92	0.122	0.775	0.117	0.18
1600	200S	3.6	20	<3	0.3	0.65	27	<1	1.58	0.04	1.24	153	12.6	25.5	3.17	12.2	2.82	0.613	2.41	0.368	1.93	0.351	0.992	0.127	0.82	0.123	0.2
1600	250S	2.2	10	<3	0.3	1.09	26	<1	1.09	0.04	1.09	182	14.4	24	3.56	13.6	3.19	0.743	2.78	0.423	2.27	0.428	1.18	0.157	0.993	0.158	0.19
1600	300S	4	10	<3	0.4	0.78	29	<1	1.58	<0.01	1.2	225	16.3	29.1	4	15.3	3.74	0.841	3.25	0.492	2.66	0.497	1.43	0.179	1.14	0.182	0.23
1600	350S	5	<10	<3	0.3	0.68	30	<1	1.49	0.05	1.18	221	14.3	27.1	3.47	13.3	3.15	0.694	2.73	0.412	2.22	0.392	1.12	0.15	0.944	0.15	0.2
1600	400S	3.5	<10	<3	0.3	0.38	30	<1	1.47	0.74	1.29	207	14.9	28.5	3.54	13.5	3.05	0.653	2.64	0.394	2.02	0.373	1.02	0.132	0.86	0.128	0.2
1600	450S	3.3	<10	<3	0.5	0.56	29	<1	1.48	0.1	1.47	292	15.2	28.9	3.71	13.7	3.24	0.71	2.72	0.427	2.22	0.398	1.16	0.15	0.991	0.153	0.2
1600	500S	3.9	10	<3	0.5	0.72	28	<1	1.48	0.01	1.3	328	12.3	24.5	2.99	11.1	2.66	0.546	2.15	0.344	1.76	0.33	0.924	0.112	0.738	0.113	0.16
1600	550S	2.3	<10	<3	0.3	0.67	31	<1	1.35	0.07	1.7	252	11.3	22.1	2.93	11.6	2.96	0.758	2.67	0.415	2.23	0.411	1.13	0.146	0.948	0.146	0.18
1600	600S	1.4	10	<3	0.2	0.69	23	<1	0.7	<0.01	0.925	116	8.16	17.5	2.12	8.43	2.07	0.479	1.84	0.298	1.6	0.291	0.795	0.107	0.673	0.102	0.17
1600	650S	3.6	20	<3	0.3	0.43	25	<1	1.49	<0.01	0.911	129	10.7	20.9	2.61	9.98	2.37	0.541	2.03	0.313	1.72	0.31	0.839	0.111	0.728	0.109	0.18
1600	700S	3.7	<10	<3	0.3	0.34	26	<1	1.43	0.03	1.4	146	10.5	21.2	2.64	10.3	2.49	0.575	2.17	0.328	1.76	0.333	0.914	0.12	0.745	0.114	0.16
1600	800S	3.2	10	<3	0.5	0.92	31	<1	1.76	0.08	1.85	190	11.3	22.4	2.85	11	2.84	0.673	2.44	0.39	2.09	0.378	1.04	0.132	0.866	0.135	0.18
0E	30S	5	10	<3	0.3	0.67	28	<1	1.58	0.07	1.58	141	13.1	25.4	3.28	12.7	3.02	0.653	2.53	0.396	2.11	0.389	1.08	0.138	0.889	0.135	0.18
0E	15S	4.4	10	<3	0.3	4.02	32	<1	1.49	<0.01	1.49	90	10.3	20.2	2.5	9.57	2.17	0.47	1.88	0.275	1.48	0.266	0.751	0.097	0.621	0.091	0.15
0E		4.1	20	<3	0.3	1.29	29	<1	1.71	0.06	1.28	108	15	28.6	3.7	14	3.28	0.726	2.83	0.436	2.3	0.434	1.18	0.153	0.971	0.148	0.19
0E	15N	3.6	<10	<3	0.2	0.69	23	<1	1.44	0.06	0.961	81	9.62	18.9	2.32	8.51	1.94	0.439	1.64	0.253	1.32	0.24	0.672	0.087	0.556	0.086	0.16
0E	30N	3.4	10	<3	0.3	0.59	27	<1	1.59	0.09	0.919	86	12.8	25	3.13	11.6	2.81	0.615	2.41	0.367	1.92	0.362	0.999	0.124	0.782	0.123	0.18
0W	30S	1.8	10	<3	0.2	0.75	26	<1	0.9	0.02	0.745	104	10.5	21.7	2.71	10.6	2.51	0.559	2.22	0.349	1.87	0.352	0.968	0.131	0.766	0.12	0.18
0W	15S	3.3	<10	<3	0.3	0.83	28	<1	1.42	0.06	2.32	216	12.5	24.8	3.05	11.9	2.89	0.682	2.44	0.382	2.01	0.375	1.03	0.135	0.857	0.135	0.2
0W		3.9	<10	<3	0.4	2.11	26	<1	1.58	0.07	1.51	236	11	22.3	2.81	10.7	2.59	0.582	2.19	0.351	1.85	0.35	0.959	0.126	0.809	0.124	0.17
0W	15N	2.8	10	<3	0.4	1.75	28	<1	1.24	0.07	1.19	101	11.2	21.6	2.82	11.2	2.68	0.645	2.48	0.387	2.04	0.387	1.06	0.138	0.876	0.13	0.19
0W	30N	3.4	<10	<3	0.3	1.3	25	<1	1.56	0.1	0.933	108	12	22.5	2.95	11.5	2.81	0.607	2.35	0.363	1.91	0.364	1	0.125	0.806	0.122	0.17

line	station	Ta_ppm	W_ppm	Re_ppb	Pt_ppb	Au_ppb	Tl_ppm	Pb_ppm	Bi_ppm	Th_ppm	U_ppm	AshYield_%
1000	0S	0.005	0.7	1.4	<2	<5	0.143	8.8	0.2	3.57	1.34	59.4
1000	50S	0.003	<0.5	0.4	<2	<5	0.153	7.8	0.16	3.07	1.07	56.8
1000	100S	0.006	<0.5	0.4	<2	<5	0.169	7.3	0.14	2.89	1.05	58.1
1000	150S	0.005	<0.5	0.8	<2	<5	0.168	9.7	0.13	3.26	1.07	63.4
1000	200S	0.003	<0.5	0.8	<2	<5	0.18	8.9	0.14	2.45	0.949	48.9
1000	250S	0.005	<0.5	0.4	<2	<5	0.151	8.4	0.17	3.81	1.27	67.9
1000	300S	0.001	<0.5	0.5	<2	<5	0.171	7.8	0.13	3.31	0.873	63.3
1000	350S	0.003	<0.5	0.6	<2	<5	0.148	7.8	0.17	3.14	0.9	65.9
1000	400S	0.003	<0.5	0.8	<2	<5	0.187	8.7	0.14	3.29	1.08	51.3
1000	450S	0.004	<0.5	0.4	<2	<5	0.191	12.7	0.15	3.29	0.81	83.1
1000	500S	0.002	<0.5	1	<2	<5	0.171	6	0.15	2.57	0.849	41.5
1000	550S	0.006	<0.5	0.3	<2	<5	0.102	8	0.15	3	1.12	61.8
1000	600S	0.006	<0.5	0.9	<2	<5	0.194	8.5	0.14	3.56	1.28	50.6
1000	650S	0.011	<0.5	1.5	<2	<5	0.179	7.3	0.14	3.31	1.41	53
1000	700S	0.005	<0.5	1.4	<2	<5	0.202	8	0.12	3.07	1.05	60.8
1000	800S	0.004	<0.5	1	<2	<5	0.115	8.1	0.12	3.02	0.914	67.3
1200	0S	0.004	<0.5	0.5	<2	<5	0.204	9.2	0.16	3.59	1.26	60.3
1200	50S	0.006	<0.5	1.1	<2	<5	0.23	20.5	0.16	3.39	1.32	37.5
1200	100S	0.001	<0.5	1.3	<2	<5	0.107	7.6	0.1	1.88	0.604	69
1200	150S	0.006	<0.5	0.5	<2	<5	0.19	7.1	0.16	2.8	1.05	41.2
1200	200S	0.008	<0.5	1	<2	<5	0.238	7.9	0.12	3.04	1.24	57
1200	250S	0.006	<0.5	0.4	<2	<5	0.158	7.3	0.11	2.58	0.846	62.7
1200	300S	0.006	<0.5	1.3	<2	<5	0.182	7.2	0.11	2.53	0.896	62.6
1200	350S	0.003	<0.5	0.5	<2	<5	0.158	9.6	0.13	2.87	1.15	52.4
1200	400S	0.004	<0.5	5.5	<2	<5	0.192	8.5	0.18	3.48	1.68	38.3
1200	450S	0.005	<0.5	1	<2	<5	0.204	8.3	0.13	3.51	1.22	49.7
1200	500S	0.002	<0.5	1	<2	89	0.142	7.3	0.13	2.81	0.938	60.1
1200	550S	0.004	<0.5	1.3	<2	<5	0.215	8.6	0.14	3.81	1.47	38.2
1200	600S	0.004	<0.5	1.5	<2	<5	0.165	11.5	0.14	3.26	1.33	28.1
1200	650S	0.003	<0.5	1.2	<2	<5	0.195	9.9	0.16	3.73	1.56	44.8
1200	750S	0.005	<0.5	1.1	<2	<5	0.175	8.2	0.16	3.68	1.21	59.6
1200	800S	0.006	<0.5	0.9	<2	<5	0.22	7.9	0.17	3.68	1.52	51.5
1400	0S	0.009	<0.5	2.1	<2	<5	0.284	6.9	0.15	3.58	1.91	49.9
1400	50S	0.005	<0.5	0.8	<2	<5	0.215	7.6	0.17	3.13	1.28	45.4
1400	100S	0.004	<0.5	0.5	<2	<5	0.272	8.9	0.16	3.33	1.46	50.4
1400	150S	0.005	<0.5	0.7	<2	<5	0.21	9.9	0.17	3.88	1.51	64.4
1400	200S	0.006	<0.5	0.7	<2	<5	0.265	8.2	0.17	3.75	1.52	54.9
1400	250S	0.006	<0.5	1.2	<2	<5	0.249	8.1	0.18	4.15	1.48	51.5

line	station	Ta_ppm	W_ppm	Re_ppb	Pt_ppb	Au_ppb	Tl_ppm	Pb_ppm	Bi_ppm	Th_ppm	U_ppm	AshYield_%
1400	300S	0.003	<0.5	1	<2	<5	0.191	8.8	0.14	3.54	1.13	58.2
1400	350S	0.004	<0.5	0.7	<2	<5	0.215	7.9	0.13	3.35	1.19	38
1400	400S	0.005	<0.5	0.6	6	<5	0.161	8.1	0.16	3.65	1.35	64.3
1400	450S	0.007	<0.5	0.4	<2	<5	0.235	7	0.15	3.35	1.42	65.5
1400	500S	0.002	0.7	0.2	<2	<5	0.141	7.6	0.14	3.45	1.12	64.9
1400	550S	0.006	<0.5	0.8	<2	<5	0.197	8.4	0.18	3.48	1.5	32.8
1400	600S	0.006	<0.5	1.1	<2	<5	0.196	7.1	0.13	2.69	0.94	48.4
1400	650S	0.006	<0.5	0.7	<2	<5	0.213	7.2	0.15	3.63	1.34	40.1
1400	700S	0.006	<0.5	0.7	14	<5	0.198	7.6	0.15	3.22	1.13	68.8
1400	800S	0.007	<0.5	1.1	4	<5	0.216	9.6	0.14	3.36	1.28	42.9
1600	0S	0.01	<0.5	0.7	<2	<5	0.254	8.1	0.18	3.36	1.39	46.5
1600	50S	0.01	<0.5	1.6	<2	<5	0.226	7.8	0.16	3.2	1.25	48
1600	100S	0.005	<0.5	0.7	<2	<5	0.216	7.9	0.14	3.06	1.23	41.5
1600	150S	0.006	<0.5	1.6	<2	236	0.201	8.6	0.18	3.66	1.31	44.4
1600	200S	0.004	<0.5	1.8	<2	<5	0.199	8.1	0.16	3.49	1.21	50
1600	250S	0.004	<0.5	2	<2	<5	0.237	228	0.13	3.02	1.02	50.7
1600	300S	0.005	<0.5	7.2	<2	<5	0.257	7.8	0.17	3.61	1.46	57.2
1600	350S	0.006	<0.5	1.7	<2	<5	0.221	11.6	0.18	3.64	1.53	54.2
1600	400S	0.007	<0.5	0.6	<2	<5	0.237	8.1	0.17	3.76	1.39	43.7
1600	450S	0.008	<0.5	0.9	<2	<5	0.283	7.7	0.16	4.04	1.45	43.5
1600	500S	0.002	<0.5	1.4	<2	<5	0.209	8.1	0.16	3.34	1.08	56.4
1600	550S	0.003	<0.5	0.4	<2	<5	0.193	8.1	0.13	2.59	0.817	52
1600	600S	0.002	<0.5	2	<2	<5	0.139	5.7	0.09	2.16	0.996	58.8
1600	650S	0.004	<0.5	0.5	<2	<5	0.164	9.2	0.14	3.28	1.32	43
1600	700S	0.005	<0.5	0.3	<2	<5	0.184	7.6	0.14	2.84	1.08	61.1
1600	800S	0.005	<0.5	1.7	<2	<5	0.179	8.2	0.13	2.9	1.17	50.2
0E	30S	0.003	<0.5	1.8	<2	<5	0.195	7.8	0.14	3.55	1.88	38.5
0E	15S	0.003	<0.5	0.7	<2	<5	0.276	8.3	0.18	3.18	0.97	34.9
0E		0.011	<0.5	0.8	<2	<5	0.179	8.6	0.23	3.89	1.52	47.1
0E	15N	0.008	<0.5	0.5	<2	<5	0.183	6.5	0.14	3.48	1.27	46.5
0E	30N	0.004	<0.5	0.9	<2	25	0.151	8.5	0.16	3.73	1.31	69.6
0W	30S	0.002	<0.5	0.9	<2	<5	0.147	7	0.11	2.78	0.814	84.8
0W	15S	0.003	<0.5	1	<2	<5	0.165	9.5	0.16	[illegible].61	0.973	51.8
0W		0.003	<0.5	1.3	<2	<5	0.155	8.1	0.12	2.[illegible]5	1.09	44.5
0W	15N	0.003	<0.5	1.4	<2	<5	0.155	8.3	0.11	2.4[illegible]	0.879	71.1
0W	30N	0.003	<0.5	1.2	<2	<5	0.186	8.5	0.14	3.4[illegible]	1.17	46.7

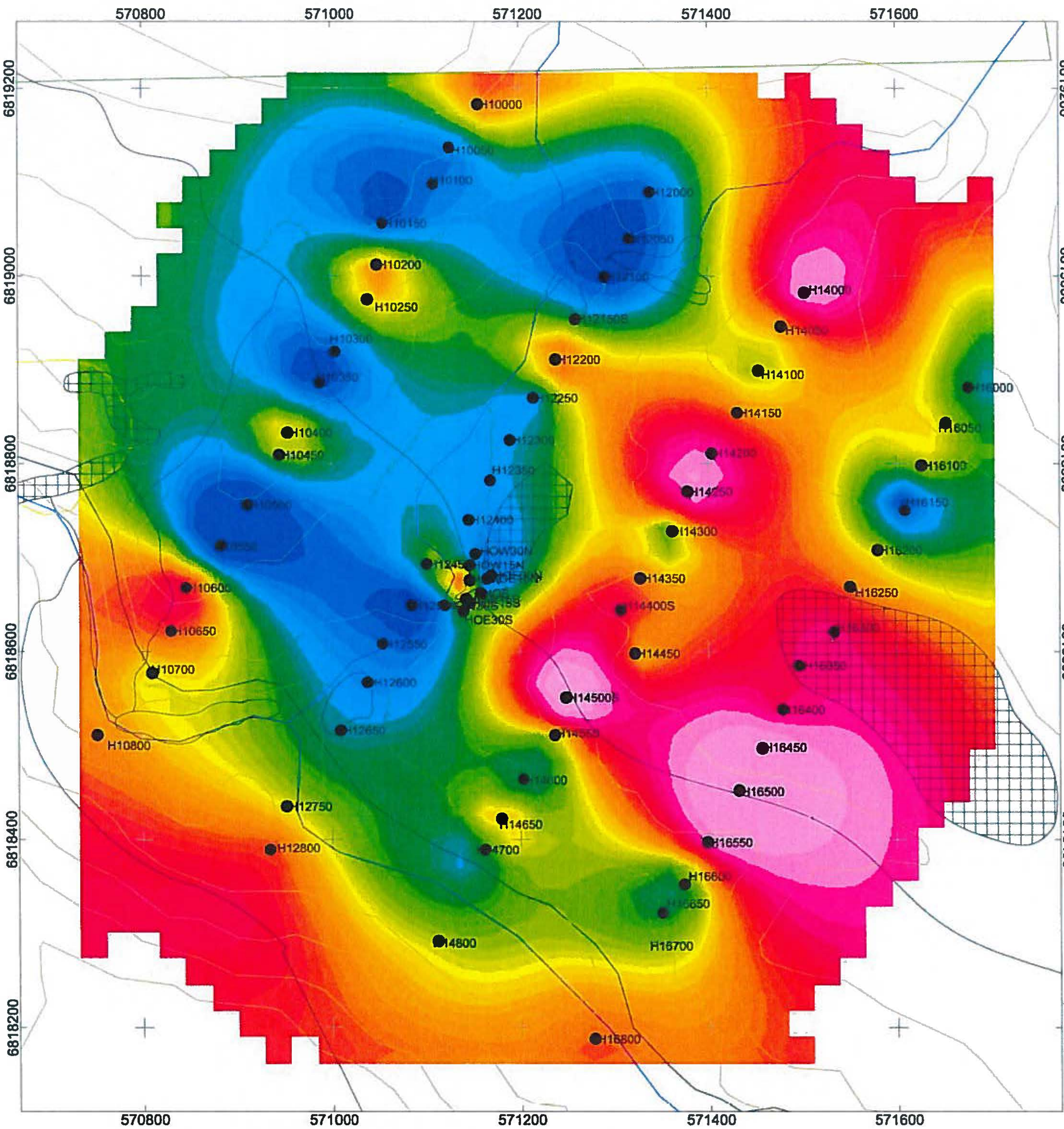


Contoured Humus Biogeochemistry
As (ppm)

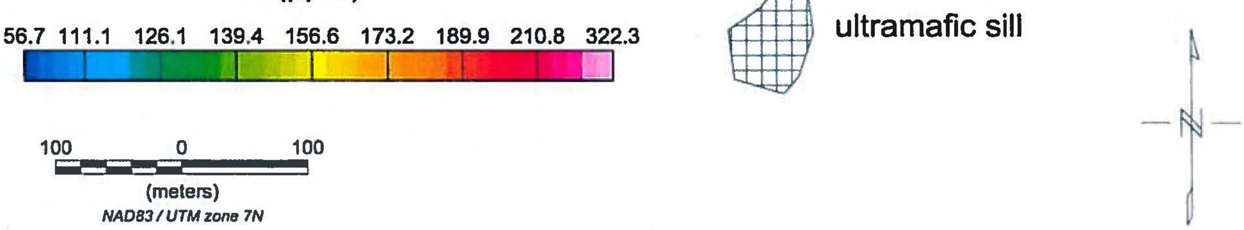
0.9 6.3 6.8 7.2 7.6 8.0 8.4 8.7 9.2 9.5 10.2 11.6 20.7

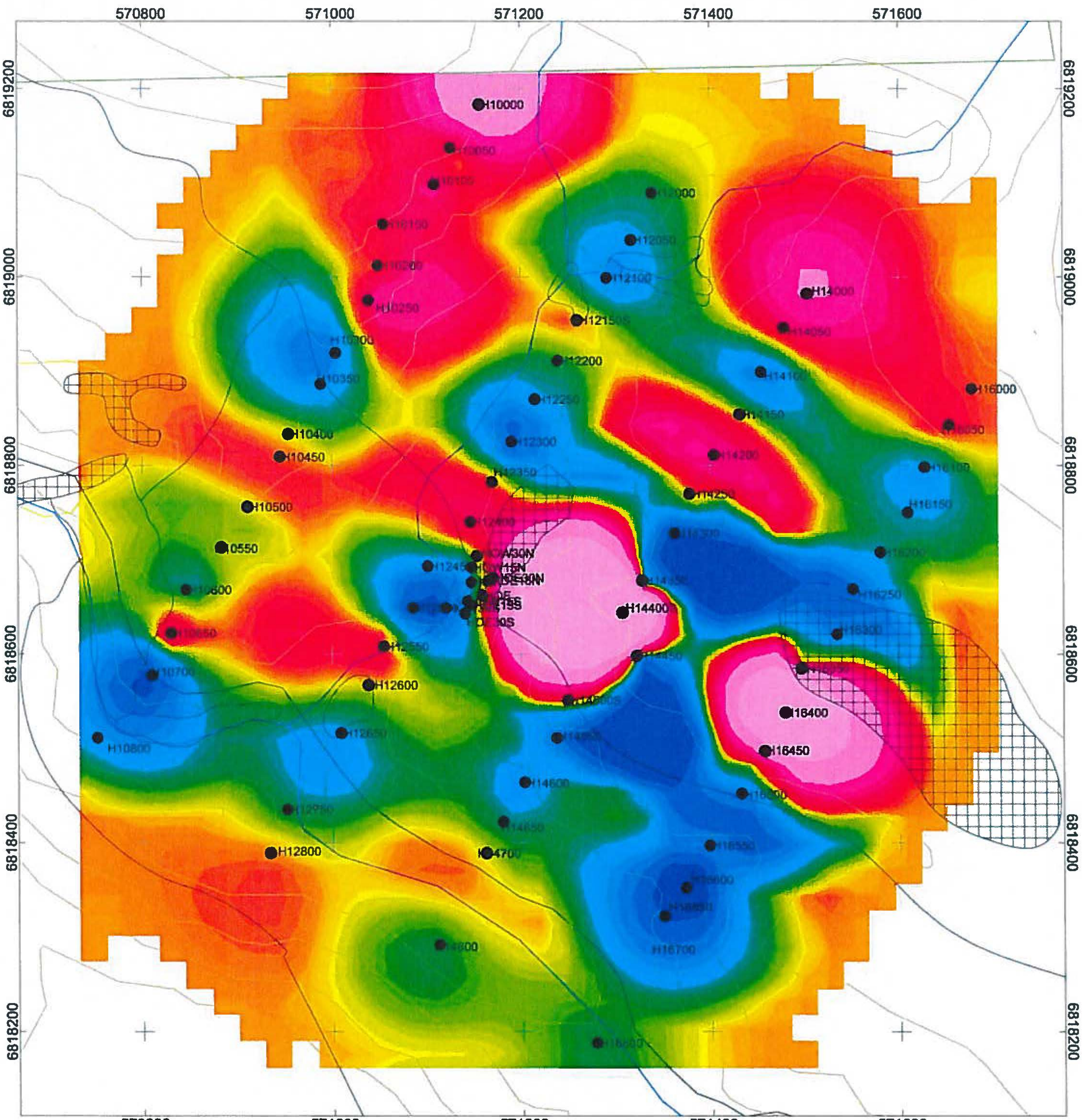
ultramafic sill

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



Contoured Humus Biogeochemistry
Ba (ppm)



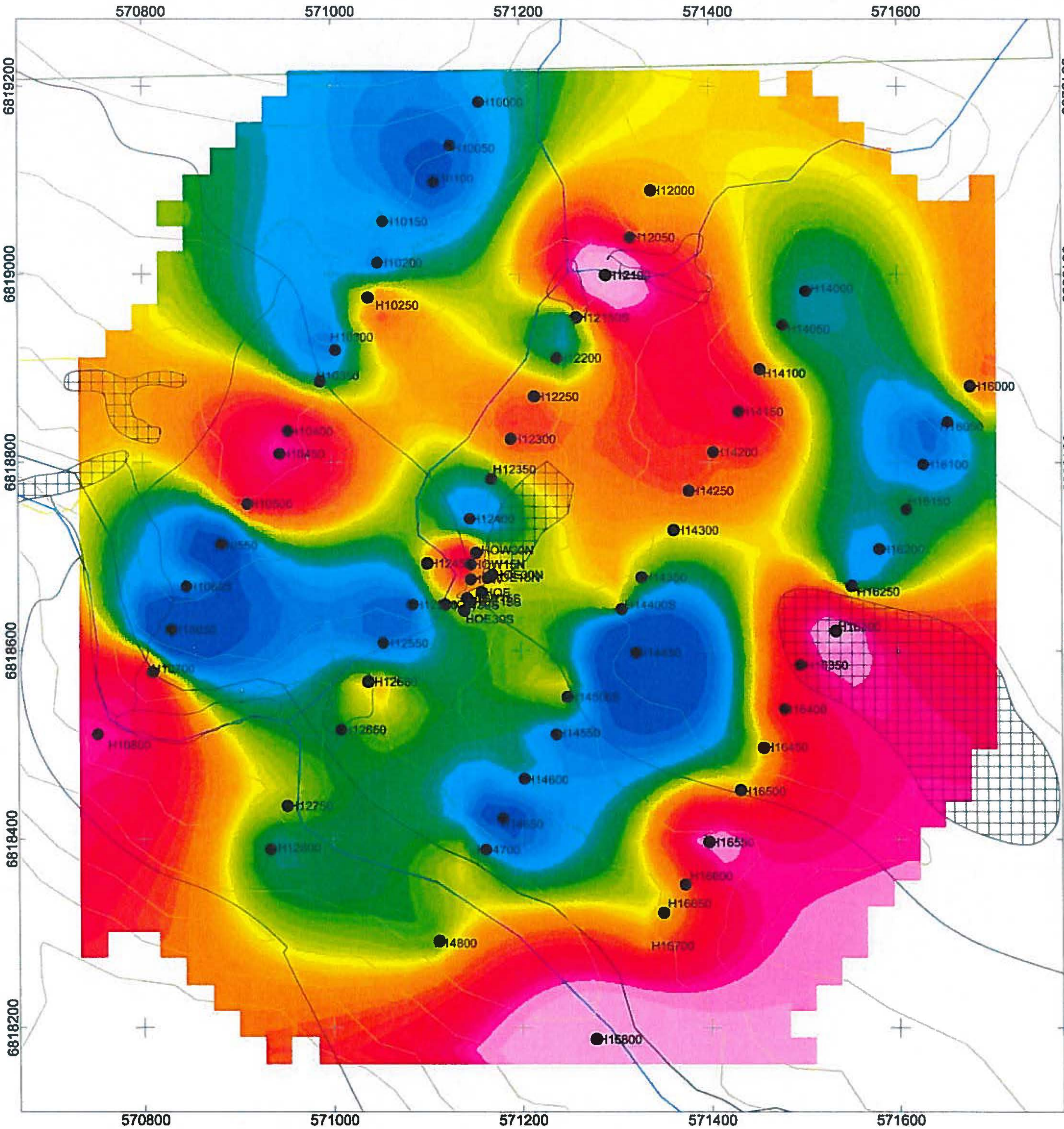


Contoured Humus Biogeochemistry
Te+Bi (ppm)

0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.3 0.3 1.0

ultramafic sill

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

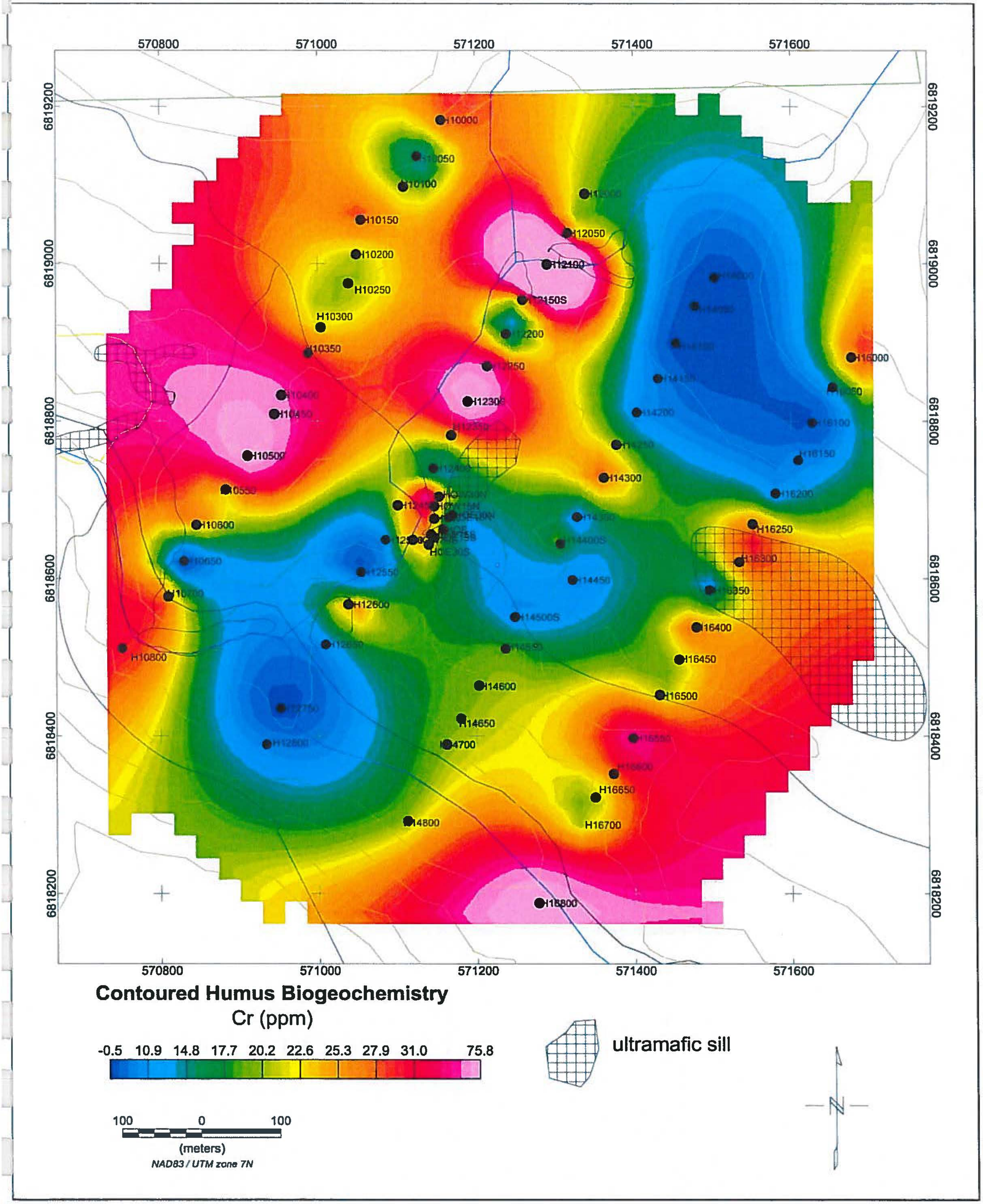


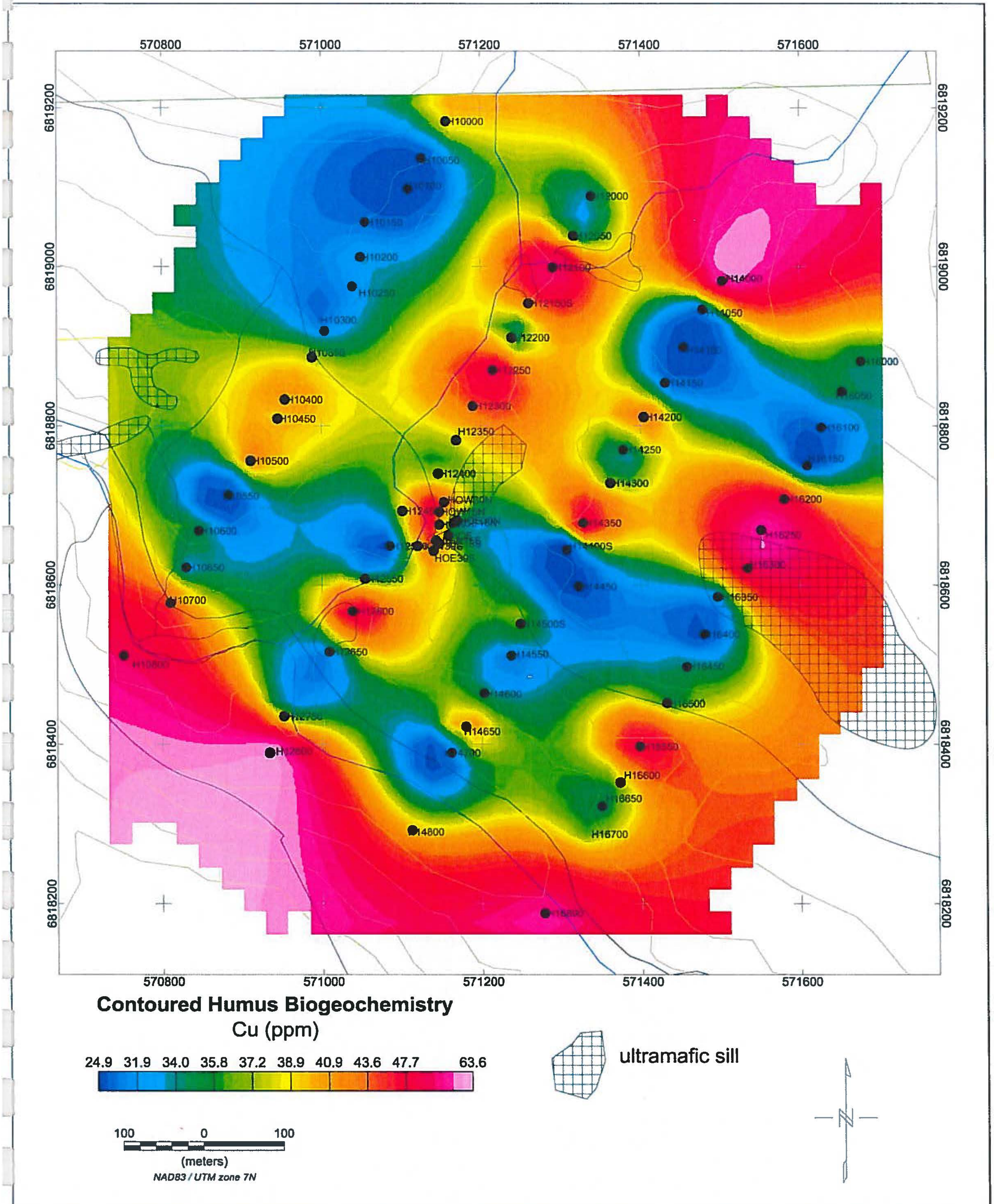
Contoured Humus Biogeochemistry
Co (ppm)

8.3 14.0 14.8 15.3 15.6 16.0 16.4 16.9 17.8 19.3 24.4

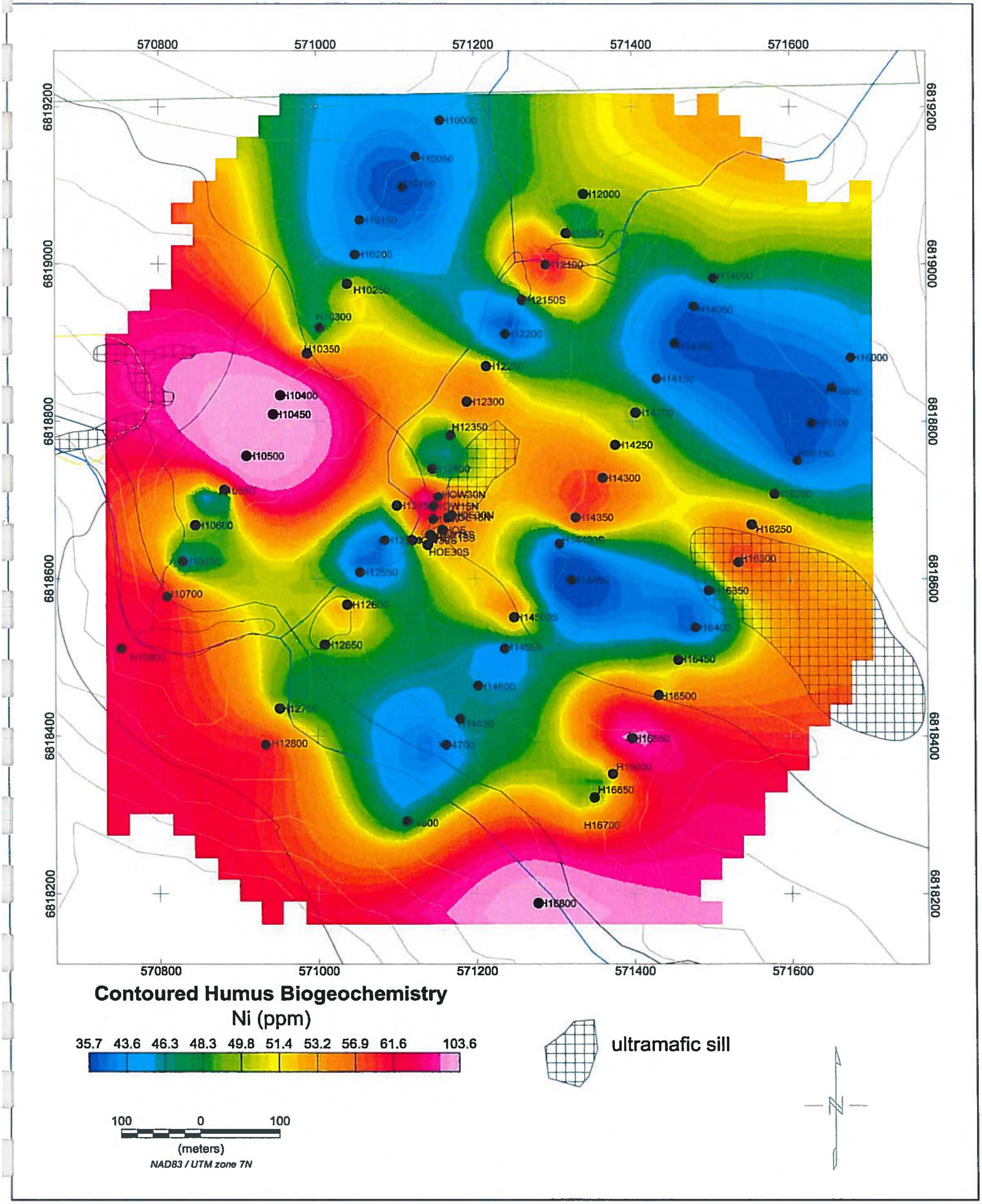
ultramafic sill

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

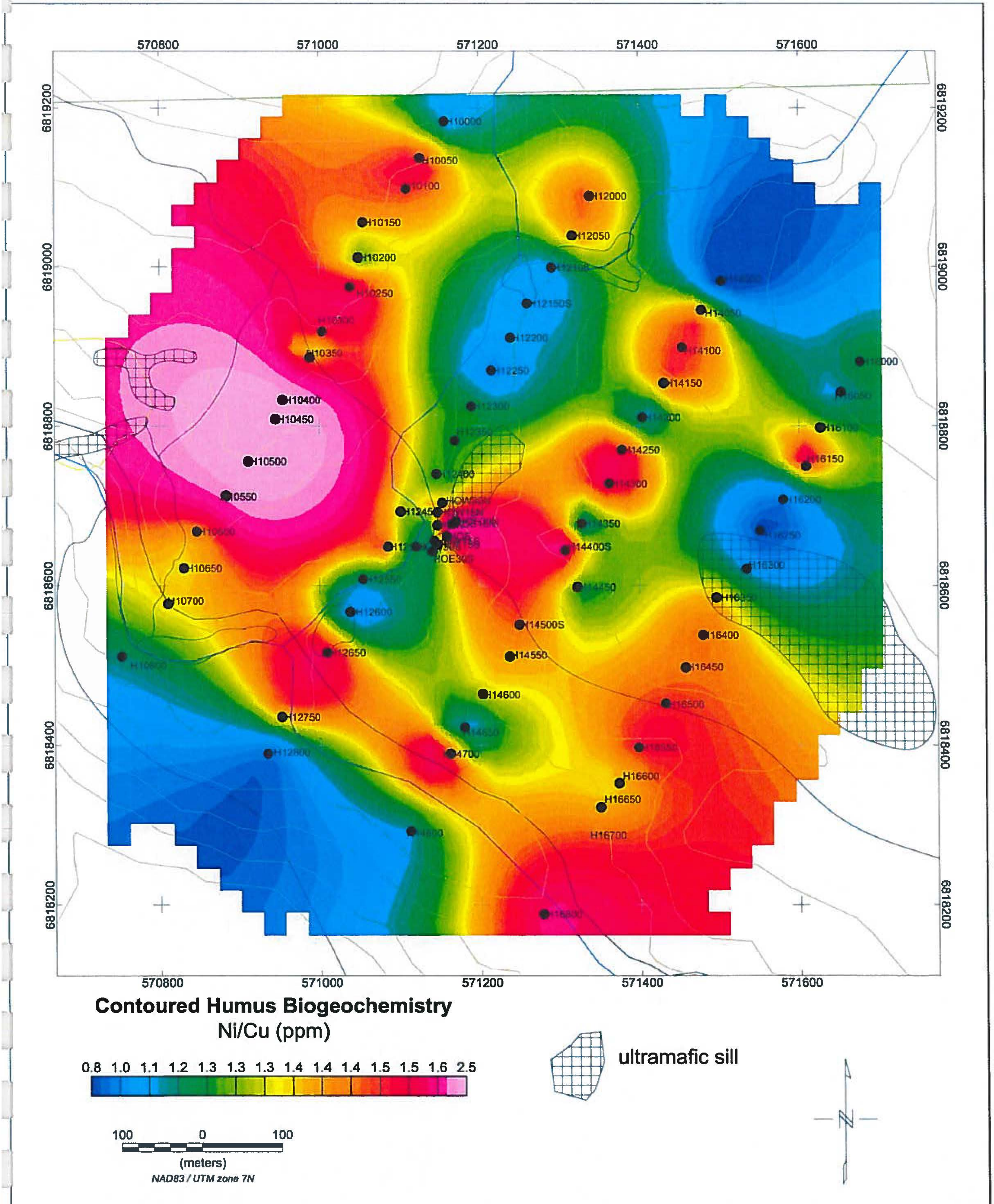

570800
571000
571200
571400
571600
6819200
6819000
6818800
6818600
6818400
6818200
Contoured Humus Biogeochemistry
Cr (ppm)
-0.5 10.9 14.8 17.7 20.2 22.6 25.3 27.9 31.0 75.8
ultramafic sill
100 0 100
(meters)
NAD83 / UTM zone 7N



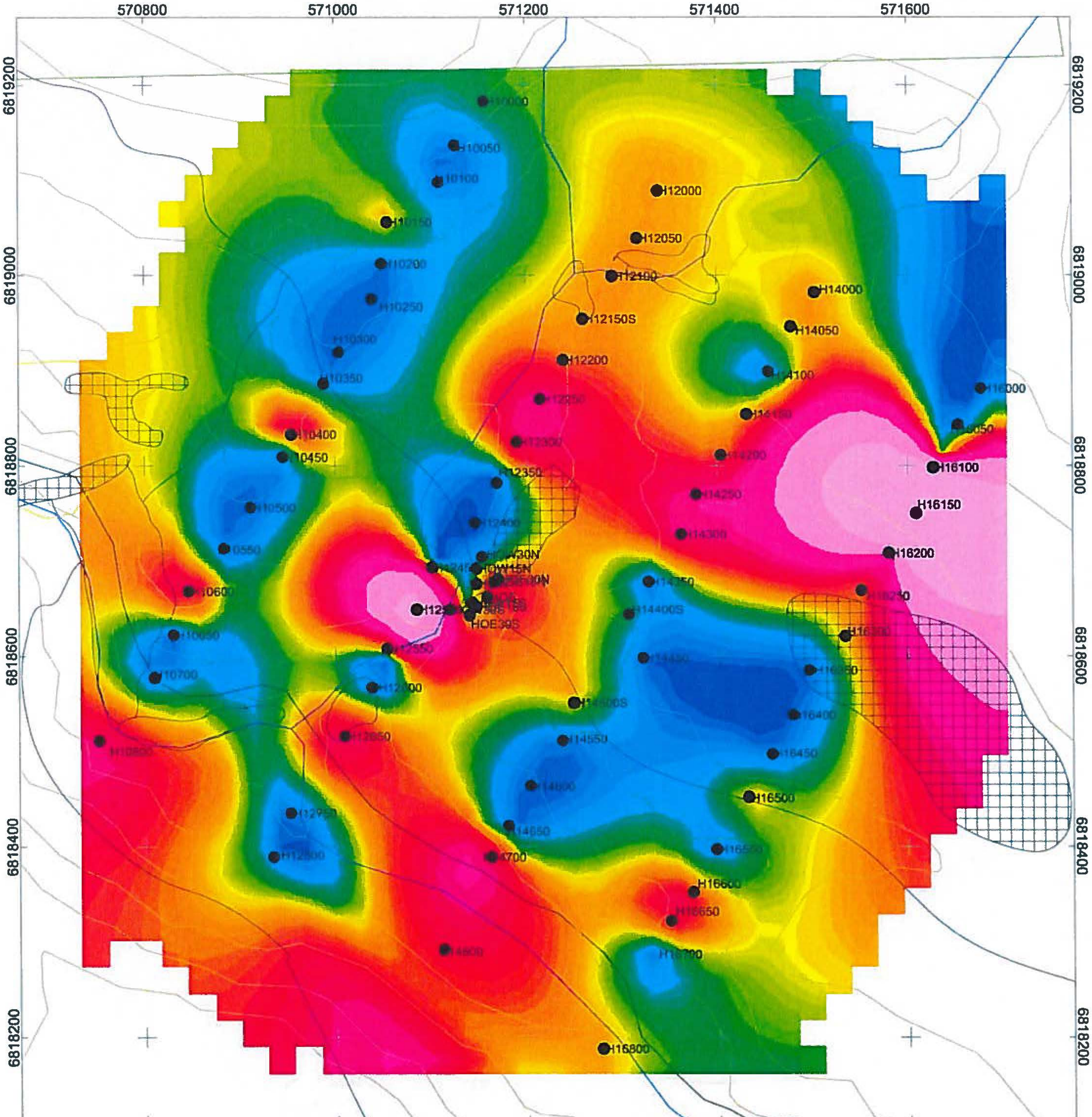
Contoured Humus Biogeochemistry
Cu (ppm)



570800
571000
571200
571400
571600
6819200
6819000
6818800
6818600
6818400
6818200
Contoured Humus Biogeochemistry
Ni (ppm)
35.7 43.6 46.3 48.3 49.8 51.4 53.2 56.9 61.6 103.6
ultramafic sill
100 0 100
(meters)
NAD83 / UTM zone 7N



570800
571000
571200
571400
571600
6819200
6819000
6818800
6818600
6818400
6818200
H10000
H10050
H10100
H10150
H10200
H10250
H10300
H10350
H10400
H10450
H10500
H10550
H10600
H10650
H10700
H12000
H12050
H12100
H12150S
H12200
H12250
H12300
H12350
H12400
H14100
H14150
H14250
H14350
H14400S
H14450
H14500S
H14550
H14600
H14700
H16000
H16100
H16150
H16200
H16250
H16300
H16400
H16450
H16500
H16600
H16650
H16700
HOE30S
Contoured Humus Biogeochemistry
Ni/Cu (ppm)
0.8 1.0 1.1 1.2 1.3 1.3 1.3 1.4 1.4 1.4 1.5 1.5 1.6 2.5
ultramafic sill
100 0 100
(meters)
NAD83 / UTM zone 7N
N



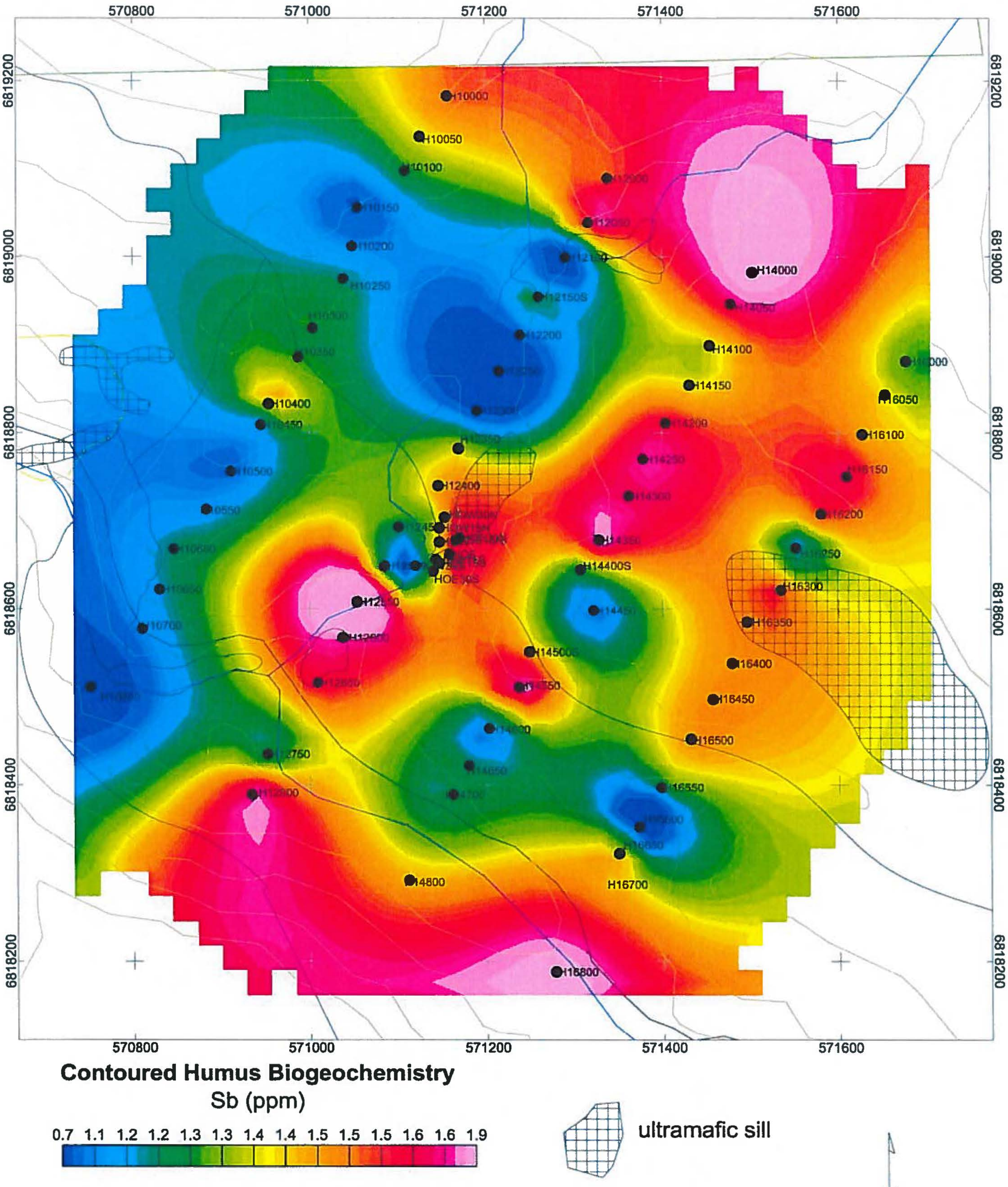
Contoured Humus Biogeochemistry

PGE + Au (ppb)
PGE=Pd, Pt, Ru

-1.1 1.9 3.8 5.1 6.3 7.1 7.8 8.7 9.7 11.0 13.7 256.0

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

ultramafic sill



Contoured Humus Biogeochemistry
Sb (ppm)

Appendix 5: Geochemistry -Soil Gas Hydrocarbons

Actlabs report including laboratory methodology, assay certificate and interpretation

MS Excel SGH sample database

MS Excel results from laboratory (digital only)

Compilation maps

3D - SGH

"A SPATIALTEMPORAL GEOCHEMICAL HYDROCARBON INTERPRETATION"

MIDNIGHT MINING SERVICES

ARCH PROJECT

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SGH – SOIL GAS HYDROCARBON
Predictive Geochemistry

for

MIDNIGHT MINING SERVICES

ARCH PROJECT

September 23, 2013

** Dale Sutherland,*

Activation Laboratories Ltd

(- author, originator)*

EVALUATION OF SAMPLES

DATA EXPLORATION FOR: "COPPER-NICKEL-PGE" TARGETS

SGH COPPER AND NICKEL TEMPLATES USED FOR THIS REPORT

Workorder: A13-10340

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PREFACE

THIS "STANDARD" SGH INTERPRETATION REPORT:

The purpose of this Soil Gas Hydrocarbon (SGH) interpretation "Standard Report" is to ensure that clients and other potential reviewers of the results have a good understanding of this organic, deep penetrating geochemistry. As SGH provides such a large data set and is not interpreted in the same way as inorganic geochemistries, this interpretation and report enables the user to realize the results in a timely fashion and capitalizes on years of research and development since the inception of SGH in 1976 combined with the knowledge obtained by Activation Laboratories through the interpretation of SGH data from over hundreds of surveys for a wide variety of target types in various lithologies from many geographical locations. Although referenced today as a "nano-technology", the analysis of SGH has not changed since inception. The report is compulsory as it is the only known organic geochemistry that, in spite of the name, uses non-gaseous semi-volatile organic compounds interpreted using a forensic signature approach It is based solely on SGH data and does not include the consideration or interpretation from any other geochemistry (inorganic), geology, or geophysics that may exist related to this survey area(s). This report can also provide evidence of project maintenance. To keep the price to a minimum and to provide as short a turnaround time as practically possible, usually only one SGH Pathfinder Class map is illustrated in a "Standard Report" with an applied interpretation although several other SGH Pathfinder Class maps are used and referenced. Definitions of certain terms or phrases used in this report can be found in Appendix A. A Supplemental Report and/or interpretations for other target types are available. A GIS package of georeferenced images is also available. (See Appendix H)

The interpretation in this report has used the results from some of the research with SGH in recent years which has focused on the potential that the SGH data might be able to further dissect and understand the relationships between the chemical Redox conditions in the overburden the development of an electrochemical cell and its affect in shaping geochemical anomalies. This research has resulted in the development by Activation Laboratories of a new enhanced model of the Electrochemical/ Redox Cell theory originated by Govett (1976) that was further developed to the model by Hamilton (2004, 2009). The new enhanced model developed by Sutherland (2011) takes the general anomalies expected by the Hamilton model to a higher level of detail and specificity. This has resulted in a more confident level of interpretation which has been referenced as 3D-SGH or **3D-"Spatiotemporal Geochemical Hydrocarbons**. This model has been formally introduced at the International Applied Geochemistry Symposium (IAGS) organized by The Association of Applied Geochemists that took place in Rovaniemi, Finland, in August 2011. This new level of understanding of the expected anomaly types that can be observed with SGH provides a new level of quality control in the interpretation process as the symmetry of SGH anomalies can assure the interpreter which anomalies are as a result of a buried target. With the enhanced 3D-SGH interpretation that was introduced in 2012, we also mark the beginning of the ability to make some statements regarding the possible depth to mineralization for some projects as we dissect the Redox cell relative to the new Electrochemical Cell theory. The cover of this report is an artist's rendering of the pathways of different classes of Spatiotemporal Geochemical Hydrocarbons which migrate through the overburden. This model is used as the new 3D-SGH interpretation approach.

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DISCLAIMER

This "SGH Interpretation Report" has been prepared to assist the user in understanding the development and capabilities of this Organic based Geochemistry. The interpretation of the Soil Gas Hydrocarbon (SGH) data is in reference to a template or group of SGH classes of compounds specific to a type of mineralization or target that is chosen by the client (i.e. the template for gold, copper, VMS, uranium, etc.). The various templates of SGH Pathfinder Classes that together define the forensic identification signature for a wide range of commodity target types; Gold, Nickel, VMS, SEDEX, Uranium, Cu-Ni-PGE, IOCG, Base Metal, Tungsten, Lithium, Polymetallic, and Copper, as well as for Kimberlites, Coal Seam, Wet Gas and Oil Play, have been developed through years of research and have been further refined from review of case studies and orientation studies has proven to be able to also address a wide range of lithologies. Even with 15+ years of development and experience with SGH, Activation Laboratories Ltd. cannot guarantee that the templates used are applicable to every type of target in every type of environment. The interpretation in this report attempts to identify an anomaly that has the best SGH signature in the survey for the type of mineralization or target chosen by the client. However, this interpretation is not exhaustive and there may be additional SGH anomalies that may warrant interest. It should not be viewed due to the generation of this SGH report, that Activation Laboratories Ltd. has the expertise or is in the business of interpreting any type of geochemical data as a general service. As the author is the originator of the SGH geochemistry, has researched and developed this exploration tool since 1996, and has produced similar interpretations using SGH data for close to 1,000 surveys, he is perhaps the best qualified to prepare this interpretation as assistance to clients wishing to use this SGH geochemistry. Activation Laboratories Ltd. can offer assistance in general suggestions for sampling protocols and in sample grid design; however we accept no responsibility to the appropriateness of the samples taken. Activation Laboratories Ltd. has made every attempt to ensure the accuracy and reliability of the information provided in this report. Activation Laboratories Ltd. or its employees do not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information or description of processes contained in this report. The information is provided "as is" without a guarantee of any kind in the interpretation or use of the results of the SGH geochemistry. The client or user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using any information or material contained in this report or using data from the associated spreadsheet of results.

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Cautionary Note Regarding Assumptions and Forward Looking Statements

The statements and target rating made in the Soil Gas Hydrocarbon (SGH) interpretive report or in other communications may contain or imply certain forward-looking information related to the quality of a target or SGH anomaly.

Statements related to the rating of a target are based on comparison of the SGH signatures derived by Activation Laboratories Ltd. through previous research on known case studies. The rating is not derived from any statistics or other formula. The rating is a subjective value on a scale of 0 to 6 relative to the similarity of the SGH signature reviewed compared to the results of previous scientific research and case studies based on the analysis of surficial samples over known ore bodies. No information on other geochemistries, geophysics, or geology is usually available as additional information for the interpretation and assignment of a rating value unless otherwise stated. The rating does not imply ore grade and is not to be used in mineral resource estimate calculations. References to the rating should be viewed as forward-looking statements to the extent that it involves a subjective comparison to known SGH case studies. As with other geochemistries, the implied rating and anticipated target characteristics may be different than that actually encountered if the target is drilled tested or the property developed.

Activation Laboratories Ltd. may also make a scientifically based reference in this interpretive report to an area that might be used as a drill target. Usually the nearest sample is identified as an approximation to a "possible drill target" location. This is based only on SGH results and is to be regarded as a guide based on the current state of this science.

Unless otherwise stated, Activation Laboratories Ltd. has not physically observed the exploration site and has no prior knowledge of any site description or details or previous test results. Actlabs makes general recommendations for sampling and shipping of samples. Unless stated, the laboratory does not witness sampling, does not take into consideration the specific sampling procedures used, or factors such as the season of sampling, samples handling, packaging, or shipping methods. The majority of the time, Activation Laboratories Ltd. has had no input into sampling survey design. Where specified Activation Laboratories Ltd. may not have conducted sample preparation procedures as it may have been conducted at the client's assigned laboratory external to Actlabs. Although Actlabs has attempted to identify important factors that could cause actual actions, events or results to differ scientifically which may impact the associated interpretation and target rating from those described in forward-looking statements, there may be other factors that cause actions, events or results that are not anticipated, estimated or intended.

In general, any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions, future events or performance are not statements of historical fact. These "scientifically based educated theories" should be viewed as "forward-looking statements".

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Readers of this interpretive report are cautioned not to place undue reliance on forward-looking information. Forward looking statements are made based on scientific beliefs, estimates and opinions on the date the statements are made and the interpretive report issued. The Company undertakes no obligation to update forward-looking statements or otherwise revise previous reports if these beliefs, estimates and opinions, future scientific developments, other new information, or other circumstances should change that may affect the analytical results, rating, or interpretation.

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SOIL GAS HYDROCARBON (SGH) GEOCHEMISTRY – OVERVIEW

In the search for minerals and elements, geology requires tools to assess the location and potential quantity of minerals and ores. In the past people looked at the landscape to find the deposit. Similar landscapes indicate similar mineral and metal deposits. This is searching on a macro level, while geochemistry is searching on a micro level. Organic material requires many minerals and elements, so organic materials can be biomarker of the present of the minerals and elements.

SGH is a deep penetrating geochemistry that involves the analysis of surficial samples from over potential mineral or petroleum targets. The analysis involves the testing for 162 hydrocarbon compounds in the C5-C17 carbon series range applicable to a wide variety of sample types. The hydrocarbons are residues from the decomposition of bacteria and microbe that feed on the target commodity as they require inorganic metallic's to catalyze the reactions necessary to develop hydrocarbons and grow in their life cycle. Specific classes of hydrocarbons (SGH) have been successful for delineating targets found at over 900 metres in depth. Samples of various media have been successfully analyzed such as soil (any horizon), sand, till, drill core, rock, peat, humus, lake-bottom sediments and even snow. After preparation in the laboratory, the SGH analysis incorporates a very weak leach, essentially aqueous, that only extracts the surficial bound hydrocarbon compounds and those compounds in interstitial spaces around the sample particles. These are the hydrocarbons that have been mobilized from the target depth. SGH is unique and should not be confused with other hydrocarbon tests or traditional analyses that measure C1 (Methane) to C5 (Pentane) or other gases. Thus, in spite of the name, SGH does not analyze for any hydrocarbons that are actually gaseous at room temperature and can be used to analyze for hydrocarbons in sample types other than soil. SGH is also different from soil hydrocarbon tests that thermally extracts or desorbs all of the hydrocarbons from the whole soil sample. This test is less specific as it does not separate the hydrocarbons and thus does not identify or measure the responses as precisely. These tests also do not use a forensic approach to identification. The hydrocarbons in the SGH extract are separated by high resolution capillary column gas chromatography and then detected by mass spectrometry to isolate, confirm, and measure the presence of only the individual hydrocarbons that have been found to be of interest from initial research and development and from performance testing especially from the two Canadian Mining Industry Research Organization (CAMIRO) projects (97E04 and 01E02).

Over the past 15+ years of research, Activation Laboratories Ltd. has developed an in-depth understanding of the unique SGH signatures associated with different commodity targets. Using a forensic approach we have developed target signatures or templates for identification, and the understanding of the expected geochromatography that is exhibited by each class of SGH compounds. In 2004 we began to include an SGH interpretation report delivered with the data to enable our clients to realize the complete value and understanding of the SGH results in the shortest time frame and provide the benefit from past research sponsored by Actlabs, CAMIRO, OMET and other industrial sponsors. In 2011, a new model of Electrochemical/Redox Cell theory was proposed and the new 3D-SGH interpretation approach based on this theory was incorporated in 2012 on a routine basis for SGH interpretation reports.

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SGH has attracted the attention of a large number of Exploration companies. In the above mentioned research projects the sponsors have included (in no order): Western Mining Corporation, BHP-Billiton, Inco, Noranda, Outokumpu, Xstrata, Cameco, Cominco, Rio Algom, Alberta Geological Survey, Ontario Geological Survey, Manitoba Geological Survey and OMET. Further, beyond this research, Activation Laboratories Ltd. has interpreted the SGH data for over 700 targets from clients since January of 2004. In both CAMIRO research projects over known mineralization and in exploration projects over unknown targets, SGH has performed exceptionally well. As an example, in the first CAMIRO research project that commenced in 1997 (Project 97E04), there were 10 study areas that were submitted blindly to Actlabs. These study sites were selected since other inorganic geochemistries were unsuccessful at illustrating anomalies related to the target.

Although Actlabs was only provided with the samples and their coordinates, SGH was able to locate the blind mineralization with exceptional accuracy in 9 of the 10 surveys. In 2007, SGH has recently been very successful in exploration and discovery of unknown targets e.g. Golden Band Resources drilled an SGH anomaly and discovered a significant vein containing "visible" gold. (www.goldenbandresources.com)

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SOIL GAS HYDROCARBON SURVEY DESIGN AND SAMPLING

Summary: See Appendix C for more details

In summary, the best conditions for the sample type and survey design include:

- Fist sized samples are usually retrieved from a shallow dug hole in the 15 to 40 cm range of depth.
- Different sample types can be taken even "within" the same survey or transect, data leveling is rarely ever required. SGH is highly effective in areas of very difficult terrain. The Golden Rule is to always take a sample.
- Samples should be evenly spaced in a grid or a series of transects with sample lines spaced at a ratio of up to 4:1 (line spacing: sample spacing).
- A minimum of 50 sample "locations" is recommended with one-third over the target and one-third on each side of the target into background if this can be predicted. This provides the opportunity of optimal data contrast.
- If very wet, samples can be drip dried in the field. No special preservation is required for shipping.
- Relative or UTM sample location coordinates are required to allow interpretation.

SAMPLE PREPARATION AND SGH ANALYSIS

Summary: See Appendix D for more details

Upon receipt at Activation Laboratories:

- The samples are air-dried at a relatively low temperature of 40°C.
- The samples are then sieved and the -60 mesh sieve fraction (<250 microns, although different mesh sizes can be used at the preference of the exploration geologist) is collected.
- The collected "pulp" is packaged in a Kraft paper envelope and transported from our sample preparation department to our analytical building also located in the industrial park in Ancaster Ontario.
- Each sample is then extracted, compounds separated by gas chromatography and detected by mass spectrometry at a *Reporting Limit* of one part-per-trillion (ppt).
- The results of the SGH analysis is reported in raw data form in an Excel spreadsheet as "semi-quantitative" concentrations without any additional statistical modification.

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SGH DATA QUALITY

Summary: See Appendix E for more details

Reporting Limit:

- The Excel spreadsheet of concentrations for each of the 162 compounds monitored is in units of ppt as "parts-per-trillion" which is equivalent to nanograms/kilogram (ng/Kg). The reporting limit of 1 ppt represents a value of approximately 5 times the standard deviation of low level analysis. Essentially all background noise has already been eliminated. All data reported should be used in geochemical mapping. Actual detectable levels can be significantly < 1 ppt.

Laboratory Replicate Analysis:

- An equal aliquot of a random sample is analyzed as a laboratory replicate.
- Due to the large amount of data, the estimate of method variability is reported as the percent coefficient of Variation (%CV).
- A laboratory replicate analysis is reported at a frequency of 1 for every 15 samples analyzed.
- The variability of field duplicate samples are similarly reported if identified.

Historical SGH Precision:

- Although the SGH analysis reports results at such trace ppt concentration levels, the average %CV for laboratory replicates is 8% within a range of ±4%.
- Field duplicates have historically been 5% higher than laboratory replicates.

Laboratory Materials Blank (LMB-QA):

- The LMB-QA values are only an early warning as a quality assurance procedure to indicate the relative cleanliness of laboratory glassware, vials, caps, and the laboratory water supply at the ppt concentration level.
- The LMB-QA values should not be subtracted from any SGH data as any background or noise characteristics have already been removed through the use of a Reporting Limit.

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SGH DATA INTERPRETATION

Summary: See Appendix F for more details

SGH Interpretation and Report:

- Due to the very large data set provided by the SGH analysis, this interpretation report is provide to offer guidance in regard to the results of this geochemistry for their survey.
- In our interpretation procedure, we separate the 162 compound results into 19 SGH sub-classes. These classes include specific alkanes, alkenes, Thiophenes, aromatic, and polyaromatic compounds. The concentrations of the individual hydrocarbons within a class are simply summed. None of these compounds are gaseous at room temperature.
- At this time the magnitude of the hydrocarbon class data has not been proven to imply a higher grade or quantity of the mineralization if present.
- A "geochemical anomaly threshold value" should not be calculated for SGH data as any background or noise has already been filtered out through the use of a Reporting Limit instead of some type of detection limit.
- SGH hydrocarbons data should never be interpreted individually. Interpretation must always be by compound class.
- Multiple SGH Classes are compared. Multiple SGH Classes that have been associated with the presence of specific mineralization are called SGH Pathfinder Classes that together represent the forensic signature or fingerprint identification for a specific type of mineralization or petroleum play.
- The anomalies of each class are compared as to their geochromatographic dispersion and ability to vector to a common location that may be referenced as a potential drill target.
- The agreement and behaviour between SGH Pathfinder Classes for a type of target, as a template of Classes, is compared against SGH research and orientation studies. The quality of agreement is expressed as an SGH Rating of confidence that the SGH anomalies of the survey being interpreted are similar to the behaviour of these classes over known mineralization.
- The interpretation is customized for the project survey by the Author. The SGH Rating and Interpretation is thus subjective and based on the experience of close to 1,000 SGH survey interpretations. The interpretation is not conducted by any computerized process.

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SGH CHARACTERISTICS

Summary: See Appendix G for more details

SGH Characteristics:

- The pattern of SGH anomalies are usually of high contrast and easily observed.
- SGH is able to illustrate exceptionally symmetrical anomalies in spite of exotic overburden and barriers such as permafrost, shale and basalt caps, previously thought to be impenetrable.
- Inorganic geochemistry can illustrate anomalies of metals that have been mobilized by surficial physical processes. As SGH is essentially "blind" to the inorganic content of a sample, SGH anomalies illustrate the true source of mineralization.
- AS SGH hydrocarbons are essentially non-polar, highly symmetrical anomalies are observed. As such symmetry is rare this provides a quality control to the interpretation resulting in higher confidence that is reflected by a higher SGH Rating Score in comparison to known case studies.
- SGH can be analyzed on samples collected in different seasons or adjacent years. The combined data rarely require any data leveling.

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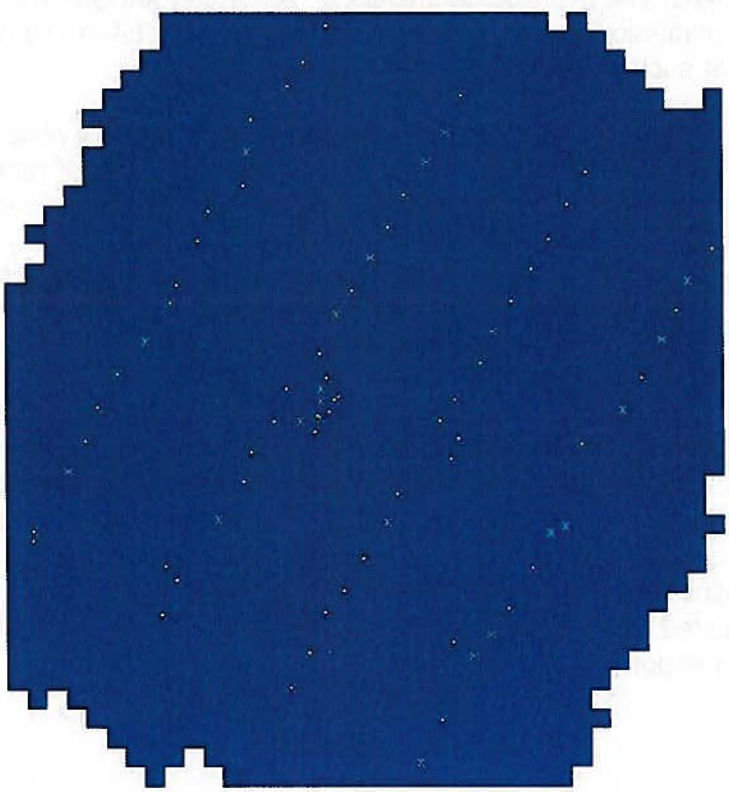
INTERPRETATION OF SGH RESULTS
A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT
SAMPLE SURVEY INTERPRETATION

This report is based on the SGH results from the analysis of a total of 78 samples. The ARCH project area is described by a somewhat rectangular survey grid with 4 Northeast trending transects that are spaced about 200 metres apart. Samples are spaced at about 50 metres along each transect. A small cluster of samples was centrally located in the survey. Sample coordinates were provided for mapping of the SGH results for these samples as UTM northing and easting coordinates, NAD83 Zone 8N datum. A sample location map is shown below.

This area is in the Whitehorse Mining District of the Southwest Yukon and was described as having highly variable terrain that included swamps, till, alluvium, active river beds, cobbles, talus and frozen ground. In addition there is a layer of buried volcanic ash that is a barrier to conventional soil geochemical methods. The inability to collect suitable samples from the varying ground cover is thought to be the reason why conventional soil sampling for inorganic parameters has not been successful. It was the plan by Midnight Mining Services to collect humus samples to provide as much consistency as possible for the sample type in this survey. The humus layer was described as covered by an average of 25 cm of living and dead moss.

SGH SURVEY- SGH ARCH PROJECT - SAMPLE LOCATION MAP



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SGH SURVEY INTERPRETATION
A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT

Note that the associated SGH results are presented in a separate Excel spreadsheet. This data is semi-quantitative and is presented in units of pg/g or *parts-per-trillion* (ppt) as the concentration of specific hydrocarbons in the sample. The number of samples submitted for this survey is adequate to use SGH as an exploration tool. As SGH is an organic geochemistry it is essentially "blind" to the elemental presence of any inorganic species as actual metallic gold, silver, uranium, etc. content in the each sample analyzed. SGH has been proven to discriminate between false or mobilized soil anomalies and is able to actually locate the source target deposition. SGH is a deep-penetrating geochemistry and has been proven to locate Nickel, Copper, and other types of mineralization at several hundred metres below the surface irrespective of the type of overburden. Note that the SGH data is only reviewed for the particular target deposit types requested, in this case for the presence of Copper-Nickel-PGE targets. If known, in surveys with several complex geophysical targets, to obtain the best interpretation the client should simply indicate that there is the chance of possibly multiple targets from geophysics. The possibility of multiple geophysical targets should be known due to potential overlap and the increased complexity of resulting geochromatographic anomalies, which could alter the interpretation as to which targets are mineralized and which ones are not.

The overall precision of the SGH analysis for the samples at the ARCH project was excellent as demonstrated by 5 different samples taken from this survey which were used for laboratory replicate analysis. The average Coefficient of Variation (%CV) of the replicate results for the survey samples in this submission was 2.3% which represents an outstanding level of analytical performance especially at such low parts-per-trillion concentrations.

Field duplicates were not identified in this submission. It is typically observed that the variability of field duplicates are 5% to 8% CV higher than for laboratory replicates of random samples taken from the survey. In comparison to other geochemistry's this is excellent performance. The typical excellent level of performance is due to the specificity of the SGH geochemistry as the method only targets relatively rare hydrocarbons that have been proven to be associated with mineralization, in this case for Copper and Nickel type targets. The SGH geochemistry does not detect all organic hydrocarbons present in the samples.

No other statistics were used on the data for this report for mapping or interpretation purposes aside from the use of a Kriging trending algorithm in the GeoSoft Oasis Montaj mapping software. **This interpretation is based only on the SGH results from this submission for the ARCH project.** A template or group of SGH Pathfinder Classes that have been found to be associated with buried Copper and/or Nickel targets have been used as the basis for the interpretation of the ARCH project (there is no specific template for Platinum Group Elements at this time). The final interpretation is customized and conducted by the author. Although the term "template" or "signature" often appears in an SGH Interpretation Report, a computerized interpretation is not used.

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A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT
SGH INTERPRETATION- SGH COPPER & NICKEL PATHFINDER CLASS MAPS

The maps shown in plan and in 3D views in this report are SGH "Pathfinder Class maps" for targeting various hydrocarbon flux signatures related to Copper and/or Nickel type targets. These maps represent the simple summation of several individual hydrocarbon compound concentrations that are grouped from within the same organic chemical class. SGH Pathfinder Class maps have been shown to be robust as they are each described using from 4 to 14 (unless otherwise stated) chemically related SGH compounds which are simply summed to create each class map. Thus each map has a higher level of confidence as it is not illustrating just one compound measurement. A legend of the compound classes appears at the bottom of the SGH data spreadsheet.

The Copper template of SGH Pathfinder Classes uses primarily low molecular weight classes of hydrocarbon compounds while the Nickel template uses low, medium, and high molecular weight classes of hydrocarbons. At least three Pathfinder Class maps, associated with the SGH signature developed for Copper or Nickel must be present to begin to be considered for assignment of a good rating relative to the SGH performance in case studies over known Copper or Nickel type mineralization. These SGH classes must also concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class. The *overall* SGH interpretation Rating has even a higher level of confidence as it further implies the consensus between at least two additional pathfinder classes. A combination of these SGH Pathfinder Classes potentially defines the signature of a target at depth if present. Each of the SGH Pathfinder Class maps shown in this report is a specific *portion* of the SGH signature considered in the interpretation relative to the presence of Nickel or Copper. Each pathfinder class map is still just one of the Pathfinder Class maps used in each of the interpretation templates (other SGH Pathfinder Class maps are usually not shown at this price point and report turnaround time except at the discretion of the Author). Additional interpretation information which may contain additional SGH Pathfinder Class maps is available as a Supplementary Report at an additional price (see Appendix H).

SGH has been described by the Ontario Geological Survey of Canada (OGS) as a "Redox cell locator". Many SGH surveys for Nickel and other mineral targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus "Apical", "Segmented-Nested-Halo", and "Rabbit-Ear" or "Segmented Halo" type anomalies are all typically observed within the SGH data set from the effect of Redox cells that have developed over mineralization or specific target types. Redox cells are also related to the presence of bacteriological activity and the presence of geological bodies such as Granite Gneiss, Dunite, etc. Recently SGH has been shown to be far more sensitive to depicting Redox conditions than any measurements using pH or ORP tests. Thus it is important to understand that; not only is SGH a Redox cell locator, due to the forensic signature of mineralization used in the interpretation process, SGH can discriminate mineral targets and other target types from geological bodies and other magnetically detected targets, mineralized versus non-mineralized conductors, cultural effects, etc. even in surveys over highly difficult or exotic terrain that results in the unavoidable collection of multiple sample types.

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A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT
SGH INTERPRETATION - SGH COPPER & NICKEL PATHFINDER CLASS MAPS

Note that any concentration value in the accompanying Excel spreadsheet greater than the "Reporting Limit" of 1 ppt is important data and has been able to depict mineralization at depth. The majority of the variability or noise has already been eliminated; additional filtering will adversely affect any interpretation. Note that a Kriging trending algorithm has been applied to the mapping routine in the Geosoft Oasis Montaj software in the development of the SGH Class maps. SGH concentrations are in some way probably related to the amount of mineralization present and the grade of mineralization, which probably defines the characteristics of the biofilm(s) in contact with the deposit, as well as being related to the depth to mineralization. SGH results have also been shown to correlate well with geophysical anomalies such as magnetic anomalies and those of CSAMT.

SGH is a "deep penetrating" geochemistry but also works well for relatively shallow targets. Targets shallower than about 3 to 5 metres will have a reduced SGH signal due to interaction with atmospheric conditions and samples taken right at surface outcrops will have even weaker signals due to a higher degree of weathering from various processes on these volatile and semi-volatile organic hydrocarbons.

One of the less known characteristics of this SGH geochemistry is that the anomalies have been shown several times to be unaffected by physical processes that usually cause drift to anomalies or sometimes called transported anomalies. As the SGH hydrocarbons are relatively neutral in charge or polarity, and are heavier in molecular weight (i.e. as they are not gases), they are unaffected by the slope of the terrain, effects of water table, etc. Only the lightest molecular weight SGH classes have shown any sign of deflection from illustrating a vertical projection when there is a major fault present. Although this may deflect the bulls-eye effect of these classes, the high amount of symmetry of heavier and thus none deflected classes can geometrically find the bulls-eye vertical projection of mineralization that can aid in decisions of drill targeting. Most importantly, in northern climates like that found in Canada, SGH has been shown to be completely resistant to transport by glacial drift.

Note, under no circumstances should SGH results be confused with assays. SGH is an excellent geochemistry to vector to, locate and identify the presence of blind mineralization. However, it is logical that the better identified and delineated a mineralized area is, the higher the possibly of finding some significant quantity of mineralization. Also, it is expected that well defined and identified mineralization is most likely to be at a relatively shallow depth. This varies with the SGH mineralization template used.

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A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT

SGH INTERPRETATION RATING AND CLARIFICATION

Often the use of a geochemistry such as SGH is used as an economical exploration investigation tool to provide more information on an exploration target as some geological body or geophysical target. Such occurrences are in general expected to change the chemistry of the immediate overburden which in turn is expected to result in a chemical anomaly as detected in surficial samples. The author believes that it is important to convey to the client of an anomaly even if it is only a part of the mineral signature or template requested. The anomaly illustrated in the report may not be representative of the mineralization sought as only a part of the SGH signature is present, but the anomaly may confirm the presence of the geological or geophysical target which may be valuable to the client. In addition it would confirm the ability and sensitivity of SGH to show geological or geophysical occurrences. Example: A well defined rabbit-ear anomaly on the SGH Pathfinder Class map in a report, even though it may have a lower rating of 2.0 or 3.0, may illustrate to the exploration geologist that SGH does agree that there is some geological body at depth that is changing the chemistry and forming a Redox cell in the overburden. However the SGH forensic signature Rating indicates that there is a lower confidence that the "identification" of that body is likely to be say Gold (if the SGH Gold template is requested). This information would provide a confirmation that a target does exist, however if the SGH Rating indicates that the target has a lower level of confidence then the target does not have the forensic signature of the mineralization sought. SGH would thus provide a savings to the exploration program and divert focus to potentially other targets having a higher confidence in the identification Rating.

Thus, the SGH rating must always be considered in conjunction with the SGH Pathfinder Class map shown in the report. It is this rating that provides an insight into the authors' complete interpretation and is a measure of the confidence and to what degree the complete SGH signature compares with the SGH results from over case studies of similar known deposits. Unfortunately, the interpretation of a visual, as the SGH map provided, is so ingrained in humans that the reader may erroneously disregard the author's subjective rating to a large degree. As of November 25, 2011, the author now highlights the rating directly on the page having the plan view of the SGH Pathfinder Class map chosen to be illustrated. Thus to the reader of the report, the authors Rating is actually **MORE IMPORTANT** than the readers instinctive interpretation of the one map provided. Again, SGH should not be used in isolation from other site information, and that a Rating of 4.0 is when, in the authors' estimation, a signature only starts to have a good identification relative to that type of mineralization, and that the survey may warrant further study although it is not a specific recommendation to drill test the anomaly. As the SGH interpretation is represented by a signature, the SGH Pathfinder Class map(s) illustrated in reports is always only "PART" of the specific SGH signature or template that the client requests (i.e. for Gold, Nickel, etc.). No one SGH map can represent the complete signature due to the different amounts of spatial dispersion expected for the variety of SGH chemical classes within each signature. Thus the author selects the one SGH Class Map relative to the mineralization requested that best represents an anomaly that estimates the overall signature found in the survey.

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A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT
SGH COPPER INTERPRETATION

As a general comment in regard to the SGH results at this ARCH project, the interpretation was fairly complex. The SGH anomalies detected were of relatively low strength as expected from the use of Humus samples. However, the objective of the SGH geochemistry is not necessarily to obtain values with the highest contrast based on a signal:noise interpretation of any one sample, SGH is a more powerful exploration tool by maximizing the overall spatial contrast of the survey to observe specific hydrocarbon signature that can vector to and identify buried mineralization. The ARCH survey had just enough samples to properly interpret the SGH data based on the size of the Redox cells observed and enable a good comparison of those SGH hydrocarbon classes that have been proven to be pathfinders relative to the presence of Copper and/or Nickel and the pathfinders that describe the SGH signature for "buried or blind" Copper-Nickel-PGE type targets. The SGH Copper Pathfinder Class shown and other SGH Classes are able to illustrate the presence of an SGH hydrocarbon signature that has usually been associated with Copper targets as the detection of those hydrocarbon residues produced by the decomposition of bacteria in the death phase that have been feeding on material containing Copper and that have subsequently migrated to the surface as a flux of different classes of hydrocarbons. During migration to the surface, dispersion away from the mineralization is expected and the distance of dispersion is dependent more on the average molecular weight of the class, and/or the depth of the target, than the complexity of the overburden unless a situation is encountered such as that of a major fault or shear zone that may result is a slight deflection of this path.

This report illustrates an SGH Pathfinder Class map on page 22 in plan view and on page 23 in 3D view that represents a very reliable illustration of a portion of the SGH signature that is used to define Copper targets and the subsequent Redox conditions developed in the overburden. The expected segmented-halo anomalies observed is then reviewed with other SGH Copper Pathfinder Class maps to discriminate and determine whether an SGH Copper signature is associated with any Redox cells. The dotted yellow oval interpretation on page 22 is observed as a very good nested-segmented-halo anomaly. In this case the central "or nested" apical anomaly is not the exact centre of the Redox zone and is thus deflected due to some other process. SGH is well known as a "Redox Cell locator", especially from independent studies conducted by the Ontario Geological Survey (OGS) and in research in cooperation with DeBeers Canada. Again this is only one part of the signature of identification which is defined by the use of multiple pathfinder SGH classes. Utilizing this forensic type signature of identification, SGH has been very successful at differentiating Redox conditions due to the presence of mineralization from those of non-mineralized geological bodies such as Dunite, Granite Gneiss, and non-mineralized conductors. SGH has thus been able to confidently discriminate magnetic targets that are due to the presence of copper from those that do not have the correct forensic signature of identification and are thus may be magnetic anomalies of no interest.

Note, under no circumstances should SGH results be confused with assays. SGH is an excellent geochemistry to vector to, locate and identify the presence of blind mineralization. However, it is logical that the better identified and delineated a mineralized area is, the higher the possibly of finding some significant quantity of mineralization. Also, it is expected that well defined and identified mineralization is most likely to be at a relatively shallow depth. This varies with the SGH mineralization template used.

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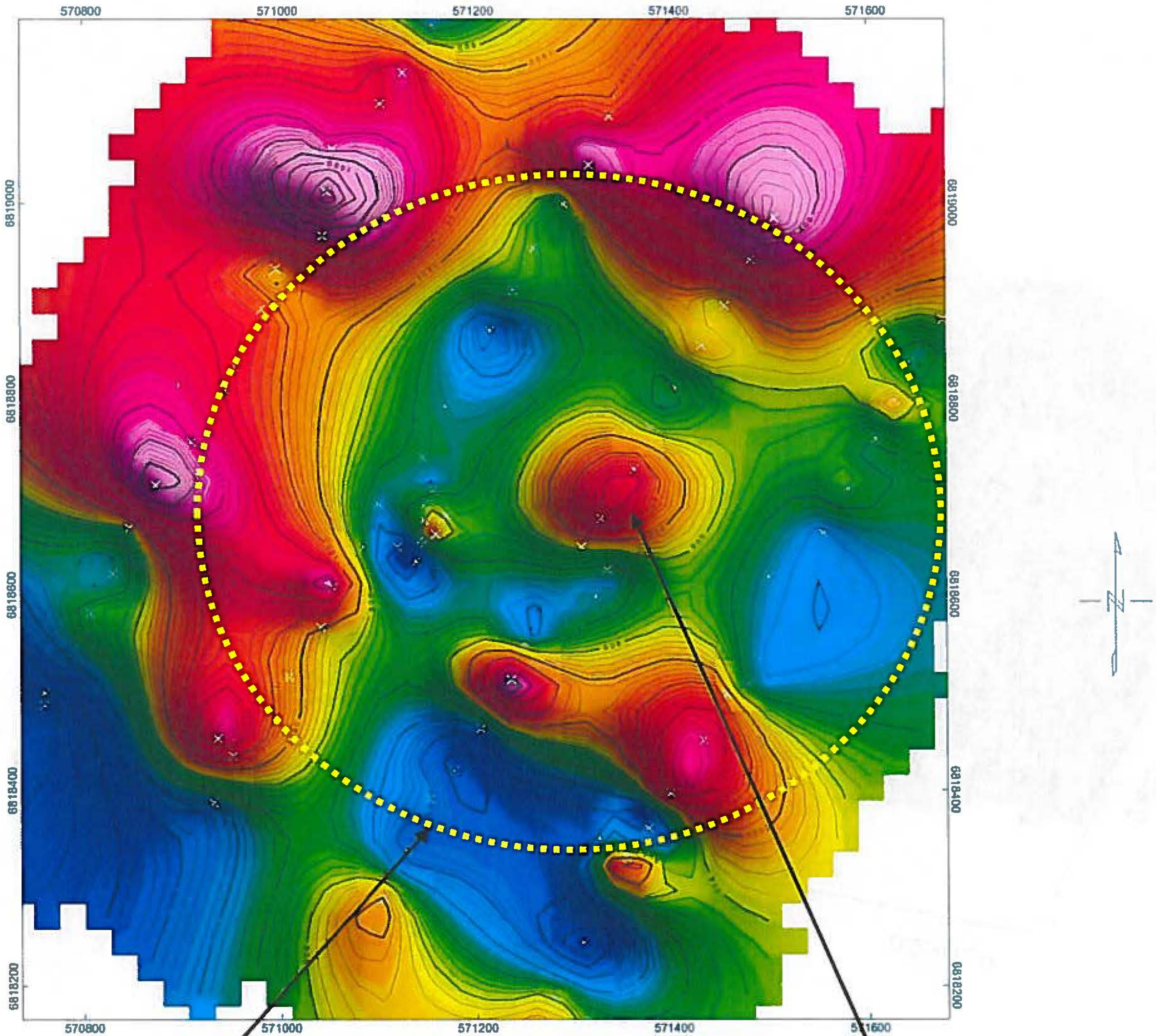
A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT SGH "COPPER" PATHFINDER CLASS MAP



REDOX ZONE HAVING SGH-COPPER SIGNATURE NESTED ANOMALY

SGH SIGNATURE RATING RELATIVE TO "COPPER TARGET" = 4.5 OF 6.0

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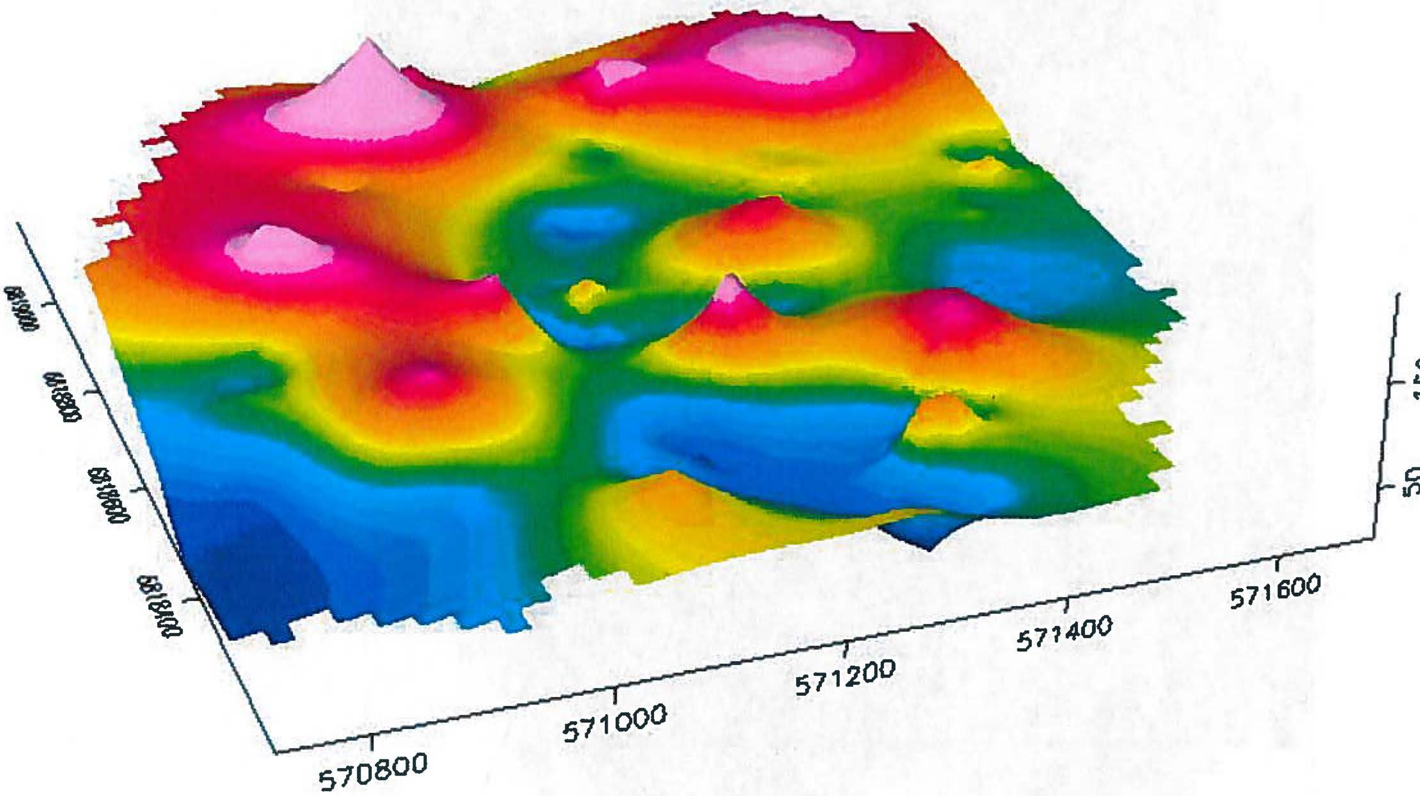
SGH "COPPER" PATHFINDER CLASS MAP



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SGH NICKEL INTERPRETATION

This report illustrates an SGH Pathfinder Class map on page 25 in plan view and on page 26 in 3D view that represents a very reliable illustration of a portion of the SGH signature that is used to define Nickel targets. The yellow oval interpretation on page 22 is again shown from the interpretation of a SGH Copper Pathfinder Class for easy reference. This SGH Pathfinder Class for Nickel illustrates a very tight halo response that is approximated by the dotted red circle applied to the map. As this ring is not centered within the dotted yellow circle we can predict from this SGH data that there are two overlapping regions of Redox conditions that are slightly offset. One related to the general Copper mineralization and one offset to the southwest for the Nickel related Redox zone, thus we have a bit of zonation which is commonly observed for Copper-Nickel-PGE targets (note that there is currently no specific SGH sub-signature for the PGE portion). The SGH Nickel Pathfinder Class on page 25 is usually expected to provide apical responses from case studies where mineralization is moderately shallow. The geometrically centered or "nested" smaller apical anomaly predicts from this SGH Nickel Pathfinder Class that any mineralization, if present, is expected to be relatively deep. The fact that this SGH Nickel "nested segmented-halo" anomaly occurs within the Redox zone of having an SGH Copper mineralization signature provides even more confidence in the data and the interpretation of the presence of Copper-Nickel-PGE type mineralization.

Another SGH Pathfinder Class for Nickel is presented on page 27 in plan view and on page 28 in 3D view. This is a heavier molecular weight class associated with Nickel mineralization that has been observed to show some of the deeper features relative to Nickel mineralization. This map, as well as the map of page 25, supports the observation of a northwest trend to the possible Nickel mineralization. The area within the long blue shaded oval attempts to illustrate this trend.

As there is some zonation between the possible primarily Copper to primarily Nickel zones, it is difficult to recommend one location as a drill target. Such a recommendation is also reliant on the resolution of the samples in the survey. The location marked by a yellow star on page 25 may be a drill target that could contain both Copper and Nickel mineralization as a vertical projection of that area having the greatest population of bacteria that are/have feed on Copper and Nickel mineralization. Again this is only one part of the signature of identification provided by the use of multiple pathfinder SGH classes that is associated with Nickel mineralization determined from past case studies.

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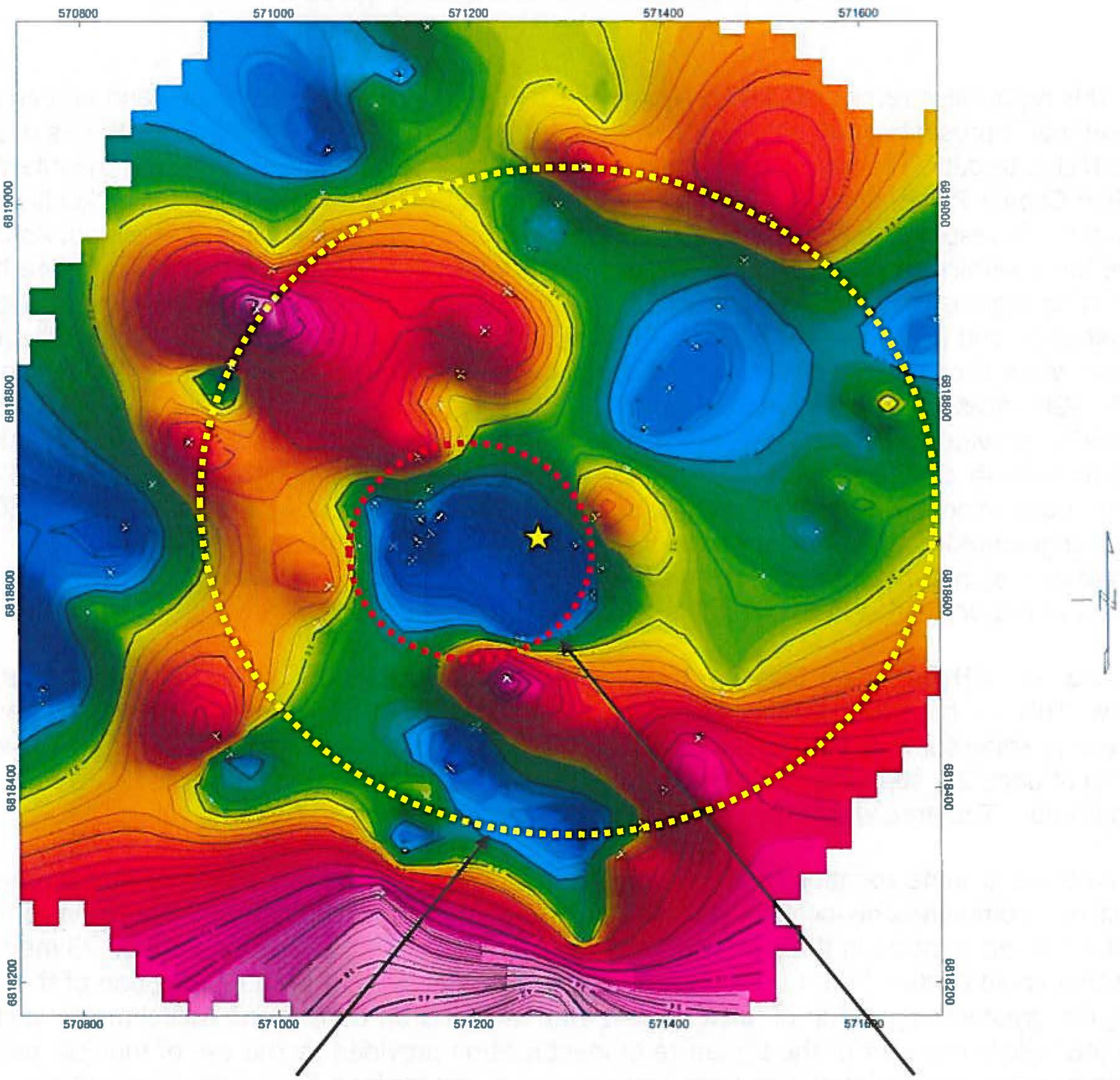
A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT
SGH "NICKEL" PATHFINDER CLASS MAP



REDOX CELL WITH SGH COPPER SIGNATURE REDOX CELL WITH SGH NICKEL SIGNATURE

SGH SIGNATURE RATING RELATIVE TO "NICKEL" TARGET = 5.0 OF 6.0

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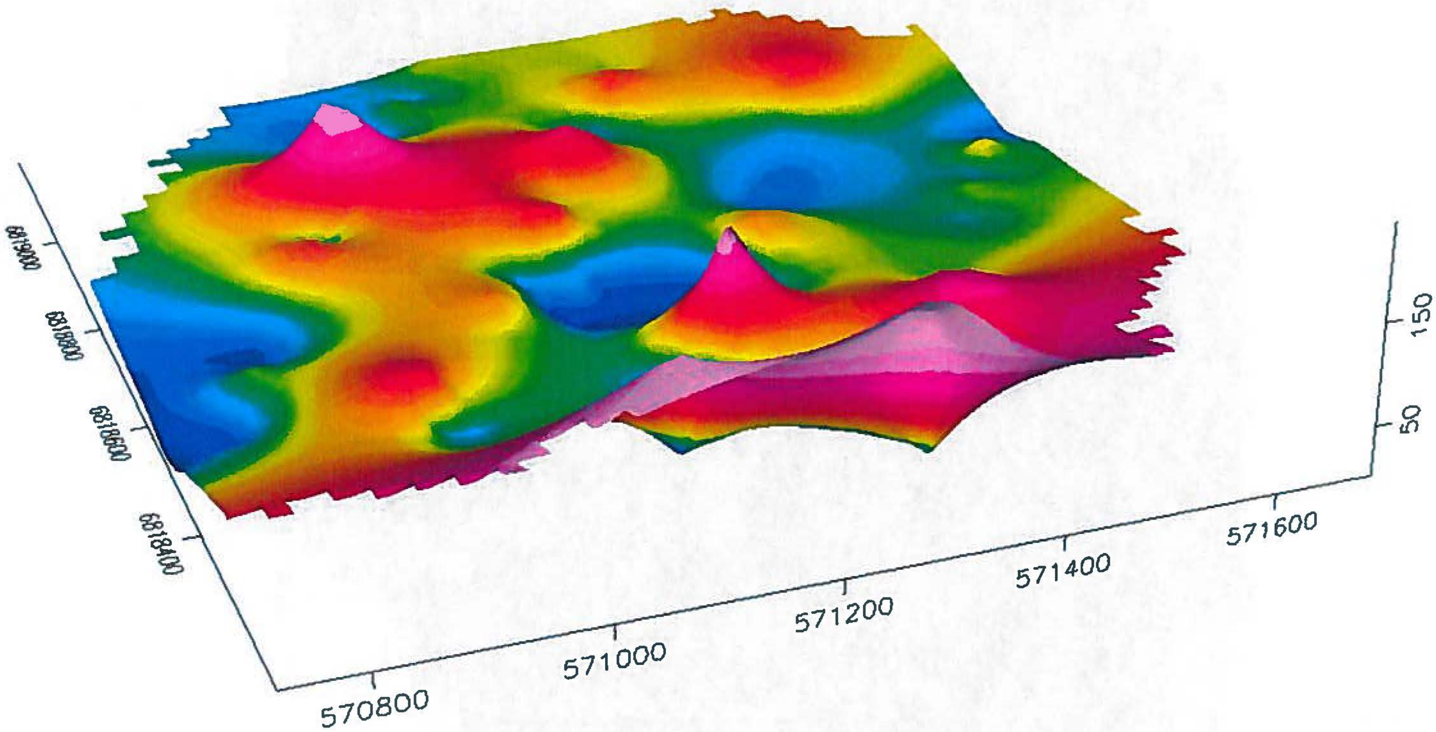
SGH "NICKEL" PATHFINDER CLASS MAP



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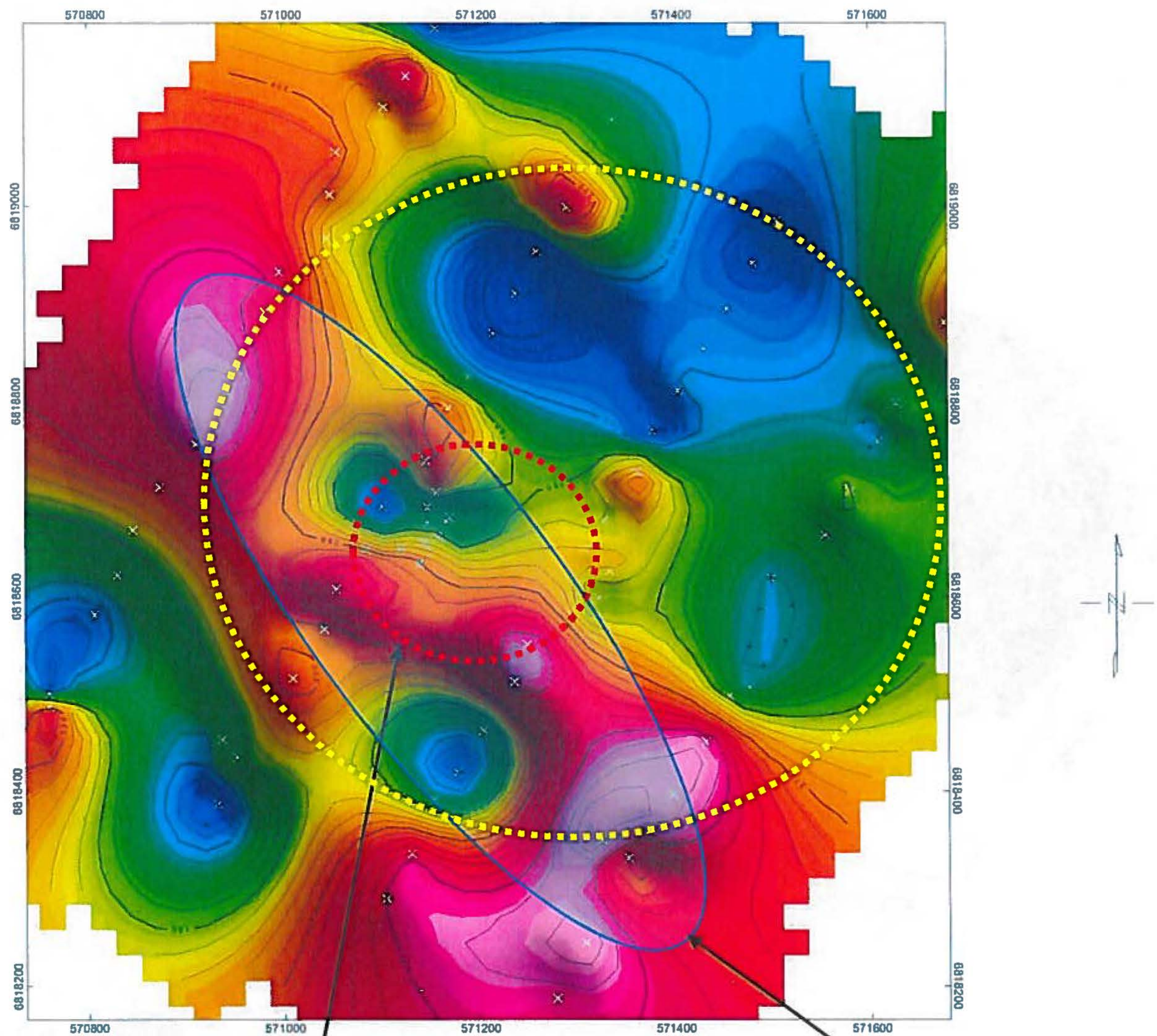
SGH "NICKEL" PATHFINDER CLASS MAP



REDOX CELL AS NICKEL

OVERALL SGH NICKEL TREND

SGH SIGNATURE RATING RELATIVE TO "NICKEL" TARGET = 5.0 OF 6.0

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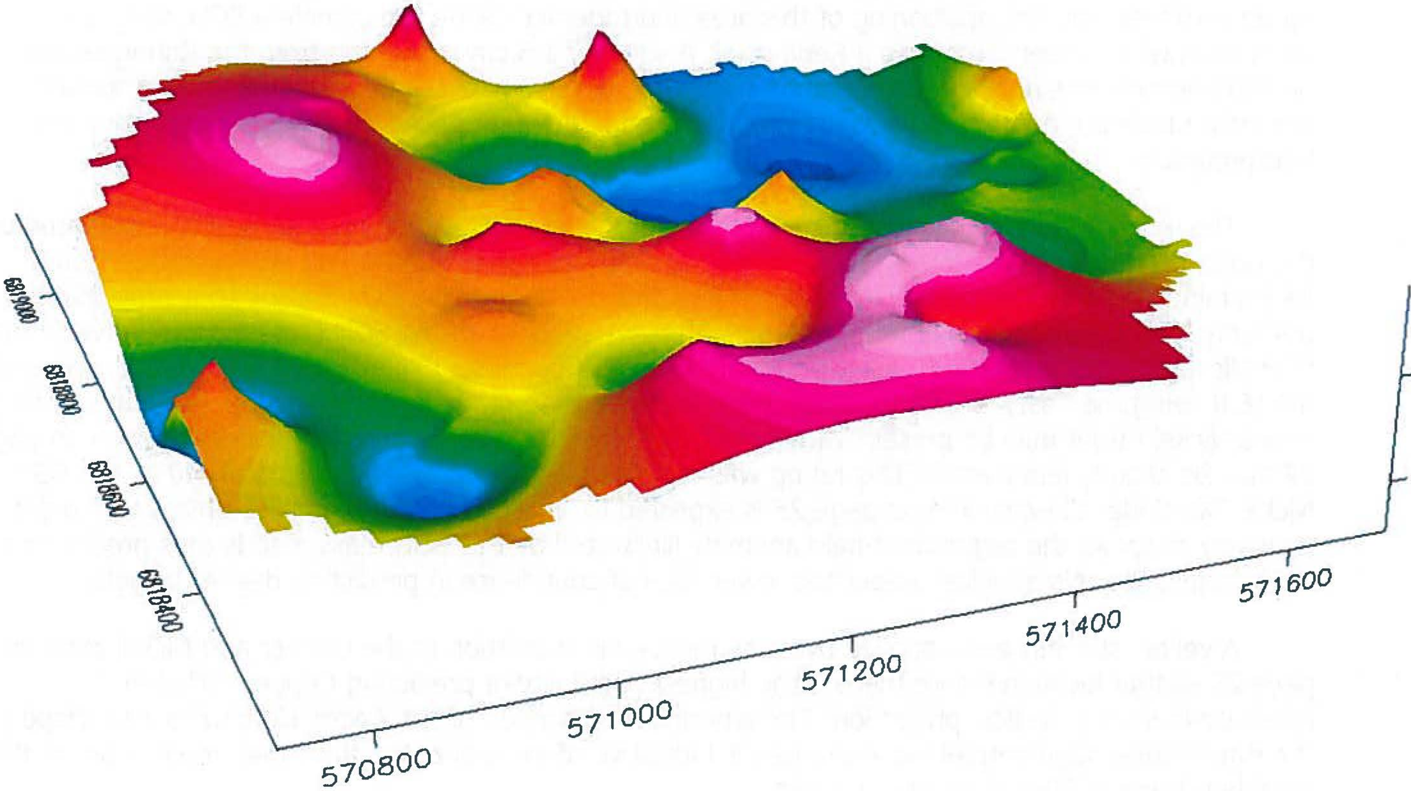
SGH "NICKEL" PATHFINDER CLASS MAP



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A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT
SGH INTERPRETATION FOR COPPER AND NICKEL

The interpretation of the SGH data relative to the presence of Copper and Nickel targets at the ARCH project area is described by what appears to be the presence of two slightly offset Redox cells approximated by the dotted yellow and dotted red ovals applied on pages 22, 25 and 27. The interpretation of the presence of Copper is approximated by the dotted yellow oval as shown on page 22. After review of all of the SGH Class maps, the SGH results from ARCH project suggests a **"rating of 4.5"** out of a possible 6.0 (6.0 being the best) for the zone within the dotted yellow oval, as the confidence in predicting that a Copper target may be present. Other SGH Copper Pathfinder Classes agree very well with the positioning of this area and together define the complete SGH signature associated with copper targets as a Redox cell. A value of 1.5 was deducted from the Rating as the nested anomaly was not perfectly centred in this Redox cell and that the segmented halo anomaly predict a moderate depth to mineralization. The greater the depth predicted the less confident the interpretation.

The interpretation of the presence of Nickel targets at the ARCH project area is approximated by the dotted red oval shown on pages 25 which may indicate the location of the shallowest portion of Nickel mineralization. The SGH Nickel Pathfinder Class on page 27 predicts a trend to a zone that is primarily Nickel based and potentially deeper. After review of all of the SGH Class maps relative to the SGH Nickel signature, the SGH results from ARCH project suggests a **"rating of 5.0"** out of a possible 6.0 (6.0 being the best) for the zone described by the dotted red oval, as the confidence in predicting that a Nickel target may be present within this zone. The blue shaded trending zone for Nickel on page 27 may be slightly less overall. This rating was reduced from a possible maximum of 6.0 as the SGH Nickel Pathfinder Class shown on page 25 is expected to illustrate apical anomalies unless the target is relatively deep. As the segmented-halo anomaly illustrated by this SGH Class map is thus predicting a deep target, there is a logical associated lower level of confidence in predicting deeper targets.

A yellow star has been applied over the most central location to the Copper and Nickel zone on page 25 as that location where there is the highest possibility of predicting Copper-Nickel-PGE mineralization as a vertical projection. The amount of dispersion of the Redox signatures and shape of the symmetrical segmented-halo anomalies is indicative of mineralization that "may roughly be" in the neighbourhood of 50-100 metres in depth.

The ratings shown in this and all SGH reports are based on a scale of 6.0, in 0.5 increments, with a value of 6.0 being the best. The rating discussed in relation to Copper and Nickel targets represents the similarity of these SGH results with other SGH case studies over known Copper and Nickel targets. The SGH signature or template has since been further enhanced since inception and has been proven effective from the interpretation over many other surveys in many different geographical regions and for a wide variety of lithologies of Copper and Nickel. Again, the degree of confidence in the rating only starts to be "good" at a level of 4.0. A Rating of 4.0 is an indication that the SGH geochemistry predicts that the zone described may warrant more work or more consideration. It must be remembered that there are still many other SGH Class maps not shown in this report due to turnaround time considerations that have been reviewed to support the interpretations shown.

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A13-10340 – MIDNIGHT MINING SERVICES - ARCH PROJECT SGH SURVEY RECOMMENDATIONS

There appears to have been just enough samples taken in this ARCH survey to conduct an SGH interpretation. Improving the sampling resolution slightly may have provided a more confident interpretation of Redox conditions and trending. Although this survey used our recommend 4:1 ratio of spacing between transects (200 metres) to sample spacing along transects (50 metres), due to the complexity of the potentially slightly offset Copper and Nickel Redox cells, the slightly lower response obtained and expected from Humus samples, and the SGH prediction of a deeper target, transect spacing of 100 metres with the same 50 metre sample spacing may have provided more detail that may have improved the confidence in interpretation. Please refer to the general recommendations for additional or in-fill sampling for SGH in the next section if this is considered.

Additional or infill sampling is not suggested unless a precise drill target is needed to be determined as humus samples may require data leveling. Based on the exceptional symmetry of the segmented-halo anomalies detected for Copper and for Nickel, it is unlikely that the approximate drill target shown in this report by the yellow star on page 25 would deviate by more than 25 metres from the position interpreted based on additional infill sampling.

The identification of a drill target is not an explicit recommendation by Activation Laboratories Ltd. to drill test the associated location or SGH anomaly. A drill target is implied to ensure that the reader is aware of the location having the highest confidence of being the location of the vertical projection of the mineralization, based only on SGH data. This is also not a recommendation for vertical drilling. Vertical drilling may not be the best approach to test the SGH anomaly in this area. Activation Laboratories Ltd. has no experience in actual exploration drilling techniques. Other geological, geochemical and/or geophysical information should also be considered.

It must be remembered that many other SGH Class maps not shown in this report have been reviewed to support the interpretation shown. The client should use a combination of the SGH results shown in this report with additional geochemical, geophysical, and geological information to possibly obtain a more confident and precise target location. This is not a statement to convey some lower level of confidence in SGH results. This statement is made to recognize the proper use and interpretation of any scientific data. Whenever possible, multiple methods should always be employed so that any decisions do not rely on any one technique.

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GENERAL RECOMMENDATIONS FOR ADDITIONAL OR IN-FILL SAMPLING FOR SGH ANALYSIS

Based on the results of this report and/or other information, the client may decide that in-fill sampling may be warranted. To obtain the best results from additional sampling for SGH it is recommended that sample locations from the original survey within, or bordering, the area of interest be re-sampled rather than just combining new sample results with the sample data from the initial survey. Although several SGH surveys have previously been easily and directly, combined without data leveling, it cannot be guaranteed that data leveling will not be required. It has been found that data leveling is more apt to be required should the new samples be collected under significantly different environmental conditions than during the initial sample survey, i.e. summer collection versus winter collection. The process of data leveling adds a minimum of 3 to 5 days of work to conduct the additional data evaluation, develop additional plots of the results, conduct new interpretations, and in additional report descriptions. Results from data leveling is also always considered "an approximation", thus the confidence in a combined interpretation will be lower that the interpretation from samples collected during one excursion to the field and submitted as one survey. An additional cost will be invoiced should data leveling operations be required if the client requests that two SGH data sets be interpreted and reported together. Thus re-sampling a few of the original sample locations will provide a faster turnaround time for results and provide more accurate and confident surveys for evaluation and aid in deciding specific drill targets.

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Date Received at Actlabs Ancaster: August 27, 2013

Date Analyzed: September 17-18, 2013

Interpretation Report: September 23, 2013

MIDNIGHT MINING SERVICES

274 MacDonald Rd.

Whitehorse, YT Y1A 4L1

Attention: Debbie James, Senior Project Geologist

RE: Your Reference: ARCH PROJECT

Activation Laboratories Workorder: A13-10340

CERTIFICATE OF ANALYSIS

This Certificate applies to the associated Excel Spreadsheet of Hydrocarbon results combined with the discussion and SGH Pathfinder Class maps of the data shown in this report.

78 Samples were analyzed for this submission

Sample preparation – Code S4 – Drying at 40°C and Sieving with -60 mesh collected

Interpretation relative to Copper and Nickel targets was requested.

The following analytical package was requested and analyzed at Actlabs Ancaster Canada:

Analysis Code SGH – Soil Gas Hydrocarbon Geochemistry using High Resolution Gas Chromatography/Mass Spectrometry (HRGC/MS)

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REPORT/WORKORDER: A13-10340

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at the time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of the material submitted for analysis.

Notes: The SGH – Soil Gas Hydrocarbon Geochemistry is a semi-quantitative analytical procedure to detect and measure 162 hydrocarbon compounds as the organic signature in the sample material collected from a survey area. It is not an assay of mineralization but is a predictive geochemical tool used for exploration. This certificate pertains only to the SGH data presented in the associated Microsoft Excel spreadsheet of results.

The author of this SGH Interpretation Report, Mr. Dale Sutherland, is the creator of the SGH and OSG organic geochemistry's. He is a Chartered Chemist (C.Chem.) and Forensic Scientist specializing in organic chemistry. He is a member of the Association of the Chemical Profession of Ontario, the Association of Applied Geochemists, the International Association of GeoChemistry, the Ontario Prospectors Association, the Association for Mineral Exploration British Columbia, the Geochemical Society Association, and the Ontario Petroleum institute as well as having memberships in several national and international Forensic associations. He is not a professional geologist.

CERTIFIED BY:

D Sutherland

Dale Sutherland, B.Sc.,B.Sc.,B.Ed.,C.Chem.,MCIC
Forensic Scientist, Organics Manager,
Director of Research
Activation Laboratories Ltd.

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Dale A. Sutherland
CHEMIST

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APPENDIX "A"

List of terms

1. **SGH** – "SOIL GAS HYDROCARBON" GEOCHEMISTRY – a Predictive Geochemistry, used for delineate buried inorganic mineral deposits and organic petroleum plays. This is the original name used to describe this geochemistry since inception in 1996. Code SGH is still used when submitting samples.
2. **3D-SGH**- "3D- SPATIAL TEMPORAL GEOCHEMICAL HYDROCARBONS - the method of interpreting SGH and OSG results based on the Redox/Electrochemical Cell model developed by Activation Laboratories Ltd. in 2011.
3. **Redox cell**- an area of oxidation-reduction reactions or exchange of electrons that is produced over geological bodies, mineralization and petroleum based plays.
4. **Electrochemical cell**- the effect of adjacent chemically reduced areas and chemically oxidized areas as a Redox cell produces a electrical gradient that obeys the physics of a typical Electrochemical cell.
5. **Anthropogenic contamination-** the introduction of impurities/compounds of the same type as those that are being analyzed by human actions that could lead to erroneous results.
6. **Background areas**- the area around a mineral deposit that is beyond the effect of the Redox cell formed over geological bodies or exploration targets. Sampling is required into background areas to produce data that has sufficient contrast to illustrate and differentiate anomalies associated with exploration targets.
7. **Background subtracted**- A sample taken some distances away as to not contain any elements of the target being analyzed.
8. **Biofilm**- a layer of microorganisms and microbe and their related secretions and decomposition products, in this case found to inhabit mineral deposits .
9. **Biomarker**- a compound used as an indicator of a biological state. In this case a biological substance used to indicate the presence of a mineral deposit.
10. **Blind mineralization** – buried mineralization that shows no physical indication of its existence at the surface
11. **Compound** – used synonymously with the term hydrocarbon in this report
12. **Compound chemical class** – a group of hydrocarbons that are similar in size, structure, and molecular weight such that their chemical characteristics, such as water solubility, partition coefficients, vapour pressures, etc. are similar
13. **Cultural activities** – human initiated processes that may affect the physical and chemical characteristics at the earth's surface
14. **Delineating targets**- indicate the position or outlines of an exploration target as a vertical projection of the target at depth.
15. **Geochemical anomalies** – inorganic element or organic hydrocarbon measurements that are significantly different than the average low level measurements or background in a survey i.e. the needle in a haystack is an anomaly

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16. **Dispersion patterns** – the movement/ spreading of something. In this context the spatial arrangements of hydrocarbons caused by their movements to the surface from some depth.
17. **Exploration tool** – a geological, geophysical or geochemical method that attempts to illustrate data in exploration activities that may indicate the presence of mineralization or petroleum plays.
18. **Fit for purpose**- this method is ideal for its intended use.
19. **Forensic signature**- a grouping or pattern found to identify a substance having multiple characteristics with a high degree of specificity.
20. **High specificity**- as in being very specific to the mineralization.
21. **Anomalies**- this is the spatial representation of data that illustrates a high or low response as well as the combined spatial shape of anomalous data from several neighbouring samples in a survey that can form anomalies described as Rabbit-Ear, Halo, Segmented-halo, nested-halo, etc.
22. **Inorganic geochemistry** – the measurement of inorganic elements in a survey of near surface samples as a tool for exploration
23. **Data leveling** – a technique that attempts to normalize the data sets obtained between two or more sampling programs. The results of data leveling is always considered as an approximation.
24. **Lithologies-** the characteristics and classifications of rock.
25. **Locations-** the physical/ geographical position or coordinates of samples in a survey.
26. **Noise-** interference in a measurement which is independent of the data signal.
27. **Nugget effect-** Anomalously high precious metal assays resulting from the analysis of samples that may not adequately represent the composition of the bulk material tested due to non-uniform distribution of high-grade nuggets in the material to be sampled. (Webster's online dictionary)
28. **Organic geochemistry-** the Soil Gas Hydrocarbon geochemistry (SGH), or now more accurately named as Spatiotemporal Geochemical Hydrocarbons, is the analysis to detect specific organic, or carbon based, hydrocarbon compounds in a sample. The Organo-Sulphur Geochemistry (OSG) is the analysis to detect specific organic compounds that have sulphur joined to carbon in its molecular structure.
29. **Percent Coefficient of Variation (%CV)** – a measure of data variability
30. **Project maintenance** – an activity where the associated cost is applied to the exploration, advancement, and/or operation of activities associated with a particular claim
31. **Rating-** a value given to the overall confidence in the SGH results
32. **Real (in relation to data)-** any rational or irrational number
33. **Reporting Limit –** minimum concentration of an analyte that can be accurately measured for a given analytical method.
34. **Sample matrix-** the components of a sample other than the analyte.
35. **Sample type** – soil, till, humus, lake bottom sediment, sand, snow, etc.
36. **Semi-quantitative-** yielding an approximation of the quantity or amount of a substance
37. **SGH anomalies** ("Apical", "Nested-Halo", and "Rabbit-Ear" or "Halo")
38. **SGH Pathfinder** (class map/compounds)

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39. **SGH template** – a set of hydrocarbon classes that together form a geochemical signature that has been associated with the presence of a particular type of mineralization the majority of the time
40. **Surficial bound hydrocarbons** –
41. **Surficial samples-** a sample from near the earth's surface.
42. **Survey-** the area, position, or boundaries of a region to be analyzed, as set out by the client.
43. **Project-** a planned undertaking
44. **Transect-** A straight line or narrow section through an object or across a section of land.
45. **Target-** Target refers to the ore body of interest

    Target signature: the unique characteristics that identify the target.

    Target type:
    i.e. Gold, Nickel, Copper, Uranium, SEDEX, VMS, Lithium Pegmatites, IOCG, Silver, Ni-Cu-PGE, Tungsten, Polymetallic, Kimberlite as well as Coal, Oil and Gas.
46. **Threshold-** level or point at which data is accepted as significant or true.
47. **Total measurement error-** An estimate of the error in a measurement. Based on either limitation of the measuring instruments or from statistical fluctuations in the quantity being measured.

    Visible (in terms of signature)- the portion shown in a chart or map

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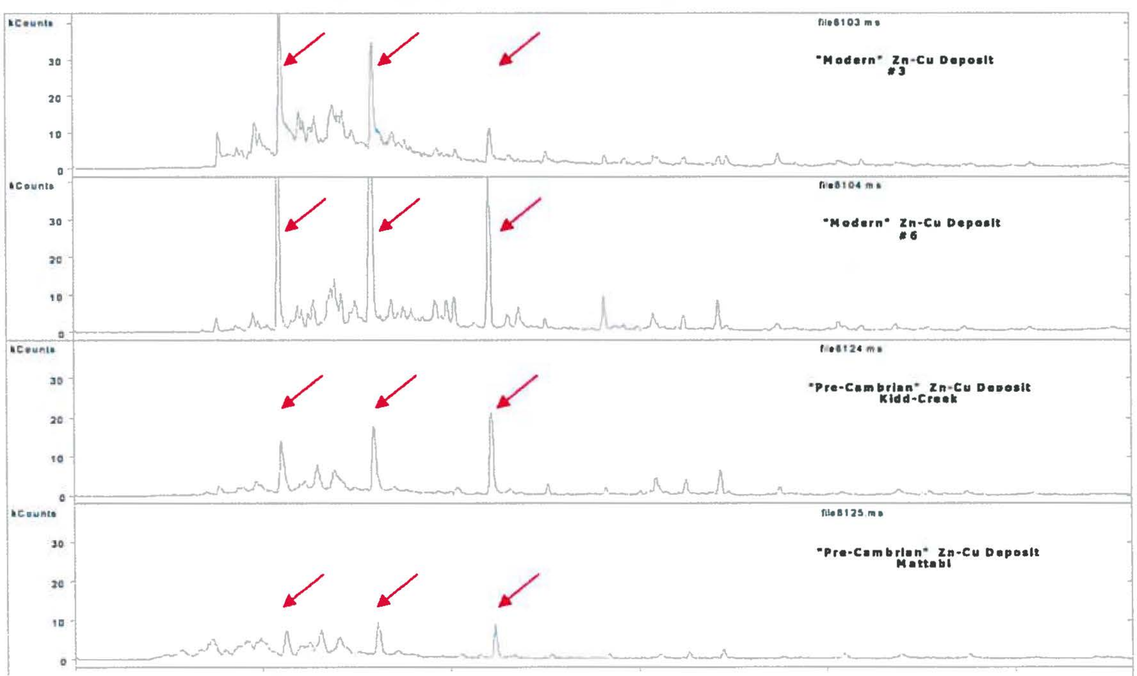
APPENDIX "B"
EXAMPLE OF AN SGH FORENSIC GEOCHEMICAL SIGNATURE
EXAMPLE SHOWN FOR A VMS TARGET

The following analyses examine the Volcanic Massive Sulphide (VMS) deposit in various known locations. These analyses show how the gas chromatography indicates the reality of deposits. For all the profiles in this section, the red arrows indicate the signature of the VMS, which have all been found by organic geochemistry. These forensic geochemical signatures are shown to be consistent for similar target areas; therefore, the analyses are reliable indicators for the presence of VMS.

One of the first experiments in 1996 in the development of the SGH analysis was to observe if an SGH response could be obtained directly from an ore sample. From office shelf specimens, small rock chips were obtained which were then crushed and milled. The fine pulp obtained was then subjected to the SGH analysis. These shelf specimen samples were from well known VMS deposits of the Mattabi deposit from the Archean Sturgeon Lake Camp in Northwestern Ontario and from the Kidd Creek Archean volcanic-hosted copper-zinc deposit. Even these specimen samples contain a geochemical record of the hydrocarbons produced by the bacteria that had been feeding on these deposits at depth. As a comparison, SGH analysis were similarly conducted on modern-day VMS ore samples taken from a "black smoker" hydrothermal volcanic vent from the deep sea bed of the Juan de Fuca Ridge where high concentrations of microbial growth was also known to exist. The raw data profiles as GC/MS Total Ion Chromatograms are shown below to illustrate the *"visible"* portion of the VMS signature obtained from the SGH analysis.



The above profiles are:

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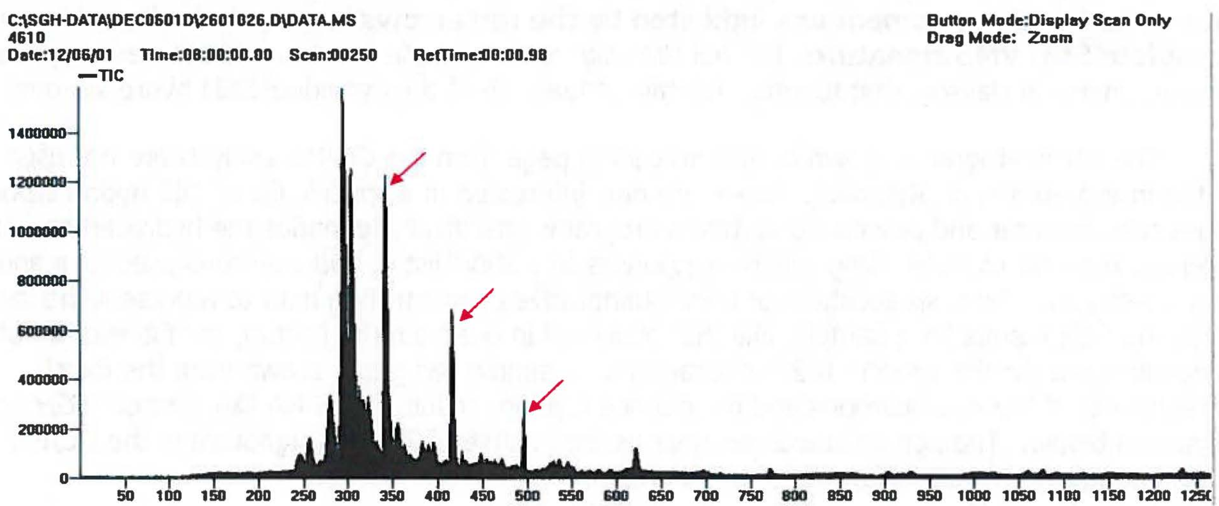
- First profile: Samples from modern day "black smokers"
- Second profile: Samples from modern day "black smokers"
- Third profile: Samples from Pre-Cambrian Zn-Cu Kidd Creek deposit
- Fourth profile: Samples from Mattabi deposit

The red arrows point to three compounds that are a *portion* of the SGH signature for VMS type deposits. This visible portion of the VMS signature of hydrocarbons can easily be seen in the analysis of each of these four samples.

The next question in our early objectives was to see if this SGH signature could also be observed in *surficial soil samples* that had been taken over VMS deposits. Through our research projects, soil samples were obtained from over the Ruttan Cu-Zn VMS deposit near Leaf Rapids, Manitoba and located in the Paleoproterozoic Rusty Lake greenstone belt. The profile obtained, as observed in the raw GC/MS chromatogram, is shown in this next image below:



The three compounds indicated by the red arrows represent the same *visible portion* of the VMS signature observed from the modern day black smoker samples and the ore samples taken from the Mattabi and Kidd Creek, even though this soil was taken from over a different VMS deposit in a geographically different area. Is this coincidence?

Another soil sample was obtained from Noranda's Gilmour South base-metal occurrence in the Bathurst Mining camp in northern New Brunswick. As shown below, this sample contained a very complex SGH signature, however the visible portion of the VMS signature as indicated by the red arrows is still observed as in the black smoker, Mattabi and Kidd Creek ore samples.

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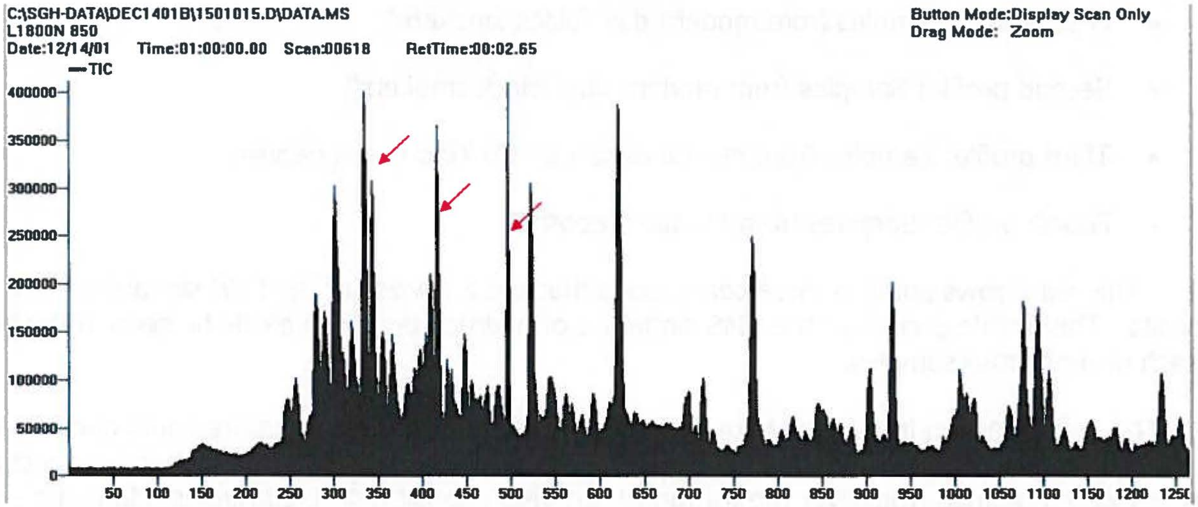

In research conducted by the Ontario Geological Survey, this same portion of the SGH signature was also observed over the VMS deposit at Cross Lake in Ontario. **Note that the visible signature shown as the three compounds indicated by the red arrows is only a small portion of the complete SGH VMS signature.** The full VMS signature is made up of at least three groups, as three organic chemical classes, that together contain at least 35 of the individual SGH hydrocarbons.

The chromatograms shown on the preceding page from the GC/MS analysis are not used directly in the interpretation of SGH data. As we are only interested in a specific list of 162 hydrocarbons, the mass spectrometer and associated software programs specifically identifies the hydrocarbons of interest, runs calculations using relative responses to a short list of hydrocarbons used as standards, and develops an Excel spreadsheet of semi-quantitative concentration data to represent the sample. Thus the SGH results for a sample, like that observed in ore from the Ruttan, are filtered to obtain the concentrations for the specific 162 hydrocarbons. A simple bar graph drawn from the Excel spreadsheet of the hydrocarbons and their concentrations results in a DNA like *forensic SGH signature* as shown below. The portion discussed hear as the "visible" SGH VMS signature in the GC/MS chromatograms, is again shown by the red arrows.

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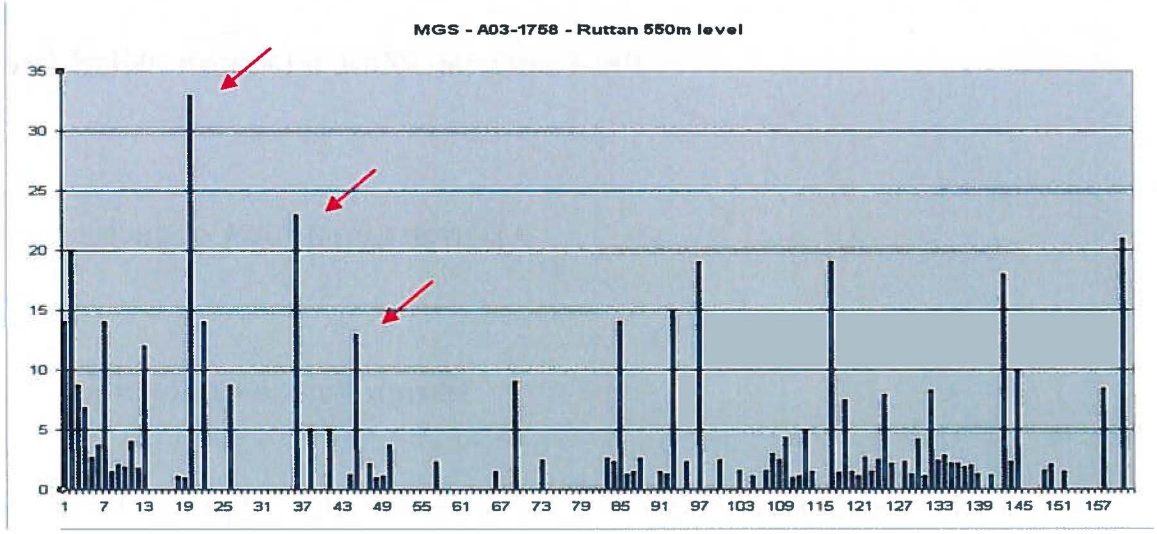

Through the work done in the SGH CAMIRO research projects, it was observed that the hydrocarbon signature produced by the SGH technique appeared to also be able to be used to differentiate barren from ore-bearing conductors. This was explored further through the submission and analysis of specific specimen samples that represented a barren pyritic conductor and a barren graphitic conductor.

The GC/MS chromatograms from these two specimens are compared to that obtained from the Kidd-Creek ore as shown below. This diagram conclusively shows that the SGH signatures obtained from the two types of barren conductors are completely different than that obtained by SGH over VMS type ore. SGH is thus able to differentiate between ore-bearing conductors and barren conductors as **the Forensic SGH Geochemical signature is different.**

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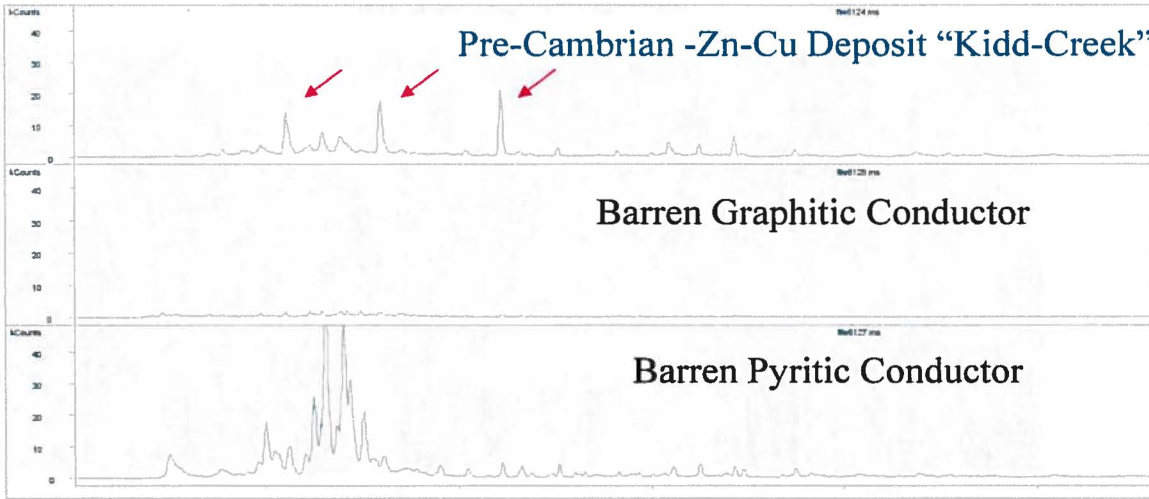

SGH has been described by the Ontario Geological Survey of Canada (OGS) as a "REDOX cell locator". Many SGH surveys for Gold and other mineral targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus "Apical", "Nested-Halo", and "Rabbit-Ear" or "Halo" type SGH anomalies are all typically observed from the effect of REDOX cells that have developed over deposits. REDOX cells are also related to the presence of bacteriological activity.

The VMS template of SGH Pathfinder Classes uses low and medium weight classes of hydrocarbon compounds. Again, at least three Pathfinder Class group maps, associated with the SGH signature for VMS, must be present to begin to be considered for assignment of a good rating. The Pathfinder Class anomalies in these maps must logically concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class, for a specific area.

The interpretation development history for VMS SGH Pathfinder Class map(s) shown in this report is similar to the development history for other target types. The reader should not draw a conclusion that SGH is used only for sulphide based mineralization as some of the most intense SGH anomaly has been associated with Kimberlites where sulphides are essentially not present.

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APPENDIX "C"
SOIL GAS HYDROCARBON SURVEY DESIGN AND SAMPLING

Sample Type and Survey Design: It is highly recommended that a ***minimum*** of 50 sample "locations" is preferred to obtain enough samples into background areas on both sides of *small* suspected targets (wet gas plays, Kimberlite pipes, Uranium Breccia pipes, veins, etc.). SGH is not interpreted in the same way as inorganic based geochemistries. SGH must have enough samples over both the target and background areas in order to fully study the dispersion patterns or geochromatography of the SGH classes of compounds. Based on our minimum recommendation of at least 50 sample locations we further suggest that all samples be *evenly spaced* with about one-third of the samples over the target and one-third on each side of the target in order for SGH to be used for exploration. Targets other than gas plays, pipes, dykes or veins usually require additional samples to represent both the target and background areas.

SGH has been shown to be very robust to the use of different sample types even "within" the same survey or transect. Research has illustrated that it is far more important to the ultimate interpretation of the results to take a complete sample transect or grid than to skip samples due to different sample media. The most ideal natural sample is still believed to be soil from the "Upper B-Horizon", however excellent results can also be obtained from other soil horizons, humus, peat, lake-bottom sediments, and even snow. The sampling design is suggested to use evenly spaced samples from 15 metres to 200 metres and line spacing from 50 metres to 500 metres depending on the size and type of target. A 4:1 ratio is suggested, however, larger orientation surveys have also been successful. Ideally even large grids should have one-third of the samples over the target and two-thirds of the samples into anticipated background areas. This will allow the proper assessment of the SGH geochromatographic vectoring and background site signature levels with minimal bias. Individual samples taken at significant distances from the main survey area to represent background are not of value in the SGH interpretation as SGH results are not background subtracted. Samples can be drip dried in the field and do not need special preservation for shipping and has been specifically designed to avoid common contaminants from sample handling and shipping. SGH has also been shown to be robust to cultural activities even to the point that successful results and interpretation has been obtained from roadside right-of-ways. In conclusion, the conditions for the sample type and survey design include:

- Fist sized samples are usually retrieved from a shallow dug hole in the 15 to 40 cm range of depth.

- Different sample types can be taken even "within" the same survey or transect, data leveling is rarely ever required. SGH is highly effective is areas of very difficult terrain. The Golden Rule is to always take a sample.

- Samples should be evenly spaced in a grid or a series of transects with sample lines spaced at a ratio of up to 4:1 (line spacing: sample spacing).

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- A minimum of 50 sample "locations" is recommended with one-third over the target and one-third on each side of the target into background if this can be predicted. This provides the opportunity of optimal data contrast.

- If very wet, samples can be drip dried in the field.

- No special preservation is required for shipping.

APPENDIX "D"
SAMPLE PREPARATION AND ANALYSIS

Upon receipt at Activation Laboratories the samples are air-dried in isolated and dedicated environmentally controlled rooms set to 40°C. The dried samples are then sieved. In the sieving process, it is important that compressed air is not used to clean the sieves between samples as trace amounts of compressor oils "may" poison the samples and significantly affect some target signatures. At Activation Laboratories a vacuum is used to clean the sieve between each sample. The -60 mesh sieve fraction (<250 microns, although different mesh sizes can be used at the preference of the exploration geologist) is collected and packaged in a Kraft paper envelope and transported from our sample preparation building to our analytical building on the same street in Ancaster Ontario. Each sample is then extracted, separated by gas chromatography and analyzed by mass spectrometry using customized parameters enabling the highly specific detection of the 162 targeted hydrocarbons at a *reporting limit* of one part-per-trillion (ppt). This trace level limit of reporting is critical to the detection of these hydrocarbons that, through research, have been found to be related at least in part to the breakdown and release of hydrocarbons from the death phase of microbes directly interacting with a deposit at depth. The hydrocarbon signatures are directly linked to the deposit type, which is used as a food source. The hydrocarbons that are mobilized and metabolized by the microbes are released in the death phase of each successive generation. Very few of the hydrocarbons measured are actually due to microbe cell structure, or hydrocarbons present or formed in the genesis of the deposit or from anthropogenic contamination. The results of the SGH analysis is reported in raw data form in an Excel spreadsheet as "semi-quantitative" concentrations without any additional statistical modification.

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APPENDIX "E"
SGH DATA QUALITY

Reporting Limit

The SGH Excel spreadsheet of results contains the raw unaltered concentrations of the individual SGH compounds in units of "part-per-trillion" (ppt). The reporting of these ultra low levels is vital to the measurement of the small amounts of hydrocarbons now known to be leached/metabolized and subsequently released by dead bacteria that have been interacting with the ore at depth. To ensure that the data has a high level of confidence, a "reporting limit" is used. The reporting limit of 1 ppt actually represents a level of confidence of approximately 5 standard deviations where SGH data is assured to be "real" and non-zero. Thus in SGH the use of a reporting limit automatically removes site variability, and there is no need to further background subtract any data as the reporting limit has already filtered out any site background effects. Thus we recommend that all data that is equal to or greater than 2 ppt should be used in any data review. It is important to review all SGH data as low values that may be the centre of halo anomalies and higher values as apical anomalies or as halo ridges are all important.

Laboratory Replicate Analysis

A laboratory replicate is a sample taken randomly from the submitted survey being analyzed and are not unrelated samples taken from some large stockpile of bulk material. In the Organics laboratory an equal portion of this sieved sample, or pulp, is taken and analyzed in the same manner using the Gas Chromatography/Mass Spectrometer. The comparison of laboratory replicate and field duplicate results for chemical tests in the parts-per-million or even parts-per-billion range has typically been done using an absolute "relative percent difference (RPD)" statistic which is an easy proxy for error estimation rather than a more complete analysis of precision as specified by Thompson and Howarth. An RPD statistic is not appropriate for SGH results as the reporting limit for SGH is *1 part-per-trillion.* Further, *SGH is a semi-quantitative technique* and was not designed to have the same level of precision as other less sensitive geochemistry's as it is only used as an exploration tool and not for any assay work. SGH is also designed to cover a wide range of organic compounds with an unprecedented 162 compounds being measured for each sample. In order to analyze such a wide molecular weight range of compounds, sacrifices were made to the variability especially in the low molecular weight range of the SGH analysis. The result is that the first fifteen SGH compounds in the Excel spreadsheet is expected to exhibit more imprecision than the other 147 compounds. An SGH laboratory replicate is a large set of data for comparison even for just a few pairs of analyses. Precision calculations using a Thompson and Howarth approach should only be used for estimating error in individual measurements, and not for describing the average error in a larger data set. In geochemical exploration geochemists seek concentration patterns to interpret and thus rigorous precision in individual samples is not required because the concentrations of many samples are interpreted collectively. For these reasons recent and independent research at Acadia University in Canada promote that a percent Coefficient of Variation (%CV) should be used as a universal measurement of relative error in all geochemical applications. As SGH results are a relatively large data set for nearly all submissions, %CV is a better statistic for use with SGH. By using %CV, the concentration of duplicate pairs is irrelevant because the

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units of concentration cancel out in the formation of the coefficient of variation ratio. For SGH, the %CV is calculated on all values ≥ 2 ppt. These values are averaged and represent a value for each pair of replicate analysis of the sample. All of the %CV values for the replicates are then averaged to report one %CV value to represent the overall estimate of the relative error in the laboratory sub-sampling from the prepared samples, and any instrumental variability, in the SGH data set for the survey. Actlabs' has successfully addressed the analytical challenge to minimize analytical variability for such a large list of compounds. Thus as SGH is also interpreted as a signature and is solely used for exploration and not assay measurement, the data from SGH is *"fit for purpose"* as a geochemical exploration tool.

Historical SGH Precision

In the general history of geochemistry, studies indicate that a large component of total measurement error is introduced during the collection of the initial sample and in sub-sampling, and that only a subordinate amount of error in the result is introduced during preparation and analysis. A historical record encompassing many projects for SGH, including a wide variety of sample types, geology and geography, shows that the consistency and precision for the analysis of SGH *is excellent* with an overall precision of 6.8% Coefficient of Variation (%CV). When last calculated, this number had a range of a maximum of 12.4% CV, a minimum of 3.0% CV, with a standard deviation of 1.6%, in a population made up of over 400 targets (over 45,000 samples) interpreted since June of 2004. Again the precision of 6.8% CV included all of the sample types as soil from different horizons, peat, till, humus, lake-bottom sediments, ocean-bottom sediments, and even snow. When field duplicates have been revealed to us, we have found that the precision of the field duplicates are in the range of about 9 to 12 %CV. As SGH is interpreted using a combination of compounds as a chemical "class" or signature, the affect of a few concentrations that may be imprecise in a direct comparison of duplicates is not significant. Further, projects that have been re-sampled at different times or seasons are expected to have different SGH concentrations. The SGH anomalies may not be in exactly the same position or of the same intensity due to variable conditions that may have affected the dispersion of different pathfinder classes. However, the SGH "signature" as to the presence of the specific mix of SGH pathfinder classes will definitely still exist, and will retain the ability to identify the deposit type and vector to the same target location.

Laboratory Materials Blank – Quality Assurance (LMB-QA)

The Laboratory Materials Blank Quality Assurance measurements (LMB-QA) shown in the SGH spreadsheet of results are matrix free blanks analyzed for SGH. These blanks are not standard laboratory blanks as they do not accurately reflect an amount expected to be from laboratory handling or laboratory conditions that may be present and affect the sample analysis result. The LMB-QA measurements are a pre-warning system to only detect any contamination originating from laboratory glassware, vials or caps. As there is no substrate to emulate the sample matrix, the full solvating power of the SGH leaching solution, effectively a water leach, is fully directed at the small surface area of the glassware, vials or caps. In a sample analysis the solvating power of the SGH leaching solution is distributed between the large sample surface area (from soil, humus, sediments, peat, till, etc.) and the relatively small contribution from the laboratory materials surfaces. The sample matrix also buffers the solvating or leaching effect in the sample versus the more vigorous leaching of the laboratory

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materials which do not experience this buffering effect. Thus the level of the LMB-QA reported is biased high relative to the sample concentration and the actual contribution of the laboratory reagents, equipment, handling, etc. to the values in samples is significantly lower. This situation in organic laboratory analysis only occurs at such extremely low part-per-trillion (ppt) measurement levels. This is one of the reasons that SGH uses a reporting limit and not a detection limit. The 1 ppt reporting limit used in the SGH spreadsheet of raw concentration data is 3 to 5 times greater than a detection limit. The reporting limit automatically filters out analytical noise, the actual LMB-QA, and most of the sample survey site background. This has been proven as SGH values of 1 to 3 parts-per-trillion (ppt) have very often illustrated the outline of anomalies directly related to mineral targets. **Thus all SGH values greater than or equal to 1 or 2 ppt should be used as reliable values for interpretations.**

The LMB-QA values thus should not be used to background subtract any SGH data. The LMB-QA values are only an early warning as a quality assurance procedure to indicate the relative cleanliness of laboratory glassware, vials, caps, and the laboratory water supply at the ppt concentration level. *Do not subtract the LMB-QA values from SGH sample data.*

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APPENDIX "F"
SGH DATA INTERPRETATION

SGH Interpretation Report

All SGH submissions must be accompanied by relative or UTM coordinates so that we may ensure that the sample survey design is appropriate for use with SGH, and to provide an SGH interpretation with the results. In our interpretation procedure, we separate the results into 19 SGH sub-classes. These classes include specific alkanes, alkenes, thiophenes, aromatic, and polyaromatic compounds. Note that none of the SGH hydrocarbons are "gaseous" at room temperature and pressure. The classes are then evaluated in terms of their geochromatography and for coincident compound class anomalies that are unique to different types of mineralization. Actlabs uses a six point scale in assigning a subjective rating of similarity of the SGH signatures found in the submitted survey to signatures previously reviewed and researched from known case studies over the same commodity type. Also factored into this rating is the appropriateness of the survey and amount of data/sample locations that is available for interpretation. This rating scale is described in detail in the following section.

SGH PATHFINDER CLASS MAGNITUDE

The magnitude of any individual concentration or that of a hydrocarbon class *does not imply* that the data is of more importance or that mineralization is of higher quantity or grade. SGH interpretation must use the review of the combination of specific hydrocarbon classes to make any interpretation.

GEOCHEMICAL ANOMALY THRESHOLD VALUE

In the interpretation of "inorganic" geochemical data one of the determinations to be made is to calculate a "Threshold" value above which data is considered anomalous. This is done on an element by element basis. In the interpretation of this "organic" geochemical data this determination is done differently. The determination of a threshold value is not calculated for each hydrocarbon compound. The determination of a threshold value is also a concentration below which geochemical data is considered as "noise" for the purposes of geochemical interpretation. As discussed, SGH uses a "Reporting Limit" instead of some type of Detection Limit. The amount of noise that is already eliminated in the data, as below the Reporting Limit of 1 part-per-trillion (shown in the data spreadsheet as "-1" as "not-detected at a Reporting Limit of 1 ppt") is equivalent to approximately 5 standard deviations of variability. *To thus calculate an additional Threshold Value is a loss of real and valuable data.* Further, in the interpretation of SGH data, individual compounds are not considered (unless explicitly mentioned in the report). The interpretation of SGH data is exclusively conducted by "compound chemical class" which is the sum of four to fourteen individual hydrocarbons in the same organic chemical class as these compounds naturally have the same chemical properties that ultimately define their spatial dispersion characteristics in their rise from a mineral target through the overburden. This combined class is more reliable than the measurement of any one compound. SGH also eliminates the need for a Threshold value determination above the Reporting Limit due to the "high specificity" of the specific hydrocarbons and the classes they form. Each of the hydrocarbons has been

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hand selected due to their lower probability of being found in general surface soils. Further, only those classes where the majority of the compounds are detected above the Reporting Limit are considered in the interpretation. This defines the SGH geochemistry as having less geochemical noise due to the use of a reporting limit and as having higher confidence in the use of groups (classes) of data instead of individual compounds. However the most important aspect of interpretation is the use of a forensic signature. At least three specific "Pathfinder" classes, based on the combinations or template of classes we have developed, must be present to define the hydrocarbon signature to confidently predict the presence of a specific type of mineral target. *Do not calculate another Threshold value.* **Fact:** It has been proven many times that important SGH anomalies that depict mineralization at depth can exist even with data at 3 ppt.

Mobilized Inorganic Geochemical Anomalies

It is important to note that SGH is essentially "blind" to any inorganic content in samples as only *organic* compounds as hydrocarbons are measured. Thus inorganic geochemical surface anomalies that have migrated away from the mineral source, and thus may be interpreted and found to be a false target location, is not detected and does not affect SGH results. This fact is of great advantage when comparing the SGH results to inorganic geochemical results. If there is agreement in the location of the anomalies between the organic and inorganic technique, such as Actlabs' Enzyme Leach, a significant increase in confidence in the target location can be realized. If there is no agreement or a shift in the location of the anomalies between the techniques, the inorganic anomaly may have been mobilized in the surficial environment.

The Nugget Effect

As SGH is "blind" to the inorganic content in the survey samples, any concern of a "nugget effect" will not be encountered with SGH data. A "nugget effect" may be of a concern for inorganic geochemistries from surveys over copper, gold, lead, nickel, etc. type targets.

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SGH DATA LEVELING

The combination of SGH data from different field sampling events has rarely required leveling in order to combine survey grids. The only circumstances that have occasionally required leveling has been the combination of samples that are very fine in texture, thus having a combined large surface area to samples of peat that may be in nearby areas. Even after maceration of the peat and in using the maximum size of sample amenable to this test method, peat samples have a significantly lower surface area. Peat samples have only required leveling in one survey in the last 500 SGH interpretations.

In only the last year it has been observed that SGH data *may* require leveling when different field sampling events have significantly different soil temperature. It has been documented that only when "soil" samples are taken from "frozen" ground that data leveling may be required as frozen sample act as a frozen cap to the hydrocarbon flux and may collect a higher concentration of hydrocarbon compounds compared to sampling during seasons where the samples are not frozen. Only two surveys have required leveling in the last 500 SGH interpretations.

The author has taken introductory training in the leveling of geochemical data. If leveling is required, both data sets are reviewed in terms of maximum, minimum and average values for each SGH Pathfinder Class intended for use in the interpretation. Data in sectioned into quartiles and each section is assigned specific leveling factors that is then applied to one data set. It should be noted that any type of data leveling is an approximation.

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APPENDIX "G"
SGH RATING SYSTEM DESCRIPTION

To date SGH has been found to be successful in the depiction of buried mineralization for Gold, Nickel, VMS, SEDEX, Uranium, Cu-Ni-PGE, IOCG, Base Metal, Tungsten, Lithium, Polymetallic, and Copper, as well as for Kimberlites, Coal Seam, Wet Gas and Oil Plays. SGH data has developed into a dual exploration tool. From the interpretation, a vertical projection of the predicted location of the target can be made as well as a statement on the rating of the comparability of the identification of the anticipated target type to that from known case studies, as an example: if the client anticipates the target to be a Gold deposit, what is the rating or comparability that the target is similar to the SGH results over a Gold deposit in Nunavut, shear hosted and sediment hosted deposits in Nevada, or Paleochannel Gold mineralization in Western Australia.

- **A rating of "6"** is the highest or best rating, and means that the SGH classes most important to describing a Gold related hydrocarbon signature are all present and consistently vector to the same location with well defined anomalies. To obtain this rating there also needs to be other SGH classes that when mapped lend support to the predicted location.
- **A rating of "5"** means that the SGH classes most important to describing a Gold signature are all present and consistently describe the same location with well defined anomalies. The SGH signatures may not be strong enough to also develop additional supporting classes.
- **A rating of "4"** means that the SGH classes most important to describing a Gold signature are mostly present describing the location with <u>well</u> defined anomalies. Supporting classes may also be present.
- **A rating of "3"** means that the SGH classes most important to describing a Gold signature are mostly present and describe the same location with <u>fairly well</u> defined anomalies. Some supporting classes may or may not be present.
- **A rating of "2"** means that some of the SGH classes most important to describing a Gold signature are present but a predicted location is difficult to determine. Some supporting classes may be present
- **A rating of "1"** is the lowest rating, and means that one of the SGH classes most important to describing a Gold signature is present but a predicted location is difficult to determine. Supporting classes are also not helpful.

The SGH rating is directly and significantly affected by the survey design. Small data sets, especially if significantly <50 sample locations, or transects/surveys that are geographically too short *will automatically receive a lower rating no matter how impressive an SGH anomaly might be.* When there is not enough sample locations to adequately review the SGH class geochromatography, or when the sample spacing is inadequate, or if the spacing is highly variable such that it biases the interpretation of the results, then the confidence in the interpretation of any geochemistry is adversely

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affected. The SGH rating is not just a rating of the agreement between the SGH pathfinder classes for a particular target type; it is a rating of the overall confidence in the SGH results from this particular survey. The interpretation is only based on the SGH results without any information from other geochemical, geological or geophysical information unless otherwise specified.

HISTORY & UNDERSTANDING

The subjective SGH rating system has been used since 2004 when Activation Laboratories started providing an SGH Interpretation Report with ever submission for SGH analysis to aid our clients in understanding this organic geochemistry and ensuring that they obtain the best results for their surveys. As explained in the previous section, the SGH rating is not just a rating of how definitive an SGH anomaly is, and it is not based just on the map(s) provided in this report. It is a rating of "confidence in the interpreted anomaly" from the combination of:

- (i) are the expected SGH Pathfinder Classes of compounds present from the template for this target type (one Pathfinder Class map is shown in the report, at least three must be present to adequately describe the correct signature for a particular target),
- (ii) how well do these SGH Pathfinder Classes agree in describing an particular area,
- (iii) how well does this agreement compare to SGH case studies over known targets of that type,
- (iv) how well is the interpreted anomaly defined by the survey (i.e. a single transect does not provide the same confidence as a complete grid of samples), and
- (v) is there at least a minimum of 50 sample locations in the survey so that there may be an adequate amount of data to observe the geochromatography of the different SGH Pathfinder Class of compounds.

The question often arises by clients as to the frequency of a rating, e.g. "how often is a rating of 5.0 given in an interpretation". To better understand this we present this review of the history of the SGH rating program since 2004 and some of the underlying situations that can affect the historical rating charts. Originally it was recommended that a minimum of 35 sample location be used for small target exploration, however it was quite quickly realized that this is often insufficient and at least 50 sample locations were required. In 2007 the rating scale was refined to include increments of 0.5 units rather than just integer values from 0 to 6.

A rating frequency may be biased high as most clients conduct an orientation study over a known target, thus several of these projects result in high ratings. Note that, at this time, the rating is not said to be linked to grade of a deposit or depth to the target. Even in exploration surveys clients tend to submit samples over more promising targets due to knowledge of the geology and prior geochemical or geophysical results. As shown in the following chart, projects with SGH data from 200 or more sample locations have a higher level of confidence in the interpretation as the

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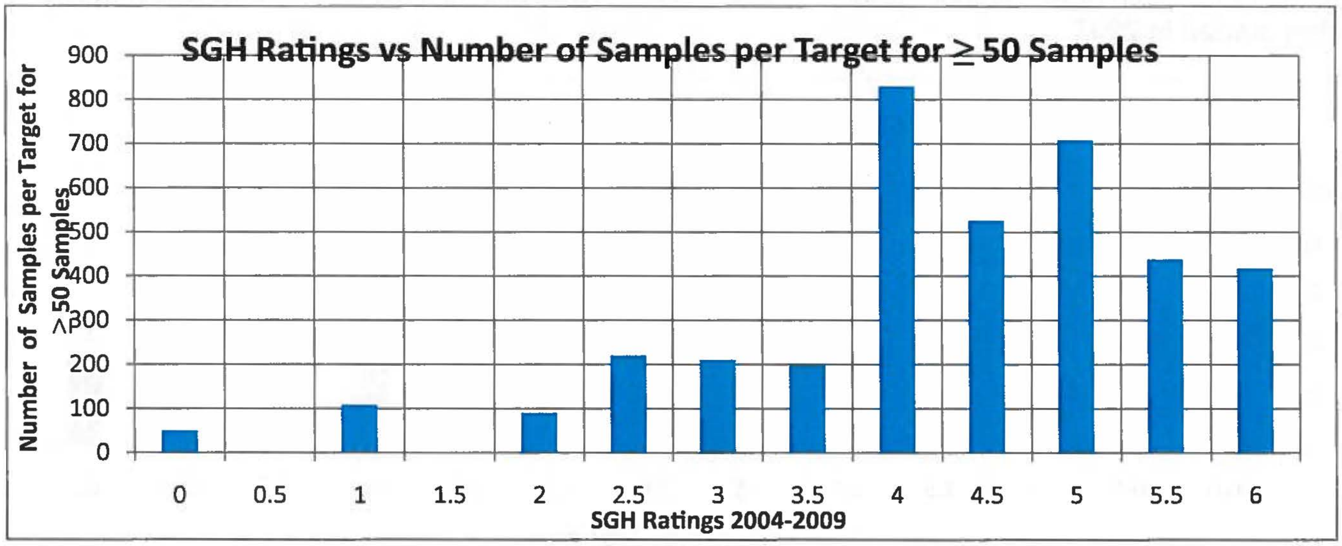
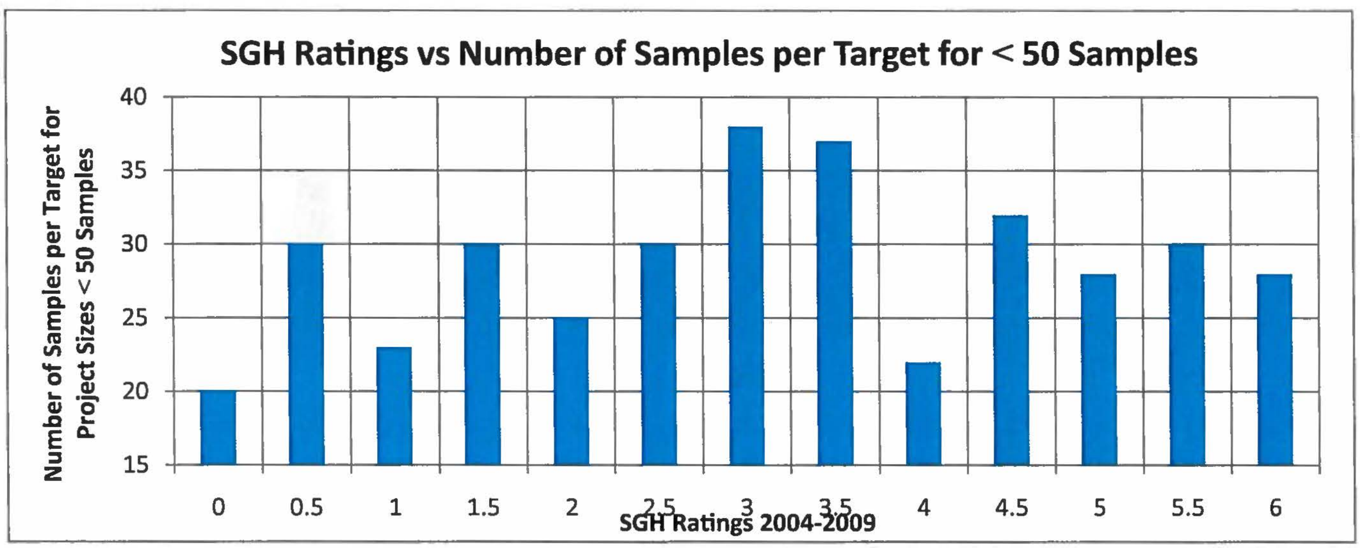
geochromatography of the SGH Pathfinder Classes of compounds can be more completely observed and reviewed.



The rating frequency may be biased low as research projects often include a bare minimum of samples to reduce costs. Research projects may also be over targets known to be difficult to depict with geochemistry. Multiple targets in close vicinity in a survey may result in a low bias as the Pathfinder Class geochromatography is more difficult to deconvelute. Ratings may also be biased low if less than the recommended 50 sample locations are submitted as indicated by the following chart. This chart also illustrates that there is no interpretation bias to a particular rating value.



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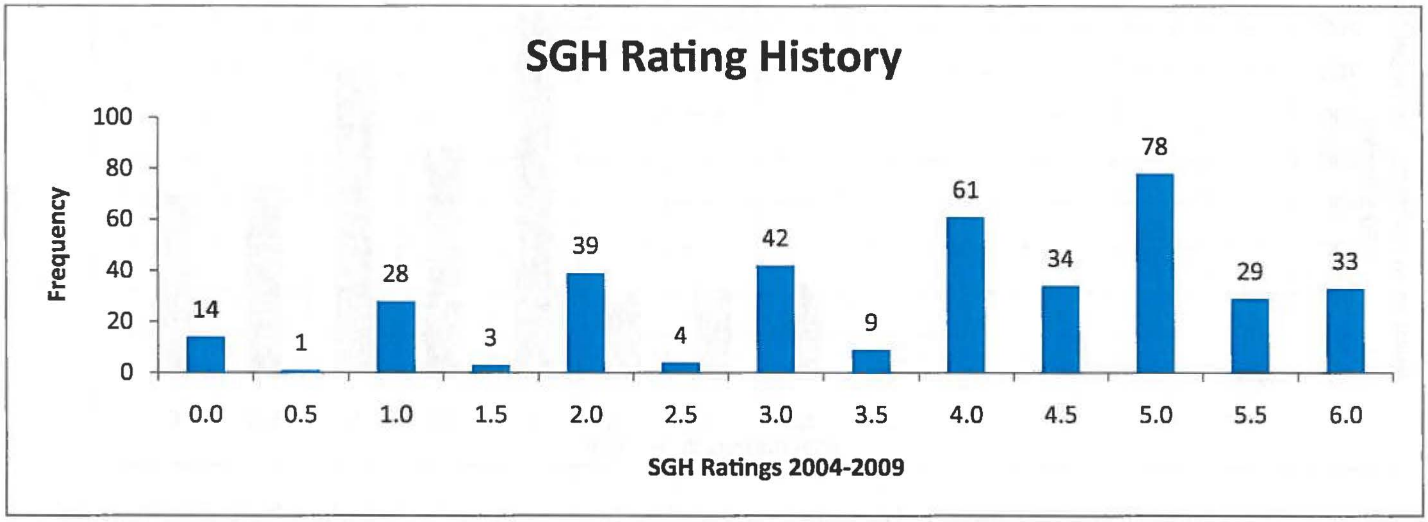
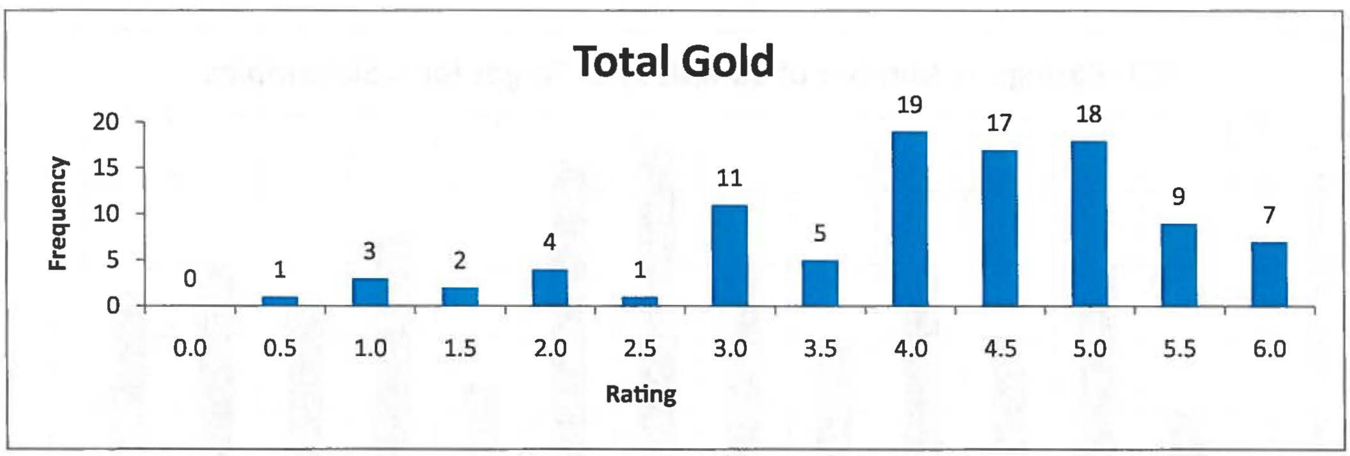
The overall rating frequency for over 400 targets from January 2004 to December 2009 is shown in the chart below illustrating that surveys over more promising targets are most often submitted for best use of research or exploration dollars. It also indicates that the 0.5 increments were less frequent as they started in 2007.



More specific for SGH interpretation for Gold targets, the overall rating frequency for 97 targets from January 2004 to December 2009 is shown in the chart below that also illustrates that surveys over more promising Gold targets are most often submitted for best use of research or exploration dollars.



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APPENDIX "H"

"SUPPLEMENTAL REPORT": ($ 1,800.00)

Those clients who have determined that these SGH results will add an important aspect to their exploration effort can request a "Supplemental Report". This report contains the additional SGH Pathfinder Classes and an explanation of their use in the SGH interpretation that supports the initial applied "Rating" for the survey as a relative comparison to the results previously obtained in case studies that were used to create the SGH template for the general target type.

"ADDITIONAL INTERPRETATION": ($ 1,800.00)

The SGH data can be interpreted multiple times in comparison to a variety of SGH templates developed for exploration for different mineral targets or petroleum plays. The samples do not have to be reanalyzed. This can be addressed as a separate section of a report or as a separate report based on the client's wishes. The price is per survey area, e.g. if there are two projects in a submission, perhaps a North area and South area, and both survey areas are to be interpreted for say Gold and Copper, the first interpretation is included in the SGH analysis price, the second interpretation for each area would be priced at $1,800 per area, thus a total of $3,600.

"BASIC OR SUPPLEMENTAL REPORT GIS PACKAGE": ($ 200.00)

Those clients that wish to import the SGH results into their GIS software can request a "GIS Package", which will include the geo-referenced image files that reflect the mapped SGH Pathfinder Class or Classes contained in the Standard or Supplemental Report and an Excel CSV file(s) containing the associated Class Sum data.

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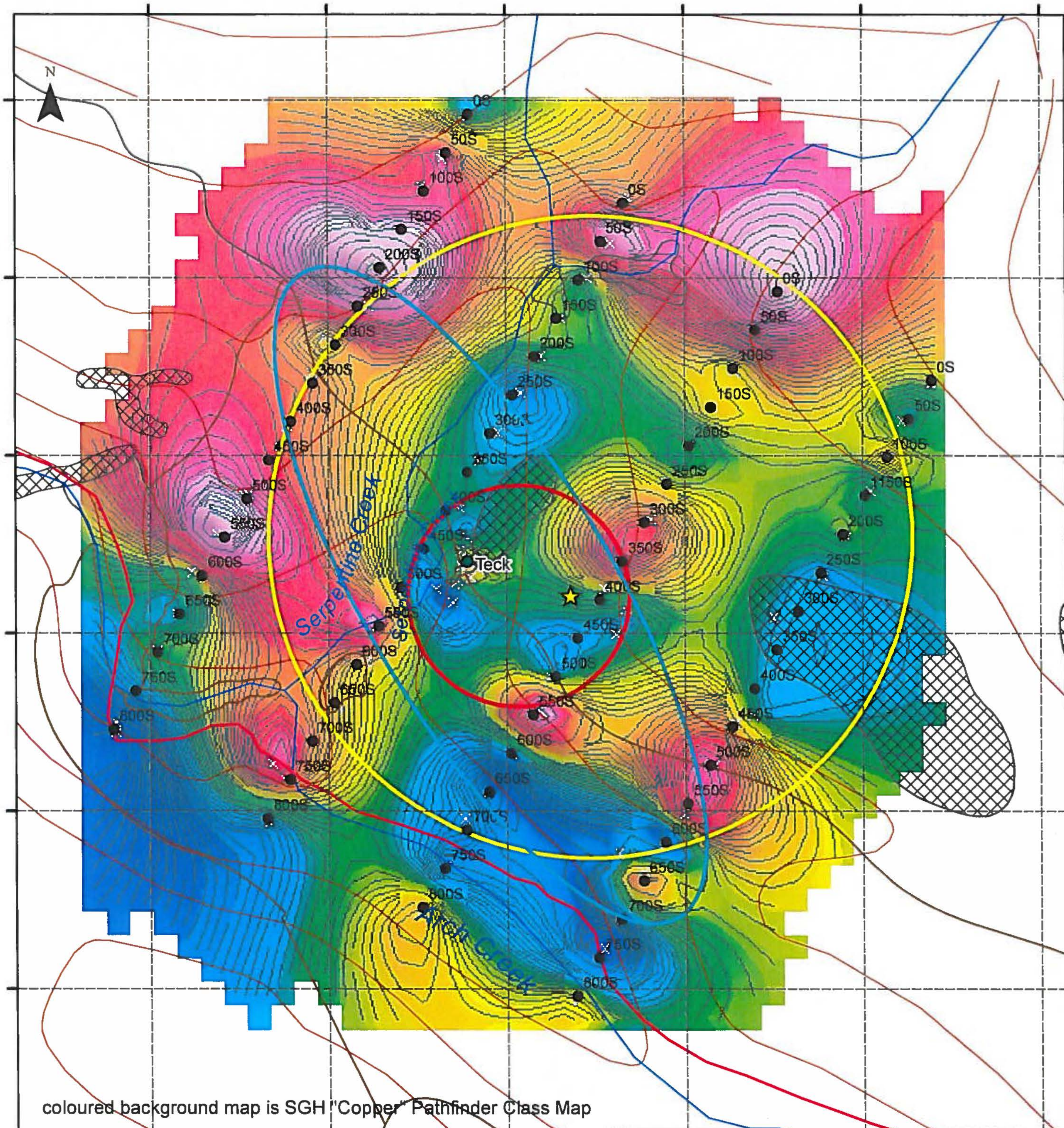


Arch Grid
Compilation of SGH Anomalies
Copper Pathfinder Class

1:6,000

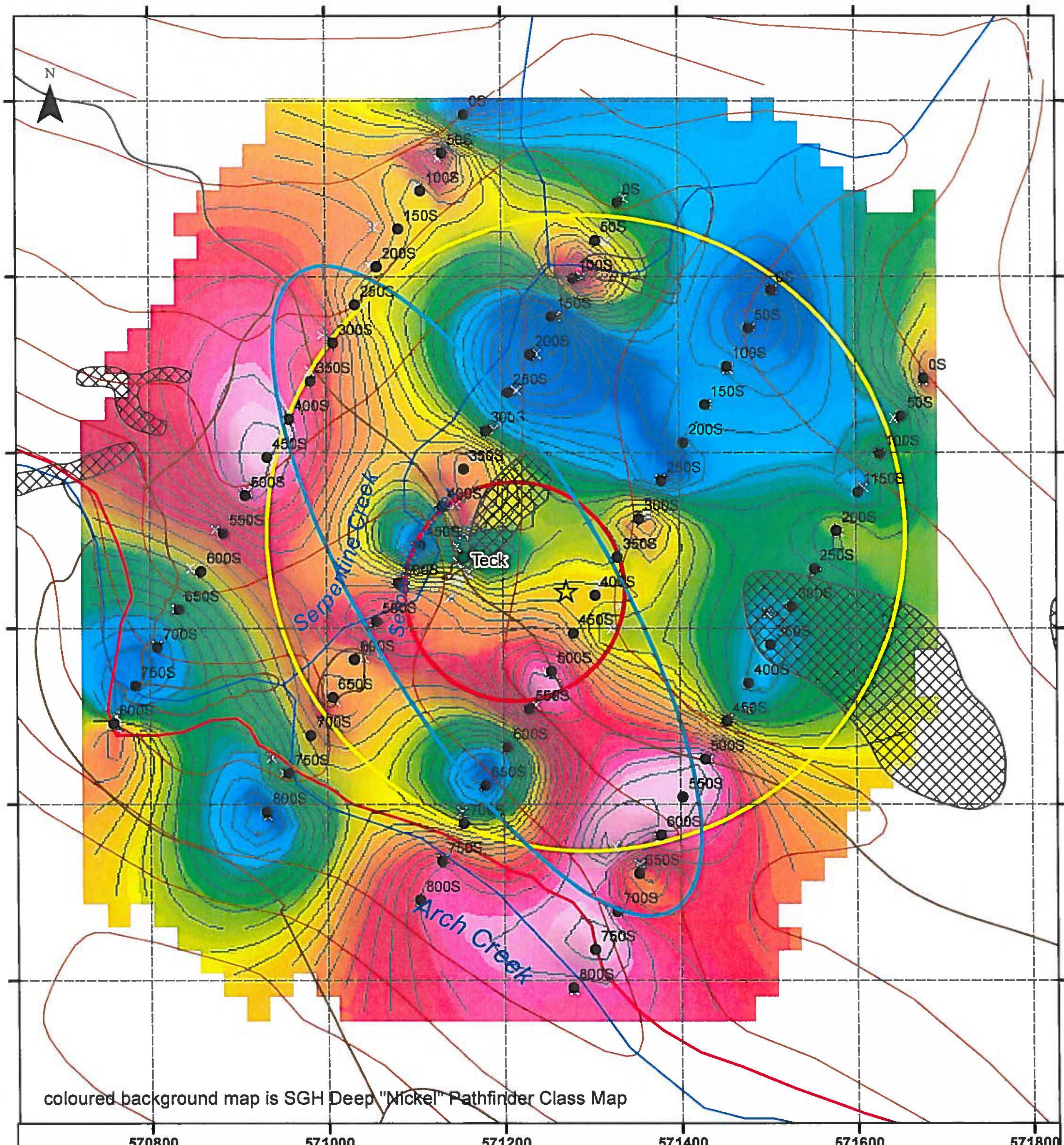
UTM Z7 NAD83

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
- Road
- ultramafic sill



Arch Grid
Compilation of SGH Anomalies
Deep Nickel Pathfinder Class

1:6,000

UTM Z7 NAD83

0 50 100 Meters

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

SGH Anomalies

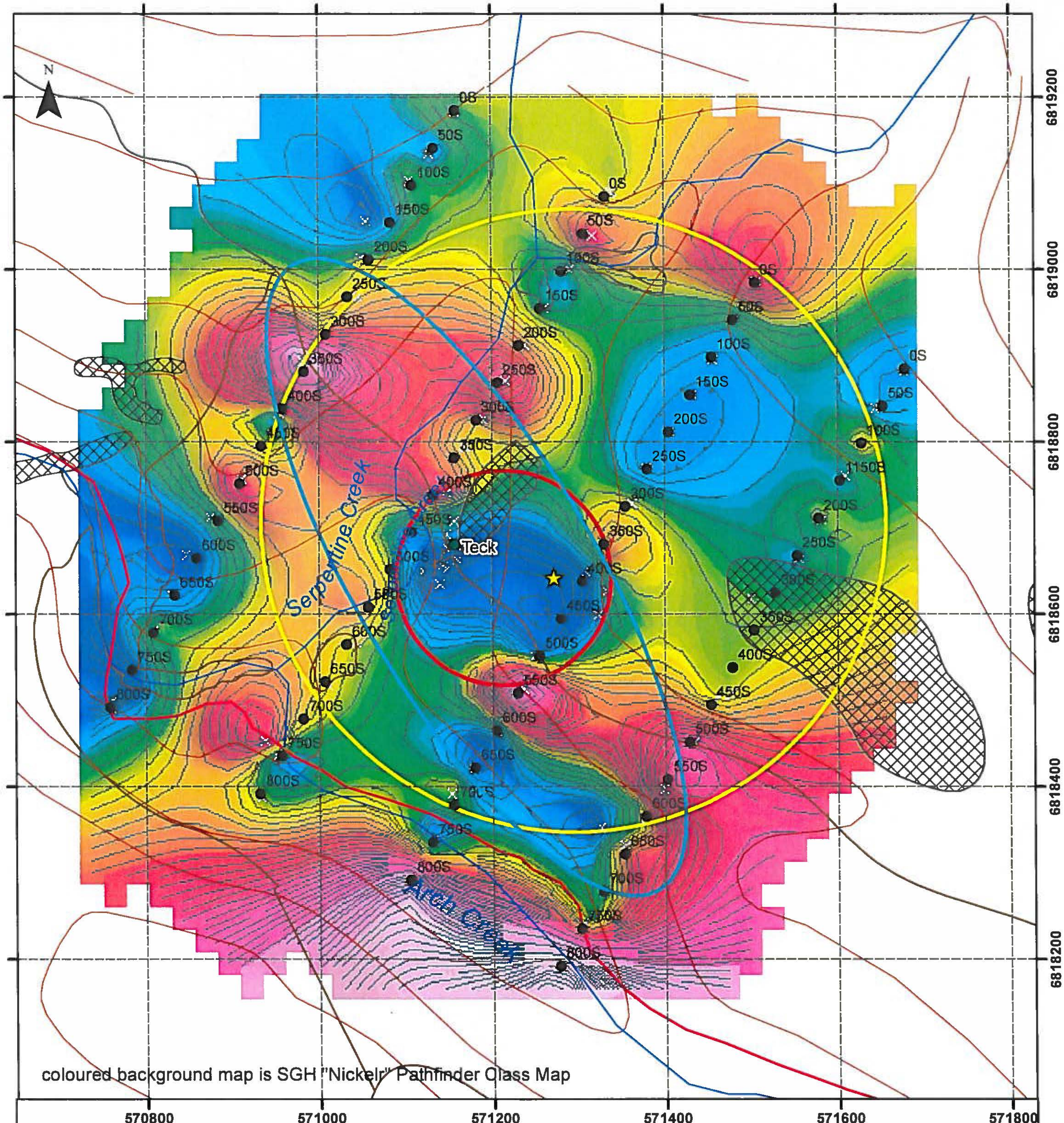
Cu Redox Cell

Deep Ni Trend

Ni Redox Cell

Road

ultramafic sill



Arch Grid
Compilation of SGH Anomalies
Shallow Nickel Pathfinder Class

1:6,000

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
- Road
- ultramafic sill

	Arch Grid - SGH Database - August 2013						
SGH sample #	SGH_easting	SGH_northing	site drainage	slope	aspect	vegetation	sample horizon
M896751	570932	6818387	POOR	VALLEY BOTTOM	N	SPRUCE, WILLOW, ALDER, LAB TEA, SUB ALPINE, DWARF BIRCH, WINTERGREEN, CRANBERRY, MOSS BERRY, BLUE BERRY	HUMUS
M896752	570937	6818453	MODERATE	VALLEY BOTTOM	N	SPRUCE, ALDER, LAB TEA	HUMUS- MIDDLE
M896753	570760	6818487					
M896754	571204	6818463	MODERATE TO POOR	SLOPE	S	SPRUCE, MINOR WILLOW, LAB TEA, ALDER	HUMUS
M896755	571177	6818420	POOR	SLOPE TO VALLEY BOTTOM	S	SPRUCE, ALDER, WILLOW, LAB TEA, MOSS	HUMUS
M896756	571152	6818391	MODERATE	SLOPE	SW	SPRUCE, WILLOW, LAB TEA, CRANBERRY	HUMUS
M896757	571352	6818332	MODERATE	SLOPE	NW	SPRUCE, ALDER, WILLOW, LAB TEA, CRANBERRY	HUMUS
M896758	571325	6818351	MODERATE TO GOOD	SLOPE FOR SGH, RIDGETOP FOR HUMUS	SW	WILLOW, ALDER FOR SGH - WILLOW, ALDER, POPLAR, LAB TEA, FIREWEED FOR HUMUS	CLAY +/- ORGANICS FOR SGH, HUMUS FOR HUMUS
M896759	571375	6818361	MODERATE TO POOR	SLOPE	S	SPRUCE, WILLOW, ALDER, GRASS, HORSETAIL, SPARSE LAB TEA	HUMUS
M896760	571398	6818397	GOOD	SLOPE	S	SPRUCE, ALDER, CRANBERRY, ROSE, GRASS	HUMUS - DEAD MOSS
M896761	571432	6818451	GOOD	SLOPE	S	SPRUCE, WILLOW, ROSE, FIREWEED, CRANBERRY, SOAPBERRY	HUMUS
M896762	571456	6818498	POOR TO MODERATE	RIDGE TOP	W	SPRUCE, WILLOW, LAB TEA, BLUEBERRY, SAUB ALPINE	HUMUS
M896763	571476	6818507	MODERATE	RIDGE TOP TO SLOPE	W	SPRUCE, WILLOW, DWARF BIRCH, GRASS, BLUEBERRY, CRANBERRY, MINOR LAB TEA	HUMUS
M896764	571499	6818618	MODERATE	RIDGE TOP	W	SPRUCE, WILLOW, SUB ALPING, DWARF BIRCH, LAB TEA, GRASS, MOSSBERRY, LOW BUSH CRANBERRY	HUMUS
M896765	571334	6818626	POOR	SLOPING RIDGE TOP	W	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, "RED MOSS"	HUMUS
M896766	571554	6818663	POOR	SLOPED RIDGETOP	W	SPRUCE, GRASS, LAB TEA MUTANT, DWARF BIRCH, HORSETAIL, LAB TGEA,	HUMUS
M896767	571580	6818708	POOR	SLOPE	SW	SPRUCE, WILLOW, DWARF BIRCH, MOSSBERRY, LAB TEA, GRASS, HORSETAIL	HUMUS
M896768	571608	6818759	MODERATE	SLOPE	SW	SPRUCE, WILLOW, CRANBERRY, GRASS, HORSETAIL, ALDER, JUNIPER	HUMUS
M896769	571627	6818798	MODERATE	SLOPE	SW	SPRUCE, WILLOW, ALDER, LAB TEA, CRANBERRY, BLUEBERRY	HUMUS
M896770	571643	6818838	MODERATE	SLOPE	SW	SPRUCE, WILLOW, BLUEBERRY, ALDER, LAB TEA, CRANBERRY, MOSSBERRY	HUMUS
M896771	571677	6818881	MODERATE TO GOOD	SLOPE	SW	SPRUCE, WILLOW, ALDER, LAB TEA, CRANBERRY, HORSETAIL, GRASS	HUMUS
M896772	571104	6818290	MODERATE	SLOPE	NE	SPRUCE, WILLOW, ALDER, LAB TEA	HUMUS
M896773	571130	6818336	MODERATE	VALLEY BOTTOM	N	WILLOW, ALDER, HORSETAIL, FIREWEED	HUMUS MIXED WITH SILT
M896774	571308	6818245	POOR	VALLEY BOTTOM	SW	POPLAR, FIREWEED, WILLOW, HORSETAIL	ALLUVIUM
M896775	571278	6818188	MODERATE	VALLEY BOTTOM	FLAT, N	SPRUCE, ALDER, POPLAR	HUMUS
M896776	570952	6818435	MODERATE	SLOPE	NE	B AND W SPRUCE, WILLOW, MOSSBERRY, ALDER, LAB TEA, CRANBERRY	HUMUS
M896777	571009	6818516	MODERATE	SLOPE	W	SPRUCE, ALDER, SOAPBERRY, CRANBERRY, WINTERGREEN.	HUMUS - MIDDLE
M896778	571042	6818567	MODERATE	VALLEY BOTTOM	W	SPRUCE, WILLOW, ALDER, POPLAR, SOAPBERRY, GRASS	HUMUS - UPPER AND MIDDLE
M896779	571054	6818608	MODERATE	SLOPE	SW	BLACK.WHITE SPRUCE, OPEN FOREST, SPRUCE DOMINANT, MIXED AGE. MOD HEALTH STAND.	HUMUS - MIDDLE
M896780	571085	6818649	MODERATE	SLOPE	SW	SPRUCE, ROSE, LAB TEA, WILLOW, ALDER, FIREWEED, CRANBERRY	HUMUS - MIDDLE
M896781	571101	6818693	MODERATE	SLOPE	S	SPRUCE, WILLOW, HORSETAIL, MOSS BERRY, WILLOW, ROSE, FIREWEED, ALDER, LAB TEA, CRANBERRY	HUMUS
M896782	571146	6818740	MODERATE	SLOPE	SW	SPRUCE, WILLOW, SOAPBERRY, GRASS, JUNIPER, ALDER	HUMUS - MIDDLE
M896783	571169	6818793	MODERATE	VALLEY BOTGTOM	SW	SPRUCE, WILLOW, ALDER, JUMIPER, WINTERGREEN, SOAPBERRY, CRANBERRY	JUMUS - MIDDLE
M896784	571190	6818825	MODERATE	SLOPE	SW	SPRUCE, ALDER, WILLOW, ROSE, WINTERGREEN, LAB TEA, GRASS, CRANBERRY, FIEWEED	HUMUS - MIDDLE
M896785	571215	6818870	MODERATE	VALLEY BOTTOM	SW	SPRUCE, WILLOW, LAB TEA, WINTERGREEN, HORSETAIL, ALDER, GRASS, CRANBERRY	HUMUS
M896786	571239	6818911	GOOD	SLOPE	W	SPRUCE, WILLOW, GRASS, WINTERGREEN, SOAPBERRY, LAB TEA	JUMUS - MIDDLE AND LOWER
M896787	571260	6818954	MODERATE	SLOPE	NW	BLACK>WHITE SPRUCE, WILLOW, ALSER, LAB TEA, CRANBERRY, MOSS BERRY	HUMUS-LOWER
M896788	571291	6818999	MODERATE	VALLEY BOTTOM	W	BLACK>WHITE SPRUCE, WILLOW, ALDER, FIREWEED, WINTERGREEN	HUMUS -MIDDLE
M896789	571317	6819039	GOOD	SLOPE	W	SRUCE, JUNIPER, ALDER, GRASS, WILLOW	HUMUS - MIDDLE
M896790	571338	6819089	GOOD	SLOPE	W	SPRUCE, ALDER, JUNIPER, FIREWEED, GRASS, WINTERGREEN, MOSSBERRY	JUMUS - MIDDLE AND SILT

SGH sample #	SGH_easting	SGH_northing	site drainage	slope	aspect	vegetation	sample horizon
M896791	571055	6819056	MODERATE	RIDGE TOP - RIM	SW	SPRUCE, ALDER, WILLOW, ROSE, FIREWEED, LAB TEA, BLUEBERRY	HUMUS
M896792	571236	6818513	GOOD	SLOPE	S	SPRUCE, WILLOW, ALDER, GRASS, POPLAR, LAB TEA, BIG OVAL, FIREWEED. TREE DOMINANT	HUMUS
M896793	571249	6818551	GOOD	RIDGETOP	S	SPRUCE, POPLAR, ALDER, BIG OVAL, SOAPBERRY	HUMUS
M896794	571322	6818598	MODERATE	RIDGE TOP	FLAT	SPRUCE, DWARF BIRCH, LAB TEA, GRASS, STUNTED TREES, BLUBERRY, WILLOW	HUMUS
M896795	571308	6818649	POOR	RIDGE TOP	FLAT	SPRUCE, LAB TEA, DWARF BIRCH, SUB ALPINE, LOW BUSH CRANBERRY, BIG OVAL, GRASS, HORSETAIL	HUMUS
M896796	571147	6818692	MODERATE	VALLEY BOTTOM	SW	SPRUCE, WILLOW, POPLAR, OVAL LEAF, ROSE	HUMUS -MIDDLE +/- ASH, SILT
M896797	571156	6818707	MODERATE TO POOR	VALLEY BOTTOM	SW	SPRUCE, WILLOW, ALDER, VETCH, OVAL LEAF, WINTERGREEN	HUMUS - MIDDLE
M896798	571143	6818656	MODERATE	SLOPE	N	SPRUCE, WILLOW, WINTERGREEN, LAB TEA, OVAL LEAF	HUMUS - MIDDLE
M896799	571120	6818649	MODERATE	VALLEY BOTTOM	S	SPRUCE, WILLOW, ALDER, FIREWEED, SOAPBERRY, ROSE	HUMUS - MIDDLE
M896851	571045	6818967	GOOD	SLOPE	S	SPRUCE, ASPEN, WILLOW, ROSE, FIREWEED, LAB TEA, SOAPBERRY, CRANBERRY	HUMUS
M896852	571049	6819012		RIDGE TOP TO SLOPE	S	SPRUCE, WILLOW, CRANBERRY, LAB TEA, ASPEN, SOAPBERRY, HORSETAILS, ROSE	HUMUS - MIDDLE
M896853	571104	6819102	GOOD	RIDGE TOP TO SLOPE	S	SPRUCE, WILLOW, ALDER, ROSE, VETCH, FIREWEED, LAB TEA, GRASS	HUMUS - LOWER
M896854	571127	6819134	GOOD TO MODERATE	SLOPED RIDGETOP	S	WHITE SPRUCE, WILLOW, DWARF BIRCH	HUMUS - MIDDLE
M896855	571157	6819183	MODERATE	SLOPE	SW	SPRUCE, MOSSBERRY, LAB TEA, BLUEBERRY, DWARF BIRCH	HUMUS
M896856	570760	6818500	MODERATE	SLOPE	NE	ALDER, MINOR W. SPRUCE, FIREWEED, GRASS, WINTERGREEN	HUMUS - LOWER
M896857	570807	6818581	GOOD	SLOPE	W	SPRUCE, WILLOW, SOAPBERRY, ROSE, W>B SPRUCE	HUMUS
M896858	570830	6818622	GOOD	SLOPE	W	W>B SPRUCE, FIREWEED, ROSE, CRANBERRY, JUNIPER, WINTERGREEN	HUMUS - LOWER
M896859	570846	6818668	MODERATE	SLOPE	W	SPRUCE, ALDER, LAB TEA, ROSE, CRANBERRY	HUMUS
M896860	570874	6818712	GOOD	RIDGE TOP	NW	SPRUCE, WILLOW, LAB TEA, ALDER, ROSE, CRANBERRY, MOSS BERRY	HUMUS - LOWER
M896861	570911	6818756	GOOD	SLOPE	W	SPRUCE, WILLOW, ASPEN, SOAPBERRY, JUNIPER	HUMUS - MIDDLE
M896862	570945	6818809	GOOD	SLOPE	S	SPRUIVE, WILLOW, SOAPBERRY, WINTERGREEN, ROSE, JUNIPER	HUMUS - MIDDLE
M896863	570954	6818833	GOOD	RIDGE TOP TO SLOPE	S	W/ SPRUCE, WILLOW, JUNIPER, ASPEN,	HUMUS - MIDDLE
M896864	570982	6818892	GOOD	SLOPE	SE	SPRUCE, ALDER, ROSE, FIREWEED, WINTERGREEN, FIREWEED, ASPEN, SOAPBERRY	HUMUS
M896865	570997	6818933	GOOD	SLOPE	S	SPRUCE, WILLOW, PEA, ALDER, SOAPBERRY	HUMUS
M896866	571328	6818678	MODERATE TO POOR	SLOPE	N	SPRUCE, ALDER, WILLOW, SUB-ALPINE, SOME LAB TEA, CRANBERRY, HORSETAIL, BLUEBERRY	HUMUS - LOWER
M896867	571362	6818728	MODERATE TO GOOD	SLOPE	NW	SPRUCE, WILLOW, ALDER, LESSER LAB TEA, SOAPBERRY, MOSSBERRY, LOW BUSH CRANBERRY, BIG OVAL	HUMUS - MIDDLE
M896868	571378	6818770	MODERATE	SLOPE	SW	SPRUCE, LAB TEA, ROSE, WILLOW, SUB ALPINE, BOGGY, WINTERGREEN, BIG OVAL, LOW BUSH CRANBERRY, PEA, DWARF BIRCH, MOSSBERRY, GRASS	HUMUS - LOWER, MAYBE A
M896869	571404	6818811	MODERATE TO POOR	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, GRASS, BLUEBERRY, MOSSBERRY, BOGGY, LOW BUSH CRANBERRY	HUMUS
M896870	571431	6818854	POOR TO MOD	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, MOSSBERRY, BLUEBERRY, GRASS, LOW BUSH CRANBERRY	HUMUS - LOWER, MAYBE Ah
M896871	571455	6818895	POOR TO MOD	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, BOGGY, GRASS, BLUEBERRY, LOW BUSH CRANBERRY, HORSETAIL	HUMUS - LOWER, MAYBE Ah
M896872	571481	6818942	MODERATE TO POOR	RIDGE TOP	N	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, MOSSBERRY, LOWBUSH CRANBERRY, SOAPBERRY, BLUEBERRY	HUMUS AND Ah?
M896873	571506	6818985	MODERATE TO POOR	RIDGE TOP TO SLOPE	W	SPRUCE, WILLOW, LOTS OF DWARF BIRCH, SUB ALPINE, GRASS, LOW BUSH CRANBERRY, BLUEBERRY, MOSSBERRY, LAB TEA	HUMUS MAYBE Ah
M896874	571159	6818662	MODERATE	SLOPE	NW	SPRUCE, ALDER, LAB TEA, CRANBERRY, WILLOW, MOSSBERRY, BLUEBERRY, GRASS	HUMUS
M896875	571147	6818652	MODERATE	SLOPE	NW	SPRUCE, WILLOW, ALDER	HUMUS-MIDDLE
M896876	571139	6818634	MODERATE	VALLEY BOTTOM	N	SPRUCE, WILLOW, ALDER	HUMUS - LOWER
M896877	571166	6818678	MODERATE	SLOPE	N	SPRUCE, ALDER, CRANBERRY, LAB TEA, WINTERGREEN	HUMUS - LOWER
M896878	571170	6818681	MODERATE TO GOOD	SLOPE	NW	SPRUCE, WILLOW, JUNIPER, ROSE, ALDER, WINTERGREEN, FIREWEED, SOAPBERRY	HUMUS-LOWER
M896879	571147	6818676	MODERATE	SLOPE	W	SPRUCE, WILLOW, ALDER, FIREWEED	HUMUS - MIDDLE

SGH sample #	texture	colour	sample depth	rock chips	round/angular	ash	ash location	nearby o/c, trench etc.
M896751	PEAT + CLAY	DARK BROWN	20	BENEATH	SUBANGULAR TO ROUNDED PEBBLES, SAND, GRAVEL	N		15M FROM PPLACER
M896752	PEAT AND ORGANICS	DARK BROWN	45			N		PLACER DISTURBANCE, ROADS
M896753			5					
M896754	ORGANIC +/- SILTY	DARK BROWN	25			Y	UNDERNEA TH	
M896755	PEAT AND ORGANIC	BLACK	25			N		
M896756	PEATY, SOME CLAY	DARK BROWN	30			Y	BENEATH	AT EDGE OF NEW ROAD
M896757	ORGANIC	DARK BROWN	30			N		
M896758	ORGANIC	BROWN GREY FOR SGH, BROWN FOR HUMUS	5 FOR SGH, 10 FOR HUMUS			Y	ASH IN HUMUS, NOT IN SGH	ROAD BELOW
M896759	ORGANIC	DARK BROWN	25			N		
M896760	MOSSY, PEATY	BROWN	10			Y	UNDERNEA TH AND MIXED IN	
M896761	PEATY	BROWN	15			N		
M896762	ORGANIC	DARK BROWN BLACK	45			Y	BENEATH	
M896763	ORGANIC	DARK BROWN	40			Y	BENEATH	BASELINE OF OLD GRID. 56 +50N
M896764	ORGANIC	DARK BROWN	25			N		
M896765	ORGANIC	DARK BROWN	30			Y	BENEATH	
M896766	ORGANIC	DARK BROWN	35			Y	BENEATH	
M896767	PEATY, DAMP	DARK BROWN	15			Y	BENEATH	OLD FLAGGING NEARBY
M896768	PEATY, DAMP	DARK BROWN	20			Y	BENEATH	
M896769	PEATY	DARK BROWN	30			Y	BENEATH	
M896770	PEATY, CLAY	DARK BROWN	20			N		
M896771	PEAT +/- ASH	BROWN	25			Y	SOME MIXED IN	
M896772	ORGANIC - PEAT	BROWN - DARK BROWN	40			N		
M896773	SILT AND ROTTED PLANTS	GREY BROWN	5			N		
M896774	CLAY	GREY	12			N		ROAD ABOVE PLACER CREEK
M896775	ORGANIC	BROWN	30			Y	BENEATH	
M896776	ORGANIC AND CLAY	DARK BROWN	35			Y	BENEATH	NEARBY PLACER MINING
M896777	DEAD MOSS	BROWN	15	BENEATH	ANGULAR	N		WATERLINE FOR PLACEDR DOWN CREEK
M896778	DEAD MOSS AND ROOTS	BROWN	12	BENEATH	ANGULAR	N		
M896779	DEAD MOSS AND ROOTS	BROWN	27			Y	BENEATH	
M896780	ORGANIC AND CLAY	DARK BROWN	20	BENEATH	SUBANGULAR	N		
M896781	PEATY	DARK BROWN	25			Y		CLAIM LINE
M896782	ORGANIC, DEAD MOSS	BROWN	15	BEANEATH	SUBANGULAR	N		
M896783		BROWN	15	BENEATH	SUBANGULAR	N		OLD CUT LINE
M896784	ORGANIC	DARK BROWN	30			Y	BENEATH AND MIXED	
M896785	ORGANIC, CLAY	DARK BROWN	25			N		
M896786	ORGANIC	DARK BROWN	32			Y	A LITTLE IN SAMPLE	
M896787	PEAT	DARK BROWN	45			Y	BENETH	LINE OF OLD FLAGGING
M896788	ORGANIC MIXED WITH SILT	BROWN GREY	5			N		
M896789	DEAD MOSS AND PEAT	DARK BROWN	20			Y	NENEATH	
M896790	ORGANICS AND SILT	DARK GREY BROWN	15			N		CUTLINE NEARBY

SGH sample #	texture	colour	sample depth	rock chips	round/angular	ash	ash location	nearby o/c, trench etc.
M896791	ORGANIC, MIXED WITH MIDDLE LAYER	DARK BROWN	40			N		
M896792	ORGANIC - PEAT	DARK BROWN	20			N		
M896793	PEAT, ORGANIC	DARK BROWN/BLACK	30			Y	BENEATH AND SOME IN SAMPLE	
M896794	ORGANIC	DARK BROWN	25			Y	BENEATH	
M896795	ORGANIC, PEATY	BROWN	40			Y	BENEATH	
M896796	PEATY AND SILT	BROWN	10	YESQ	SUBROUNDED	Y	IN SAMPLE	5M AWAY FROM TRENCH
M896797	PEATY	DARK BROWN	20			N		TRENCH AND O/C
M896798	PEATY	BROWN	24			N		O/C ABOVE
M896799	PEATY, DEAD MOSS	BROWN	15	Y	SUBROUNDED, SUBANGULAR	Y		ON OLD CAT TRACK
M896851	ORGANIC	DARK BROWN	25			Y	UNDERNEATH	
M896852	ORGANIC +/- ASH	BROWN	25			Y	TINY BIT IN SAMPLE	
M896853	ORGANIC	DARK BROWN	40			Y	BENEATH	
M896854	ORGANIC +/- ASH	BROWN	15			Y	BENEATH	
M896855	ORGANIC, DAMP	DARK BROWN	55			Y	BENEATH	
M896856	ORGANIC - DAMP	BLACK	33	BENEATH	SUBROUNDED	N		PLACER ROAD BELOW
M896857	ORGANIC	DARK BROWN	32			N		
M896858	ORGANIC	DARK BROWN	30			Y	BENEATH	
M896859	ORGANIC	BLACK	31			Y	BENEATH	
M896860	ORGANIC - DAMP	BROWN	36			Y	BENEATH	
M896861	ORGANIC +/- SILT	BROWN	36			N		
M896862	ORAGANIC + SILT/CLAY	BROWN	19			Y	MIXED IN SAMPLE	
M896863	ORGANIC, DEAD MOSS	RED BROWN	9			Y	BENEATH	
M896864	ORGANIC	DARK BROWN	13			N		
M896865	ORGANIC	BROWN	17			N		
M896866	PEATY	BLACK-DARK BROWN	35	BENEATH		N		OLD FLAGGING
M896867	MOSSY TO PEATY	BROWN	15			Y	BENEATH	LINE OF OLD FLAGGING
M896868	PEAT, SILT CLAY	BLACK	30			Y	BENEATH	
M896869	PEATY	BLACK	25			Y	BENEATH	OLD CUTLINE TO NW
M896870	organic, silt and clay	black	25			Y	BENEATH	
M896871	organic, silt and clay	BLACK	35			Y	BENEATH	
M896872	PEAT AND SILT-CLAY	DARK BROWN	25			Y	BENEATH	
M896873	ORGANIC - WET	BLACK	25			Y	BENEATH	OLD CUTLINE, SQUARED POST
M896874	ORGANIC	DARK BROWN	52	BENEATH SAMPLE		N		OLD FLAGGING L8+25E 9+25N. ABOVE TECK SHOWING O/C
M896875	PEAT- DEAD MOSS	BROWN	25			N		OLD FLAGGING. ABOVE TECK SHOWING
M896876	ORGANIC	DARK BROWN	23			N		ABOVE TECK SHOWING
M896877	ORGANIC	DARK BROWN	25			N		OLD FLAGGING 8+25E 9+40N
M896878	ORGANIC	DARK BROWN	20	YES	ANGULAR TO SUBROUNDED	N		ABOVE TECK TRENCH
M896879	PEATY	BROWN	15	BENEATH	SUBANGULAR	N		BELOW TECK TRENCH

SGH sample #	notes	COMMENTS
M896751	SPRUCE>LAB TEA>ALDER>DWARF BIRCH. YOUNG TO MIDDLE AGED STAND. OPEN, BOGGY, HJUMMOCKY. MOD OPEN STAND. SGH TAKEN SEPARATELY FROM OTHERS.	
M896752	MOVED OFF LINE TO SAMPLE UNDISTURBED MATERIAL. RECENT BULLDOZING NEARBY. SPRUCE DYING	TRAIL SAMPLE. SGH DUPLICATE.
M896753		TRIAL SAMPLE. DUPLICATE OF 1000 800S
M896754	MANY TREES IN POOR HEALTH OR DYING.	
M896755	MIXED AGE STAND, SOME DEAD, OTHERS WITH DEAD BRANCHES. YOUNG SPRUCE.	
M896756	POOR HEALTH FOREST. LOTS OF LAB TEA AND CRANBERRY. MODERATELY OPEN FOREST NEAR CREEK.	SGH SAMPLED EARLIER. MOVED FROM STATION TO AVOID RECENT ROAD BUILDING,.
M896757	SPRUCE AND ALDER OPEN FOREST, MIXED AGE, UNHEALTHY TREES. ABOVE CREEK	
M896758	ON GRAVEL/CALY BANK ABNOVE ROAD. DIFF LOCATION FOR SGH AND HUMUS SAMPLES.	
M896759	CLOSE TO CREEK. SPRUCE UNHEALTHY, DECIDUOUS HEALTHY, MOD CLOSED, MIXED AGE SPRUCE	
M896760	WELL DRAINE DSLOPE ABOVE CREEK, MOD FOREST CANOPY, MOD HEALTH.	
M896761	MATURE FOREST, MOD HEALTH, WELL DRAINED SLOPE, SPRUCE DOMINANT	
M896762	FLATTISH, SEMI-BOGGY, LOTS OF MOSS, OPEN FOREST, SMALLER TREES.	
M896763	SLIGHT SLOPE OUT OF BOGGY AREA. STAND OF OLD SPRUCE. MORE CLOSED IN THAN BOG. DWARF BIRCH DOMINANT. MOD TO POOR HEALTH.	
M896764	SMALL Ah MIXED IN. DWARF BIRCH DOMINANT, MIXED AGE STAND, VERY OPEN FOREST, SOMEWHAT UNHEALTHY	
M896765	OPEN, MILDLY UNHEALTHY, BOGGY	
M896766	OPEN, MODERATE HEALTH BOG FOREST, SMALL STANDING WATER, MIXED AGE, DWARF BIRCH DOMINANT	
M896767	OPEN, MODERATE HEALTH, MIXED AGE, SPRUCE DOMINANT	
M896768	CANOPY CLOSING, MODERATE HEALTH, MIXED AGE, SPRUCE DOMINANT	
M896769	OPEN, MODERATE HEALTH, MIXED AGE, LAB TEA DOMINANT	
M896770	CLOSING CANOPY, SPRUCE DOMINANT, A FEW ALDER, MODERATE HEALTH	
M896771	OPEN FOREST, ALDER DOMINANT, MODERATE HEALTH. SLOPE AT BASE OF MOUNTAIN.	
M896772	MOD OPEN FOREST, POOR HEALTH. PERMAFRSOT BENEATH SAMPLE. 15M AWAY FROM CREEK.	
M896773	VEGETATED POINT BAR. TREES 5-10 YEARS OLD. NO SPRUCE OR HUMUS. LEAF LITTER UNDER TREES.	
M896774	EARLY SUCCESSION RIVERBANK. 5-10 YEAR OLD POPLAR, WILLOW. LOTS OF HORSETAIL	
M896775	GOOD-MODERATE HEALTH STAND, MIXED OLDER FOREST. LOCATED ON BENCH 2M ABOVE CREEK.	
M896776	MODERATLEY OPEN FOREST, MODERATE HEALTH	
M896777	MOD OPEN FOREST, MIXED AGE. MOD HEALTH.	
M896778	OPEN SPRUCE AND POPLAR FOREST. BENCH ABOVE CREEK, BESIDE SECONDARY CHANNEL.	
M896779	OPEN FOREST, SPRUCE DOMINANTSTAND HEALT MOD.	
M896780	MOD OPEN FOREST OF BLACK SPRUCE. MIXED AGE, MOD HEALTH.	
M896781	MODERATELY OPEN, SPRUCE DOMINANT, MODERATE HEALTH	
M896782	MODERATELY OPEN, MIXED AGE, MODERATE HEALTH, SPRUCE DOMINANT	
M896783	TIGHT GROWTH, MIXED AGE, MODERATELY HEALTHY, SPRUCE AND ALDER DOMINANT	
M896784	MODERATELY OPEN, MIXED AGE, MODERATELY HEALTHY	
M896785	CLOSING FOREST, MIXED AGE, DOMINANTLY ALDER, MODERATE HEALTH	
M896786	ENCLOSED FOREST, STEEP SLOPE, DOMINANT SPRUCE AND ALDER, MODERATELY HEALTHY, MIXED AGE TREES	
M896787	OPEN FOREST, MODERATE HEALTH, SIDE OF VALLEY	
M896788	OPEN FOREST ALONG CREEK. MATURE SPRUCE WITH ALDER. MOD TO GOOD FOREST HEALTH. PERIODIC INUNDATIONS OF SILT.	
M896789	MIDDLE TO OLD AGED FOREST. MOD CLOSED, MOD HEALTH. STEEP SLOPE ON TILLABOVE CREEK.	
M896790	MIXED AGE. STAND HEALTH MOD TO GOOD.	

SGH sample #	notes	COMMENTS
M896791	MODERATELY OPEN, MODERATELY HEALTHY, WILLOW DOMINANT	
M896792	MATURE FOREST, MODERATE HEALTH. OLD GROWTH, SPRUCE DOMINANT, CLOSED CANOPY	
M896793	ON EDGE OF BIG GRAVEL BOWL, SPRUCE DOMINANT, OLD GROWTH FOREST, LIMITED VEGT UNDER CANOPY, GOOD HEALTH, VERY DRY	
M896794	MOVED 36M EAST OFF LINE TO SAMPLE. STAKE IN MIDDLE OF STEEP DRAW. ON TOP OF GRAVEL BOWL, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE.	
M896795	FLAT, HUMMOCKY, SLIGHTLY BOGGY, SPRUCE, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE	
M896796	MINI GRID AROUND TECK SHOWING. FLOODPLAIN, SILT AND ASHJ MIXED WITH HUMUS. MIXED ALDER>POPLAR AND WHITE SPRUCE, CLOSED FOREST.	
M896797	BENCH ABOVE CREEK. LESS INUDATION THAN 15N	
M896798	MINI GRID AROUND TECK SHOWING. MIXED AGE, MOD HEALTH. ON SLOPE ABOVE CREEK.	
M896799	BENCH ABOVE CREEK. WILLOW AND ALDER ON OLD CAT ROAD. MIXED AGE, MOD HEALTH.	
M896851	MOSTLY SPRUCE AND WILLOW, MIXED AGE, FAIRLY OPEN, MODERATE HEALTH	
M896852	MOSTLY SPRUCE, MIXED AGE, FAIRLY OPEN, GOOD TO MODERATE HEALTH	ORGANIC +/- ASH
M896853	SILT/CLAY UNDERNEATH SAMPLE. W. SPRUCE DOMIN ANT, OPEN MOD HEALTH.	
M896854	DRY, RIDGE AND SOUTH ASPECT SLOPE. OPEN FOREST, MIXED AGE, MOD TO GOOD HEALTH	
M896855	OPEN FOREST, MODERATE HEALTH, DWARF BIRCH	
M896856	UNSTABLE SLOPE WITH LOTS OF ALDER, MOD HEALTH OVERALL.	
M896857	CLAY UNDERNEATH HUMUS. MIXED AGE FOREST. SPRUCE DOMINANT.	
M896858	SPRUCE DOMINANT, MIXED AGE, MOD HEALTH	
M896859	MOD OPEN FOREST, MIXED AGE. W SPRUCE DOMINANT.	
M896860	CANYON RIM, MOD HEALTH, MOD OPEN FOREST, SPRUCE DOMINANT.	
M896861	CANYON RIM. DRY SITE. NO BLACK SPRUCE. SPRUCE ON LOWER SLOPELS, ASPEN ABOVE.	
M896862	RIM OF CANYON. ACTUAL STATION IN SPACE. HUMUS SAMPLE MIX OF HUMUS, CLAY, ASH AND SILT.SPRUCE AND ASPEN AT RIM, SPRUCE BELOW.	
M896863	SPRUCE DOMINANT, MIXED AGE. DRY CANYON RIM	
M896864	CLOSED FOREST, MOSTLY SPRUCE OR ALDER, MIXED AGE, MODERATE HEALTH	
M896865	NEARBY CREEK DRAW, CLOSE FOREST, MIXED AGE, MODERATE HEALTH, MOSTLY SPRUCE	
M896866	HUMMOCKY, SOLIFLUCTION SLOPE OF SIDE OF DRAW. MOD HEALTH, STUNTED OR SUB ALPINE. PERMAFROST BELOW SAMPLE. SPRUCE AND ALDER DOMINANT, FAIRLY OPEN.	
M896867	SPRUCE DOMINANT, VARIABLY OPEN, MIXED AGE SPRUCE, SOME DEAD, MAJORITY MOD HEALTH.	SGH SAMPLED LATER
M896868	AT EDGE OF BENCH. NEAR TOP OF GLACIAL OVERBURDEN? MOD TO GOOD HEALTH STAND, OPEN FOREST, SPRUCE DOMINANT, MIXED AGE.	SGH SAMPLED LATER
M896869	HUMMOCKY RIDGETOP. SPRUCE DOMINANT, OPEN FOREST, MIXED AGE. SOME DEAD, REST MOD HEALTH.	
M896870	OPEN SPRUCE FOREST, SUB ALPINE, BOGGY, MIXED AGE, MOD HEALTH.	
M896871	OPEN SPRUCE FOREST, SUB ALPINE RIDGE TOP. HUMMOCKY, MIXED AGE. MOD HEALTH. Lots of willow and birch.	
M896872	SUB ALPINE, BOG FOREST, SHRUBS INCREASING. OPEN SPRUCE, STUNTED, MOD HEALTH, MOSTLY SPRUCE, MIXED AGE	SGH SAMPLED LATER
M896873	DWARF BIRCH DOMINANT. OPEN STUNTED SPRUCE GIVING WAY TO SHRUBS. MIXED AGE	SGH SAMPLED LATER
M896874	MINI GRID AROUND TECK SHOWING. FAIRLY OPEN, MIXED AGE, MODERATE HEALTH, ALDER AND SPRUCE DOMINANT	
M896875	MINI GRID AROUND TECK SHOWING. MODERATELY OPEN, MOD TO GOOD EHALTH.	
M896876	MINI GRID AROUND TECK SHOWING. BESIDE INTERMITTENT CREEK. ALDER DOMINANT. WHITE SPRUCE POOR HEALTH.	
M896877	MINI GRID AROUND TECK SHOWING. ALDER DOMINANT. CLAY AND GRAVEL UNDER SAMPLE. OPEN FOREST.	
M896878	MOD OPEN FOREST, SPRUCE DOMINANT	MINI GRID AROUND TECK SHOWING
M896879	ON SIDE OF CREEK. MOD HEALTH STAND, ALDERA ND SPRUCE STAND ON BENCH ABOVE CREEK.	

Appendix 6: Biogeochemistry – spruce bark

Laboratory methodology

MS Excel spruce bark sample database

MS Excel results from laboratory (digital only)

Assay certificate from laboratory

Contoured maps of As, Ba, Bi+Te, Co, Cr, Cu, Ni, Ni/Cu, PGE+Au and Sb distribution

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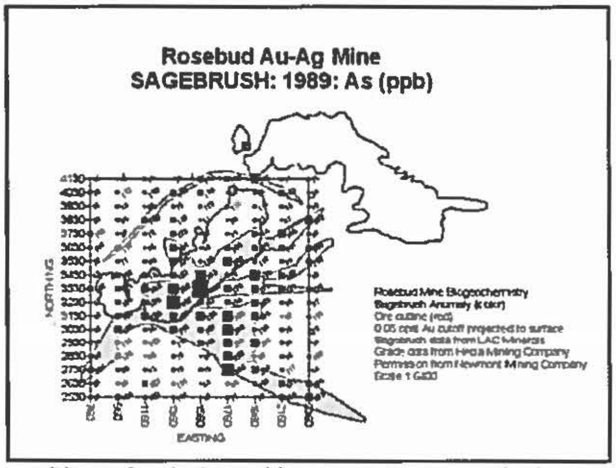
LATE DEVELOPMENTS

As the mining industry has grown globally, so has MEG. We provide the best-known and respected biogeochemical service in the Western Hemisphere, and despite added shipping costs from remote exploration frontiers, MEG receives samples from around the world. We are also the preferred subcontractor for many major N.A. laboratories (eg. ALS Chemex, Actlabs, Acme, SGS-XRAL, American Assay, Alaska Assay, Becquerel, Eco-Tech, iPL, and Skyline).
Please note our import permits:
SOIL: P330-09-00260 (Expires 12-16-2012)
VEGETATION: PDEP-07-00480 (10-4-2010)

Permit and Quarantine Stickers must be applied to the outside of all shipping containers.
Please notify MEG prior to shipping for late information on USDA import requirements.



Biogeochemical (A. tridentata), soil, and geophysical response to gold mineralization under 200 m of barren volcanics & alluvium, Rosebud Mine, Pershing Co., NV.

SAMPLE COLLECTION:

MEG is expert in survey design and sample collection. With30 years experience in varied terrains throughout N.A., we can lead you directly to success. From reconnaissance to detailed grids, we know what to do and how to get it done. We can collect several media in one traverse, giving good return for your field investment. Often, surveys cover both exposed and covered terrains and samples of just soils or vegetation alone are not enough. MEG can put one crew in the field to complete the entire geochemical survey and expedite the preparation and analysis of all your samples together. GPS, Brunton & chain control, fast and efficient collection, and coordination with the MEG Sample Preparation Laboratories for rapid return of data. We are happy to train and work with other contract or in-house crews. Bee pollen collection is also part of this infield service. Time and materials pricing. No padding.

Just honest pay for honest work.

SAMPLE PREPARATION:

MEG is Nevada's only independent full service sample preparation laboratory. This means you get the best prep, and because we work with all of the analytical labs in the industry, you get your choice of the best analysis without sacrificing one for the other. We are focused at MEG on preparing your samples cleanly, accurately, and consistently. Additionally, we are positioned to assure you unsurpassed quality since we incorporate QA/QC protocols you don't find at other laboratories. These include randomization and true-blind standards, replicates and blanks sent on for analysis. In this NI43-101 era, expert and thoughtful sample preparation is an important consideration to JV partners, stakeholders, and shareholders in your company.

And our vegetation prep equipment stands alone in the western US: Microwave dryers, Wiley Mill, Baird Pellet Press, 6 Temperature Controlled Ashing Kilns with smoke capture system. Since 1984, the vegetation lab (located 300 ft from the rock lab) has processed over 250,000 samples.

QUALITY CONTROL:

MEG Labs routinely adds standards (blind & known) to each job sent on to the analytical lab of your choice. We often randomize submittals (on your instructions, only) to monitor for systematic error during prep and analysis. A full spectrum of

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US $5.90
US $1.20

MEG LABS operates as an independent prep service to assure your geochemical samples are properly treated prior to analysis. MEG and the analytical labs will each invoice for their respective services. Data reporting is strictly proprietary, between you and the analytical laboratory. MEG is involved only to assure quality through randomization, controls, and blind standards, replicates and blanks. If you require QA/QC compilations, please refer to the services described above.

PROCEDURES

All samples are vigorously washed to thoroughly eliminate dust and other surface contaminants. Prior to washing or immediately thereafter, plant tissues can be separated to maximize chemical response and reduce variability. They are thoroughly dried in a microwave oven, and macerated to pass a 0.5mm sieve if they are to be pelletized, or a 2mm sieve if they are to be ashed. Ashed samples are submitted for either INAA, ICP/MS, ICP/OES, and/or GF/AAS analysis. Pelletized samples are analyzed by instrumental neutron activation analysis (INAA). Wet digestion of plant tissue and analysis by ICP/MS keeps prep costs low with superb metal detection.

DRY PULP / ICPMS PACKAGE:

Wash/dry/macerate/blend
& SPLIT .... US $9.55

15g PELLET PACKAGE:

Wash/dry/macerate/blend/weigh
& PELLETIZE .... US $10.95
Shrink wrap each pellet ....add US $1.90
Substitute 30 g pellet..................add US $1.90

30g ASH PACKAGE:

Wash/dry/macerate/blend/weigh
& ASH .... US $15..95
Each additional 30 g ....add US $ 5.55
Encapsulate ash for INAA ....add US $ 2.50

HUMUS PREP (Ao soils)

The preparation is designed to maximize the organic content of the sample while eliminating coarse and fine inorganics. The sample is then treated as vegetation described above. Itemized HUMUS and WEIGH charges are applied to the total prep cost.

ITEM PREP COSTS

Remove leaves & Prune.........	US $1.55
Pelletize (8 to 15 g)	US $3.90
Pelletize (30 grams)	US $5.80
Ash (40g/ 450 C)	US $5.55
Ash weight	US $1.20
Humus (see above)................	US $3.15
Duplicate Pulp	US $1.00
Randomize	US $1.20
Surcharges	US $65/hr
Rush jobs	add 50%
Shipping (UPS, etc.)	COST +$25 Handling
Veg Disposal (USDA Regulated)...	US $0.55

MEG package prices apply to 225 g (1/2 pound) vegetation and humus samples in 7 x 12 inch cloth, olefin, or finon bags.

FIELD SERVICES

Crew	US $ 295/day
Supervisor	US $ 470/day
Vehicle	US $ 0.70/mile
Expenses	Cost + 10%

HYDRO-BIOGEOCHEMICAL SURVEYS

Water quality issues can be addressed using biogeochemistry linked to ground water chemistry. See our "Consulting & Environ-mental Services Brochure". Call for details.

OTHER SERVICES

SAMPLE PREPARATION: `Rock Soil Sediment`
SURVEY & COLLECTION
GEOCHEMICAL INTERPRETATION
QUALITY ASSURANCE PROGRAMS
GEOCHEMICAL REFERENCE STANDARDS
MERCURY & RADON SOIL GAS ANALYSIS

Biogeochemistry

Plants may be viewed as geochemical sampling devices, with root systems that can selectively adsorb elements from a large 3D section of soil, groundwater and even bedrock. Typically, the relationship between the chemistry of a plant and that of the soil the plant grows in isn't one-to-one due to biological effects. The differences in element distribution and uptake in plants provide complementary information to soil surveys and may concentrate elements of interest where they are not present in soils.

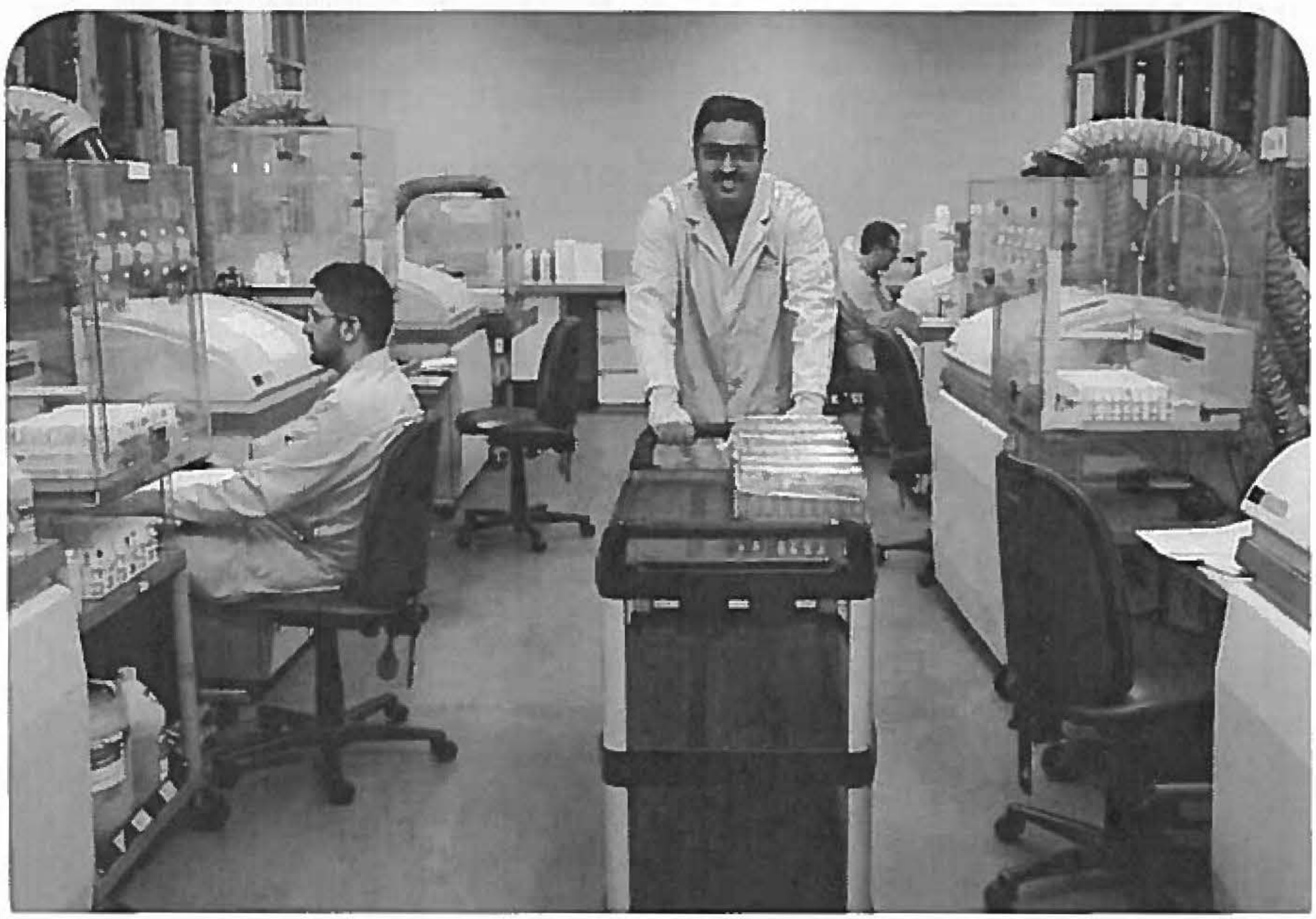
ALS Geochemistry can help you find resources on designing vegetation surveys and special preparation for various vegetation tissue types. Please contact client services for more information.

Results are reported on vegetation samples following a nitric/hydrochloric acid digestion on 1g of sample. Due to permit requirements, vegetation samples are not available for return to the client.

39 Elements in Vegetation by Nitric/Hydrochloric, ICP-AES and ICP-MS

ANALYTES & DETECTION LIMITS (ppm)								CODE	PRICE PER SAMPLE ($)
Ag	0.002	Cu	0.01	Nb	0.05	Ta	0.01	ME-VEG41	25.95 Sold only as a complete package.
Al	0.01%	Fe	0.001%	Ni	0.1	Te	0.02		
As	0.1	Ga	0.05	P	0.001%	Th	0.01		
Au	0.0002	Ge	0.05	Pb	0.01	Ti	0.001%		
B	10	Hf	0.02	Pd	0.002	Tl	0.02		
Ba	0.1	Hg	0.001	Pt	0.001	U	0.01		
Be	0.05	In	0.01	Rb	0.1	V	1		
Bi	0.01	K	0.01%	Re	0.001	W	0.05		
Ca	0.01%	La	0.01	S	0.01%	Y	0.005		
Cd	0.01	Li	0.1	Sb	0.02	Zn	0.1		
Ce	0.02	Mg	0.001%	Sc	0.1	Zr	0.1		
Co	0.01	Mn	1	Se	0.1				
Cr	0.5	Mo	0.01	Sn	0.2				
Cs	0.05	Na	0.001%	Sr	0.2				

REEs may be added on request.



SHEA CLARK SMITH
MINERALS EXPLORATION GEOCHEMISTRY
SAMPLE PREPARATION SERVICES
2235 Lakeshore Drive
Carson City, Nevada 89704
TEL: 775-849-2235
FAX: 775-849-2335

Job No: CX13008V
Company: ALS CHEMEX
Geologist: D. JAMES / S. RICE
Project/ PO #: SW YUKON / MIDNIGHT
Received: 17-SEP-2013
Completed: 23-SEP-2013
Shipped to: ALS CHEMEX (Vancouver)

NOTES FROM MEG CHEMIST:
All weights in grams. Blind QA/QC samples are indicated to client only.
Sample preparation (using the ENTIRE sample):

___ Oven Dry (50C) ___ Randomize within limits of ALS Bar Code Labels
___ Pulverize to 150 mesh = _______sec
___ (-150 mesh) into 3x5 envelope with ALS bar code
___ Store archive pulp envelope with ALS bar code
___ Store bulk reject in original bar coded ziploc

NOTE: SAMPLE L-14100 MISSING FROM SHIPMENT
SPECIES: BLACK SPUCE BARK (S) & LABRADOR TEA (L)
ALS CLIENT: MIDMIN
WORK ORDER: WH13150726
ANALYSIS: ME-VEG41

MEG SEQ	ALS SEQ	SAMPLE ID		
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s1	s2	s3	s4	
1	42	QAQC 1		STANDARD: V34 (11 ppm Cu, 1.3 Ni, 0.1 ppb Pt)
2	20	S- 12150		
3	61	S- 16550		
4	51	S- 16050		
5	47	S- 14650		
6	59	S- 16450		
7	72	S0W30S		
8	41	S- 14350		
9	24	S- 12350		
10	7	S- 10350		
11	62	S- 16600		
12	11	S- 10550		
13	91	S- 10300		
14	54	S- 16200		
15	40	S- 14300		
16	22	S- 12250		
17	50	S- 16000		
18	78	L- 14050		
19	49	S- 14800		
20	84	L- 14400		
21	94	S- 14800A		
22	68	S0E15S		
23	69	S0E		
24	18	S- 12050		
25	35	S- 14050	A	
26	44	QAQC 2		STANDARD: V32 (7 ppm Cu, 0.7 Ni)
27	58	S- 16400		
28	36	S- 14100		
29	57	S- 16350		
30	92	S- 14400S		

31	66	S0E30S	
32	13	S-10650	
33	73	S0W15S	
34	60	S-16500	
35	70	S0E15N	
36	64	S-16800	
37	95	S-16300S	
38	52	S-16100	
39	31	S-12750	
40	81	L-14200	
41	96	L-10100	
42	83	L-14350	
43	12	S-10600	
44	30	S-12650	
45	65	QAQC 3	STANDARD: V34 (11 ppm Cu, 1.3 Ni, 0.1 ppb Pt)
46	98	L-14450	
47	76	S0W30N	
48	55	S-16250	
49	53	S-16150	
50	97	L-14300	
51	93	S-14500S	
52	82	L-14250	
53	1	S-10000	
54	10	S-10500	
55	2	S-10050	
56	34	S-14050	
57	86	L-14550	
58	77	L-14000	
59	74	S0W	
60	67	S0E30S A	
61	5	S-10200	
62	23	S-12300	
63	43	S-14450	
64	16	S-10800	
65	46	S-14600	
66	15	S-10700 A	
67	39	S-14250	
68	45	S-14550	
69	63	S-16650	
70	6	S-10250	
71	4	S-10150	
72	3	S-10100	
73	71	S0E30N	
74	19	S-12100	
75	8	S-10400	
76	88	L-L0E	
77	25	S-12400	
78	85	L-14500	
79	29	S-12600	
80	17	S-12000	
81	27	S-12500	
82	32	S-12800	
83	56	QAQC 4	STANDARD: V32 (7 ppm Cu, 0.7 Ni)
84	33	S-14000	
85	90	L-L0W15S	
86	26	S-12450	
87	21	S-12200	
88	28	S-12550	
89	89	L-L0E15N	

90	80	L- 14150	
91	48	S- 14700	
92	38	S- 14200	
93	75	S0W15N	
94	14	S- 10700	
95	87	L- L0E15S	
96	9	S- 10450	
97	37	S- 14150	
98	79	QAQC 5	STANDARD: V34 (11 ppm Cu, 1.3 Ni, 0.1 ppb Pt)

ALS Minerals
ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

CERTIFICATE WH13170902

Project: Arch
P.O. No.: VEG- 01
This report is for 98 Vegetation samples submitted to our lab in Whitehorse, YT, Canada on 24- SEP- 2013.
The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND- 02	Find Sample for Addn Analysis

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME- VEG41	Vegetation - HNO3/HCl ICPAES- ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Au ppm 0.0002	ME-VEG41 Pd ppm 0.001	ME-VEG41 Pt ppm 0.001	ME-VEG41 Ag ppm 0.001	ME-VEG41 Al % 0.01	ME-VEG41 As ppm 0.05	ME-VEG41 B ppm 10	ME-VEG41 Ba ppm 0.1	ME-VEG41 Be ppm 0.01	ME-VEG41 Bi ppm 0.001	ME-VEG41 Ca % 0.01	ME-VEG41 Cd ppm 0.002	ME-VEG41 Ce ppm 0.003	ME-VEG41 Co ppm 0.002	ME-VEG41 Cr ppm 0.5
S10000		<0.0002	<0.001	<0.001	0.008	0.01	0.22	50	23.6	<0.01	0.007	0.74	0.177	0.734	0.103	<0.5
S10050		0.0003	0.001	0.001	0.015	0.01	0.25	20	188.5	0.01	0.003	1.36	0.023	0.630	0.328	<0.5
S10100		0.0004	<0.001	0.001	0.011	0.02	0.32	30	164.5	<0.01	0.007	1.63	0.050	1.015	0.509	<0.5
S10150		<0.0002	<0.001	0.001	0.021	0.02	0.25	20	106.5	0.01	0.006	1.15	0.041	0.869	0.387	<0.5
S10200		<0.0002	0.001	0.001	0.010	0.02	0.18	30	209	0.01	0.006	1.41	0.040	1.080	0.505	1.5
S10250		<0.0002	<0.001	<0.001	0.013	0.01	0.16	20	179.0	0.01	0.009	1.43	0.030	1.775	0.255	0.9
S10350		<0.0002	0.001	0.002	0.012	0.01	0.26	20	99.3	<0.01	0.012	1.00	0.025	2.54	0.245	0.7
S10400		<0.0002	<0.001	<0.001	0.010	0.03	0.31	20	104.5	0.01	0.007	1.14	0.032	1.195	0.375	1.5
S10450		<0.0002	0.001	<0.001	0.018	0.02	0.31	10	100.5	0.01	0.006	0.95	0.024	1.260	0.354	1.1
S10500		0.0002	<0.001	0.001	0.016	0.03	0.34	<10	67.0	0.01	0.006	1.07	0.027	1.270	0.459	2.2
S10550		<0.0002	0.001	<0.001	0.024	0.04	0.54	10	197.5	0.02	0.009	1.54	0.040	1.905	0.591	2.8
S10600		<0.0002	0.001	0.002	0.025	0.03	0.40	10	204	0.01	0.006	1.86	0.046	1.265	0.558	1.7
S10650		<0.0002	<0.001	0.002	0.018	0.02	0.25	10	136.5	0.01	0.005	1.69	0.022	0.879	0.304	1.1
S10700		0.0002	0.001	0.001	0.051	0.02	0.21	10	197.0	0.01	0.007	1.61	0.040	1.640	0.461	1.1
S10700A		<0.0002	<0.001	0.001	0.014	0.03	0.50	20	182.5	0.01	0.008	1.29	0.058	1.390	0.715	<0.5
S10800		0.0006	<0.001	<0.001	0.014	0.01	0.22	20	151.5	0.01	0.004	1.05	0.028	0.638	0.366	<0.5
S12000		<0.0002	0.001	<0.001	0.042	0.01	0.23	20	192.0	0.01	0.007	0.92	0.022	1.310	0.298	<0.5
S12050		<0.0002	<0.001	<0.001	0.004	0.01	0.21	30	87.4	<0.01	0.008	0.50	0.009	1.325	0.244	<0.5
S12100		<0.0002	<0.001	0.001	0.011	0.01	0.18	20	99.9	<0.01	0.006	1.09	0.016	0.937	0.301	<0.5
S12150		<0.0002	<0.001	0.001	0.005	0.01	0.18	20	62.5	<0.01	0.011	0.54	0.005	1.875	0.261	<0.5
S12200		<0.0002	<0.001	<0.001	0.009	0.01	0.15	20	111.0	<0.01	0.006	1.14	0.015	0.830	0.286	<0.5
S12250		0.0002	0.001	<0.001	0.032	0.04	0.58	20	95.9	0.01	0.009	1.34	0.053	1.665	0.667	1.3
S12300		0.0003	<0.001	<0.001	0.037	0.01	0.16	20	86.9	0.01	0.006	1.07	0.016	0.871	0.309	<0.5
S12350		<0.0002	0.001	0.001	0.020	0.04	0.55	20	151.5	0.02	0.008	1.87	0.044	1.345	0.548	<0.5
S12400		<0.0002	0.001	<0.001	0.034	0.03	0.33	20	273	0.01	0.010	1.09	0.040	1.850	0.555	<0.5
S12450		0.0002	<0.001	<0.001	0.005	0.01	0.47	50	16.5	0.01	0.007	0.53	0.251	0.859	0.135	<0.5
S12500		0.0003	0.001	0.001	0.019	0.02	0.24	20	177.0	0.01	0.008	1.31	0.041	1.285	0.384	<0.5
S12550		0.0003	<0.001	0.002	0.046	0.02	0.35	20	119.0	0.01	0.006	1.07	0.046	0.866	0.521	1.7
S12600		<0.0002	<0.001	<0.001	0.018	0.02	0.27	20	160.0	0.01	0.007	1.11	0.029	1.065	0.389	<0.5
S12650		0.0006	<0.001	0.001	0.014	0.03	0.34	20	98.3	0.01	0.006	0.99	0.036	1.220	0.463	<0.5
S12750		<0.0002	0.001	<0.001	0.016	0.03	0.38	20	137.0	0.01	0.010	1.45	0.038	1.885	0.532	<0.5
S12800		0.0003	<0.001	<0.001	0.015	0.02	0.30	20	89.9	0.01	0.008	1.08	0.016	1.285	0.387	<0.5
S14000		<0.0002	<0.001	0.002	0.011	0.02	0.22	30	116.0	<0.01	0.005	1.24	0.021	1.065	0.354	1.3
S14050		0.0002	<0.001	<0.001	0.012	0.02	0.21	10	77.9	0.01	0.006	0.94	0.027	1.120	0.362	1.2
S14050A		<0.0002	0.002	<0.001	0.021	0.01	0.24	10	117.0	0.01	0.011	1.21	0.032	1.900	0.349	1.1
S14100		<0.0002	0.001	<0.001	0.007	0.01	0.30	20	305	<0.01	0.009	1.25	0.018	1.750	0.254	0.7
S14150		<0.0002	<0.001	<0.001	0.017	0.02	0.31	10	143.0	0.01	0.007	1.05	0.030	1.320	0.311	1.0
S14200		<0.0002	0.001	<0.001	0.008	0.02	0.29	10	188.0	0.01	0.013	1.18	0.025	2.29	0.400	1.2
S14250		<0.0002	0.001	<0.001	0.013	0.03	0.39	10	146.5	0.01	0.010	1.33	0.036	1.770	0.467	1.0
S14300		<0.0002	<0.001	<0.001	0.004	0.01	0.20	10	103.0	<0.01	0.010	0.61	0.007	1.890	0.155	1.2

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41
	Analyte	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	In	K	La
	Units	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOR	0.005	0.01	0.005	0.003	0.003	0.001	0.01	0.005	0.005	0.002	0.001	0.001	0.005	0.01	0.002
S10000		0.037	9.02	0.017	0.008	0.011	0.049	0.05	0.035	0.018	0.006	0.017	0.003	<0.005	1.39	0.413
S10050		0.019	3.56	0.027	0.015	0.010	0.057	0.05	0.036	0.009	0.006	0.034	0.005	<0.005	0.09	0.350
S10100		0.032	4.05	0.049	0.019	0.019	0.090	0.08	0.065	0.017	0.007	0.057	0.008	<0.005	0.12	0.539
S10150		0.025	3.67	0.041	0.021	0.015	0.075	0.08	0.059	0.017	0.007	0.027	0.007	<0.005	0.05	0.462
S10200		0.020	4.43	0.034	0.018	0.021	0.055	0.06	0.062	0.011	0.005	0.034	0.005	<0.005	0.14	0.618
S10250		0.016	3.94	0.047	0.017	0.032	0.044	0.06	0.096	<0.005	0.002	0.013	0.007	<0.005	0.08	0.978
S10350		0.017	4.83	0.057	0.016	0.049	0.047	0.06	0.123	<0.005	0.002	0.031	0.008	<0.005	0.16	1.420
S10400		0.044	3.60	0.059	0.029	0.025	0.122	0.11	0.084	0.006	0.006	0.034	0.010	<0.005	0.08	0.627
S10450		0.025	4.43	0.044	0.020	0.024	0.092	0.09	0.076	<0.005	0.005	0.040	0.008	<0.005	0.09	0.672
S10500		0.038	7.57	0.054	0.031	0.025	0.099	0.11	0.074	<0.005	0.008	0.063	0.010	<0.005	0.08	0.618
S10550		0.049	5.03	0.082	0.044	0.034	0.132	0.15	0.123	0.008	0.010	0.043	0.015	<0.005	0.08	0.944
S10600		0.041	5.82	0.067	0.036	0.027	0.105	0.12	0.096	0.007	0.009	0.024	0.013	<0.005	0.12	0.631
S10650		0.017	4.66	0.036	0.018	0.014	0.085	0.08	0.055	<0.005	0.002	0.033	0.006	<0.005	0.10	0.441
S10700		0.024	4.38	0.049	0.024	0.026	0.112	0.10	0.077	0.015	0.003	0.043	0.008	<0.005	0.07	0.835
S10700A		0.035	5.96	0.067	0.033	0.028	0.120	0.12	0.098	0.026	0.010	0.069	0.012	<0.005	0.32	0.755
S10800		0.012	3.69	0.027	0.013	0.013	0.072	0.06	0.042	0.009	0.005	0.039	0.005	<0.005	0.14	0.341
S12000		0.020	6.21	0.033	0.015	0.020	0.087	0.08	0.065	0.013	0.007	0.029	0.006	<0.005	0.06	0.712
S12050		0.025	5.48	0.022	0.009	0.023	0.143	0.09	0.060	0.020	0.004	0.008	0.003	<0.005	0.54	0.735
S12100		0.024	3.87	0.025	0.008	0.016	0.075	0.06	0.047	0.012	0.005	0.019	0.004	<0.005	0.21	0.516
S12150		0.029	6.53	0.028	0.009	0.024	0.136	0.10	0.081	0.023	0.005	0.008	0.003	<0.005	0.57	1.030
S12200		0.022	3.74	0.020	0.011	0.014	0.056	0.06	0.042	0.009	0.005	0.020	0.004	<0.005	0.18	0.465
S12250		0.078	6.95	0.077	0.033	0.031	0.233	0.17	0.102	0.032	0.009	0.024	0.013	<0.005	0.08	0.898
S12300		0.033	4.10	0.027	0.012	0.014	0.072	0.08	0.048	0.019	0.005	0.016	0.004	<0.005	0.08	0.493
S12350		0.062	4.63	0.076	0.035	0.031	0.120	0.15	0.099	0.017	0.011	0.034	0.016	<0.005	0.05	0.725
S12400		0.032	5.20	0.060	0.031	0.033	0.118	0.13	0.102	0.022	0.010	0.039	0.011	<0.005	0.08	1.025
S12450		0.081	7.84	0.026	0.010	0.013	0.040	0.06	0.049	0.020	0.005	0.023	0.004	<0.005	1.13	0.508
S12500		0.031	4.46	0.051	0.021	0.025	0.084	0.08	0.079	0.016	0.007	0.032	0.008	<0.005	0.10	0.719
S12550		0.026	5.88	0.035	0.017	0.016	0.066	0.08	0.061	0.028	0.006	0.017	0.006	<0.005	0.20	0.471
S12600		0.028	4.35	0.049	0.021	0.018	0.075	0.08	0.075	0.012	0.007	0.030	0.008	<0.005	0.09	0.565
S12650		0.037	4.79	0.058	0.030	0.023	0.093	0.12	0.083	0.017	0.006	0.022	0.010	<0.005	0.09	0.644
S12750		0.033	6.25	0.076	0.030	0.034	0.146	0.13	0.110	0.023	0.009	0.030	0.012	<0.005	0.07	1.010
S12800		0.032	5.35	0.051	0.024	0.024	0.075	0.09	0.077	0.015	0.007	0.026	0.010	<0.005	0.12	0.718
S14000		0.020	4.21	0.033	0.015	0.017	0.086	0.07	0.055	0.015	0.004	0.021	0.005	<0.005	0.06	0.556
S14050		0.030	6.29	0.039	0.018	0.018	0.116	0.09	0.062	<0.005	0.004	0.027	0.006	<0.005	0.10	0.586
S14050A		0.019	4.22	0.047	0.018	0.028	0.076	0.08	0.084	0.006	0.002	0.032	0.007	<0.005	0.17	0.993
S14100		0.015	4.71	0.036	0.014	0.030	0.068	0.06	0.083	<0.005	0.002	0.041	0.005	<0.005	0.24	0.952
S14150		0.021	3.67	0.045	0.021	0.026	0.066	0.08	0.071	<0.005	0.004	0.022	0.008	<0.005	0.06	0.716
S14200		0.021	3.85	0.057	0.024	0.041	0.102	0.10	0.119	<0.005	0.006	0.030	0.010	<0.005	0.11	1.235
S14250		0.032	5.05	0.065	0.030	0.034	0.088	0.11	0.109	0.005	0.005	0.023	0.011	<0.005	0.14	0.944
S14300		0.024	5.37	0.033	0.008	0.031	0.075	0.08	0.086	<0.005	0.002	0.006	0.005	<0.005	0.50	1.045

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method Analyte Units LOR	ME- VEG41 Li ppm 0.1	ME- VEG41 Lu ppm 0.001	ME- VEG41 Mg % 0.001	ME- VEG41 Mn ppm 1	ME- VEG41 Mo ppm 0.01	ME- VEG41 Na % 0.001	ME- VEG41 Nb ppm 0.002	ME- VEG41 Nd ppm 0.001	ME- VEG41 Ni ppm 0.04	ME- VEG41 P % 0.001	ME- VEG41 Pb ppm 0.01	ME- VEG41 Pr ppm 0.003	ME- VEG41 Rb ppm 0.01	ME- VEG41 Re ppm 0.001	ME- VEG41 S % 0.01
S10000		1.1	0.001	0.166	66	0.96	0.367	0.035	0.337	1.47	0.215	0.43	0.081	2.02	0.002	0.47
S10050		0.1	0.002	0.076	64	0.10	0.457	0.040	0.286	1.61	0.010	0.19	0.070	0.82	<0.001	0.43
S10100		0.2	0.003	0.068	65	0.12	0.315	0.055	0.466	3.30	0.016	0.30	0.118	1.01	<0.001	0.30
S10150		0.2	0.003	0.060	55	0.12	0.340	0.056	0.404	2.11	0.011	0.25	0.100	0.64	<0.001	0.33
S10200		0.2	0.002	0.075	106	0.12	0.464	0.038	0.487	6.63	0.011	0.23	0.125	0.98	<0.001	0.44
S10250		0.1	0.002	0.055	81	0.10	0.143	0.074	0.722	0.92	0.010	0.29	0.188	0.75	<0.001	0.14
S10350		0.2	0.002	0.058	48	0.10	0.105	0.077	0.967	0.69	0.014	0.48	0.264	0.86	<0.001	0.10
S10400		0.3	0.004	0.056	54	0.21	0.070	0.098	0.535	1.31	0.016	0.31	0.135	1.53	<0.001	0.06
S10450		0.2	0.003	0.056	51	0.11	0.051	0.083	0.556	1.10	0.014	0.31	0.138	0.74	<0.001	0.04
S10500		0.3	0.004	0.065	38	0.15	0.159	0.080	0.543	2.20	0.019	0.31	0.139	0.93	<0.001	0.15
S10550		0.4	0.006	0.079	59	0.16	0.196	0.111	0.806	2.65	0.017	0.40	0.215	0.91	<0.001	0.19
S10600		0.3	0.005	0.080	80	0.18	0.063	0.082	0.558	2.09	0.015	0.27	0.141	1.38	<0.001	0.06
S10650		0.2	0.002	0.058	39	0.13	0.012	0.058	0.364	0.94	0.015	0.22	0.096	0.56	<0.001	0.01
S10700		0.2	0.003	0.059	68	0.14	<0.001	0.083	0.673	1.14	0.010	0.43	0.178	0.59	<0.001	<0.01
S10700A		0.3	0.004	0.077	91	0.20	0.431	0.102	0.660	3.10	0.018	0.34	0.163	1.94	<0.001	0.41
S10800		0.1	0.002	0.059	59	0.23	0.423	0.047	0.291	2.76	0.010	0.20	0.072	0.89	<0.001	0.40
S12000		0.2	0.002	0.051	73	0.12	0.277	0.067	0.561	1.76	0.011	0.31	0.145	0.69	<0.001	0.25
S12050		0.1	0.002	0.136	307	0.37	0.443	0.088	0.549	2.38	0.140	0.23	0.149	8.69	<0.001	0.49
S12100		0.1	0.001	0.055	51	0.10	0.400	0.055	0.416	1.90	0.010	0.19	0.105	1.36	<0.001	0.37
S12150		0.1	0.001	0.127	422	0.39	0.304	0.098	0.803	2.72	0.145	0.29	0.197	7.99	<0.001	0.39
S12200		0.1	0.001	0.052	46	0.09	0.422	0.042	0.344	2.15	0.010	0.16	0.092	1.28	<0.001	0.39
S12250		0.3	0.005	0.073	76	0.40	0.386	0.179	0.734	4.08	0.020	0.38	0.199	1.41	<0.001	0.37
S12300		0.2	0.002	0.053	72	0.10	0.425	0.056	0.394	2.58	0.011	0.16	0.101	0.87	<0.001	0.40
S12350		0.4	0.006	0.093	60	0.21	0.356	0.109	0.637	2.90	0.020	0.34	0.162	1.38	<0.001	0.34
S12400		0.2	0.004	0.059	51	0.15	0.402	0.097	0.839	2.42	0.013	0.44	0.215	0.81	<0.001	0.38
S12450		0.8	0.002	0.127	47	1.13	0.339	0.030	0.377	2.04	0.174	0.46	0.095	1.89	0.002	0.40
S12500		0.2	0.003	0.058	74	0.14	0.289	0.074	0.591	1.67	0.011	0.26	0.157	0.93	<0.001	0.26
S12550		0.2	0.003	0.059	69	0.13	0.289	0.046	0.387	1.97	0.008	0.27	0.104	1.19	<0.001	0.26
S12600		0.2	0.003	0.061	70	0.13	0.332	0.056	0.481	1.69	0.012	0.30	0.115	1.12	<0.001	0.31
S12650		0.3	0.003	0.062	61	0.11	0.326	0.066	0.552	2.04	0.012	0.29	0.140	1.22	<0.001	0.32
S12750		0.2	0.004	0.094	78	0.24	0.377	0.104	0.869	2.75	0.015	0.43	0.219	0.53	<0.001	0.36
S12800		0.2	0.004	0.055	46	0.13	0.375	0.071	0.580	1.85	0.011	0.24	0.148	0.90	<0.001	0.35
S14000		0.1	0.002	0.049	36	0.11	0.039	0.055	0.452	1.91	0.014	0.21	0.113	0.48	<0.001	0.03
S14050		0.2	0.002	0.049	40	0.12	0.047	0.084	0.474	1.03	0.013	0.22	0.124	1.00	<0.001	0.05
S14050A		0.2	0.002	0.064	66	0.16	0.106	0.080	0.724	1.15	0.012	0.30	0.197	0.99	<0.001	0.11
S14100		0.1	0.001	0.047	51	0.09	0.089	0.071	0.690	0.85	0.014	0.26	0.184	1.10	<0.001	0.09
S14150		0.2	0.002	0.050	55	0.11	0.084	0.054	0.564	1.06	0.009	0.26	0.146	0.48	<0.001	0.08
S14200		0.2	0.002	0.058	64	0.12	0.137	0.101	0.965	1.16	0.009	0.41	0.243	0.78	<0.001	0.13
S14250		0.3	0.004	0.076	61	0.15	0.083	0.081	0.755	1.43	0.013	0.36	0.187	1.19	<0.001	0.08
S14300		0.1	0.001	0.141	267	0.17	0.065	0.067	0.772	1.22	0.148	0.26	0.201	7.04	<0.001	0.14

***** See Appendix Page for comments regarding this certificate *****

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To: MIDNIGHT MINING SERVICES
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WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description / Method / Analyte / Units / LOR	ME- VEG41 Sb ppm 0.02	ME- VEG41 Sc ppm 0.01	ME- VEG41 Se ppm 0.1	ME- VEG41 Sm ppm 0.003	ME- VEG41 Sn ppm 0.01	ME- VEG41 Sr ppm 0.02	ME- VEG41 Ta ppm 0.005	ME- VEG41 Tb ppm 0.001	ME- VEG41 Te ppm 0.02	ME- VEG41 Th ppm 0.002	ME- VEG41 Ti % 0.001	ME- VEG41 Tl ppm 0.002	ME- VEG41 Tm ppm 0.001	ME- VEG41 U ppm 0.005	ME- VEG41 V ppm 1
S10000	0.02	0.03	0.1	0.061	0.08	38.6	<0.005	0.003	<0.02	0.061	<0.001	0.004	0.001	0.011	<1
S10050	0.03	0.03	<0.1	0.055	0.05	58.7	<0.005	0.005	<0.02	0.057	0.001	0.004	0.002	0.015	<1
S10100	0.05	0.06	<0.1	0.076	0.06	47.4	<0.005	0.008	<0.02	0.080	0.001	0.005	0.004	0.025	1
S10150	0.04	0.06	<0.1	0.064	0.04	39.4	<0.005	0.007	<0.02	0.094	0.001	0.004	0.003	0.024	1
S10200	0.04	0.05	<0.1	0.101	0.06	70.1	<0.005	0.007	<0.02	0.077	0.001	0.004	0.002	0.022	<1
S10250	0.04	0.04	<0.1	0.140	0.08	47.1	<0.005	0.011	<0.02	0.176	0.001	0.006	0.002	0.024	<1
S10350	0.03	0.03	0.1	0.186	0.08	38.7	<0.005	0.013	0.02	0.224	0.001	0.005	0.002	0.035	<1
S10400	0.06	0.11	<0.1	0.105	0.05	38.2	<0.005	0.009	<0.02	0.105	0.002	0.007	0.004	0.035	1
S10450	0.04	0.06	0.2	0.099	0.14	34.8	<0.005	0.009	<0.02	0.119	0.001	0.004	0.003	0.026	1
S10500	0.05	0.09	<0.1	0.105	0.04	36.5	<0.005	0.011	<0.02	0.121	0.002	0.005	0.003	0.036	1
S10550	0.07	0.14	0.1	0.156	0.05	63.0	<0.005	0.015	<0.02	0.159	0.003	0.008	0.006	0.048	2
S10600	0.06	0.12	0.1	0.119	0.06	79.4	<0.005	0.014	<0.02	0.111	0.002	0.009	0.005	0.041	1
S10650	0.03	0.06	<0.1	0.069	0.06	57.3	<0.005	0.007	<0.02	0.060	0.001	0.003	0.003	0.019	1
S10700	0.04	0.07	<0.1	0.111	0.08	62.4	<0.005	0.010	<0.02	0.121	0.001	0.007	0.003	0.033	1
S10700A	0.06	0.09	<0.1	0.119	0.06	54.5	<0.005	0.012	<0.02	0.119	0.002	0.006	0.005	0.053	1
S10800	0.03	0.04	<0.1	0.053	0.07	49.4	<0.005	0.005	0.02	0.054	0.001	0.004	0.002	0.018	<1
S12000	0.03	0.03	<0.1	0.099	0.07	54.1	<0.005	0.007	<0.02	0.092	0.001	0.005	0.002	0.020	1
S12050	0.09	0.02	<0.1	0.111	0.30	9.52	<0.005	0.007	<0.02	0.100	<0.001	0.005	0.001	0.015	<1
S12100	0.03	0.03	<0.1	0.076	0.06	29.5	<0.005	0.005	<0.02	0.077	0.001	0.002	0.001	0.015	<1
S12150	0.10	0.03	<0.1	0.142	0.30	7.77	<0.005	0.008	<0.02	0.167	<0.001	0.021	0.001	0.023	<1
S12200	0.03	0.04	<0.1	0.058	0.04	31.1	<0.005	0.005	<0.02	0.064	0.001	0.002	0.001	0.012	<1
S12250	0.07	0.10	<0.1	0.150	0.07	48.5	<0.005	0.013	<0.02	0.130	0.002	0.007	0.006	0.040	1
S12300	0.04	0.03	<0.1	0.064	0.07	30.9	<0.005	0.005	<0.02	0.077	0.001	0.004	0.002	0.015	<1
S12350	0.07	0.14	<0.1	0.134	0.06	56.2	<0.005	0.014	<0.02	0.126	0.003	0.008	0.006	0.040	1
S12400	0.06	0.11	<0.1	0.160	0.07	56.2	<0.005	0.012	<0.02	0.142	0.002	0.006	0.004	0.035	1
S12450	0.04	0.03	<0.1	0.066	0.10	47.1	<0.005	0.004	<0.02	0.052	<0.001	0.006	0.001	0.013	<1
S12500	0.05	0.06	<0.1	0.108	0.05	54.8	<0.005	0.010	<0.02	0.114	0.001	0.005	0.003	0.025	1
S12550	0.05	0.08	<0.1	0.069	0.05	45.9	<0.005	0.007	<0.02	0.083	0.001	0.005	0.002	0.025	1
S12600	0.06	0.07	<0.1	0.096	0.05	54.4	<0.005	0.009	<0.02	0.093	0.001	0.004	0.003	0.030	1
S12650	0.05	0.11	<0.1	0.113	0.06	31.0	<0.005	0.010	<0.02	0.105	0.002	0.006	0.004	0.036	1
S12750	0.06	0.10	<0.1	0.168	0.10	50.7	<0.005	0.013	0.02	0.152	0.002	0.006	0.005	0.033	1
S12800	0.05	0.07	<0.1	0.106	0.07	32.7	<0.005	0.009	<0.02	0.111	0.002	0.004	0.003	0.038	1
S14000	0.03	0.07	0.2	0.081	0.06	31.0	<0.005	0.006	<0.02	0.078	0.001	0.003	0.002	0.017	1
S14050	0.05	0.06	<0.1	0.082	0.06	26.0	<0.005	0.007	<0.02	0.089	0.001	0.003	0.002	0.023	1
S14050A	0.05	0.05	<0.1	0.139	0.08	43.7	<0.005	0.010	<0.02	0.130	0.001	0.005	0.002	0.029	1
S14100	0.03	0.03	0.1	0.124	0.07	38.0	<0.005	0.008	<0.02	0.121	0.001	0.002	0.002	0.021	1
S14150	0.05	0.07	<0.1	0.104	0.10	41.1	<0.005	0.010	<0.02	0.105	0.001	0.004	0.002	0.027	1
S14200	0.05	0.07	<0.1	0.176	0.13	56.6	<0.005	0.013	<0.02	0.171	0.001	0.004	0.004	0.036	1
S14250	0.06	0.10	<0.1	0.152	0.07	37.2	<0.005	0.012	<0.02	0.145	0.002	0.005	0.004	0.037	1
S14300	0.08	0.03	<0.1	0.138	0.20	11.15	<0.005	0.009	<0.02	0.103	0.001	0.006	0.001	0.018	<1

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 W ppm 0.01	ME-VEG41 Y ppm 0.003	ME-VEG41 Yb ppm 0.003	ME-VEG41 Zn ppm 0.1	ME-VEG41 Zr ppm 0.02
S10000		0.25	0.079	0.006	21.9	0.16
S10050		0.12	0.128	0.011	65.2	0.16
S10100		0.09	0.228	0.021	85.9	0.23
S10150		0.15	0.204	0.021	99.7	0.22
S10200		0.11	0.191	0.018	103.5	0.16
S10250		0.14	0.187	0.012	136.5	0.13
S10350		0.08	0.203	0.013	96.5	0.10
S10400		0.16	0.292	0.025	50.9	0.24
S10450		0.11	0.205	0.020	81.4	0.18
S10500		0.10	0.291	0.023	61.8	0.28
S10550		0.08	0.457	0.034	51.1	0.35
S10600		0.08	0.360	0.034	60.4	0.32
S10650		0.05	0.189	0.017	61.6	0.15
S10700		0.11	0.224	0.020	83.5	0.22
S10700A		0.12	0.330	0.029	72.2	0.34
S10800		0.10	0.138	0.011	87.8	0.15
S12000		0.08	0.161	0.013	135.0	0.17
S12050		0.04	0.078	0.007	31.1	0.13
S12100		0.08	0.119	0.009	64.1	0.13
S12150		0.04	0.101	0.007	27.0	0.15
S12200		0.05	0.110	0.009	64.8	0.15
S12250		0.10	0.372	0.034	63.1	0.35
S12300		0.05	0.129	0.008	78.1	0.16
S12350		0.07	0.408	0.038	62.1	0.37
S12400		0.14	0.310	0.026	78.2	0.30
S12450		0.20	0.104	0.006	18.1	0.18
S12500		0.09	0.236	0.019	112.0	0.18
S12550		0.19	0.204	0.016	73.8	0.22
S12600		0.13	0.217	0.019	93.7	0.21
S12650		0.09	0.293	0.024	60.2	0.27
S12750		0.08	0.344	0.030	127.5	0.29
S12800		0.07	0.261	0.021	78.6	0.23
S14000		0.06	0.180	0.012	66.4	0.11
S14050		0.07	0.175	0.015	41.7	0.16
S14050A		0.10	0.198	0.015	60.0	0.15
S14100		0.06	0.147	0.010	116.0	0.13
S14150		0.12	0.220	0.021	76.2	0.16
S14200		0.09	0.271	0.023	80.1	0.21
S14250		0.10	0.320	0.031	58.5	0.23
S14300		0.04	0.134	0.008	34.6	0.07

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method Analyte Units LOR	ME- VEG41 Au ppm 0.0002	ME- VEG41 Pd ppm 0.001	ME- VEG41 Pt ppm 0.001	ME- VEG41 Ag ppm 0.001	ME- VEG41 Al % 0.01	ME- VEG41 As ppm 0.05	ME- VEG41 B ppm 10	ME- VEG41 Ba ppm 0.1	ME- VEG41 Be ppm 0.01	ME- VEG41 Bi ppm 0.001	ME- VEG41 Ca % 0.01	ME- VEG41 Cd ppm 0.002	ME- VEG41 Ce ppm 0.003	ME- VEG41 Co ppm 0.002	ME- VEG41 Cr ppm 0.5
S14350		<0.0002	0.001	<0.001	0.008	0.01	0.26	30	114.0	0.01	0.017	0.61	0.009	3.81	0.120	0.8
S14400		<0.0002	<0.001	<0.001	0.003	0.01	0.10	10	94.0	<0.01	0.008	0.49	0.004	1.340	0.123	0.8
S14450		0.0003	<0.001	<0.001	0.045	0.06	0.82	10	203	0.02	0.014	1.87	0.059	2.58	0.801	2.1
S14500		<0.0002	0.001	<0.001	0.014	0.02	0.29	20	154.5	0.01	0.006	1.72	0.034	0.968	0.394	0.9
S14550		0.0004	<0.001	<0.001	0.006	0.01	0.21	50	24.2	<0.01	0.006	0.74	0.191	0.874	0.098	0.6
S14600		<0.0002	<0.001	<0.001	0.008	0.01	0.15	10	133.0	<0.01	0.006	0.76	0.012	0.740	0.144	0.6
S14650		<0.0002	0.001	<0.001	0.005	0.02	0.29	10	111.0	0.01	0.004	1.29	0.031	0.602	0.381	0.6
S14700		<0.0002	0.002	<0.001	0.068	0.03	0.32	10	226	0.01	0.007	1.64	0.047	1.080	0.458	1.0
S14800		<0.0002	<0.001	<0.001	0.024	0.02	0.33	10	156.0	0.01	0.006	1.23	0.036	0.857	0.355	0.8
S16000		<0.0002	<0.001	<0.001	0.010	0.01	0.11	20	158.0	<0.01	0.007	0.81	0.009	1.040	0.129	0.6
S16050		<0.0002	<0.001	<0.001	0.011	0.02	0.24	10	241	0.01	0.010	1.30	0.042	1.350	0.317	1.6
S16100		<0.0002	<0.001	<0.001	0.004	0.01	0.18	10	124.0	<0.01	0.006	0.60	0.009	0.839	0.189	1.0
S16150		0.0002	0.002	<0.001	0.014	0.03	0.48	10	224	0.01	0.006	1.73	0.064	0.986	0.520	1.4
S16200		<0.0002	<0.001	<0.001	0.019	0.03	0.34	10	82.1	0.01	0.005	1.38	0.035	1.000	0.803	1.9
S16250		<0.0002	0.001	<0.001	0.017	0.04	0.46	<10	158.5	0.01	0.008	1.28	0.047	1.320	0.455	1.3
S16300		0.0002	0.001	<0.001	0.036	0.02	0.31	10	348	0.01	0.005	1.23	0.039	0.847	0.403	1.0
S16350		<0.0002	<0.001	<0.001	0.004	0.01	0.23	10	124.5	<0.01	0.007	0.60	0.011	1.120	0.220	1.1
S16400		<0.0002	<0.001	<0.001	0.003	0.01	0.14	20	85.0	<0.01	0.009	0.55	0.011	0.724	0.097	0.6
S16450		<0.0002	<0.001	<0.001	0.019	0.03	0.30	10	127.5	0.01	0.005	1.27	0.031	0.867	0.560	1.4
S16500		<0.0002	0.002	<0.001	0.015	0.02	0.30	10	144.5	0.01	0.008	1.51	0.045	1.305	0.423	1.0
S16550		0.0002	<0.001	<0.001	0.012	0.03	0.37	10	171.5	0.01	0.007	1.53	0.039	1.515	0.512	1.2
S16600		<0.0002	0.001	<0.001	0.026	0.01	0.26	10	141.5	0.01	0.006	1.03	0.033	0.764	0.282	0.5
S16650		<0.0002	<0.001	0.002	0.016	0.02	0.21	<10	111.0	<0.01	0.005	0.90	0.031	0.817	0.280	0.6
S16800		0.0002	0.001	<0.001	0.010	0.03	0.36	<10	110.5	0.01	0.005	1.56	0.026	1.010	0.391	0.9
S16800A		<0.0002	<0.001	<0.001	0.026	0.05	0.55	<10	117.0	0.01	0.008	1.68	0.038	1.925	0.680	2.3
S0E30S		<0.0002	<0.001	0.001	0.048	0.03	0.38	<10	119.5	0.01	0.006	1.42	0.045	1.120	0.458	1.1
S0E30SA		<0.0002	<0.001	<0.001	0.025	0.04	0.52	<10	226	0.01	0.007	1.57	0.050	1.250	0.505	1.4
S0E15S		0.0002	<0.001	<0.001	0.032	0.02	0.35	10	215	<0.01	0.004	1.63	0.041	0.681	0.241	0.8
S0E		0.0006	0.001	0.004	0.019	0.02	0.32	30	117.5	0.01	0.005	1.18	0.031	0.883	0.368	0.7
S0E15N		0.0003	<0.001	<0.001	0.017	0.03	0.37	10	160.0	0.01	0.006	1.62	0.062	1.035	0.575	1.0
S0E30N		<0.0002	<0.001	0.001	0.024	0.02	0.29	<10	143.5	0.01	0.004	0.98	0.028	1.035	0.364	0.9
S0W30S		<0.0002	<0.001	0.001	0.031	0.02	0.24	10	170.5	0.01	0.004	1.40	0.036	0.669	0.303	2.1
S0W15S		<0.0002	0.001	<0.001	0.009	0.01	0.26	10	149.0	0.01	0.020	0.98	0.038	2.59	0.363	1.7
S0W		<0.0002	0.001	0.003	0.016	0.01	0.17	30	48.7	<0.01	0.004	1.02	0.014	0.793	0.191	0.5
S0W15N		<0.0002	0.001	<0.001	0.019	0.02	0.27	<10	214	0.01	0.007	1.23	0.030	1.310	0.450	1.1
S0W30N		<0.0002	<0.001	<0.001	0.004	0.01	0.13	<10	144.0	<0.01	0.006	0.63	0.006	1.265	0.137	0.9
L14000		0.0002	0.001	<0.001	0.011	0.02	0.23	<10	209	0.01	0.005	1.33	0.038	1.085	0.382	0.7
L14050		0.0002	<0.001	0.004	0.003	0.01	0.10	40	141.5	<0.01	0.005	0.63	0.006	0.911	0.103	<0.5
L14100		0.0004	<0.001	0.003	0.016	0.02	0.24	30	67.4	0.01	0.005	1.13	0.028	0.944	0.316	0.6
L14150		<0.0002	<0.001	<0.001	0.009	0.02	0.25	10	104.0	0.01	0.004	0.85	0.026	0.631	0.236	0.7

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME- VEG41 Cs ppm 0.005	ME- VEG41 Cu ppm 0.01	ME- VEG41 Dy ppm 0.005	ME- VEG41 Er ppm 0.003	ME- VEG41 Eu ppm 0.003	ME- VEG41 Fe % 0.001	ME- VEG41 Ga ppm 0.01	ME- VEG41 Gd ppm 0.005	ME- VEG41 Ge ppm 0.005	ME- VEG41 Hf ppm 0.002	ME- VEG41 Hg ppm 0.001	ME- VEG41 Ho ppm 0.001	ME- VEG41 In ppm 0.005	ME- VEG41 K % 0.01	ME- VEG41 La ppm 0.002
S14350		0.017	5.78	0.081	0.016	0.067	0.056	0.08	0.197	<0.005	<0.002	0.008	0.009	<0.005	0.54	2.11
S14400		0.093	5.64	0.022	0.006	0.022	0.079	0.08	0.058	<0.005	0.009	0.002	0.003	<0.005	0.58	0.730
S14450		0.103	6.09	0.129	0.066	0.049	0.148	0.22	0.183	0.010	0.016	0.037	0.024	<0.005	0.10	1.340
S14500		0.022	4.92	0.043	0.027	0.020	0.074	0.07	0.063	<0.005	0.004	0.044	0.007	<0.005	0.13	0.511
S14550		0.039	9.23	0.016	0.007	0.010	0.049	0.05	0.035	<0.005	0.003	0.020	0.003	<0.005	1.34	0.363
S14600		0.032	7.00	0.021	0.012	0.012	0.030	0.07	0.038	<0.005	0.002	0.005	0.004	<0.005	0.52	0.399
S14650		0.026	4.34	0.028	0.016	0.014	0.038	0.05	0.042	<0.005	0.004	0.036	0.006	<0.005	0.15	0.328
S14700		0.031	6.26	0.061	0.034	0.023	0.070	0.10	0.080	<0.005	0.006	0.041	0.011	<0.005	0.08	0.593
S14800		0.024	5.23	0.038	0.022	0.016	0.042	0.07	0.053	<0.005	0.005	0.031	0.008	<0.005	0.15	0.460
S16000		0.038	7.32	0.021	0.009	0.018	0.030	0.07	0.050	<0.005	<0.002	0.012	0.003	<0.005	0.55	0.591
S16050		0.025	3.96	0.050	0.023	0.025	0.081	0.09	0.082	<0.005	0.006	0.033	0.009	<0.005	0.06	0.724
S16100		0.023	6.28	0.018	0.008	0.014	0.089	0.09	0.041	<0.005	<0.002	0.009	0.003	<0.005	0.57	0.445
S16150		0.030	6.10	0.067	0.040	0.022	0.063	0.09	0.078	<0.005	0.007	0.043	0.012	<0.005	0.22	0.506
S16200		0.035	8.15	0.057	0.034	0.020	0.070	0.10	0.077	<0.005	0.005	0.032	0.011	<0.005	0.18	0.535
S16250		0.054	6.47	0.079	0.042	0.026	0.080	0.13	0.096	<0.005	0.008	0.040	0.013	<0.005	0.07	0.689
S16300		0.027	4.88	0.046	0.025	0.014	0.054	0.08	0.065	<0.005	0.008	0.043	0.009	<0.005	0.08	0.445
S16350		0.025	7.46	0.026	0.011	0.018	0.108	0.09	0.054	0.005	0.003	0.009	0.004	<0.005	0.49	0.599
S16400		0.019	5.86	0.015	0.006	0.012	0.034	0.06	0.033	<0.005	<0.002	0.006	0.002	<0.005	0.51	0.387
S16450		0.029	5.96	0.045	0.025	0.017	0.060	0.09	0.068	<0.005	0.007	0.033	0.010	<0.005	0.12	0.459
S16500		0.029	5.95	0.066	0.031	0.023	0.052	0.09	0.080	<0.005	0.005	0.024	0.011	<0.005	0.04	0.686
S16550		0.057	4.64	0.066	0.030	0.027	0.107	0.12	0.093	<0.005	0.009	0.043	0.011	<0.005	0.13	0.806
S16600		0.046	5.59	0.031	0.015	0.014	0.029	0.05	0.053	<0.005	0.002	0.033	0.006	<0.005	0.20	0.436
S16650		0.024	3.88	0.031	0.017	0.015	0.041	0.06	0.051	<0.005	0.004	0.025	0.006	<0.005	0.09	0.457
S16800		0.037	4.62	0.049	0.023	0.019	0.054	0.10	0.073	<0.005	0.004	0.031	0.010	<0.005	0.04	0.525
S16800A		0.057	4.95	0.091	0.046	0.035	0.206	0.21	0.128	0.011	0.014	0.034	0.016	<0.005	0.06	0.999
S0E30S		0.039	4.81	0.066	0.038	0.024	0.074	0.11	0.085	<0.005	0.006	0.022	0.012	<0.005	0.03	0.595
S0E30SA		0.050	4.67	0.084	0.043	0.024	0.089	0.14	0.099	<0.005	0.009	0.036	0.016	<0.005	0.06	0.658
S0E15S		0.225	4.71	0.037	0.019	0.012	0.046	0.07	0.048	<0.005	0.003	0.031	0.006	<0.005	0.18	0.350
S0E		0.029	4.96	0.046	0.026	0.017	0.054	0.08	0.058	0.017	0.007	0.047	0.008	<0.005	0.17	0.448
S0E15N		0.040	7.19	0.067	0.032	0.024	0.060	0.09	0.072	<0.005	0.004	0.043	0.012	<0.005	0.18	0.564
S0E30N		0.023	4.95	0.051	0.027	0.019	0.074	0.09	0.073	<0.005	0.004	0.023	0.009	<0.005	0.08	0.555
S0W30S		0.034	6.39	0.036	0.021	0.014	0.039	0.07	0.049	<0.005	0.005	0.023	0.006	<0.005	0.08	0.363
S0W15S		0.073	6.00	0.069	0.022	0.058	0.066	0.08	0.161	<0.005	0.004	0.024	0.009	<0.005	0.26	1.365
S0W		0.014	6.06	0.025	0.010	0.014	0.047	0.05	0.044	0.011	0.003	0.027	0.004	<0.005	0.13	0.405
S0W15N		0.027	4.12	0.045	0.019	0.021	0.038	0.07	0.076	<0.005	0.004	0.030	0.007	<0.005	0.17	0.688
S0W30N		0.061	5.70	0.025	0.008	0.020	0.079	0.06	0.058	<0.005	0.002	0.005	0.003	<0.005	0.54	0.666
L14000		0.015	3.84	0.043	0.022	0.022	0.038	0.06	0.071	<0.005	0.002	0.043	0.007	<0.005	0.16	0.670
L14050		0.052	5.82	0.017	0.006	0.014	0.036	0.06	0.040	0.011	0.003	0.007	0.002	<0.005	0.56	0.461
L14100		0.023	4.31	0.036	0.021	0.018	0.045	0.06	0.056	0.010	0.005	0.032	0.007	<0.005	0.10	0.472
L14150		0.043	4.79	0.027	0.013	0.014	0.030	0.05	0.044	<0.005	0.003	0.047	0.005	<0.005	0.14	0.334

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41
	Analyte	Li	Lu	Mg	Mn	Mo	Na	Nb	Nd	Ni	P	Pb	Pr	Rb	Re	S
	Units	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	LOR	0.1	0.001	0.001	1	0.01	0.001	0.002	0.001	0.04	0.001	0.01	0.003	0.01	0.001	0.01
S14350		0.1	0.001	0.150	247	0.20	0.153	0.130	1.475	0.98	0.142	0.45	0.405	7.45	<0.001	0.25
S14400		0.1	0.001	0.133	428	0.25	0.097	0.049	0.524	1.21	0.152	0.19	0.143	11.00	<0.001	0.18
S14450		0.6	0.010	0.101	91	0.23	0.108	0.147	1.120	2.99	0.026	0.53	0.284	2.39	<0.001	0.11
S14500		0.2	0.003	0.073	55	0.12	0.059	0.058	0.417	1.10	0.015	0.22	0.107	0.80	<0.001	0.06
S14550		1.2	0.001	0.168	65	0.99	0.092	0.032	0.283	1.24	0.223	0.39	0.073	1.96	0.003	0.22
S14600		0.1	0.001	0.142	444	0.09	0.036	0.026	0.294	1.84	0.137	0.15	0.084	5.54	<0.001	0.13
S14650		0.2	0.002	0.063	57	0.06	0.050	0.027	0.254	1.43	0.015	0.18	0.065	1.02	<0.001	0.05
S14700		0.3	0.005	0.065	67	0.10	0.123	0.050	0.509	1.49	0.014	0.29	0.129	0.68	<0.001	0.12
S14800		0.2	0.002	0.072	70	0.07	0.071	0.032	0.379	1.16	0.012	0.25	0.092	1.16	<0.001	0.07
S16000		0.1	0.001	0.150	415	0.22	0.067	0.025	0.420	1.50	0.157	0.19	0.111	7.93	<0.001	0.17
S16050		0.2	0.003	0.062	67	0.13	0.135	0.079	0.600	1.48	0.013	0.29	0.151	0.99	<0.001	0.13
S16100		0.1	0.001	0.143	356	0.15	0.066	0.031	0.351	1.08	0.159	0.13	0.088	6.83	<0.001	0.16
S16150		0.3	0.005	0.075	65	0.11	0.092	0.054	0.434	1.92	0.018	0.26	0.106	1.32	<0.001	0.10
S16200		0.3	0.004	0.086	64	0.10	0.113	0.052	0.444	4.71	0.020	0.24	0.118	0.94	<0.001	0.12
S16250		0.3	0.005	0.071	54	0.12	0.091	0.066	0.580	1.97	0.017	0.37	0.152	1.17	<0.001	0.09
S16300		0.2	0.004	0.065	49	0.08	0.090	0.038	0.356	1.46	0.012	0.27	0.093	0.83	<0.001	0.09
S16350		0.1	0.001	0.138	244	0.24	0.056	0.061	0.456	1.44	0.129	0.21	0.124	8.48	<0.001	0.13
S16400		0.1	0.001	0.117	300	0.13	0.042	0.025	0.299	1.02	0.134	0.15	0.074	6.45	<0.001	0.13
S16450		0.3	0.004	0.074	48	0.08	0.062	0.050	0.408	3.31	0.016	0.25	0.095	0.74	<0.001	0.06
S16500		0.2	0.005	0.088	46	0.10	0.101	0.047	0.569	2.24	0.014	0.29	0.139	0.43	<0.001	0.10
S16550		0.3	0.004	0.073	90	0.14	0.056	0.085	0.678	1.54	0.018	0.34	0.169	1.88	<0.001	0.06
S16600		0.2	0.002	0.067	100	0.07	0.120	0.030	0.367	0.78	0.017	0.23	0.085	2.54	<0.001	0.11
S16650		0.2	0.003	0.048	59	0.06	0.136	0.033	0.367	0.77	0.011	0.20	0.094	1.03	<0.001	0.13
S16800		0.3	0.003	0.061	36	0.08	0.088	0.045	0.458	1.11	0.012	0.25	0.115	0.58	<0.001	0.09
S16800A		0.4	0.006	0.083	57	0.23	0.039	0.104	0.902	2.23	0.023	0.35	0.221	1.35	<0.001	0.04
S0E30S		0.3	0.005	0.077	41	0.11	0.136	0.057	0.521	1.50	0.013	0.29	0.125	0.54	<0.001	0.13
S0E30SA		0.4	0.006	0.078	59	0.13	0.166	0.059	0.571	1.76	0.017	0.32	0.147	0.98	<0.001	0.17
S0E15S		0.2	0.003	0.073	47	0.08	0.152	0.033	0.322	0.73	0.023	0.24	0.080	5.68	<0.001	0.16
S0E		0.2	0.004	0.066	50	0.11	0.039	0.045	0.384	1.22	0.016	0.25	0.096	1.19	<0.001	0.03
S0E15N		0.3	0.006	0.075	84	0.12	0.115	0.045	0.484	1.71	0.020	0.30	0.125	1.63	<0.001	0.12
S0E30N		0.2	0.004	0.049	47	0.09	0.212	0.054	0.479	1.04	0.011	0.25	0.119	0.71	<0.001	0.20
S0W30S		0.2	0.002	0.057	71	0.08	0.182	0.038	0.309	2.25	0.013	0.20	0.075	1.10	<0.001	0.17
S0W15S		0.2	0.003	0.065	75	0.12	0.073	0.086	1.245	1.93	0.012	0.50	0.309	2.41	<0.001	0.06
S0W		0.1	0.001	0.042	28	0.14	0.019	0.042	0.328	0.64	0.012	0.15	0.084	0.63	<0.001	0.01
S0W15N		0.2	0.003	0.075	61	0.10	0.124	0.047	0.558	1.78	0.015	0.29	0.146	2.98	<0.001	0.11
S0W30N		0.1	0.001	0.139	135	0.27	0.077	0.059	0.521	1.76	0.144	0.19	0.137	9.48	<0.001	0.15
L14000		0.2	0.003	0.063	62	0.08	0.128	0.041	0.483	1.04	0.014	0.27	0.126	0.79	<0.001	0.13
L14050		0.1	0.001	0.144	281	0.30	0.010	0.033	0.357	1.20	0.130	0.15	0.091	13.45	<0.001	0.09
L14100		0.2	0.003	0.052	34	0.09	0.022	0.037	0.406	1.02	0.015	0.26	0.101	0.60	<0.001	0.01
L14150		0.2	0.002	0.055	40	0.07	0.135	0.027	0.269	0.70	0.019	0.17	0.071	2.14	<0.001	0.13

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Sb ppm 0.02	ME-VEG41 Sc ppm 0.01	ME-VEG41 Se ppm 0.1	ME-VEG41 Sm ppm 0.003	ME-VEG41 Sn ppm 0.01	ME-VEG41 Sr ppm 0.02	ME-VEG41 Ta ppm 0.005	ME-VEG41 Tb ppm 0.001	ME-VEG41 Te ppm 0.02	ME-VEG41 Th ppm 0.002	ME-VEG41 Ti % 0.001	ME-VEG41 Tl ppm 0.002	ME-VEG41 Tm ppm 0.001	ME-VEG41 U ppm 0.005	ME-VEG41 V ppm 1
S14350		0.07	0.01	<0.1	0.303	0.24	12.00	<0.005	0.021	0.02	0.363	<0.001	0.013	0.002	0.035	<1
S14400		0.09	0.01	<0.1	0.108	0.20	9.22	<0.005	0.006	<0.02	0.088	<0.001	0.046	0.001	0.013	<1
S14450		0.11	0.22	0.1	0.218	0.10	66.7	<0.005	0.026	<0.02	0.196	0.004	0.010	0.009	0.082	2
S14500		0.06	0.07	0.1	0.085	0.05	66.9	<0.005	0.008	<0.02	0.085	0.001	0.006	0.003	0.028	1
S14550		0.03	0.03	0.2	0.059	0.06	37.9	<0.005	0.004	<0.02	0.057	<0.001	0.004	0.001	0.012	<1
S14600		0.09	0.04	<0.1	0.058	0.13	15.80	<0.005	0.005	<0.02	0.053	0.001	0.011	0.001	0.013	<1
S14650		0.05	0.05	<0.1	0.048	0.03	40.2	<0.005	0.006	<0.02	0.047	0.001	0.006	0.002	0.015	<1
S14700		0.07	0.10	0.1	0.109	0.05	86.8	<0.005	0.011	<0.02	0.092	0.002	0.006	0.005	0.039	1
S14800		0.03	0.07	<0.1	0.088	0.03	46.1	<0.005	0.007	<0.02	0.066	0.001	0.004	0.003	0.025	1
S16000		0.10	0.03	<0.1	0.077	0.19	19.45	<0.005	0.005	<0.02	0.063	<0.001	0.008	0.001	0.013	<1
S16050		0.04	0.09	<0.1	0.111	0.07	57.7	<0.005	0.011	<0.02	0.113	0.001	0.005	0.003	0.029	1
S16100		0.07	0.02	<0.1	0.066	0.20	12.45	<0.005	0.004	<0.02	0.055	<0.001	0.003	0.001	0.019	<1
S16150		0.07	0.11	<0.1	0.087	0.03	67.8	<0.005	0.011	<0.02	0.084	0.002	0.006	0.005	0.047	1
S16200		0.06	0.10	0.1	0.100	0.04	38.4	<0.005	0.011	<0.02	0.100	0.002	0.006	0.005	0.048	1
S16250		0.08	0.14	0.1	0.114	0.04	42.6	<0.005	0.014	<0.02	0.109	0.003	0.007	0.004	0.035	1
S16300		0.05	0.11	<0.1	0.064	0.04	61.8	<0.005	0.008	<0.02	0.067	0.001	0.004	0.004	0.029	1
S16350		0.09	0.03	<0.1	0.088	0.28	9.79	<0.005	0.006	<0.02	0.082	0.001	0.004	0.001	0.022	<1
S16400		0.10	0.01	<0.1	0.057	0.15	9.88	<0.005	0.003	0.02	0.051	<0.001	0.004	0.001	0.009	<1
S16450		0.05	0.13	<0.1	0.074	0.04	47.2	<0.005	0.009	<0.02	0.067	0.002	0.004	0.004	0.036	1
S16500		0.05	0.10	0.1	0.101	0.05	55.1	<0.005	0.010	<0.02	0.097	0.001	0.005	0.005	0.032	1
S16550		0.06	0.12	0.1	0.122	0.04	48.0	<0.005	0.012	<0.02	0.127	0.002	0.006	0.005	0.037	1
S16600		0.02	0.04	<0.1	0.072	0.04	47.4	<0.005	0.006	<0.02	0.056	0.001	0.004	0.002	0.017	1
S16650		0.03	0.06	<0.1	0.070	0.04	29.7	<0.005	0.007	<0.02	0.064	0.001	0.003	0.003	0.034	<1
S16800		0.04	0.11	0.1	0.087	0.04	46.9	<0.005	0.010	<0.02	0.082	0.002	0.003	0.004	0.042	1
S16800A		0.08	0.17	0.1	0.175	0.09	54.5	<0.005	0.016	<0.02	0.186	0.003	0.007	0.006	0.056	2
S0E30S		0.06	0.12	0.1	0.112	0.04	46.4	<0.005	0.011	<0.02	0.091	0.002	0.004	0.005	0.033	1
S0E30SA		0.07	0.13	0.1	0.119	0.06	53.9	<0.005	0.015	<0.02	0.108	0.002	0.006	0.006	0.041	1
S0E15S		0.03	0.06	0.1	0.060	0.04	53.1	<0.005	0.006	<0.02	0.053	0.001	0.005	0.003	0.019	1
S0E		0.05	0.09	0.6	0.066	0.04	40.0	<0.005	0.008	<0.02	0.073	0.001	0.005	0.003	0.039	1
S0E15N		0.06	0.09	0.1	0.094	0.04	59.0	<0.005	0.011	<0.02	0.084	0.002	0.006	0.005	0.054	1
S0E30N		0.04	0.09	<0.1	0.098	0.05	44.8	<0.005	0.009	<0.02	0.091	0.002	0.004	0.003	0.034	1
S0W30S		0.03	0.07	<0.1	0.066	0.03	56.2	<0.005	0.007	0.02	0.056	0.001	0.003	0.003	0.023	1
S0W15S		0.04	0.05	0.1	0.250	0.06	49.9	<0.005	0.016	<0.02	0.255	0.001	0.005	0.003	0.028	1
S0W		0.03	0.04	0.3	0.061	0.05	42.3	<0.005	0.005	<0.02	0.068	0.001	0.002	0.001	0.019	<1
S0W15N		0.04	0.07	0.1	0.100	0.06	57.7	<0.005	0.008	<0.02	0.092	0.001	0.007	0.003	0.023	<1
S0W30N		0.05	0.03	<0.1	0.085	0.09	15.50	<0.005	0.006	<0.02	0.101	<0.001	0.017	0.001	0.015	<1
L14000		0.04	0.05	<0.1	0.102	0.03	61.6	<0.005	0.010	<0.02	0.081	0.001	0.005	0.003	0.033	<1
L14050		0.09	0.02	0.2	0.064	0.18	11.65	<0.005	0.004	<0.02	0.069	<0.001	0.004	0.001	0.010	<1
L14100		0.05	0.06	0.4	0.071	0.05	31.2	<0.005	0.007	<0.02	0.076	0.001	0.005	0.003	0.024	1
L14150		0.04	0.04	<0.1	0.058	0.02	34.1	<0.005	0.006	<0.02	0.049	0.001	0.003	0.002	0.018	1

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
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Finalized Date: 3- OCT- 2013
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Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41
	Analyte	W	Y	Yb	Zn	Zr
	Units	ppm	ppm	ppm	ppm	ppm
	LOR	0.01	0.003	0.003	0.1	0.02
S14350		0.03	0.213	0.011	35.4	0.08
S14400		0.02	0.067	0.004	23.4	0.07
S14450		0.09	0.675	0.057	78.5	0.52
S14500		0.07	0.234	0.024	72.5	0.17
S14550		0.25	0.071	0.005	20.5	0.11
S14600		0.02	0.101	0.008	34.0	0.08
S14650		0.08	0.168	0.015	73.6	0.13
S14700		0.11	0.347	0.030	74.7	0.26
S14800		0.12	0.201	0.022	87.4	0.17
S16000		0.04	0.090	0.007	31.7	0.07
S16050		0.06	0.231	0.020	74.0	0.19
S16100		0.02	0.079	0.006	38.7	0.07
S16150		0.08	0.363	0.035	105.5	0.28
S16200		0.06	0.341	0.032	62.4	0.21
S16250		0.08	0.389	0.032	83.4	0.28
S16300		0.08	0.257	0.024	88.3	0.20
S16350		0.05	0.116	0.008	27.9	0.12
S16400		0.03	0.058	0.005	34.1	0.07
S16450		0.06	0.280	0.021	60.7	0.20
S16500		0.06	0.327	0.023	108.5	0.22
S16550		0.09	0.334	0.032	76.0	0.24
S16600		0.10	0.152	0.016	102.0	0.12
S16650		0.09	0.190	0.016	62.2	0.12
S16800		0.06	0.269	0.024	71.6	0.18
S16800A		0.09	0.498	0.044	55.0	0.41
S0E30S		0.08	0.364	0.034	79.8	0.24
S0E30SA		0.08	0.454	0.041	111.5	0.30
S0E15S		0.07	0.199	0.016	54.1	0.15
S0E		0.11	0.271	0.021	71.3	0.21
S0E15N		0.09	0.315	0.031	81.3	0.25
S0E30N		0.07	0.274	0.024	67.5	0.19
S0W30S		0.05	0.190	0.017	85.0	0.17
S0W15S		0.08	0.257	0.014	105.5	0.16
S0W		0.09	0.117	0.007	75.1	0.08
S0W15N		0.08	0.210	0.017	73.4	0.16
S0W30N		0.03	0.079	0.007	27.5	0.10
L14000		0.10	0.224	0.019	84.3	0.15
L14050		0.03	0.072	0.005	27.4	0.07
L14100		0.08	0.233	0.019	45.1	0.15
L14150		0.05	0.144	0.014	60.4	0.12

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Au ppm 0.0002	ME-VEG41 Pd ppm 0.001	ME-VEG41 Pt ppm 0.001	ME-VEG41 Ag ppm 0.001	ME-VEG41 Al % 0.01	ME-VEG41 As ppm 0.05	ME-VEG41 B ppm 10	ME-VEG41 Ba ppm 0.1	ME-VEG41 Be ppm 0.01	ME-VEG41 Bi ppm 0.001	ME-VEG41 Ca % 0.01	ME-VEG41 Cd ppm 0.002	ME-VEG41 Ce ppm 0.003	ME-VEG41 Co ppm 0.002	ME-VEG41 Cr ppm 0.5
L14200		0.0002	<0.001	0.004	0.020	0.02	0.22	30	118.5	0.01	0.006	1.32	0.034	1.005	0.343	0.7
L14250		0.0002	<0.001	0.001	0.025	0.03	0.37	<10	150.5	0.01	0.005	1.62	0.034	1.100	0.414	1.3
L14350		0.0004	<0.001	0.001	0.005	0.01	0.44	30	16.9	<0.01	0.008	0.53	0.234	0.924	0.108	1.0
L14400		<0.0002	0.001	0.001	0.034	0.03	0.44	<10	169.5	0.01	0.005	1.48	0.044	0.902	0.415	1.2
L14500		<0.0002	<0.001	<0.001	0.003	0.01	0.16	10	161.5	<0.01	0.004	0.84	0.009	0.839	0.107	0.7
L14550		<0.0002	<0.001	0.001	0.013	0.03	0.47	<10	208	0.01	0.005	1.58	0.040	1.195	0.518	1.4
L0E15S		<0.0002	<0.001	<0.001	0.025	0.01	0.17	10	117.0	<0.01	0.004	1.23	0.015	0.653	0.234	1.2
L0E		<0.0002	0.001	0.001	0.020	0.02	0.27	<10	198.0	0.01	0.004	2.00	0.045	0.679	0.455	0.9
L0E15N		<0.0002	<0.001	<0.001	0.003	0.01	0.10	10	114.0	<0.01	0.005	0.64	0.006	0.755	0.138	1.3
L0W15S		0.0002	<0.001	0.003	0.002	0.01	0.07	30	83.2	<0.01	0.004	0.56	0.005	0.582	0.052	<0.5
S10300		<0.0002	0.001	0.002	0.017	0.02	0.35	30	203	0.01	0.005	1.59	0.043	0.911	0.501	0.8
S14400S		<0.0002	0.001	<0.001	0.023	0.02	0.31	<10	137.0	0.01	0.004	1.14	0.029	0.769	0.297	0.8
S14500S		0.0002	0.002	0.001	0.015	0.03	0.34	10	118.5	0.01	0.006	1.11	0.042	1.220	0.456	1.3
S14800A		0.0002	0.002	0.003	0.046	0.03	0.30	<10	123.5	0.01	0.005	1.39	0.043	0.857	0.435	2.3
S16300S		<0.0002	<0.001	0.001	0.004	0.01	0.14	10	131.5	<0.01	0.004	0.74	0.006	0.678	0.107	2.1
L10100		0.0002	<0.001	0.001	0.019	0.02	0.46	<10	118.5	0.01	0.005	1.65	0.039	1.155	0.542	2.6
L14300		0.0002	<0.001	0.005	0.061	0.02	0.26	20	213	0.01	0.003	1.52	0.040	0.704	0.389	3.3
L14450		0.0002	<0.001	0.004	0.007	0.01	0.18	60	22.9	0.01	0.005	0.71	0.178	0.755	0.098	0.6

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41
Analyte	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	In	K	La
Units	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
LOR	0.005	0.01	0.005	0.003	0.003	0.001	0.01	0.005	0.005	0.002	0.001	0.001	0.005	0.01	0.002
L14200	0.028	3.69	0.038	0.020	0.019	0.049	0.07	0.062	0.011	0.007	0.039	0.007	<0.005	0.07	0.494
L14250	0.039	4.54	0.064	0.032	0.022	0.058	0.10	0.076	<0.005	0.006	0.025	0.012	<0.005	0.12	0.579
L14350	0.064	7.56	0.024	0.010	0.016	0.039	0.05	0.051	<0.005	0.004	0.022	0.004	<0.005	1.09	0.541
L14400	0.034	3.93	0.049	0.026	0.020	0.054	0.09	0.067	<0.005	0.008	0.038	0.010	<0.005	0.23	0.485
L14500	0.035	5.45	0.021	0.009	0.014	0.030	0.06	0.041	<0.005	<0.002	0.009	0.003	<0.005	0.64	0.476
L14550	0.042	5.08	0.061	0.035	0.026	0.108	0.12	0.088	<0.005	0.007	0.052	0.012	<0.005	0.14	0.596
L0E15S	0.015	4.39	0.020	0.010	0.012	0.056	0.05	0.033	<0.005	0.002	0.018	0.004	<0.005	0.13	0.345
L0E	0.020	4.07	0.041	0.024	0.018	0.045	0.07	0.058	<0.005	0.005	0.037	0.009	<0.005	0.07	0.355
L0E15N	0.045	6.27	0.018	0.006	0.012	0.027	0.05	0.035	<0.005	<0.002	0.013	0.003	<0.005	0.53	0.404
L0W15S	0.015	5.11	0.010	0.003	0.009	0.017	0.04	0.024	0.007	0.002	0.006	0.001	<0.005	0.51	0.301
S10300	0.030	4.61	0.054	0.028	0.018	0.059	0.09	0.068	0.016	0.008	0.049	0.010	<0.005	0.13	0.447
S14400S	0.032	5.11	0.050	0.026	0.019	0.052	0.08	0.065	<0.005	0.006	0.024	0.007	<0.005	0.07	0.404
S14500S	0.034	4.27	0.056	0.028	0.022	0.060	0.09	0.071	0.009	0.005	0.030	0.010	<0.005	0.15	0.614
S14800A	0.044	4.39	0.051	0.026	0.018	0.060	0.09	0.068	<0.005	0.006	0.017	0.010	<0.005	0.03	0.418
S16300S	0.098	6.46	0.015	0.005	0.012	0.020	0.05	0.032	<0.005	<0.002	0.006	0.002	<0.005	0.64	0.365
L10100	0.047	6.67	0.045	0.026	0.020	0.088	0.09	0.077	0.007	0.006	0.031	0.009	<0.005	0.08	0.559
L14300	0.025	5.19	0.040	0.022	0.013	0.037	0.05	0.049	0.014	0.009	0.028	0.008	<0.005	0.11	0.346
L14450	0.039	9.36	0.016	0.009	0.011	0.046	0.05	0.033	0.032	0.006	0.017	0.002	<0.005	1.30	0.383

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	ME-VEG41 Li ppm 0.1	ME-VEG41 Lu ppm 0.001	ME-VEG41 Mg % 0.001	ME-VEG41 Mn ppm 1	ME-VEG41 Mo ppm 0.01	ME-VEG41 Na % 0.001	ME-VEG41 Nb ppm 0.002	ME-VEG41 Nd ppm 0.001	ME-VEG41 Ni ppm 0.04	ME-VEG41 P % 0.001	ME-VEG41 Pb ppm 0.01	ME-VEG41 Pr ppm 0.003	ME-VEG41 Rb ppm 0.01	ME-VEG41 Re ppm 0.001	ME-VEG41 S % 0.01
L14200	0.2	0.002	0.062	68	0.08	0.034	0.046	0.418	1.07	0.013	0.27	0.106	0.73	<0.001	0.02
L14250	0.3	0.004	0.067	58	0.11	0.138	0.054	0.506	1.40	0.015	0.26	0.132	1.03	<0.001	0.14
L14350	0.8	0.001	0.124	47	1.06	0.219	0.032	0.392	0.90	0.178	0.53	0.103	1.81	0.001	0.29
L14400	0.3	0.004	0.063	78	0.08	0.141	0.044	0.409	1.49	0.015	0.31	0.109	1.71	<0.001	0.14
L14500	0.1	0.001	0.167	222	0.27	0.153	0.027	0.351	1.26	0.169	0.20	0.093	5.36	<0.001	0.25
L14550	0.3	0.004	0.077	60	0.15	0.101	0.076	0.556	1.54	0.019	0.35	0.138	1.35	<0.001	0.10
L0E15S	0.1	0.001	0.069	55	0.07	0.159	0.042	0.282	1.00	0.015	0.14	0.073	1.12	<0.001	0.16
L0E	0.2	0.004	0.079	67	0.10	0.202	0.033	0.326	1.31	0.011	0.21	0.079	0.53	<0.001	0.20
L0E15N	0.1	0.001	0.149	194	0.21	0.201	0.022	0.337	1.53	0.142	0.13	0.079	7.78	<0.001	0.26
L0W15S	0.1	<0.001	0.120	207	0.11	0.005	0.017	0.227	0.71	0.131	0.10	0.061	6.42	<0.001	0.08
S10300	0.2	0.004	0.076	86	0.10	0.029	0.045	0.398	1.39	0.016	0.25	0.103	1.05	<0.001	0.03
S14400S	0.2	0.003	0.053	44	0.08	0.151	0.042	0.345	0.91	0.012	0.25	0.093	0.92	<0.001	0.14
S14500S	0.3	0.003	0.068	50	0.10	0.153	0.061	0.543	1.68	0.019	0.44	0.136	0.91	<0.001	0.13
S14800A	0.3	0.004	0.073	37	0.11	0.228	0.046	0.382	2.17	0.012	0.24	0.096	0.47	<0.001	0.22
S16300S	0.1	<0.001	0.146	259	0.41	0.072	0.021	0.286	2.09	0.142	0.11	0.070	10.70	<0.001	0.16
L10100	0.2	0.004	0.071	83	0.13	0.054	0.066	0.497	3.19	0.020	0.22	0.122	1.48	<0.001	0.05
L14300	0.2	0.003	0.065	66	0.10	0.019	0.030	0.310	1.85	0.010	0.27	0.072	1.31	<0.001	<0.01
L14450	1.2	0.001	0.162	63	1.01	0.124	0.031	0.392	1.37	0.209	0.47	0.079	2.00	0.002	0.21

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41
	Analyte	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOR	0.02	0.01	0.1	0.003	0.01	0.02	0.005	0.001	0.02	0.002	0.001	0.002	0.001	0.005	1
L14200		0.03	0.07	0.2	0.082	0.04	45.3	<0.005	0.007	<0.02	0.069	0.001	0.004	0.003	0.021	1
L14250		0.05	0.13	<0.1	0.116	0.04	50.8	<0.005	0.011	<0.02	0.104	0.002	0.006	0.005	0.041	1
L14350		0.05	0.02	0.1	0.080	0.12	44.4	<0.005	0.005	<0.02	0.055	<0.001	0.005	0.001	0.014	<1
L14400		0.05	0.08	0.1	0.085	0.03	46.5	<0.005	0.009	<0.02	0.076	0.002	0.006	0.004	0.030	1
L14500		0.06	0.03	<0.1	0.062	0.10	15.35	<0.005	0.004	<0.02	0.049	0.001	0.007	0.001	0.013	<1
L14550		0.05	0.12	0.1	0.110	0.05	68.5	<0.005	0.013	<0.02	0.114	0.002	0.006	0.005	0.045	1
L0E15S		0.02	0.03	<0.1	0.052	0.04	33.0	<0.005	0.004	<0.02	0.070	0.001	0.003	0.001	0.013	<1
L0E		0.04	0.10	0.1	0.063	0.03	79.2	<0.005	0.009	<0.02	0.058	0.001	0.003	0.004	0.028	1
L0E15N		0.06	0.01	<0.1	0.062	0.09	12.55	<0.005	0.004	<0.02	0.053	<0.001	0.003	0.001	0.014	<1
L0W15S		0.09	0.02	0.2	0.040	0.17	7.83	<0.005	0.002	<0.02	0.041	<0.001	0.005	0.001	0.006	<1
S10300		0.05	0.11	0.3	0.079	0.08	63.8	<0.005	0.009	<0.02	0.076	0.001	0.005	0.005	0.037	1
S14400S		0.05	0.08	<0.1	0.073	0.04	42.9	<0.005	0.008	<0.02	0.069	0.002	0.003	0.004	0.025	1
S14500S		0.05	0.10	<0.1	0.099	0.05	45.8	<0.005	0.010	<0.02	0.087	0.002	0.003	0.004	0.030	1
S14800A		0.10	0.12	<0.1	0.077	0.04	48.5	<0.005	0.008	<0.02	0.065	0.002	0.003	0.004	0.027	1
S16300S		0.08	0.02	<0.1	0.057	0.06	14.05	<0.005	0.004	<0.02	0.045	<0.001	0.004	0.001	0.010	<1
L10100		0.05	0.08	0.1	0.091	0.04	49.6	<0.005	0.009	<0.02	0.098	0.001	0.004	0.004	0.027	1
L14300		0.05	0.08	<0.1	0.055	0.03	59.8	<0.005	0.007	<0.02	0.050	0.001	0.004	0.003	0.026	1
L14450		0.03	0.03	0.1	0.054	0.05	38.9	<0.005	0.005	<0.02	0.058	<0.001	0.004	0.001	0.011	<1

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

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To: MIDNIGHT MINING SERVICES
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WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME- VEG41 W ppm 0.01	ME- VEG41 Y ppm 0.003	ME- VEG41 Yb ppm 0.003	ME- VEG41 Zn ppm 0.1	ME- VEG41 Zr ppm 0.02
L14200		0.08	0.220	0.017	68.7	0.18
L14250		0.07	0.322	0.026	57.9	0.25
L14350		0.18	0.097	0.008	17.2	0.16
L14400		0.11	0.290	0.025	123.0	0.22
L14500		0.03	0.086	0.006	43.3	0.08
L14550		0.08	0.353	0.033	68.0	0.28
L0E15S		0.06	0.101	0.008	123.5	0.10
L0E		0.08	0.265	0.024	104.0	0.21
L0E15N		0.02	0.065	0.006	28.2	0.08
L0W15S		0.02	0.039	0.003	29.5	0.04
S10300		0.08	0.318	0.026	93.4	0.24
S14400S		0.10	0.235	0.021	58.3	0.20
S14500S		0.07	0.283	0.023	73.5	0.22
S14800A		0.06	0.290	0.029	81.0	0.24
S16300S		0.02	0.055	0.004	25.5	0.07
L10100		0.07	0.242	0.023	62.6	0.22
L14300		0.13	0.248	0.021	113.0	0.22
L14450		0.26	0.087	0.006	21.2	0.17

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WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
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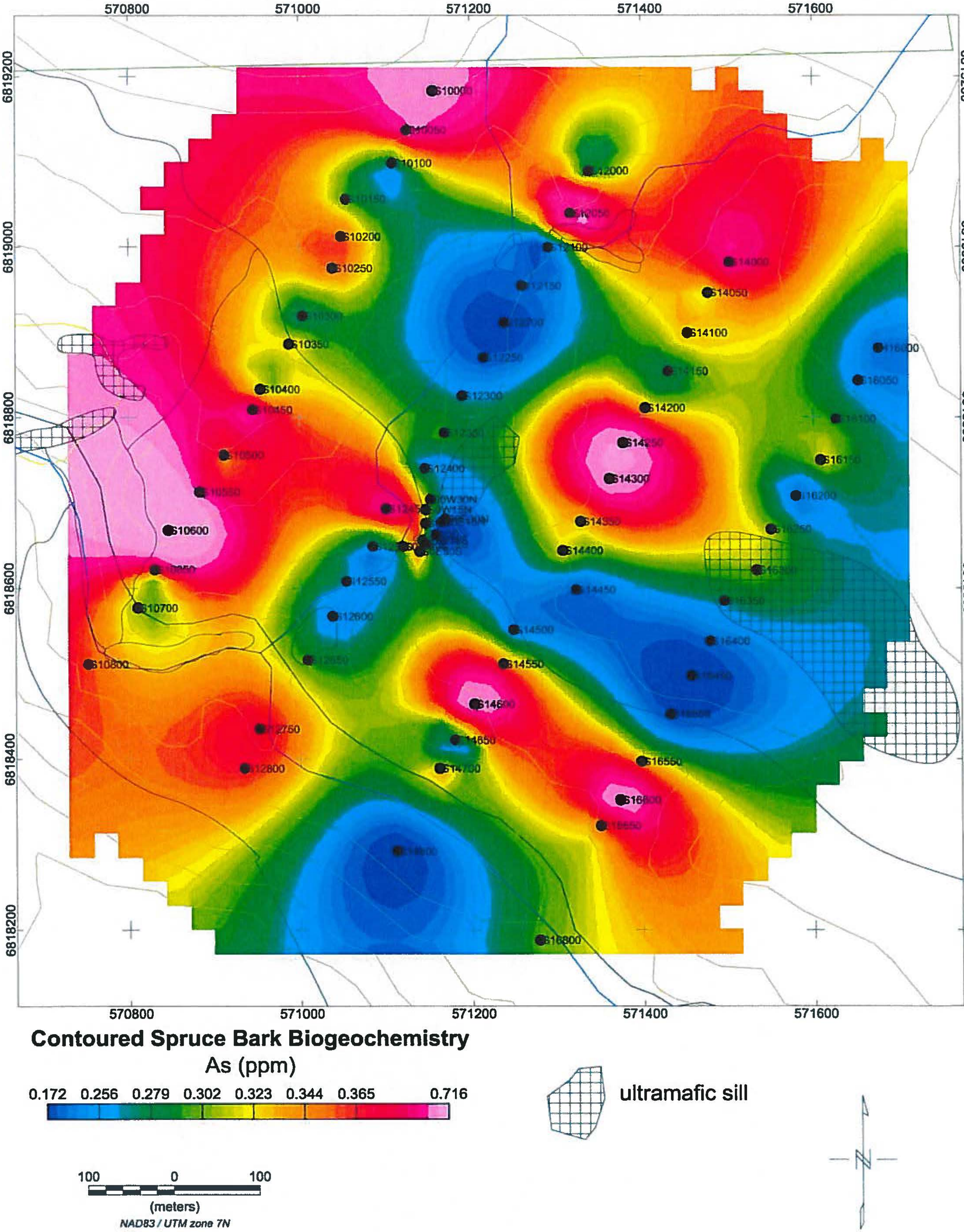
CERTIFICATE OF ANALYSIS WH13170902

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method: FND- 02 ME- VEG41



570800
571000
571200
571400
571600
6819200
6819000
6818800
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6818400
6818200
Contoured Spruce Bark Biogeochemistry
As (ppm)
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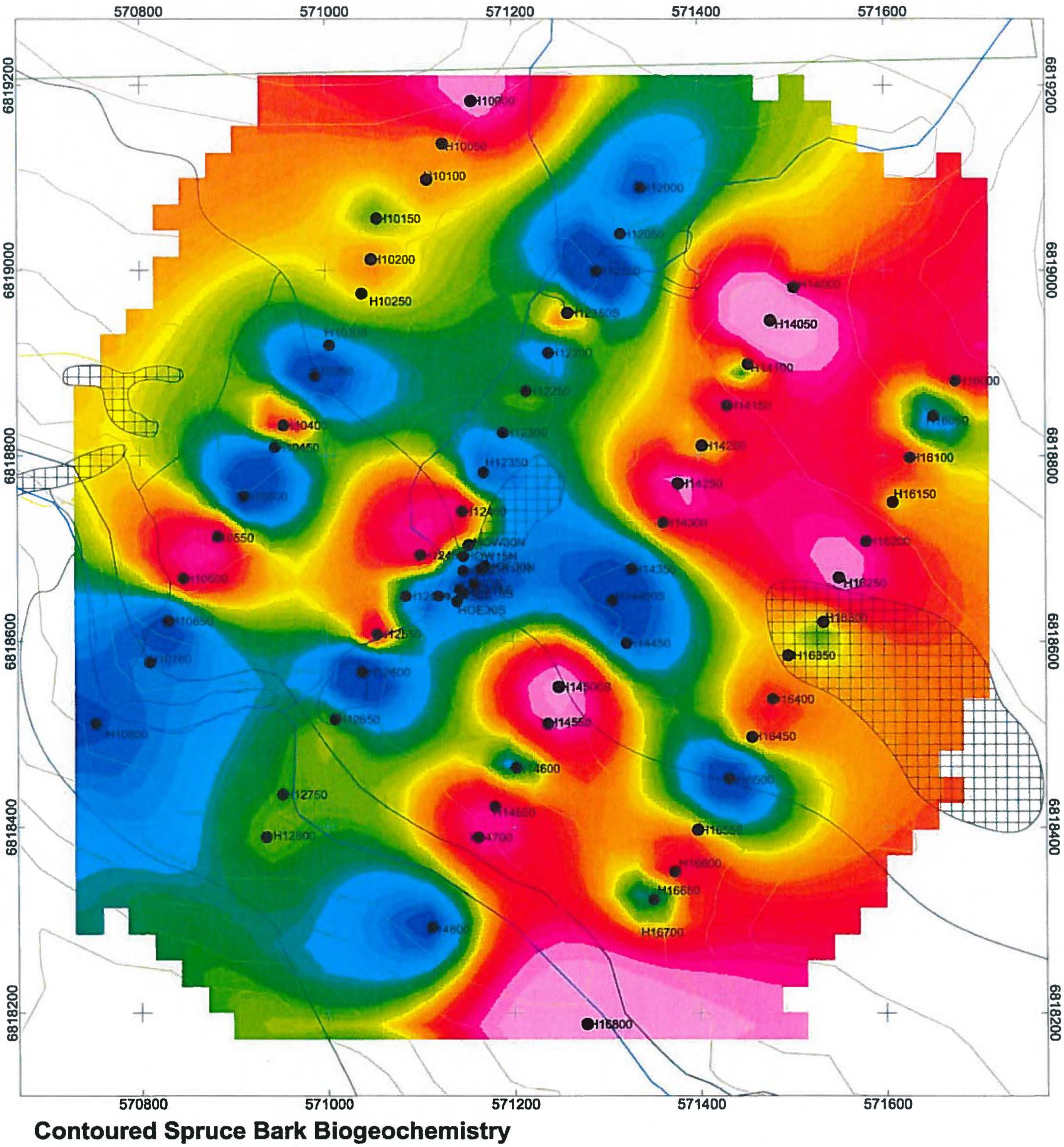
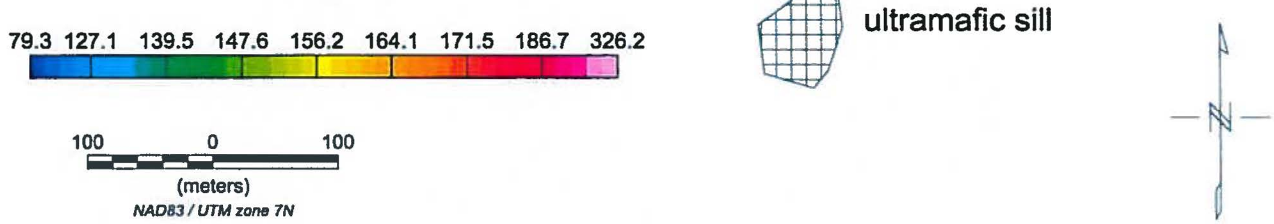
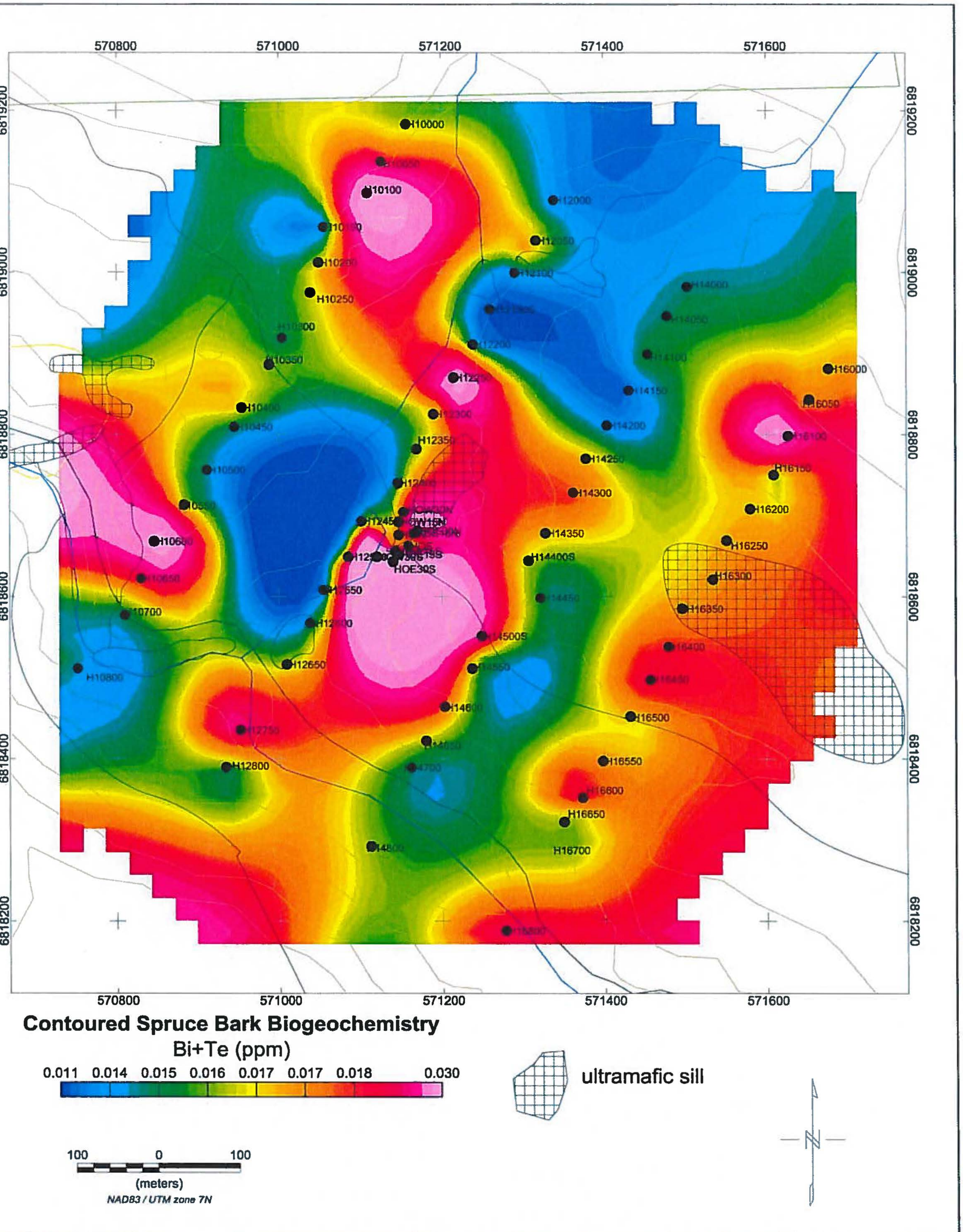
ultramafic sill
100 0 100
(meters)
NAD83 / UTM zone 7N



Contoured Spruce Bark Biogeochemistry
Ba (ppm)

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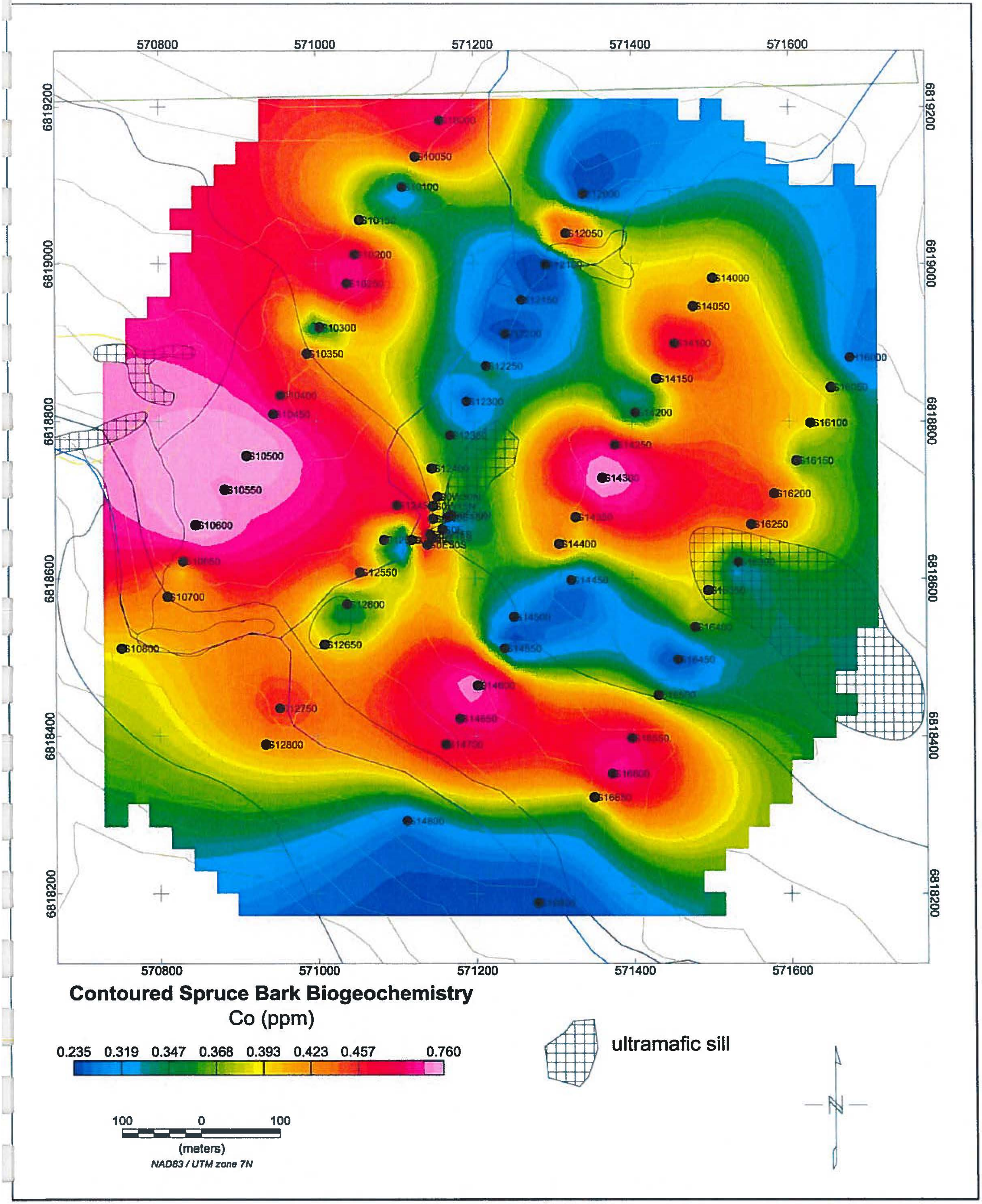
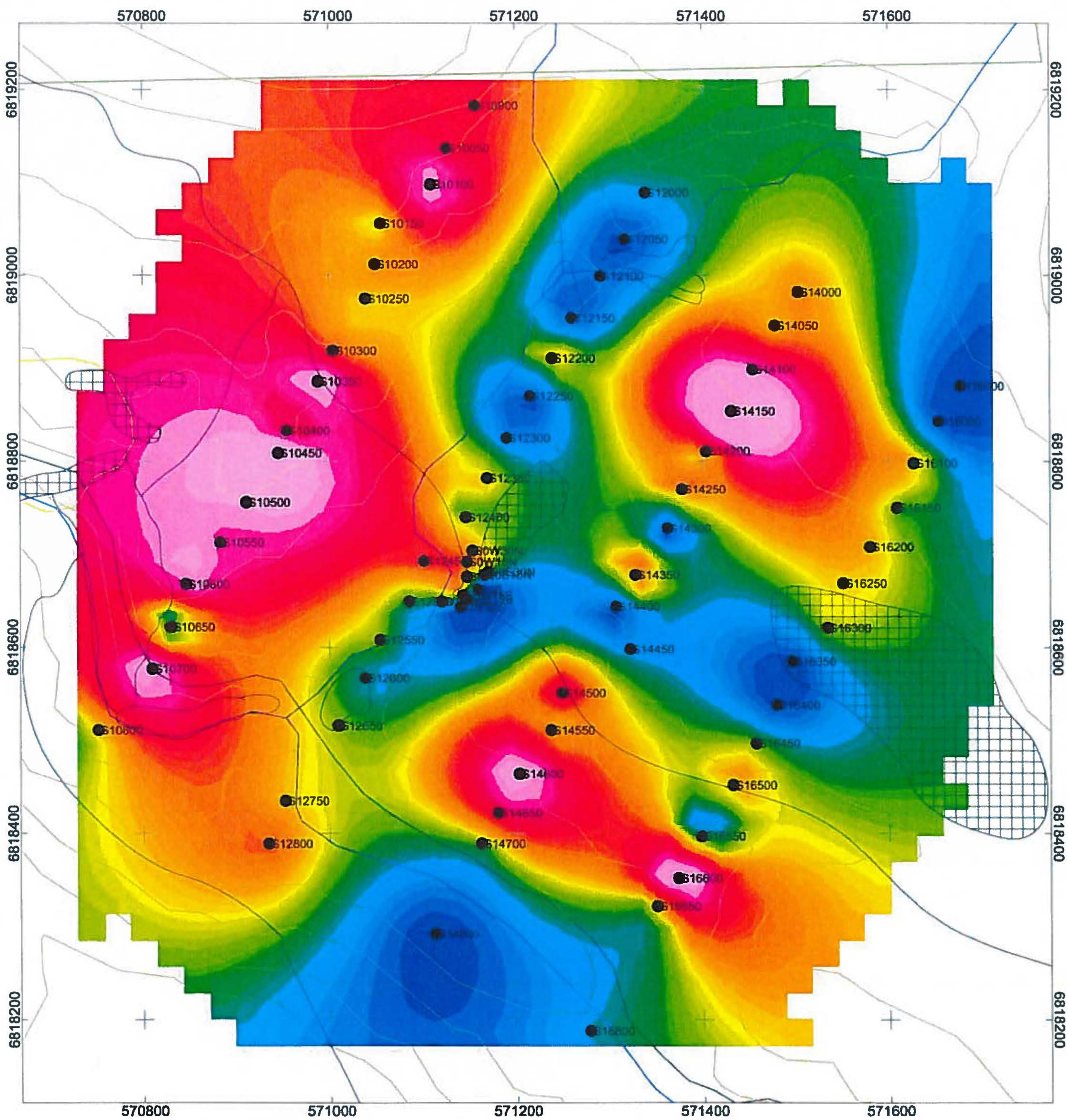
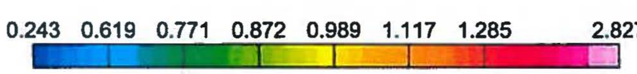
H12350
H14350
H16000
H16200
H16250
H16300
H16350
H16500
H16550
H16650
H16700
HOE30S
Contoured Spruce Bark Biogeochemistry
Bi+Te (ppm)
0.011 0.014 0.015 0.016 0.017 0.017 0.018 0.030
ultramafic sill
100 0 100
(meters)
NAD83 / UTM zone 7N



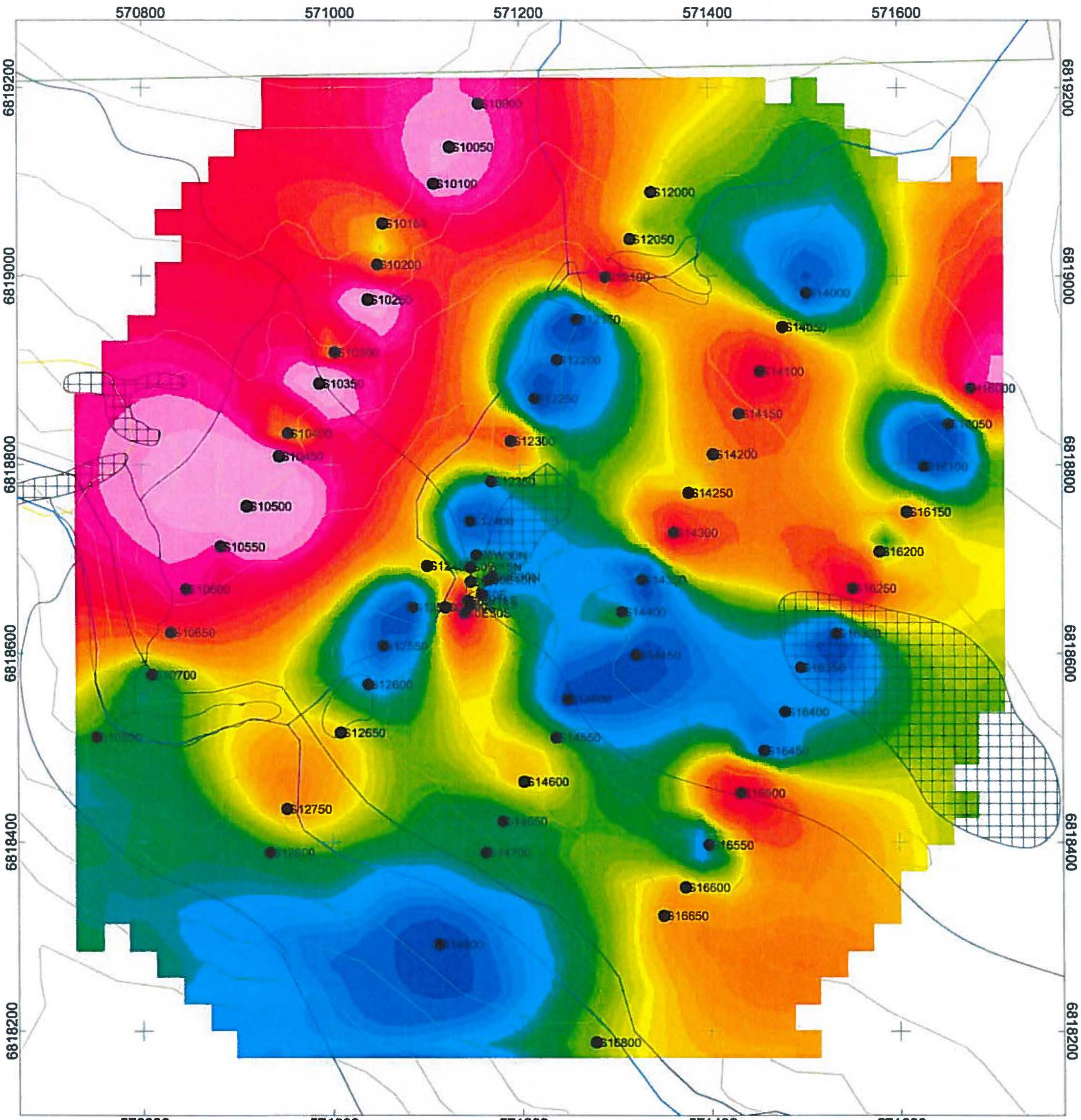
Contoured Spruce Bark Biogeochemistry
Co (ppm)



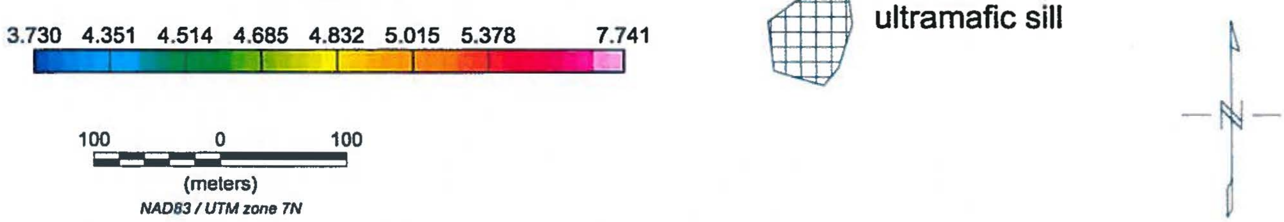
Contoured Spruce Bark Biogeochemistry
Cr (ppm)

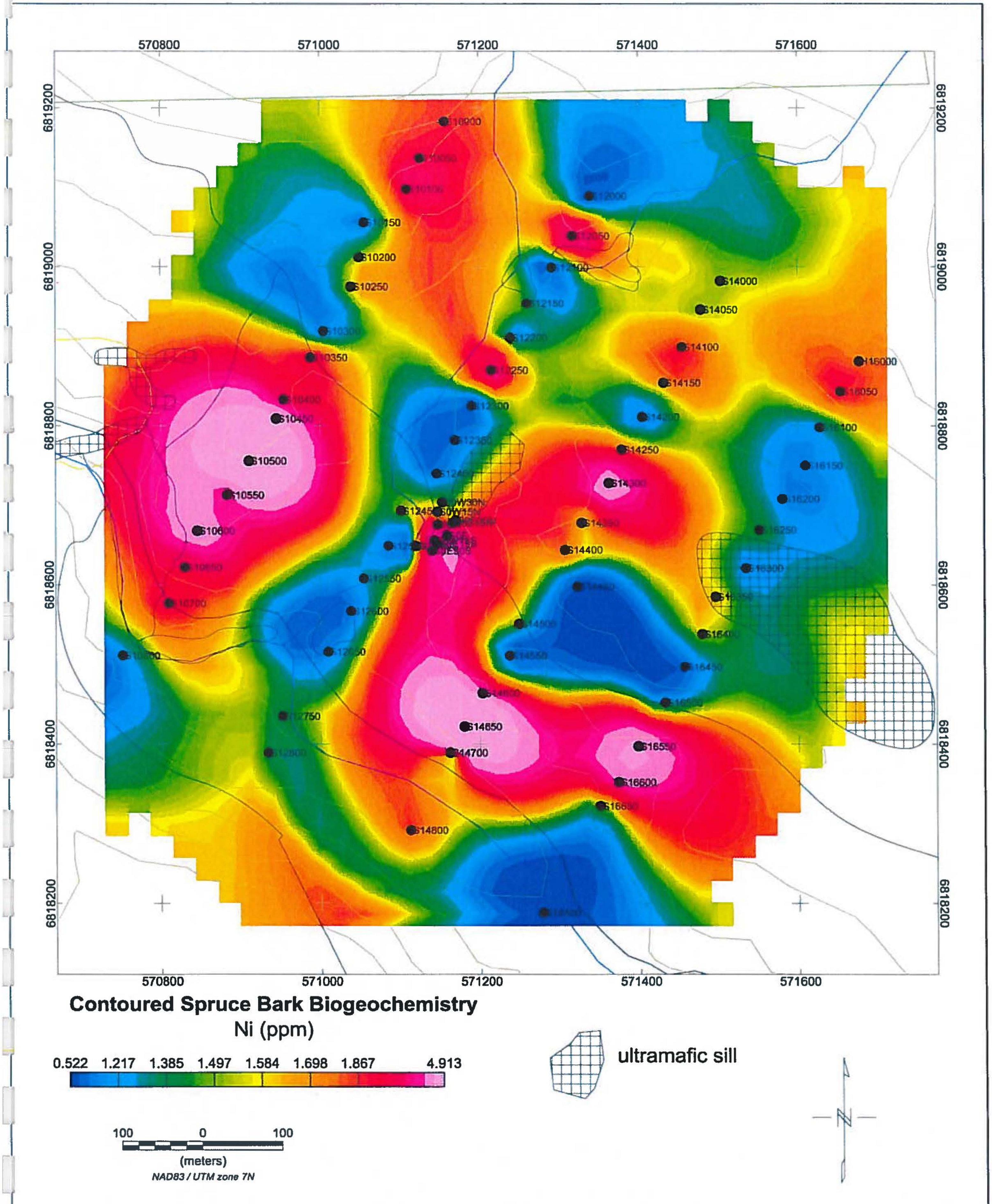


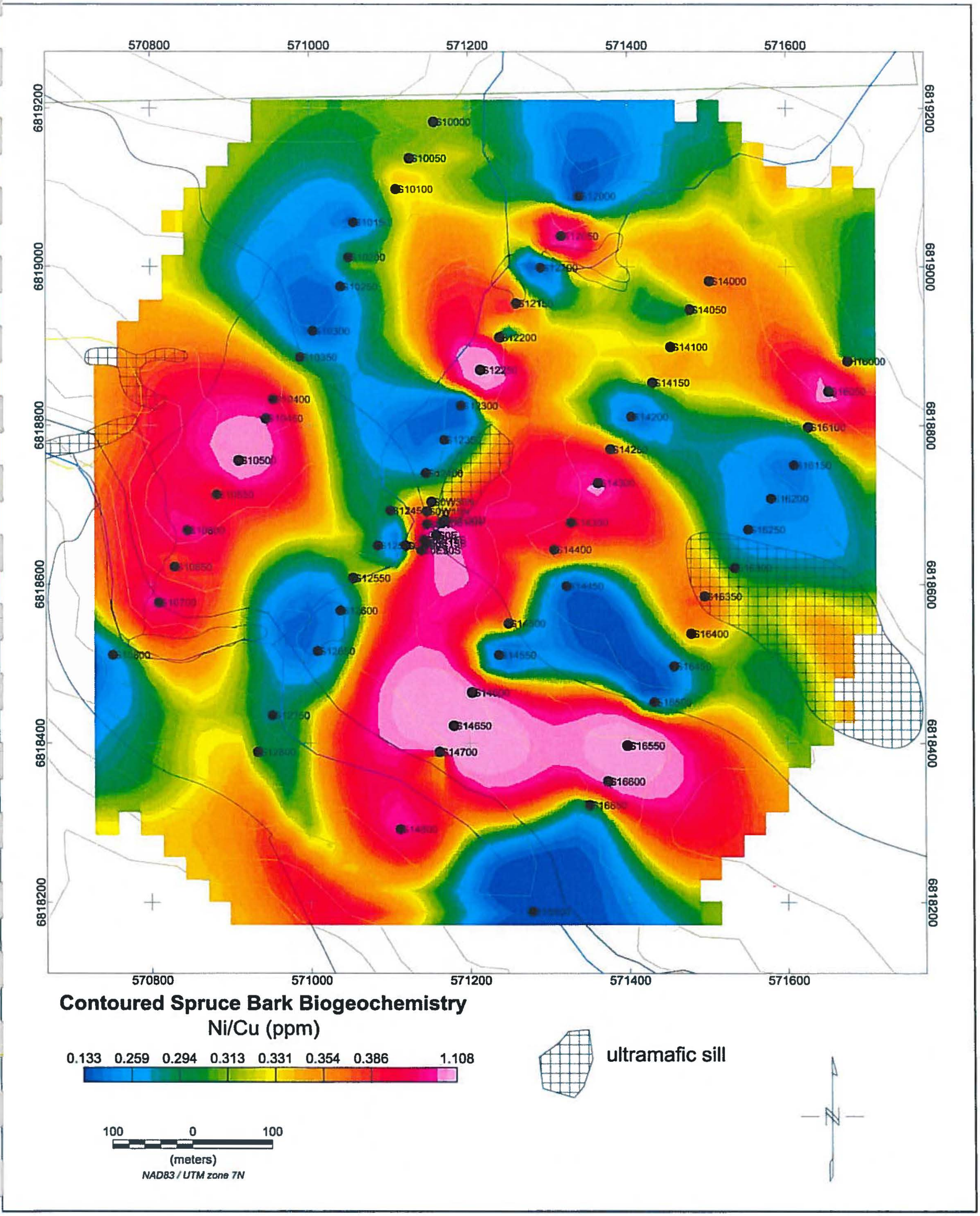
NAD83 / UTM zone 7N

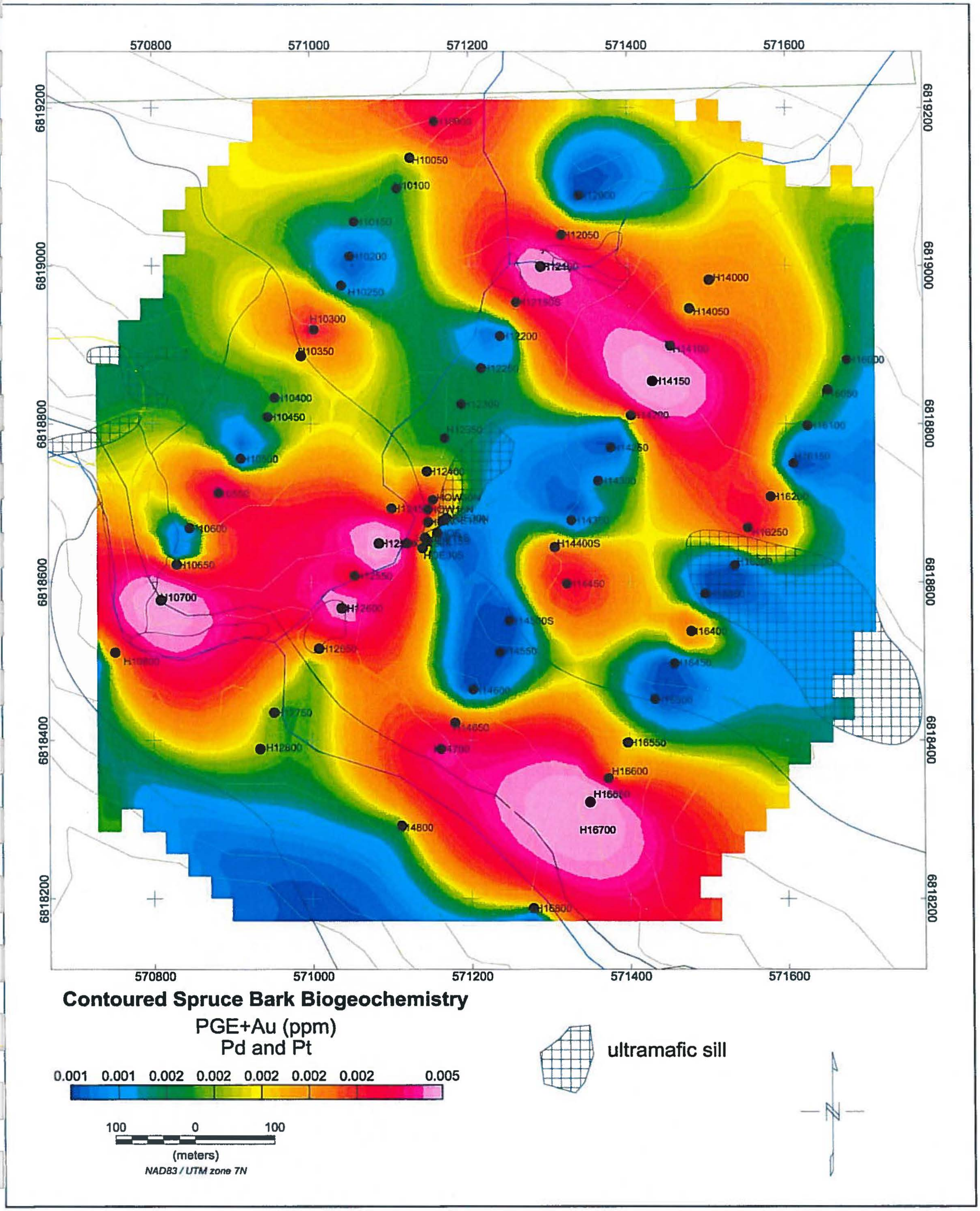


Contoured Spruce Bark Biogeochemistry
Cu (ppm)




570800
571000
571200
571400
571600
6819200
6819000
6818800
6818600
6818400
6818200
S10200
S10250
S10350
S10450
S10500
S10550
S14000
S14050
S14100
S14150
S14250
S14400
S14650
S14700
S14800
S16550
S16600
S16000
Contoured Spruce Bark Biogeochemistry
Ni (ppm)
0.522
1.217
1.385
1.497
1.584
1.698
1.867
4.913
ultramafic sill
100
0
100
(meters)
NAD83 / UTM zone 7N

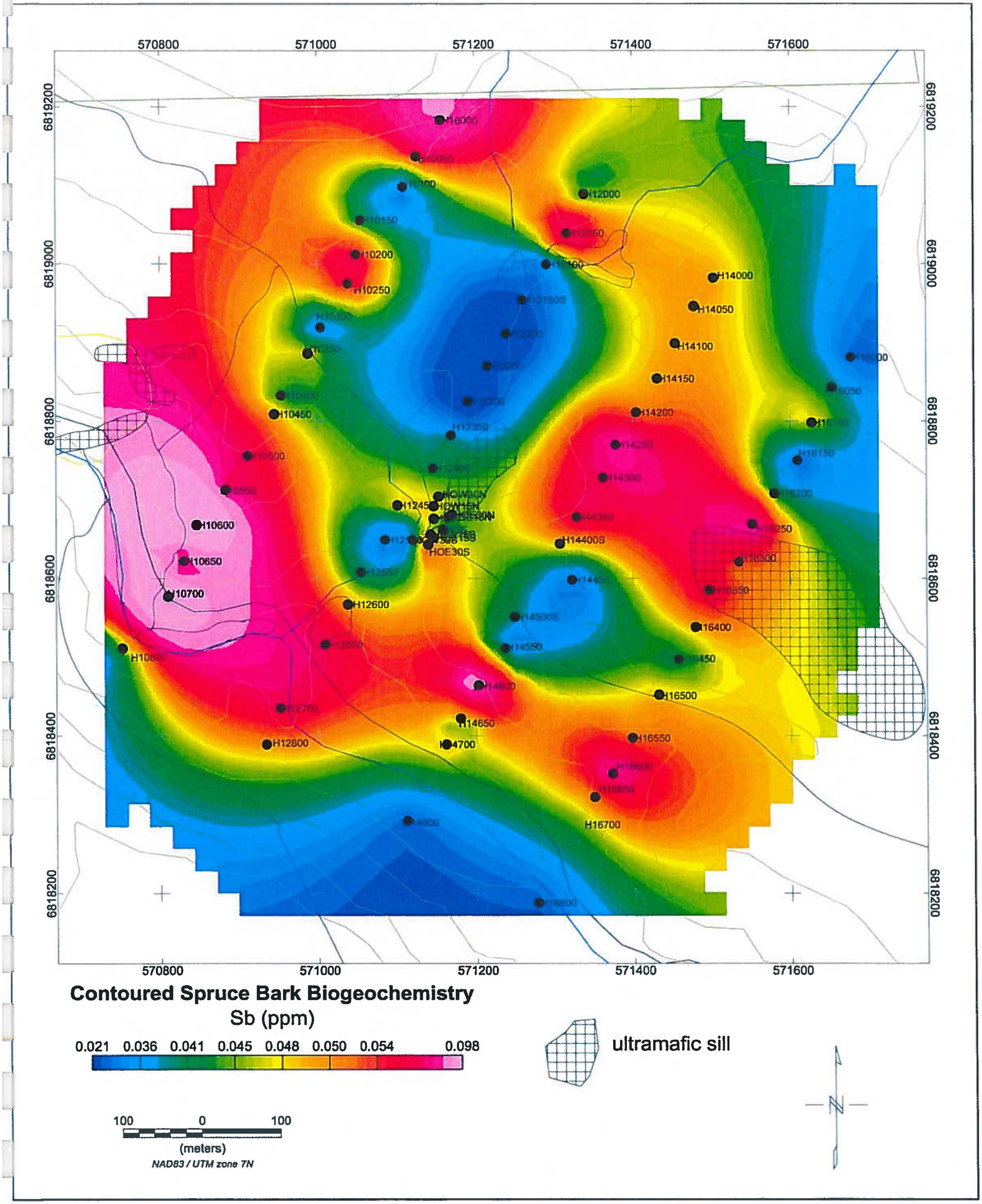

570800
571000
571200
571400
571600
6819200
6819000
6818800
6818600
6818400
6818200
Contoured Spruce Bark Biogeochemistry
Ni/Cu (ppm)
0.133 0.259 0.294 0.313 0.331 0.354 0.386 1.108
ultramafic sill
100 0 100
(meters)
NAD83 / UTM zone 7N



Contoured Spruce Bark Biogeochemistry

PGE+Au (ppm)
Pd and Pt

0.001 0.001 0.002 0.002 0.002 0.002 0.002 0.005



570800
571000
571200
571400
571600
6819200
6819000
6818800
6818600
6818400
6818200
H10200
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H10450
H10600
H10650
H10700
H12000
H12600
H12800
H14000
H14050
H14100
H14150
H14200
H14400S
H14650
H16400
H16500
H16700
HOE30S
Contoured Spruce Bark Biogeochemistry
Sb (ppm)
0.021 0.036 0.041 0.045 0.048 0.050 0.054 0.098
ultramafic sill
N
100 0 100
(meters)
NAD83 / UTM zone 7N

Spruce Bark Biogeochemistry - Arch Grid August 2014

line	station	map easting	map northing	ELEVATION	date sampled	sampler	bark sample #	BARK DUP	bark_easting	bark_northing	tree diameter	# OF TREES	SAMPLE tree species	tree health	site drainage	slope	aspect	vegetation	sample horizon	texture
1000	0S	571158	6819184		AUG 14/13	DEB, WINSTON, CODY	S10000		571157	6819183	34	1	WHITE SPRUCE	MODERATE	MODERATE	SLOPE	SW	SPRUCE, MOSSBERRY, LAB TEA, BLUEBERRY, DWARF BIRCH	HUMUS	ORGANIC, DAMP
1000	50S	571133	6819141	1219	AUG 16/13	DEB AND CODY	S10050		571126	6819137	38	1	WHITE SPRUCE		GOOD TO MODERATE	SLOPED RIDGETOP	S	WHITE SPRUCE, WILLOW, DWARF BIRCH	HUMUS - MIDDLE	ORGANIC +/- ASH
1000	100S	571108	6819098	1196	AUG 16/13	DEB AND CODY	S10100		571109	6819098	40	1	WHITE SPRUCE	MODERATE	GOOD	RIDGE TOP TO SLOPE	S	SPRUCE, WILLOW, ALDER, ROSE, VETCH, FIREWEED, LAB TEA, GRASS	HUMUS - LOWER	ORGANIC
1000	150S	571083	6819054	1197	AUG 16/13		S10150		571055	6819056	20	1	WHITE SPRUCE	MODERATE	MODERATE	RIDGE TOP - RIM	SW	SPRUCE, ALDER, WILLOW, ROSE, FIREWEED, LAB TEA, BLUEBERRY	HUMUS	ORGANIC, MIXED WITH MIDDLE LAYER
1000	200S	571058	6819011	1191	AUG 16/13	DEB, WINSTON, CODY	S10200		571049	6819012	22	1	WHITE SPRUCE	MODERATE TO GOOD		RIDGE TOP TO SLOPE	S	SPRUCE, WILLOW, CRANBERRY, LAB TEA, ASPEN, SOAPBERRY, HORSETAILS, ROSE	HUMUS - MIDDLE	ORGANIC +/- ASH
1000	250S	571033	6818968	1182	AUG 16/13	DEB, WINSTON, CODY	S10250		571039	6818975	32	1	WHITE SPRUCE	MODERATE	GOOD	SLOPE	S	SPRUCE, ASPEN, WILLOW, ROSE, FIREWEED, LAB TEA, SOAPBERRY, CRANBERRY	HUMUS	ORGANIC
1000	300S	571008	6818924	1151	AUG 16/13	DEB, WINSTON, CODY	S10300		571004	6818919	35	1	WHITE SPRUCE	MODERATE	GOOD	SLOPE	S	SPRUCE, WILLOW, PEA, ALDER, SOAPBERRY	HUMUS	ORGANIC
1000	350S	570983	6818881	1160	AUG 16/13	DEB, WINSTON, CODY	S10350		570988	6818886	35	1	WHITE SPRUCE	MODERATE	GOOD	SLOPE	SE	SPRUCE, ALDER, ROSE, FIREWEED, WINTERGREEN, FIREWEED, ASPEN, SOAPBERRY	HUMUS	ORGANIC
1000	400S	570958	6818838		AUG 16/13	DEB AND WINSTON	S10400		570954	6818833	30	1	WHITE SPRUCE	MODERATE	GOOD	RIDGE TOP TO SLOPE	S	W/ SPRUCE, WILLOW, JUNIPER, ASPEN,	HUMUS - MIDDLE	ORGANIC, DEAD MOSS
1000	450S	570933	6818795	1144	AUG 16/13	DEB AND WINSTON	S10450		570945	6818809	40	1	WHITE SPRUCE		GOOD	SLOPE	S	SPRUIVE, WILLOW, SOAPBERRY, WINTERGREEN, ROSE, JUNIPER	HUMUS - MIDDLE	ORAGANIC + SILT/CLAY
1000	500S	570908	6818751	1135	AUG 16/13	DEB AND WINSTON	S10500		570911	6818756	35	1	WHITE SPRUCE		GOOD	SLOPE	W	SPRUCE, WILLOW, ASPEN, SOAPBERRY, JUNIPER	HUMUS - MIDDLE	ORGANIC +/- SILT
1000	550S	570883	6818708	1130	AUG 16/13	DEB AND WINSTON	S10550		570883	6818713	25	1	WHITE SPRUCE	MODERATE	GOOD	RIDGE TOP	NW	SPRUCE, WILLOW, LAB TEA, ALDER, ROSE, CRANBERRY, MOSS BERRY	HUMUS - LOWER	ORGANIC - DAMP
1000	600S	570858	6818665	1102	AUG 16/13	DEB AND WINSTON	S10600		570846	6818668	23	1	WHITE SPRUCE		MODERATE	SLOPE	W	SPRUCE, ALDER, LAB TEA, ROSE, CRANBERRY	HUMUS	ORGANIC
1000	650S	570833	6818621		AUG 16/13	DEB AND WINSTON	S10650		570830	6818622	35	1	BLACK SPRUCE	MODERATE TO POOR	GOOD	SLOPE	W	W>B SPRUCE, FIREWEED, ROSE, CRANBERRY, JUNIPER, WINTERGREEN	HUMUS - LOWER	ORGANIC
1000	700S	570808	6818578		AUG 16/13	DEB AND WINSTON	S10700		570810	6818577	25	1	SPRUCE	MODERATE	GOOD	SLOPE	W	SPRUCE, WILLOW, SOAPBERRY, ROSE, W>B SPRUCE	HUMUS	ORGANIC
1000	700A							S10700A												
1000	800S	570758	6818491	1042	AUG 10 AND 16/13	DEB AND WINSTON	S10800		570752	6818511	20	1	WHITE SPRUCE	MODERATE	MODERATE	SLOPE	NE	ALDER, MINOR W. SPRUCE, FIREWEED, GRASS, WINTERGREEN	HUMUS - LOWER	ORGANIC - DAMP
1200	0S	571331	6819084	1169	AUG 14/13	DEB AND WINSTON	S12000		571339	6819089	45	1	SPRUCE	MODERATE	GOOD	SLOPE	W	SPRUCE, ALDER, JUNIPER, FIREWEED, GRASS, WINTERGREEN, MOSSBERRY	JUMUS - MIDDLE AND SILT	ORGANICS AND SILT
1200	50S	571306	6819041	1152	AUG 14/13	DEB	S12050		571317	6819039	55	1	SPRUCE	MOD	GOOD	SLOPE	W	SRUCE, JUNIPER, ALDER, GRASS, WILLOW	HUMUS - MIDDLE	DEAD MOSS AND PEAT
1200	100S	571281	6818998	1129	AUG 14/13	DEB	S12100		571291	6818999	38	1	SPRUCE		MODERATE	VALLEY BOTTOM	W	BLACK>WHITE SPRUCE, WILLOW, ALDER, FIREWEED, WINTERGREEN	HUMUS -MIDDLE	ORGANIC MIXED WITH SILT
1200	150S	571256	6818954		AUG 14/13	DEB AND WINSTON	S12150		571260	6818954	35	1	BLACK SPRUCE	MODERATE	MODERATE	SLOPE	NW	BLACK>WHITE SPRUCE, WILLOW, ALSER, LAB TEA, CRANBERRY, MOSS BERRY	HUMUS-LOWER	PEAT
1200	200S	571231	6818911	1116	AUG 14/13	DEB AND WINSTON	S12200		571239	6818911	54	1	SPRUCE		GOOD	SLOPE	W	SPRUCE, WILLOW, GRASS, WINTERGREEN, SOAPBERRY, LAB TEA	JUMUS - MIDDLE AND LOWER	ORGANIC
1200	250S	571206	6818868	1105	AUG 14/13	DEB AND WINSTON	S12250		571215	6818870	43	1	SPRUCE	MOD	MODERATE	VALLEY BOTTOM	SW	SPRUCE, WILLOW, LAB TEA, WINTERGREEN, HORSETAIL, ALDER, GRASS, CRANBERRY	HUMUS	ORGANIC, CLAY
1200	300S	571181	6818824	1098	AUG 14/13	DEB AND WINSTON	S12300		571190	6818825	14	1	SPRUCE	MOD	MODERATE	SLOPE	SW	SPRUCE, ALDER, WILLOW, ROSE, WINTERGREEN, LAB TEA, GRASS, CRANBERRY, FIEWEED	HUMUS - MIDDLE	ORGANIC
1200	350S	571156	6818781	1090	AUG 14/13	DEB AND WINSTON	S12350		571169	6818782	15	1	SPRUCE		MODERATE	VALLEY BOTGTOM	SW	SPRUCE, WILLOW, ALDER, JUMIPER, WINTERGREEN, SOAPBERRY, CRANBERRY	JUMUS - MIDDLE	
1200	400S	571131	6818738	1093	AUG 14/13	DEB AND WINSTON	S12400		571146	6818740	25	1	SPRUCE		MODERATE	SLOPE	SW	SPRUCE, WILLOW, SOAPBERRY, GRASS, JUNIPER, ALDER	HUMUS - MIDDLE	ORGANIC, DEAD MOSS
1200	450S	571106	6818695	1088	AUG 14/13	DEB AND WINSTON	S12450		571101	6818693	27	1	SPRUCE	MOD	MODERATE	SLOPE	S	SPRUCE, WILLOW, HORSETAIL, MOSS BERRY, WILLOW, ROSE, FIREWEED, ALDER, LAB TEA, CRANBERRY	HUMUS	PEATY
1200	500S	571081	6818651	1085	AUG 14/13	DEB AND WINSTON	S12500		571085	6818649	18	1	BLACK SPRUCE	MOD	MODERATE	SLOPE	SW	SPRUCE, ROSE, LAB TEA, WILLOW, ALDER, FIREWEED, CRANBERRY	HUMUS - MIDDLE	ORGANIC AND CLAY
1200	550S	571056	6818608		AUG 14/13	DEB AND WINSTON	S12550		571054	6818608	27	1	SPRUCE	MOD	MODERATE	SLOPE	SW	BLACK.WHITE SPRUCE, OPEN FOREST, SPRUCE DOMINANT, MIXED AGE. MOD HEALTH STAND.	HUMUS - MIDDLE	DEAD MOSS AND ROOTS
1200	600S	571031	6818565	1054	AUG 14/13	DEB AND WINSTON	S12600		571038	6818567	20	1	SPRUCE	GOOD	MODERATE	VALLEY BOTTOM	W	SPRUCE, WILLOW, ALDER, POPLAR, SOAPBERRY, GRASS	HUMUS - UPPER AND MIDDLE	DEAD MOSS AND ROOTS
1200	650S	571006	6818521	1043	AUG 14/13	DEB AND WINSTON	S12650		571009	6818516	36	1	SPRUCE	MODERATE TO GOOD	MODERATE	SLOPE	W	SPRUCE, ALDER, SOAPBERRY, CRANBERRY, WINTERGREEN.	HUMUS - MIDDLE	DEAD MOSS
1200	700S	570981	6818478		AUG 10/13	DEB	NO SAMPLE								MODERATE	VALLEY BOTTOM	N	SPRUCE, ALDER, LAB TEA	HUMUS- MIDDLE	PEAT AND ORGANICS
1200	750S	570956	6818435	1055	AUG 14/13	DEB, WINSTON, CODY	S12750		570952	6818435	28	1	SPRUCE	MODERATE	MODERATE	SLOPE	NE	B AND W SPRUCE, WILLOW, MOSSBERRY, ALDER, LAB TEA, CRANBERRY	HUMUS	ORGANIC AND CLAY
1200	800S	570931	6818391		AUG 10 AND 14/13	DEB, WINSTON, CODY	S12800		570934	6818389	13	1	SPRUCE		POOR	VALLEY BOTTOM	N	SPRUCE, WILLOW, ALDER, LAB TEA, SUB ALPINE, DWARF BIRCH, WINTERGREEN, CRANBERRY, MOSS BERRY, BLUE BERRY	HUMUS	PEAT + CLAY
1400	0S	571505	6818984		aug 11/13 AND 18	DEB, WINSTON, CODY	S14000		571503	6818982	15	1	SPRUCE		MODERATE TO POOR	RIDGE TOP TO SLOPE	W	SPRUCE, WILLOW, LOTS OF DWARF BIRCH, SUB ALPINE, GRASS, LOW BUSH CRANBERRY, BLUEBERRY, MOSSBERRY, LAB TEA	HUMUS MAYBE Ah	ORGANIC - WET
1400	50S	571480	6818941	1200	aug 11/13 AND 18	DEB, WINSTON, CODY	S14050		571478	6818946	25	1	SPRUCE	MOD	MODERATE TO POOR	RIDGE TOP	N	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, MOSSBERRY, LOWBUSH CRANBERRY, SOAPBERRY, BLUEBERRY	HUMUS AND Ah?	PEAT AND SILT-CLAY
1400	50S							S14050A												
1400	100S	571455	6818898	1193	aug 11/13 and 18/13	DEB, WINSTON, CODY	S14100		571454	6818899	30	1	WHITE SPRUCE	MOD	POOR TO MOD	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, BOGGY, GRASS, BLUEBERRY, LOW BUSH CRANBERRY, HORSETAIL	HUMUS - LOWER, MAYBE Ah	organic, silt and clay
1400	150S	571430	6818854	1191	aug 11/13 AND 18/13	DEB, WINSTON, CODY	S14150		571431	6818854	20	1	WHITE SPRUCE	mod	POOR TO MOD	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, MOSSBERRY, BLUEBERRY, GRASS, LOW BUSH CRANBERRY	HUMUS - LOWER, MAYBE Ah	organic, silt and clay
1400	200S	571405	6818811	1185	aug 11/13 AND 18/13	DEB, WINSTON, CODY	S14200		571404	6818811	15	1	WHITE SPRUCE	MOD	MODERATE TO POOR	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, GRASS, BLUEBERRY, MOSSBERRY, BOGGY, LOW BUSH CRANBERRY	HUMUS	PEATY
1400	250S	571380	6818768	1176	aug 11/13 AND 18/13	DEB, WINSTON, CODY	S14250		571378	6818770	20	1	WHITE SPRUCE	GOOD	MODERATE	SLOPE	SW	SPRUCE, LAB TEA, ROSE, WILLOW, SUB ALPINE, BOGGY, WINTERGREEN, BIG OVAL, LOW BUSH CRANBERRY, PEA, DWARF BIRCH, MOSSBERRY, GRASS	HUMUS - LOWER, MAYBE A	PEAT, SILT CLAY

line	station	map easting	map northing	ELEVATION	date sampled	sampler	bark sample #	BARK DUP	bark_easting	bark_northing	tree diameter	# OF TREES	SAMPLE tree species	tree health	site drainage	slope	aspect	vegetation	sample horizon	texture
1400	300S	571355	6818724	1161	aug 11/13 AND 18/13	DEB, WINSTON, CODY	S14300		571362	6818728	25	1	WHITE SPRUCE	MOD	MODERATE TO GOOD	SLOPE	NW	SPRUCE, WILLOW, ALDER, LESSER LAB TEA, SOAPBERRY, MOSSBERRY, LOW BUSH CRANBERRY, BIG OVAL	HUMUS - MIDDLE	MOSSY TO PEATY
1400	350S	571330	6818681		aug 11/13 AND 18/13	DEB AND WINSTON	S14350		571328	6818678	10 AND 15	2	WHITE SPRUCE	MOD	MODERATE TO POOR	SLOPE	N	SPRUCE, ALDER, WILLOW, SUB-ALPINE, SOME LAB TEA, CRANBERRY, HORSETAIL, BLUEBERRY	HUMUS - LOWER	PEATY
1400	400S	571305	6818638		aug 11/13 AND 18/13	DEB, WINSTON, CODY	S14400		571307	6818644	35	1	SPRUCE		POOR	RIDGE TOP	FLAT	SPRUCE, LAB TEA, DWARF BIRCH, SUB ALPINE, LOW BUSH CRANBERRY, BIG OVAL, GRASS, HORSETAIL	HUMUS	ORGANIC, PEATY
1400	450S	571280	6818595		AUG 18/13	DEB, WINSTON, CODY	S14450		571322	6818598	21	1	WHITE SPRUCE	MOD TO GOOD	MODERATE	RIDGE TOP	FLAT	SPRUCE, DWARF BIRCH, LAB TEA, GRASS, STUNTED TREES, BLUBERRY, WILLOW	HUMUS	ORGANIC
1400	500S	571255	6818551		AUG 11/13 AND 18/13	DEB, WINSTON, CODY	S14500		571249	6818551	35	1	WHITE SPRUCE	GOOD HEALTH	GOOD	RIDGETOP	S	SPRUCE, POPLAR, ALDER, BIG OVAL, SOAPBERRY	HUMUS	PEAT, ORGANIC
1400	550S	571230	6818508	1136	AUG 11/13 and 18/13	DEB, WINSTON, CODY	S14550		571237	6818511	30	1	WHITE SPRUCE	HEALTHIER THAN DOWNSLOOE	GOOD	SLOPE	S	SPRUCE, WILLOW, ALDER, GRASS, POPLAR, LAB TEA, BIG OVAL, FIREWEED. TREE DOMINANT	HUMUS	ORGANIC - PEAT
1400	600S	571205	6818465	1085	AUG 10/13 AND AUG 11/13	DEB	S14600		571203	6818464	20	1	WHITE SPRUCE	MODERATE	MODERATE TO POOR	SLOPE	S	SPRUCE, MINOR WILLOW, LAB TEA, ALDER	HUMUS	ORGANIC +/- SILTY
1400	650S	571180	6818421		AUG 10 AND 11/13	DEB	S14650		571180	6818422	30	1	SPRUCE	MOD	POOR	SLOPE TO VALLEY BOTTOM	S	SPRUCE, ALDER, WILLOW, LAB TEA, MOSS	HUMUS	PEAT AND ORGANIC
1400	700S	571155	6818378	1065	AUG 10/13 13/13	DEB	S14700		571162	6818389	20	1	WHITE SPRUCE	GOOD	MODERATE	SLOPE	SW	SPRUCE, WILLOW, LAB TEA, CRANBERRY	HUMUS	PEATY, SOME CLAY
1400	750S	571130	6818335	1066	AUG 13/13	DEB	NO SAMPLE					1	WHITE SPRUCE		MODERATE	VALLEY BOTTOM	N	WILLOW, ALDER, HORSETAIL, FIREWEED	HUMUS MIXED WITH SILT	SILT AND ROTTED PLANTS
1400	800S	571105	6818291	1062	AUG 13/13	DEB	S14800		571112	6818292	25	1	SPRUCE	MOD	MODERATE	SLOPE	NE	SPRUCE, WILLOW, ALDER, LAB TEA	HUMUS	ORGANIC - PEAT
1400	800S							S14800A												
1600	0S	571678	6818884	1236	AUG 13/13	DEB, WINSTON, CODY	H16000		571677	6818881	29	1	SPRUCE		MODERATE TO GOOD	SLOPE	SW	SPRUCE, WILLOW, ALDER, LAB TEA, CRANBERRY, HORSETAIL, GRASS	HUMUS	PEAT +/- ASH
1600	50S	571653	6818841	1224	AUG 12/13	DEB, WINSTON, CODY	S16050		571653	6818843	22	1	SPRUCE		MODERATE	SLOPE	SW	SPRUCE, WILLOW, BLUEBERRY, ALDER, LAB TEA, CRANBERRY, MOSSBERRY	HUMUS	PEATY, CLAY
1600	100S	571628	6818798	1211	AUG 12/13	DEB, WINSTON, CODY	S16100		571627	6818798	8	1	SPRUCE		MODERATE	SLOPE	SW	SPRUCE, WILLOW, ALDER, LAB TEA, CRANBERRY, BLUEBERRY	HUMUS	PEATY
1600	150S	571603	6818754	1190	AUG 12/13	DEB, WINSTON, CODY	S16150		571609	6818750	10	1	SPRUCE		MODERATE	SLOPE	SW	SPRUCE, WILLOW, CRANBERRY, GRASS, HORSETAIL, ALDER, JUNIPER	HUMUS	PEATY, DAMP
1600	200S	571578	6818711	1180	AUG 12/13	DEB, WINSTON, CODY	S16200		571580	6818708	12	1	SPRUCE		POOR	SLOPE	SW	SPRUCE, WILLOW, DWARF BIRCH, MOSSBERRY, LAB TEA, GRASS, HORSETAIL	HUMUS	PEATY, DAMP
1600	250S	571553	6818668	1180	AUG 12/13	DEB, WINSTON, CODY	S16250		571551	6818669	15	1	SPRUCE	MOD	POOR	SLOPED RIDGETOP	W	SPRUCE, GRASS, LAB TEA MUTANT, DWARF BIRCH, HORSETAIL, LAB TGEA,	HUMUS	ORGANIC
1600	300S	571528	6818625	1179	AUG 12/13	DEB, WINSTON, CODY	S16300		571534	6818621	18	1	SPRUCE	MODERATE	POOR	SLOPING RIDGE TOP	W	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, "RED MOSS"	HUMUS	ORGANIC
1600	350S	571503	6818581	1179	AUG 12/13	DEB, WINSTON, CODY	S16350		571496	6818585	25	1	SPRUCE	GOOD	MODERATE	RIDGE TOP	W	SPRUCE, WILLOW, SUB ALPING, DWARF BIRCH, LAB TEA, GRASS, MOSSBERRY, LOW BUSH CRANBERRY	HUMUS	ORGANIC
1600	400S	571478	6818538	1176	AUG 13/13	DEB, WINSTON, CODY	S16400		571479	6818538	25	1	SPRUCE	GOOD	MODERATE	RIDGE TOP TO SLOPE	W	SPRUCE, WILLOW, DWARF BIRCH, GRASS, BLUEBERRY, CRANBERRY, MINOR LAB TEA	HUMUS	ORGANIC
1600	450S	571453	6818495	1166	AUG 13/13	DEB, WINSTON, CODY	S16450		571457	6818497	36	1	SPRUCE		POOR TO MODERATE	RIDGE TOP	W	SPRUCE, WILLOW, LAB TEA, BLUEBERRY, SAUB ALPINE	HUMUS	ORGANIC
1600	500S	571428	6818451	1155	AUG 13/13	DEB, WINSTON, CODY	S16500		571432	6818452	40	1	SPRUCE	MODERATE	GOOD	SLOPE	S	SPRUCE, WILLOW, ROSE, FIREWEED, CRANBERRY, SOAPBERRY	HUMUS	PEATY
1600	550S	571403	6818408	1110	AUG 12/13	DEB, WINSTON, CODY	S16550		571398	6818397	38	1	SPRUCE		GOOD	SLOPE	S	SPRUCE, ALDER, CRANBERRY, ROSE, GRASS	HUMUS - DEAD MOSS	MOSSY, PEATY
1600	600S	571378	6818365	1108	AUG 12/13	DEB, WINSTON, CODY	S16600		571373	6818352	19	1	SPRUCE		MODERATE TO POOR	SLOPE	S	SPRUCE, WILLOW, ALDER, GRASS, HORSETAIL, SPARSE LAB TEA	HUMUS	ORGANIC
1600	650S	571353	6818321	1130	AUG 12/13	DEB, WINSTON, CODY	S16650		571350	6818322	34	1	SPRUCE	GOOD	MODERATE	SLOPE	NW	SPRUCE, ALDER, WILLOW, LAB TEA, CRANBERRY	HUMUS	ORGANIC
1600	700S	571328	6818278	1135	AUG 12/13	DEB, WINSTON, CODY	NO SAMPLE								MODERATE TO GOOD	SLOPE FOR SGH, RIDGETOP FOR HUMUS	SW	WILLOW, ALDER FOR SGH - WILLOW, ALDER, POPLAR, LAB TEA, FIREWEED FOR HUMUS	CLAY +/- ORGANICS FOR SGH, HUMUS FOR HUMUS	ORGANIC
1600	750S	571303	6818235		AUG 13/13	DEB	NO SAMPLE								POOR	VALLEY BOTTOM	SW	POPLAR, FIREWEED, WILLOW, HORSETAIL	ALLUVIUM	CLAY
1600	800S	571278	6818191	1076	AUG 13/13	DEB, WINSTON, CODY	S16800		571278	6818188	34	1	SPRUCE	MODERATE	MODERATE	VALLEY BOTTOM	FLAT, N	SPRUCE, ALDER, POPLAR	HUMUS	ORGANIC
1601	800S							S16800A												
0E	30S			1085	AUG 18/13	DEB, WINSTON, CODY	S0E30S		571140	6818643	40	1	WHITE SPRUCE	POOR	MODERATE	VALLEY BOTTOM	N	SPRUCE, WILLOW, ALDER	HUMUS - LOWER	ORGANIC
0E	30S							S0E30SA												
0E	15S			1089	AUG 18/13	DEB, WINSTON, CODY	S0E15S		571147	6818652	25	1	WHITE SPRUCE		MODERATE	SLOPE	NW	SPRUCE, WILLOW, ALDER	HUMUS-MIDDLE	PEAT- DEAD MOSS
0E				1091	AUG 18/13	DEB, WINSTON, CODY	S0E		571159	6818662	33	1	WHITE SPRUCE		MODERATE	SLOPE	NW	SPRUCE, ALDER, LAB TEA, CRANBERRY, WILLOW, MOSSBERRY, BLUEBERRY, GRASS	HUMUS	ORGANIC
0E	15N				AUG 18/13	DEB, WINSTON, CODY	S0E15N		571166	6818678	25	1	WHITE SPRUCE	GOOD	MODERATE	SLOPE	N	SPRUCE, ALDER, CRANBERRY, LAB TEA, WINTERGREEN	HUMUS - LOWER	ORGANIC
0E	30N				AUG 18/13	DEB, WINSTON, CODY	S0E30N		571170	6818681	36	1	WHITE SPRUCE	MODERATE	MODERATE TO GOOD	SLOPE	NW	SPRUCE, WILLOW, JUNIPER, ROSE, ALDER, WINTERGREEN, FIREWEED, SOAPBERRY	HUMUS-LOWER	ORGANIC
0W	30S				AUG 18/13	DEB, WINSTON, CODY	S0W30S		571120	6818649	30	1	WHITE SPRUCE		MODERATE	VALLEY BOTTOM	S	SPRUCE, WILLOW, ALDER, FIREWEED, SOAPBERRY, ROSE	HUMUS - MIDDLE	PEATY, DEAD MOSS
0W	15S				AUG 18/13	DEB, WINSTON, CODY	S0W15S		571143	6818656	30	1	WHITE SPRUCE		MODERATE	SLOPE	N	SPRUCE, WILLOW, WINTERGREEN, LAB TEA, OVAL LEAF	HUMUS - MIDDLE	PEATY
0W					AUG 18/13	DEB, WINSTON, CODY	S0W		571147	6818676	22	1	WHITE SPRUCE	MODERATE	MODERATE	SLOPE	W	SPRUCE, WILLOW, ALDER, FIREWEED	HUMUS - MIDDLE	PEATY
0W	15N				AUG 18/13	DEB, WINSTON, CODY	S0W15N		571147	6818692	19	1	WHITE SPRUCE	MODERATE	MODERATE	VALLEY BOTTOM	SW	SPRUCE, WILLOW, POPLAR, OVAL LEAF, ROSE	HUMUS -MIDDLE +/- ASH, SILT	PEATY AND SILT
0W	30N				AUG 18/13	DEB, WINSTON, CODY	S0W30N		571153	6818704	35	1	WHITE SPRUCE	MODERATE	MODERATE TO POOR	VALLEY BOTTOM	SW	SPRUCE, WILLOW, ALDER, VETCH, OVAL LEAF, WINTERGREEN	HUMUS - MIDDLE	PEATY

line	station	colour	sample depth	rock chips	round/angular	ash	ash location	nearby o/c, trench etc.	notes	COMMENTS	Auppm	Pdppm	Ptppm	agppm	Al%	Asppm	Bppm	Bappm	Beppm	Bippm	Ca%	Cdppm	Ceppm
1000	0S	DARK BROWN	55			Y	BENEATH		OPEN FOREST, MODERATE HEALTH, DWARF BIRCH		0.0002	0.002	<0.001	0.014	0	0.48	10	224	0.01	0.006	1.7	0.064	0.986
1000	50S	BROWN	15			Y	BENEATH		DRY, RIDGE AND SOUTH ASPECT SLOPE. OPEN FOREST, MIXED AGE, MOD TO GOOD HEALTH		<0.0002	0.001	<0.001	0.017	0	0.46	<10	158.5	0.01	0.008	1.3	0.047	1.32
1000	100S	DARK BROWN	40			Y	BENEATH		SILT/CLAY UNDERNEATH SAMPLE. W. SPRUCE DOMIN ANT, OPEN MOD HEALTH.		<0.0002	<0.001	0.001	0.031	0	0.24	10	170.5	0.01	0.004	1.4	0.036	0.669
1000	150S	DARK BROWN	40			N			MODERATELY OPEN, MODERATELY HEALTHY, WILLOW DOMINANT		<0.0002	<0.001	0.001	0.024	0	0.29	<10	143.5	0.01	0.004	1	0.028	1.035
1000	200S	BROWN	25			Y	TINY BIT IN SAMPLE		MOSTLY SPRUCE, MIXED AGE, FAIRLY OPEN, GOOD TO MODERATE HEALTH	ORGANIC +/- ASH	0.0002	<0.001	<0.001	0.012	0	0.37	10	171.5	0.01	0.007	1.5	0.039	1.515
1000	250S	DARK BROWN	25			Y	UNDERNEATH		MOSTLY SPRUCE AND WILLOW, MIXED AGE, FAIRLY OPEN, MODERATE HEALTH		0.0003	<0.001	<0.001	0.017	0	0.37	10	160	0.01	0.006	1.6	0.062	1.035
1000	300S	BROWN	17			N			NEARBY CREEK DRAW, CLOSE FOREST, MIXED AGE, MODERATE HEALTH, MOSTLY SPRUCE		<0.0002	<0.001	0.002	0.018	0	0.25	10	136.5	0.01	0.005	1.7	0.022	0.879
1000	350S	DARK BROWN	13			N			CLOSED FOREST, MOSTLY SPRUCE OR ALDER, MIXED AGE, MODERATE HEALTH		0.0002	<0.001	0.001	0.016	0	0.34	<10	67	0.01	0.006	1.1	0.027	1.27
1000	400S	RED BROWN	9			Y	BENEATH		SPRUCE DOMINANT, MIXED AGE. DRY CANYON RIM		<0.0002	0.001	<0.001	0.019	0	0.27	<10	214	0.01	0.007	1.2	0.03	1.31
1000	450S	BROWN	19			Y	MIXED IN SAMPLE		RIM OF CANYON. ACTUAL STATION IN SPACE. HUMUS SAMPLE MIX OF HUMUS, CLAY, ASH AND SILT.SPRUCE AND ASPEN AT RIM, SPRUCE BELOW.		0.0002	<0.001	0.001	0.019	0	0.46	<10	118.5	0.01	0.005	1.7	0.039	1.155
1000	500S	BROWN	36			N			CANYON RIM. DRY SITE. NO BLACK SPRUCE. SPRUCE ON LOWER SLOPELS, ASPEN ABOVE.		<0.0002	<0.001	<0.001	0.019	0	0.34	10	82.1	0.01	0.005	1.4	0.035	1
1000	550S	BROWN	36			Y	BENEATH		CANYON RIM, MOD HEALTH, MOD OPEN FOREST, SPRUCE DOMINANT.		<0.0002	0.001	0.002	0.025	0	0.4	10	204	0.01	0.006	1.9	0.046	1.265
1000	600S	BLACK	31			Y	BENEATH		MOD OPEN FOREST, MIXED AGE. W SPRUCE DOMINANT.		0.0003	<0.001	<0.001	0.045	0.1	0.82	10	203	0.02	0.014	1.9	0.059	2.58
1000	650S	DARK BROWN	30			Y	BENEATH		SPRUCE DOMINANT, MIXED AGE, MOD HEALTH		0.0003	<0.001	<0.001	0.015	0	0.3	20	89.9	0.01	0.008	1.1	0.016	1.285
1000	700S	DARK BROWN	32			N			CLAY UNDERNEATH HUMUS. MIXED AGE FOREST. SPRUCE DOMINANT.		0.0002	0.002	0.003	0.046	0	0.3	<10	123.5	0.01	0.005	1.4	0.043	0.857
1000	700A										<0.0002	<0.001	0.001	0.048	0	0.38	<10	119.5	0.01	0.006	1.4	0.045	1.12
1000	800S	BLACK	5 AND 33	BENEATH	SUBROUNDED	N		PLACER ROAD BELOW	UNSTABLE SLOPE WITH LOTS OF ALDER, MOD HEALTH OVERALL.		0.0002	0.001	<0.001	0.01	0	0.36	<10	110.5	0.01	0.005	1.6	0.026	1.01
1200	0S	DARK GREY BROWN	15			N		CUTLINE NEARBY	MIXED AGE. STAND HEALTH MOD TO GOOD.		<0.0002	<0.001	<0.001	0.009	0	0.25	10	104	0.01	0.004	0.9	0.026	0.631
1200	50S	DARK BROWN	20			Y	NENEATH		MIDDLE TO OLD AGED FOREST. MOD CLOSED, MOD HEALTH. STEEP SLOPE ON TILLABOVE CREEK.		<0.0002	0.001	0.001	0.02	0	0.55	20	151.5	0.02	0.008	1.9	0.044	1.345
1200	100S	BROWN GREY	5			N			OPEN FOREST ALONG CREEK. MATURE SPRUCE WITH ALDER. MOD TO GOOD FOREST HEALTH. PERIODIC INUNDATIONS OF SILT.		<0.0002	0.001	0.003	0.016	0	0.17	30	48.7	<0.01	0.004	1	0.014	0.793
1200	150S	DARK BROWN	45			Y	BENETH	LINE OF OLD FLAGGING	OPEN FOREST, MODERATE HEALTH, SIDE OF VALLEY		0.0003	0.001	0.001	0.015	0	0.25	20	188.5	0.01	0.003	1.4	0.023	0.63
1200	200S	DARK BROWN	32			Y	A LITTLE IN SAMPLE		ENCLOSED FOREST, STEEP SLOPE, DOMINANT SPRUCE AND ALDER, MODERATELY HEALTHY, MIXED AGE TREES		<0.0002	<0.001	<0.001	0.025	0	0.17	10	117	<0.01	0.004	1.2	0.015	0.653
1200	250S	DARK BROWN	25			N			CLOSING FOREST, MIXED AGE, DOMINANTLY ALDER, MODERATE HEALTH		0.0006	<0.001	<0.001	0.014	0	0.22	20	151.5	0.01	0.004	1.1	0.028	0.638
1200	300S	DARK BROWN	30			Y	BENEATH AND MIXED		MODERATELY OPEN, MIXED AGE, MODERATELY HEALTHY		<0.0002	0.001	<0.001	0.026	0	0.26	10	141.5	0.01	0.006	1	0.033	0.764
1200	350S	BROWN	15	BENEATH	SUBANGULAR	N		OLD CUT LINE	TIGHT GROWTH, MIXED AGE, MODERATELY HEALTHY, SPRUCE AND ALDER DOMINANT		<0.0002	0.001	<0.001	0.018	0	0.31	10	100.5	0.01	0.006	1	0.024	1.26
1200	400S	BROWN	15	BEANEATH	SUBANGULAR	N			MODERATELY OPEN, MIXED AGE, MODERATE HEALTH, SPRUCE DOMINANT		0.0002	0.001	<0.001	0.011	0	0.23	<10	209	0.01	0.005	1.3	0.038	1.085
1200	450S	DARK BROWN	25			Y		CLAIM LINE	MODERATELY OPEN, SPRUCE DOMINANT, MODERATE HEALTH		<0.0002	<0.001	0.001	0.013	0	0.47	<10	208	0.01	0.005	1.6	0.04	1 195
1200	500S	DARK BROWN	20	BENEATH	SUBANGULAR	N			MOD OPEN FOREST OF BLACK SPRUCE. MIXED AGE, MOD HEALTH.		0.0002	<0.001	0.004	0.02	0	0.22	30	118.5	0.01	0.006	1.3	0.034	1.005
1200	550S	BROWN	27			Y	BENEATH		OPEN FOREST, SPRUCE DOMINANTSTAND HEALT MOD.		<0.0002	0.001	0.001	0.02	0	0.27	<10	198	0.01	0.004	2	0.045	0.679
1200	600S	BROWN	12	BENEATH	ANGULAR	N			OPEN SPRUCE AND POPLAR FOREST. BENCH ABOVE CREEK, BESIDE SECONDARY CHANNEL.		0.0004	<0.001	0.003	0.016	0	0.24	30	67.4	0.01	0.005	1.1	0.028	0.944
1200	650S	BROWN	15	BENEATH	ANGULAR	N		WATERLINE FOR PLACEDR DOWN CREEK	MOD OPEN FOREST, MIXED AGE. MOD HEALTH.		<0.0002	0.001	<0.001	0.014	0	0.29	20	154.5	0.01	0.006	1.7	0.034	0.968
1200	700S	DARK BROWN	45			N		PLACER DISTURBANCE, ROADS	MOVED OFF LINE TO SAMPLE UNDISTURBED MATERIAL. RECENT BULLDOZING NEARBY. SPRUCE DYING	TRAIL SAMPLE. SGH DUPLICATE.													
1200	750S	DARK BROWN	35			Y	BENEATH	NEARBY PLACER MINING	MODERATLEY OPEN FOREST, MODERATE HEALTH		<0.0002	0.001	<0.001	0.013	0	0.39	10	146.5	0.01	0.01	1.3	0.036	1.77
1200	800S	DARK BROWN	20	BENEATH	SUBANGULAR TO ROUNDED PEBBLES, SAND, GRAVEL	N		15M FROM PPLACER	SPRUCE>LAB TEA>ALDER>DWARF BIRCH. YOUNG TO MIDDLE AGED STAND. OPEN, BOGGY, HUMMOCKY. MOD OPEN STAND. SGH TAKEN SEPARATELY FROM OTHERS.		0.0002	<0.001	0.001	0.025	0	0.37	<10	150.5	0.01	0.005	1.8	0.034	1.1
1400	0S	BLACK	25			Y	BENEATH	OLD CUTLINE, SQUARED POST	DWARF BIRCH DOMINANT. OPEN STUNTED SPRUCE GIVING WAY TO SHRUBS. MIXED AGE	SGH SAMPLED LATER	<0.0002	0.001	0.001	0.034	0	0.44	<10	169.5	0.01	0.005	1.5	0.044	0.902
1400	50S	DARK BROWN	25			Y	BENEATH		SUB ALPINE, BOG FOREST, SHRUBS INCREASING. OPEN SPRUCE, STUNTED, MOD HEALTH, MOSTLY SPRUCE, MIXED AGE	SGH SAMPLED LATER	0.0002	0.001	<0.001	0.036	0	0.31	10	348	0.01	0.005	1.2	0.039	0.847
1400	50S										<0.0002	0.001	<0.001	0.034	0	0.33	20	273	0.01	0.01	1.1	0.04	1.85
1400	100S	BLACK	35			Y	BENEATH		OPEN SPRUCE FOREST, SUB ALPINE RIDGE TOP. HUMMOCKY, MIXED AGE. MOD HEALTH. Lots of willow and birch.		0.0003	<0.001	0.002	0.046	0	0.35	20	119	0.01	0.006	1.1	0.046	0.866
1400	150S	black	25			Y	BENEATH		OPEN SPRUCE FOREST, SUB ALPINE, BOGGY, MIXED AGE, MOD HEALTH.		0.0002	<0.001	0.005	0.061	0	0.26	20	213	0.01	0.003	1.5	0.04	0.704
1400	200S	BLACK	25			Y	BENEATH	OLD CUTLINE TO NW	HUMMOCKY RIDGETOP. SPRUCE DOMINANT, OPEN FOREST, MIXED AGE. SOME DEAD, REST MOD HEALTH.		<0.0002	0.001	<0.001	0.023	0	0.31	<10	137	0.01	0.004	1.1	0.029	0.769
1400	250S	BLACK	30			Y	BENEATH		AT EDGE OF BENCH. NEAR TOP OF GLACIAL OVERBURDEN? MOD TO GOOD HEALTH STAND, OPEN FOREST, SPRUCE DOMINANT, MIXED AGE.	SGH SAMPLED LATER	<0.0002	<0.001	<0.001	0.025	0	0.52	<10	226	0.01	0.007	1.6	0.05	1.25

line	station	colour	sample depth	rock chips	round/angular	ash	ash location	nearby o/c, trench etc.	notes	COMMENTS	Auppm	Pdppm	Ptppm	agppm	Al%	Asppm	Bppm	Bappm	Beppm	Bippm	Ca%	Cdppm	Ceppm
1400	300S	BROWN	15			Y	BENEATH	LINE OF OLD FLAGGING	SPRUCE DOMINANT, VARIABLY OPEN, MIXED AGE SPRUCE, SOME DEAD, MAJORITY MOD HEALTH.	SGH SAMPLED LATER	<0.0002	<0.001	0.001	0.014	0	0.5	20	182.5	0.01	0.008	1.3	0.058	1.39
1400	350S	BLACK-DARK BROWN	35	BENEATH		N		OLD FLAGGING	HUMMOCKY, SOLIFLUCTION SLOPE OF SIDE OF DRAW. MOD HEALTH, STUNTED OR SUB ALPINE. PERMAFROST BELOW SAMPLE. SPRUCE AND ALDER DOMINANT, FAIRLY OPEN.		<0.0002	<0.001	<0.001	0.01	0	0.31	20	104.5	0.01	0.007	1.1	0.032	1.195
1400	400S	BROWN	40			Y	BENEATH		FLAT, HUMMOCKY, SLIGHTLY BOGGY, SPRUCE, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE		0.0006	<0.001	0.001	0.014	0	0.34	20	98.3	0.01	0.006	1	0.036	1.22
1400	450S	DARK BROWN	25			Y	BENEATH		MOVED 36M EAST OFF LINE TO SAMPLE. STAKE IN MIDDLE OF STEEP DRAW. ON TOP OF GRAVEL BOWL, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE.		<0.0002	<0.001	0.002	0.016	0	0.21	<10	111	<0.01	0.005	0.9	0.031	0.817
1400	500S	DARK BROWN/BLACK	30			Y	BENEATH AND SOME IN SAMPLE		ON EDGE OF BIG GRAVEL BOWL, SPRUCE DOMINANT, OLD GROWTH FOREST, LIMITED VEGT UNDER CANOPY, GOOD HEALTH, VERY DRY		<0.0002	<0.001	<0.001	0.011	0	0.24	10	241	0.01	0.01	1.3	0.042	1.35
1400	550S	DARK BROWN	20			N			MATURE FOREST, MODERATE HEALTH. OLD GROWTH, SPRUCE DOMINANT, CLOSED CANOPY		0.0002	<0.001	<0.001	0.032	0	0.35	10	215	<0.01	0.004	1.6	0.041	0.681
1400	600S	DARK BROWN	25			Y	UNDERNEATH		MANY TREES IN POOR HEALTH OR DYING.		<0.0002	<0.001	<0.001	0.026	0.1	0.55	<10	117	0.01	0.008	1.7	0.038	1.925
1400	650S	BLACK	25			N			MIXED AGE STAND, SOME DEAD, OTHERS WITH DEAD BRANCHES. YOUNG SPRUCE.		<0.0002	0.001	0.001	0.01	0	0.18	30	209	0.01	0.006	1.4	0.04	1.08
1400	700S	DARK BROWN	30			Y	BENEATH	AT EDGE OF NEW ROAD	POOR HEALTH FOREST. LOTS OF LAB TEA AND CRANBERRY. MODERATELY OPEN FOREST NEAR CREEK.	SGH SAMPLED EARLIER. MOVED FROM STATION TO AVOID RECENT ROAD BUILDING.	<0.0002	0.001	0.002	0.017	0	0.35	30	203	0.01	0.005	1.6	0.043	0.911
1400	750S	GREY BROWN	5			N			VEGETATED POINT BAR. TREES 5-10 YEARS OLD. NO SPRUCE OR HUMUS. LEAF LITTER UNDER TREES.														
1400	800S	BROWN - DARK BROWN	40			N			MOD OPEN FOREST, POOR HEALTH. PERMAFRSOT BENEATH SAMPLE. 15M AWAY FROM CREEK.		<0.0002	<0.001	0.001	0.011	0	0.18	20	99.9	<0.01	0.006	1.1	0.016	0.937
1400	800S										<0.0002	<0.001	<0.001	0.009	0	0.15	20	111	<0.01	0.006	1.1	0.015	0.83
1600	0S	BROWN	25			Y	SOME MIXED IN		OPEN FOREST, ALDER DOMINANT, MODERATE HEALTH. SLOPE AT BASE OF MOUNTAIN.		<0.0002	0.001	<0.001	0.042	0	0.23	20	192	0.01	0.007	0.9	0.022	1.31
1600	50S	DARK BROWN	20			N			CLOSING CANOPY, SPRUCE DOMINANT, A FEW ALDER, MODERATE HEALTH		<0.0002	<0.001	0.001	0.021	0	0.25	20	106.5	0.01	0.006	1.2	0.041	0.869
1600	100S	DARK BROWN	30			Y	BENEATH		OPEN, MODERATE HEALTH, MIXED AGE, LAB TEA DOMINANT		<0.0002	0.001	<0.001	0.008	0	0.29	10	188	0.01	0.013	1.2	0.025	2.29
1600	150S	DARK BROWN	20			Y	BENEATH		CANOPY CLOSING, MODERATE HEALTH, MIXED AGE, SPRUCE DOMINANT		<0.0002	<0.001	<0.001	0.024	0	0.33	10	156	0.01	0.006	1.2	0.036	0.857
1600	200S	DARK BROWN	15			Y	BENEATH	OLD FLAGGING NEARBY	OPEN, MODERATE HEALTH, MIXED AGE, SPRUCE DOMINANT		0.0002	0.001	0.001	0.051	0	0.21	10	197	0.01	0.007	1.6	0.04	1.64
1600	250S	DARK BROWN	35			Y	BENEATH		OPEN, MODERATE HEALTH BOG FOREST, SMALL STANDING WATER, MIXED AGE, DWARF BIRCH DOMINANT		<0.0002	0.002	<0.001	0.068	0	0.32	10	226	0.01	0.007	1.6	0.047	1.08
1600	300S	DARK BROWN	30			Y	BENEATH		OPEN, MILDLY UNHEALTHY, BOGGY		<0.0002	<0.001	<0.001	0.017	0	0.31	10	143	0.01	0.007	1.1	0.03	1.32
1600	350S	DARK BROWN	25			N			SMALL Ah MIXED IN. DWARF BIRCH DOMINANT, MIXED AGE STAND, VERY OPEN FOREST, SOMEWHAT UNHEALTHY		<0.0002	<0.001	<0.001	0.018	0	0.27	20	160	0.01	0.007	1.1	0.029	1.065
1600	400S	DARK BROWN	40			Y	BENEATH	BASELINE OF OLD GRID. 56 +50N	SLIGHT SLOPE OUT OF BOGGY AREA. STAND OF OLD SPRUCE. MORE CLOSED IN THAN BOG. DWARF BIRCH DOMINANT. MOD TO POOR HEALTH.		0.0003	0.001	0.001	0.019	0	0.24	20	177	0.01	0.008	1.3	0.041	1.285
1600	450S	DARK BROWN BLACK	45			Y	BENEATH		FLATTISH, SEMI-BOGGY, LOTS OF MOSS, OPEN FOREST, SMALLER TREES.		<0.0002	<0.001	<0.001	0.013	0	0.16	20	179	0.01	0.009	1.4	0.03	1.775
1600	500S	BROWN	15			N			MATURE FOREST, MOD HEALTH, WELL DRAINED SLOPE, SPRUCE DOMINANT		0.0002	<0.001	<0.001	0.012	0	0.21	10	77.9	0.01	0.006	0.9	0.027	1.12
1600	550S	BROWN	10			Y	UNDERNEATH AND MIXED IN		WELL DRAINE DSLOPE ABOVE CREEK, MOD FOREST CANOPY, MOD HEALTH.		0.0004	<0.001	0.001	0.011	0	0.32	30	164.5	<0.01	0.007	1.6	0.05	1.015
1600	600S	DARK BROWN	25			N			CLOSE TO CREEK. SPRUCE UNHEALTHY, DECIDUOUS HEALTHY, MOD CLOSED, MIXED AGE SPRUCE		<0.0002	0.001	<0.001	0.024	0	0.54	10	197.5	0.02	0.009	1.5	0.04	1.905
1600	650S	DARK BROWN	30			N			SPRUCE AND ALDER OPEN FOREST, MIXED AGE, UNHEALTHY TREES. ABOVE CREEK		0.0006	0.001	0.004	0.019	0	0.32	30	117.5	0.01	0.005	1.2	0.031	0.883
1600	700S	BROWN GREY FOR SGH, BROWN FOR HUMUS	5 FOR SGH, 10 FOR HUMUS			Y	ASH IN HUMUS, NOT IN SGH	ROAD BELOW	ON GRAVEL/CALY BANK ABNOVE ROAD. DIFF LOCATION FOR SGH AND HUMUS SAMPLES.														
1600	750S	GREY	12			N		ROAD ABOVE PLACER CREEK	EARLY SUCCESSION RIVERBANK. 5-10 YEAR OLD POPLAR, WILLOW. LOTS OF HORSETAIL														
1600	800S	BROWN	30			Y	BENEATH		GOOD-MODERATE HEALTH STAND, MIXED OLDER FOREST. LOCATED ON BENCH 2M ABOVE CREEK.		<0.0002	0.001	<0.001	0.007	0	0.3	20	305	<0.01	0.009	1.3	0.018	1.75
1601	800S																						
0E	30S	DARK BROWN	23			N		ABOVE TECK SHOWING	MINI GRID AROUND TECK SHOWING. BESIDE INTERMITTENT CREEK. ALDER DOMINANT. WHITE SPRUCE POOR HEALTH.		<0.0002	0.001	<0.001	0.016	0	0.38	20	137	0.01	0.01	1.5	0.038	1.885
0E	30S										<0.0002	0.002	<0.001	0.015	0	0.3	10	144.5	0.01	0.008	1.5	0.045	1.305
0E	15S	BROWN	25			N		OLD FLAGGING. ABOVE TECK SHOWING	MINI GRID AROUND TECK SHOWING. MODERATELY OPEN, MOD TO GOOD EHALTH.		0.0002	0.001	<0.001	0.032	0	0.58	20	95.9	0.01	0.009	1.3	0.053	1.665
0E		DARK BROWN	52	BENEATH SAMPLE		N		OLD FLAGGING L8+25E 9+25N. ABOVE TECK SHOWING O/C	MINI GRID AROUND TECK SHOWING. FAIRLY OPEN, MIXED AGE, MODERATE HEALTH, ALDER AND SPRUCE DOMINANT		0.0003	<0.001	<0.001	0.037	0	0.16	20	86.9	0.01	0.006	1.1	0.016	0.871
0E	15N	DARK BROWN	25			N		OLD FLAGGING 8+25E 9+40N	MINI GRID AROUND TECK SHOWING. ALDER DOMINANT. CLAY AND GRAVEL UNDER SAMPLE. OPEN FOREST.		<0.0002	0.002	<0.001	0.021	0	0.24	10	117	0.01	0.011	1.2	0.032	1.9
0E	30N	DARK BROWN	20	YES	ANGULAR TO SUBROUNDED	N		ABOVE TECK TRENCH	MOD OPEN FOREST, SPRUCE DOMINANT	MINI GRID AROUND TECK SHOWING	<0.0002	0.001	<0.001	0.009	0	0.26	10	149	0.01	0.02	1	0.038	2.59
0W	30S	BROWN	15	Y	SUBROUNDED, SUBANGULAR	Y		ON OLD CAT TRACK	BENCH ABOVE CREEK. WILLOW AND ALDER ON OLD CAT ROAD. MIXED AGE, MOD HEALTH.		<0.0002	0.001	0.002	0.012	0	0.26	20	99.3	<0.01	0.012	1	0.025	2.54
0W	15S	BROWN	24			N		O/C ABOVE	MINI GRID AROUND TECK SHOWING. MIXED AGE, MOD HEALTH. ON SLOPE ABOVE CREEK.		<0.0002	<0.001	0.002	0.011	0	0.22	30	116	<0.01	0.005	1.2	0.021	1.065
0W		BROWN	15	BENEATH	SUBANGULAR	N		BELOW TECK TRENCH	ON SIDE OF CREEK. MOD HEALTH STAND, ALDERA ND SPRUCE STAND ON BENCH ABOVE CREEK.		<0.0002	<0.001	<0.001	0.019	0	0.3	10	127.5	0.01	0.005	1.3	0.031	0.867
0W	15N	BROWN	10	YES	SUBROUNDED	Y	IN SAMPLE	5M AWAY FROM TRENCH	MINI GRID AROUND TECK SHOWING. FLOODPLAIN, SILT AND ASH MIXED WITH HUMUS. MIXED ALDER>POPLAR AND WHITE SPRUCE, CLOSED FOREST.		0.0002	0.002	0.001	0.015	0	0.34	10	118.5	0.01	0.006	1.1	0.042	1.22
0W	30N	DARK BROWN	20			N		TRENCH AND O/C	BENCH ABOVE CREEK. LESS INUDATION THAN 15N		<0.0002	0.001	<0.001	0.005	0	0.29	10	111	0.01	0.004	1.3	0.031	0.602

line	station	Coppm	Crppm	Csppm	Cuppm	Dyppm	Erppm	Euppm	Fe%	Gappm	Gdppm	Geppm	Hfppm	Hgppm	Hoppm	Inppm	K%	Lappm	Lippm	Luppm	Mg%	Mnppm	Moppm	Na%	Nbppm	Ndppm	Nippm	P%	Pbppm	Prppm	Rbppm	Reppm	S%	Sbppm
1000	0S	0.52	1.4	0.03	6.1	0.067	0.04	0.022	0.063	0.09	0.078	<0.005	0.007	0.043	0.012	<0.005	0.2	0.506	0.3	0.005	0.075	65	0.11	0.092	0.054	0.434	1.92	0.018	0.26	0.106	1.32	<0.001	0.1	0.07
1000	50S	0.455	1.3	0.054	6.47	0.079	0.042	0.026	0.08	0.13	0.096	<0.005	0.008	0.04	0.013	<0.005	0.1	0.689	0.3	0.005	0.071	54	0.12	0.091	0.066	0.58	1.97	0.017	0.37	0.152	1.17	<0.001	0.09	0.06
1000	100S	0.303	2.1	0.034	6.39	0.036	0.021	0.014	0.039	0.07	0.049	<0.005	0.005	0.023	0.006	<0.005	0.1	0.363	0.2	0.002	0.057	71	0.08	0.182	0.038	0.309	2.25	0.013	0.2	0.075	1.1	<0.001	0.17	0.03
1000	150S	0.364	0.9	0.023	4.95	0.051	0.027	0.019	0.074	0.09	0.073	<0.005	0.004	0.023	0.009	<0.005	0.1	0.555	0.2	0.004	0.049	47	0.09	0.212	0.054	0.479	1.04	0.011	0.25	0.119	0.71	<0.001	0.2	0.04
1000	200S	0.512	1.2	0.057	4.64	0.066	0.03	0.027	0.107	0.12	0.093	<0.005	0.009	0.043	0.011	<0.005	0.1	0.806	0.3	0.004	0.073	90	0.14	0.056	0.085	0.678	1.54	0.018	0.34	0.169	1.88	<0.001	0.06	0.06
1000	250S	0.575	1	0.04	7.19	0.067	0.032	0.024	0.06	0.09	0.072	<0.005	0.004	0.043	0.012	<0.005	0.2	0.564	0.3	0.006	0.075	84	0.12	0.115	0.045	0.484	1.71	0.02	0.3	0.125	1.63	<0.001	0.12	0.06
1000	300S	0.304	1.1	0.017	4.66	0.036	0.018	0.014	0.085	0.08	0.055	<0.005	0.002	0.033	0.006	<0.005	0.1	0.441	0.2	0.002	0.058	39	0.13	0.012	0.058	0.364	0.94	0.015	0.22	0.096	0.56	<0.001	0.01	0.03
1000	350S	0.459	2.2	0.038	7.57	0.054	0.031	0.025	0.099	0.11	0.074	<0.005	0.008	0.063	0.01	<0.005	0.1	0.618	0.3	0.004	0.065	38	0.15	0.159	0.08	0.543	2.2	0.019	0.31	0.139	0.93	<0.001	0.15	0.05
1000	400S	0.45	1.1	0.027	4.12	0.045	0.019	0.021	0.038	0.07	0.076	<0.005	0.004	0.03	0.007	<0.005	0.2	0.688	0.2	0.003	0.075	61	0.1	0.124	0.047	0.558	1.78	0.015	0.29	0.146	2.98	<0.001	0.11	0.04
1000	450S	0.542	2.6	0.047	6.67	0.045	0.026	0.02	0.088	0.09	0.077	0.007	0.006	0.031	0.009	<0.005	0.1	0.559	0.2	0.004	0.071	83	0.13	0.054	0.066	0.497	3.19	0.02	0.22	0.122	1.48	<0.001	0.05	0.05
1000	500S	0.803	1.9	0.035	8.15	0.057	0.034	0.02	0.07	0.1	0.077	<0.005	0.005	0.032	0.011	<0.005	0.2	0.535	0.3	0.004	0.086	64	0.1	0.113	0.052	0.444	4.71	0.02	0.24	0.118	0.94	<0.001	0.12	0.06
1000	550S	0.558	1.7	0.041	5.82	0.067	0.036	0.027	0.105	0.12	0.096	0.007	0.009	0.024	0.013	<0.005	0.1	0.631	0.3	0.005	0.08	80	0.18	0.063	0.082	0.558	2.09	0.015	0.27	0.141	1.38	<0.001	0.06	0.05
1000	600S	0.801	2.1	0.103	6.09	0.129	0.066	0.049	0.148	0.22	0.183	0.01	0.016	0.037	0.024	<0.005	0.1	1.34	0.6	0.01	0.101	91	0.23	0.108	0.147	1.12	2.99	0.026	0.53	0.284	2.39	<0.001	0.11	0.11
1000	650S	0.387	<0.5	0.032	5.35	0.051	0.024	0.024	0.075	0.09	0.077	0.015	0.007	0.026	0.01	<0.005	0.1	0.718	0.2	0.004	0.055	46	0.13	0.375	0.071	0.58	1.85	0.011	0.24	0.148	0.9	<0.001	0.35	0.05
1000	700S	0.435	2.3	0.044	4.39	0.051	0.026	0.018	0.06	0.09	0.068	<0.005	0.006	0.017	0.01	<0.005	0	0.418	0.3	0.004	0.073	37	0.11	0.228	0.046	0.382	2.17	0.012	0.24	0.096	0.47	<0.001	0.22	0.1
1000	700A	0.458	1.1	0.039	4.81	0.066	0.038	0.024	0.074	0.11	0.085	<0.005	0.006	0.022	0.012	<0.005	0	0.595	0.3	0.005	0.077	41	0.11	0.136	0.057	0.521	1.5	0.013	0.29	0.125	0.54	<0.001	0.13	0.06
1000	800S	0.391	0.9	0.037	4.62	0.049	0.023	0.019	0.054	0.1	0.073	<0.005	0.004	0.031	0.01	<0.005	0	0.525	0.3	0.003	0.061	36	0.08	0.088	0.045	0.458	1.11	0.012	0.25	0.115	0.58	<0.001	0.09	0.04
1200	0S	0.236	0.7	0.043	4.79	0.027	0.013	0.014	0.03	0.05	0.044	<0.005	0.003	0.047	0.005	<0.005	0.1	0.334	0.2	0.002	0.055	40	0.07	0.135	0.027	0.269	0.7	0.019	0.17	0.071	2.14	<0.001	0.13	0.04
1200	50S	0.548	<0.5	0.062	4.63	0.076	0.035	0.031	0.12	0.15	0.099	0.017	0.011	0.034	0.016	<0.005	0.1	0.725	0.4	0.006	0.093	60	0.21	0.356	0.109	0.637	2.9	0.02	0.34	0.162	1.38	<0.001	0.34	0.07
1200	100S	0.191	0.5	0.014	6.06	0.025	0.01	0.014	0.047	0.05	0.044	0.011	0.003	0.027	0.004	<0.005	0.1	0.405	0.1	0.001	0.042	28	0.14	0.019	0.042	0.328	0.64	0.012	0.15	0.084	0.63	<0.001	0.01	0.03
1200	150S	0.328	<0.5	0.019	3.56	0.027	0.015	0.01	0.057	0.05	0.036	0.009	0.006	0.034	0.005	<0.005	0.1	0.35	0.1	0.002	0.076	64	0.1	0.457	0.04	0.286	1.61	0.01	0.19	0.07	0.82	<0.001	0.43	0.03
1200	200S	0.234	1.2	0.015	4.39	0.02	0.01	0.012	0.056	0.05	0.033	<0.005	0.002	0.018	0.004	<0.005	0.1	0.345	0.1	0.001	0.069	55	0.07	0.159	0.042	0.282	1	0.015	0.14	0.073	1.12	<0.001	0.16	0.02
1200	250S	0.366	<0.5	0.012	3.69	0.027	0.013	0.013	0.072	0.06	0.042	0.009	0.005	0.039	0.005	<0.005	0.1	0.341	0.1	0.002	0.059	59	0.23	0.423	0.047	0.291	2.76	0.01	0.2	0.072	0.89	<0.001	0.4	0.03
1200	300S	0.282	0.5	0.046	5.59	0.031	0.015	0.014	0.029	0.05	0.053	<0.005	0.002	0.033	0.006	<0.005	0.2	0.436	0.2	0.002	0.067	100	0.07	0.12	0.03	0.367	0.78	0.017	0.23	0.085	2.54	<0.001	0.11	0.02
1200	350S	0.354	1.1	0.025	4.43	0.044	0.02	0.024	0.092	0.09	0.076	<0.005	0.005	0.04	0.008	<0.005	0.1	0.672	0.2	0.003	0.056	51	0.11	0.051	0.083	0.556	1.1	0.014	0.31	0.138	0.74	<0.001	0.04	0.04
1200	400S	0.362	0.7	0.015	3.84	0.043	0.022	0.022	0.038	0.06	0.071	<0.005	0.002	0.043	0.007	<0.005	0.2	0.67	0.2	0.003	0.063	62	0.08	0.128	0.041	0.483	1.04	0.014	0.27	0.126	0.79	<0.001	0.13	0.04
1200	450S	0.518	1.4	0.042	5.08	0.061	0.035	0.026	0.108	0.12	0.088	<0.005	0.007	0.052	0.012	<0.005	0.1	0.596	0.3	0.004	0.077	60	0.15	0.101	0.076	0.556	1.54	0.019	0.35	0.138	1.35	<0.001	0.1	0.05
1200	500S	0.343	0.7	0.028	3.69	0.038	0.02	0.019	0.049	0.07	0.062	0.011	0.007	0.039	0.007	<0.005	0.1	0.494	0.2	0.002	0.062	68	0.08	0.034	0.046	0.418	1.07	0.013	0.27	0.106	0.73	<0.001	0.02	0.03
1200	550S	0.455	0.9	0.02	4.07	0.041	0.024	0.018	0.045	0.07	0.058	<0.005	0.005	0.037	0.009	<0.005	0.1	0.355	0.2	0.004	0.079	67	0.1	0.202	0.033	0.326	1.31	0.011	0.21	0.079	0.53	<0.001	0.2	0.04
1200	600S	0.316	0.6	0.023	4.31	0.036	0.021	0.018	0.045	0.06	0.056	0.01	0.005	0.032	0.007	<0.005	0.1	0.472	0.2	0.003	0.052	34	0.09	0.022	0.037	0.406	1.02	0.015	0.26	0.101	0.6	<0.001	0.01	0.05
1200	650S	0.394	0.9	0.022	4.92	0.043	0.027	0.02	0.074	0.07	0.063	<0.005	0.004	0.044	0.007	<0.005	0.1	0.511	0.2	0.003	0.073	55	0.12	0.059	0.058	0.417	1.1	0.015	0.22	0.107	0.8	<0.001	0.06	0.06
1200	700S																																	
1200	750S	0.467	1	0.032	5.05	0.065	0.03	0.034	0.088	0.11	0.109	0.005	0.005	0.023	0.011	<0.005	0.1	0.944	0.3	0.004	0.076	61	0.15	0.083	0.081	0.755	1.43	0.013	0.36	0.187	1.19	<0.001	0.08	0.06
1200	800S	0.414	1.3	0.039	4.54	0.064	0.032	0.022	0.058	0.1	0.076	<0.005	0.006	0.025	0.012	<0.005	0.1	0.579	0.3	0.004	0.067	58	0.11	0.138	0.054	0.506	1.4	0.015	0.26	0.132	1.03	<0.001	0.14	0.05
1400	0S	0.415	1.2	0.034	3.93	0.049	0.026	0.02	0.054	0.09	0.067	<0.005	0.008	0.038	0.01	<0.005	0.2	0.485	0.3	0.004	0.063	78	0.08	0.141	0.044	0.409	1.49	0.015	0.31	0.109	1.71	<0.001	0.14	0.05
1400	50S	0.403	1	0.027	4.88	0.046	0.025	0.014	0.054	0.08	0.065	<0.005	0.008	0.043	0.009	<0.005	0.1	0.445	0.2	0.004	0.065	49	0.08	0.09	0.038	0.356	1.46	0.012	0.27	0.093	0.83	<0.001	0.09	0.05
1400	50S	0.555	<0.5	0.032	5.2	0.06	0.031	0.033	0.118	0.13	0.102	0.022	0.01	0.039	0.011	<0.005	0.1	1.025	0.2	0.004	0.059	51	0.15	0.402	0.097	0.839	2.42	0.013	0.44	0.215	0.81	<0.001	0.38	0.06
1400	100S	0.521	1.7	0.026	5.88	0.035	0.017	0.016	0.066	0.08	0.061	0.028	0.006	0.017	0.006	<0.005	0.2	0.471	0.2	0.003	0.059	69	0.13	0.289	0.046	0.387	1.97	0.008	0.27	0.104	1.19	<0.001	0.26	0.05
1400	150S	0.389	3.3	0.025	5.19	0.04	0.022	0.013	0.037	0.05	0.049	0.014	0.009	0.028	0.008	<0.005	0.1	0.346	0.2	0.003	0.065	66	0.1	0.019	0.03	0.31	1.85	0.01	0.27	0.072	1.31	<0.001	<0.01	0.05
1400	200S	0.297	0.8	0.032	5.11	0.05	0.026	0.019	0.052	0.08	0.065	<0.005	0.006	0.024	0.007	<0.005	0.1	0.404	0.2	0.003	0.053	44	0.08	0.151	0.042	0.345	0.91	0.012	0.25	0.093	0.92	<0.001	0.14	0.05
1400	250S	0.505	1.4	0.05	4.67	0.084	0.043	0.024	0.089	0.14	0.099	<0.005	0.009	0.036	0.016	<0.005	0.1	0.658	0.4	0.006	0.078	59	0.13	0.166	0.059	0.571	1.76	0.017	0.32	0.147	0.98	<0.001	0.17	0.07

line	station	Coppm	Crppm	Csppm	Cuppm	Dyppm	Erppm	Euppm	Fe%	Gappm	Gdppm	Geppm	Hfppm	Hgppm	Hoppm	Inppm	K%	Lappm	Lippm	Luppm	Mg%	Mnppm	Moppm	Na%	Nbppm	Ndppm	Nippm	P%	Pbppm	Prppm	Rbppm	Reppm	S%	Sbppm
1400	300S	0.715	<0.5	0.035	5.96	0.067	0.033	0.028	0.12	0.12	0.098	0.026	0.01	0.069	0.012	<0.005	0.3	0.755	0.3	0.004	0.077	91	0.2	0.431	0.102	0.66	3.1	0.018	0.34	0.163	1.94	<0.001	0.41	0.06
1400	350S	0.375	1.5	0.044	3.6	0.059	0.029	0.025	0.122	0.11	0.084	0.006	0.006	0.034	0.01	<0.005	0.1	0.627	0.3	0.004	0.056	54	0.21	0.07	0.098	0.535	1.31	0.016	0.31	0.135	1.53	<0.001	0.06	0.06
1400	400S	0.463	<0.5	0.037	4.79	0.058	0.03	0.023	0.093	0.12	0.083	0.017	0.006	0.022	0.01	<0.005	0.1	0.644	0.3	0.003	0.062	61	0.11	0.326	0.066	0.552	2.04	0.012	0.29	0.14	1.22	<0.001	0.32	0.05
1400	450S	0.28	0.6	0.024	3.88	0.031	0.017	0.015	0.041	0.06	0.051	<0.005	0.004	0.025	0.006	<0.005	0.1	0.457	0.2	0.003	0.048	59	0.06	0.136	0.033	0.367	0.77	0.011	0.2	0.094	1.03	<0.001	0.13	0.03
1400	500S	0.317	1.6	0.025	3.96	0.05	0.023	0.025	0.081	0.09	0.082	<0.005	0.006	0.033	0.009	<0.005	0.1	0.724	0.2	0.003	0.062	67	0.13	0.135	0.079	0.6	1.48	0.013	0.29	0.151	0.99	<0.001	0.13	0.04
1400	550S	0.241	0.8	0.225	4.71	0.037	0.019	0.012	0.046	0.07	0.048	<0.005	0.003	0.031	0.006	<0.005	0.2	0.35	0.2	0.003	0.073	47	0.08	0.152	0.033	0.322	0.73	0.023	0.24	0.08	5.68	<0.001	0.16	0.03
1400	600S	0.68	2.3	0.057	4.95	0.091	0.046	0.035	0.206	0.21	0.128	0.011	0.014	0.034	0.016	<0.005	0.1	0.999	0.4	0.006	0.083	57	0.23	0.039	0.104	0.902	2.23	0.023	0.35	0.221	1.35	<0.001	0.04	0.08
1400	650S	0.505	1.5	0.02	4.43	0.034	0.018	0.021	0.055	0.06	0.062	0.011	0.005	0.034	0.005	<0.005	0.1	0.618	0.2	0.002	0.075	106	0.12	0.464	0.038	0.487	6.63	0.011	0.23	0.125	0.98	<0.001	0.44	0.04
1400	700S	0.501	0.8	0.03	4.61	0.054	0.028	0.018	0.059	0.09	0.068	0.016	0.008	0.049	0.01	<0.005	0.1	0.447	0.2	0.004	0.076	86	0.1	0.029	0.045	0.398	1.39	0.016	0.25	0.103	1.05	<0.001	0.03	0.05
1400	750S																																	
1400	800S	0.301	<0.5	0.024	3.87	0.025	0.008	0.016	0.075	0.06	0.047	0.012	0.005	0.019	0.004	<0.005	0.2	0.516	0.1	0.001	0.055	51	0.1	0.4	0.055	0.416	1.9	0.01	0.19	0.105	1.36	<0.001	0.37	0.03
1400	800S	0.286	<0.5	0.022	3.74	0.02	0.011	0.014	0.056	0.06	0.042	0.009	0.005	0.02	0.004	<0.005	0.2	0.465	0.1	0.001	0.052	46	0.09	0.422	0.042	0.344	2.15	0.01	0.16	0.092	1.28	<0.001	0.39	0.03
1600	0S	0.298	<0.5	0.02	6.21	0.033	0.015	0.02	0.087	0.08	0.065	0.013	0.007	0.029	0.006	<0.005	0.1	0.712	0.2	0.002	0.051	73	0.12	0.277	0.067	0.561	1.76	0.011	0.31	0.145	0.69	<0.001	0.25	0.03
1600	50S	0.387	<0.5	0.025	3.67	0.041	0.021	0.015	0.075	0.08	0.059	0.017	0.007	0.027	0.007	<0.005	0.1	0.462	0.2	0.003	0.06	55	0.12	0.34	0.056	0.404	2.11	0.011	0.25	0.1	0.64	<0.001	0.33	0.04
1600	100S	0.4	1.2	0.021	3.85	0.057	0.024	0.041	0.102	0.1	0.119	<0.005	0.006	0.03	0.01	<0.005	0.1	1.235	0.2	0.002	0.058	64	0.12	0.137	0.101	0.965	1.16	0.009	0.41	0.243	0.78	<0.001	0.13	0.05
1600	150S	0.355	0.8	0.024	5.23	0.038	0.022	0.016	0.042	0.07	0.053	<0.005	0.005	0.031	0.008	<0.005	0.2	0.46	0.2	0.002	0.072	70	0.07	0.071	0.032	0.379	1.16	0.012	0.25	0.092	1.16	<0.001	0.07	0.03
1600	200S	0.461	1.1	0.024	4.38	0.049	0.024	0.026	0.112	0.1	0.077	0.015	0.003	0.043	0.008	<0.005	0.1	0.835	0.2	0.003	0.059	68	0.14	<0.001	0.083	0.673	1.14	0.01	0.43	0.178	0.59	<0.001	<0.01	0.04
1600	250S	0.458	1	0.031	6.26	0.061	0.034	0.023	0.07	0.1	0.08	<0.005	0.006	0.041	0.011	<0.005	0.1	0.593	0.3	0.005	0.065	67	0.1	0.123	0.05	0.509	1.49	0.014	0.29	0.129	0.68	<0.001	0.12	0.07
1600	300S	0.311	1	0.021	3.67	0.045	0.021	0.026	0.066	0.08	0.071	<0.005	0.004	0.022	0.008	<0.005	0.1	0.716	0.2	0.002	0.05	55	0.11	0.084	0.054	0.564	1.06	0.009	0.26	0.146	0.48	<0.001	0.08	0.05
1600	350S	0.389	<0.5	0.028	4.35	0.049	0.021	0.018	0.075	0.08	0.075	0.012	0.007	0.03	0.008	<0.005	0.1	0.565	0.2	0.003	0.061	70	0.13	0.332	0.056	0.481	1.69	0.012	0.3	0.115	1.12	<0.001	0.31	0.06
1600	400S	0.384	<0.5	0.031	4.46	0.051	0.021	0.025	0.084	0.08	0.079	0.016	0.007	0.032	0.008	<0.005	0.1	0.719	0.2	0.003	0.058	74	0.14	0.289	0.074	0.591	1.67	0.011	0.26	0.157	0.93	<0.001	0.26	0.05
1600	450S	0.255	0.9	0.016	3.94	0.047	0.017	0.032	0.044	0.06	0.096	<0.005	0.002	0.013	0.007	<0.005	0.1	0.978	0.1	0.002	0.055	81	0.1	0.143	0.074	0.722	0.92	0.01	0.29	0.188	0.75	<0.001	0.14	0.04
1600	500S	0.362	1.2	0.03	6.29	0.039	0.018	0.018	0.116	0.09	0.062	<0.005	0.004	0.027	0.006	<0.005	0.1	0.586	0.2	0.002	0.049	40	0.12	0.047	0.084	0.474	1.03	0.013	0.22	0.124	1	<0.001	0.05	0.05
1600	550S	0.509	<0.5	0.032	4.05	0.049	0.019	0.019	0.09	0.08	0.065	0.017	0.007	0.057	0.008	<0.005	0.1	0.539	0.2	0.003	0.068	65	0.12	0.315	0.055	0.466	3.3	0.016	0.3	0.118	1.01	<0.001	0.3	0.05
1600	600S	0.591	2.8	0.049	5.03	0.082	0.044	0.034	0.132	0.15	0.123	0.008	0.01	0.043	0.015	<0.005	0.1	0.944	0.4	0.006	0.079	59	0.16	0.196	0.111	0.806	2.65	0.017	0.4	0.215	0.91	<0.001	0.19	0.07
1600	650S	0.368	0.7	0.029	4.96	0.046	0.026	0.017	0.054	0.08	0.058	0.017	0.007	0.047	0.008	<0.005	0.2	0.448	0.2	0.004	0.066	50	0.11	0.039	0.045	0.384	1.22	0.016	0.25	0.096	1.19	<0.001	0.03	0.05
1600	700S																																	
1600	750S																																	
1600	800S	0.254	0.7	0.015	4.71	0.036	0.014	0.03	0.068	0.06	0.083	<0.005	0.002	0.041	0.005	<0.005	0.2	0.952	0.1	0.001	0.047	51	0.09	0.089	0.071	0.69	0.85	0.014	0.26	0.184	1.1	<0.001	0.09	0.03
1601	800S																																	
0E	30S	0.532	<0.5	0.033	6.25	0.076	0.03	0.034	0.146	0.13	0.11	0.023	0.009	0.03	0.012	<0.005	0.1	1.01	0.2	0.004	0.094	78	0.24	0.377	0.104	0.869	2.75	0.015	0.43	0.219	0.53	<0.001	0.36	0.06
0E	30S	0.423	1	0.029	5.95	0.066	0.031	0.023	0.052	0.09	0.08	<0.005	0.005	0.024	0.011	<0.005	0	0.686	0.2	0.005	0.088	46	0.1	0.101	0.047	0.569	2.24	0.014	0.29	0.139	0.43	<0.001	0.1	0.05
0E	15S	0.667	1.3	0.078	6.95	0.077	0.033	0.031	0.233	0.17	0.102	0.032	0.009	0.024	0.013	<0.005	0.1	0.898	0.3	0.005	0.073	76	0.4	0.386	0.179	0.734	4.08	0.02	0.38	0.199	1.41	<0.001	0.37	0.07
0E		0.309	<0.5	0.033	4.1	0.027	0.012	0.014	0.072	0.08	0.048	0.019	0.005	0.016	0.004	<0.005	0.1	0.493	0.2	0.002	0.053	72	0.1	0.425	0.056	0.394	2.58	0.011	0.16	0.101	0.87	<0.001	0.4	0.04
0E	15N	0.349	1.1	0.019	4.22	0.047	0.018	0.028	0.076	0.08	0.084	0.006	0.002	0.032	0.007	<0.005	0.2	0.993	0.2	0.002	0.064	66	0.16	0.106	0.08	0.724	1.15	0.012	0.3	0.197	0.99	<0.001	0.11	0.05
0E	30N	0.363	1.7	0.073	6	0.069	0.022	0.058	0.066	0.08	0.161	<0.005	0.004	0.024	0.009	<0.005	0.3	1.365	0.2	0.003	0.065	75	0.12	0.073	0.086	1.245	1.93	0.012	0.5	0.309	2.41	<0.001	0.06	0.04
0W	30S	0.245	0.7	0.017	4.83	0.057	0.016	0.049	0.047	0.06	0.123	<0.005	0.002	0.031	0.008	<0.005	0.2	1.42	0.2	0.002	0.058	48	0.1	0.105	0.077	0.967	0.69	0.014	0.48	0.264	0.86	<0.001	0.1	0.03
0W	15S	0.354	1.3	0.02	4.21	0.033	0.015	0.017	0.086	0.07	0.055	0.015	0.004	0.021	0.005	<0.005	0.1	0.556	0.1	0.002	0.049	36	0.11	0.039	0.055	0.452	1.91	0.014	0.21	0.113	0.48	<0.001	0.03	0.03
0W		0.56	1.4	0.029	5.96	0.045	0.025	0.017	0.06	0.09	0.068	<0.005	0.007	0.033	0.01	<0.005	0.1	0.459	0.3	0.004	0.074	48	0.08	0.062	0.05	0.408	3.31	0.016	0.25	0.095	0.74	<0.001	0.06	0.05
0W	15N	0.456	1.3	0.034	4.27	0.056	0.028	0.022	0.06	0.09	0.071	0.009	0.005	0.03	0.01	<0.005	0.2	0.614	0.3	0.003	0.068	50	0.1	0.153	0.061	0.543	1.68	0.019	0.44	0.136	0.91	<0.001	0.13	0.05
0W	30N	0.381	0.6	0.026	4.34	0.028	0.016	0.014	0.038	0.05	0.042	<0.005	0.004	0.036	0.006	<0.005	0.2	0.328	0.2	0.002	0.063	57	0.06	0.05	0.027	0.254	1.43	0.015	0.18	0.065	1.02	<0.001	0.05	0.05

line	station	Scppm	Seppm	Smppm	Snppm	Srppm	Tappm	Tbppm	Teppm	Thppm	Ti%	Tlppm	Tmppm	Uppm	Vppm	Wppm	Yppm	Ybppm	Znppm	Zrppm
1000	0S	0.11	<0.1	0.087	0.03	67.8	<0.005	0.011	<0.02	0.084	0.002	0.006	0.005	0.047	1	0.08	0.363	0.035	105.5	0.28
1000	50S	0.14	0.1	0.114	0.04	42.6	<0.005	0.014	<0.02	0.109	0.003	0.007	0.004	0.035	1	0.08	0.389	0.032	83.4	0.28
1000	100S	0.07	<0.1	0.066	0.03	56.2	<0.005	0.007	0.02	0.056	0.001	0.003	0.003	0.023	1	0.05	0.19	0.017	85	0.17
1000	150S	0.09	<0.1	0.098	0.05	44.8	<0.005	0.009	<0.02	0.091	0.002	0.004	0.003	0.034	1	0.07	0.274	0.024	67.5	0.19
1000	200S	0.12	0.1	0.122	0.04	48	<0.005	0.012	<0.02	0.127	0.002	0.006	0.005	0.037	1	0.09	0.334	0.032	76	0.24
1000	250S	0.09	0.1	0.094	0.04	59	<0.005	0.011	<0.02	0.084	0.002	0.006	0.005	0.054	1	0.09	0.315	0.031	81.3	0.25
1000	300S	0.06	<0.1	0.069	0.06	57.3	<0.005	0.007	<0.02	0.06	0.001	0.003	0.003	0.019	1	0.05	0.189	0.017	61.6	0.15
1000	350S	0.09	<0.1	0.105	0.04	36.5	<0.005	0.011	<0.02	0.121	0.002	0.005	0.003	0.036	1	0.1	0.291	0.023	61.8	0.28
1000	400S	0.07	0.1	0.1	0.06	57.7	<0.005	0.008	<0.02	0.092	0.001	0.007	0.003	0.023	<1	0.08	0.21	0.017	73.4	0.16
1000	450S	0.08	0.1	0.091	0.04	49.6	<0.005	0.009	<0.02	0.098	0.001	0.004	0.004	0.027	1	0.07	0.242	0.023	62.6	0.22
1000	500S	0.1	0.1	0.1	0.04	38.4	<0.005	0.011	<0.02	0.1	0.002	0.006	0.005	0.048	1	0.06	0.341	0.032	62.4	0.21
1000	550S	0.12	0.1	0.119	0.06	79.4	<0.005	0.014	<0.02	0.111	0.002	0.009	0.005	0.041	1	0.06	0.36	0.034	60.4	0.32
1000	600S	0.22	0.1	0.218	0.1	66.7	<0.005	0.026	<0.02	0.196	0.004	0.01	0.009	0.082	2	0.09	0.675	0.057	78.5	0.52
1000	650S	0.07	<0.1	0.106	0.07	32.7	<0.005	0.009	<0.02	0.111	0.002	0.004	0.003	0.038	1	0.07	0.261	0.021	78.6	0.23
1000	700S	0.12	<0.1	0.077	0.04	48.5	<0.005	0.008	<0.02	0.065	0.002	0.003	0.004	0.027	1	0.06	0.29	0.029	81	0.24
1000	700A	0.12	0.1	0.112	0.04	46.4	<0.005	0.011	<0.02	0.091	0.002	0.004	0.005	0.033	1	0.08	0.364	0.034	79.8	0.24
1000	800S	0.11	0.1	0.087	0.04	46.9	<0.005	0.01	<0.02	0.082	0.002	0.003	0.004	0.042	1	0.06	0.269	0.024	71.6	0.18
1200	0S	0.04	<0.1	0.058	0.02	34.1	<0.005	0.006	<0.02	0.049	0.001	0.003	0.002	0.018	1	0.05	0.144	0.014	60.4	0.12
1200	50S	0.14	<0.1	0.134	0.06	56.2	<0.005	0.014	<0.02	0.126	0.003	0.008	0.006	0.04	1	0.07	0.408	0.038	62.1	0.37
1200	100S	0.04	0.3	0.061	0.05	42.3	<0.005	0.005	<0.02	0.068	0.001	0.002	0.001	0.019	<1	0.09	0.117	0.007	75.1	0.08
1200	150S	0.03	<0.1	0.055	0.05	58.7	<0.005	0.005	<0.02	0.057	0.001	0.004	0.002	0.015	<1	0.12	0.128	0.011	65.2	0.16
1200	200S	0.03	<0.1	0.052	0.04	33	<0.005	0.004	<0.02	0.07	0.001	0.003	0.001	0.013	<1	0.06	0.101	0.008	123.5	0.1
1200	250S	0.04	<0.1	0.053	0.07	49.4	<0.005	0.005	0.02	0.054	0.001	0.004	0.002	0.018	<1	0.1	0.138	0.011	87.8	0.15
1200	300S	0.04	<0.1	0.072	0.04	47.4	<0.005	0.006	<0.02	0.056	0.001	0.004	0.002	0.017	1	0.1	0.152	0.016	102	0.12
1200	350S	0.06	0.2	0.099	0.14	34.8	<0.005	0.009	<0.02	0.119	0.001	0.004	0.003	0.026	1	0.11	0.205	0.02	81.4	0.18
1200	400S	0.05	<0.1	0.102	0.03	61.6	<0.005	0.01	<0.02	0.081	0.001	0.005	0.003	0.033	<1	0.1	0.224	0.019	84.3	0.15
1200	450S	0.12	0.1	0.11	0.05	68.5	<0.005	0.013	<0.02	0.114	0.002	0.006	0.005	0.045	1	0.08	0.353	0.033	68	0.28
1200	500S	0.07	0.2	0.082	0.04	45.3	<0.005	0.007	<0.02	0.069	0.001	0.004	0.003	0.021	1	0.08	0.22	0.017	68.7	0.18
1200	550S	0.1	0.1	0.063	0.03	79.2	<0.005	0.009	<0.02	0.058	0.001	0.003	0.004	0.028	1	0.08	0.265	0.024	104	0.21
1200	600S	0.06	0.4	0.071	0.05	31.2	<0.005	0.007	<0.02	0.076	0.001	0.005	0.003	0.024	1	0.08	0.233	0.019	45.1	0.15
1200	650S	0.07	0.1	0.085	0.05	66.9	<0.005	0.008	<0.02	0.085	0.001	0.006	0.003	0.028	1	0.07	0.234	0.024	72.5	0.17
1200	700S																			
1200	750S	0.1	<0.1	0.152	0.07	37.2	<0.005	0.012	<0.02	0.145	0.002	0.005	0.004	0.037	1	0.1	0.32	0.031	58.5	0.23
1200	800S	0.13	<0.1	0.116	0.04	50.8	<0.005	0.011	<0.02	0.104	0.002	0.006	0.005	0.041	1	0.07	0.322	0.026	57.9	0.25
1400	0S	0.08	0.1	0.085	0.03	46.5	<0.005	0.009	<0.02	0.076	0.002	0.006	0.004	0.03	1	0.11	0.29	0.025	123	0.22
1400	50S	0.11	<0.1	0.064	0.04	61.8	<0.005	0.008	<0.02	0.067	0.001	0.004	0.004	0.029	1	0.08	0.257	0.024	88.3	0.2
1400	50S	0.11	<0.1	0.16	0.07	56.2	<0.005	0.012	<0.02	0.142	0.002	0.006	0.004	0.035	1	0.14	0.31	0.026	78.2	0.3
1400	100S	0.08	<0.1	0.069	0.05	45.9	<0.005	0.007	<0.02	0.083	0.001	0.005	0.002	0.025	1	0.19	0.204	0.016	73.8	0.22
1400	150S	0.08	<0.1	0.055	0.03	59.8	<0.005	0.007	<0.02	0.05	0.001	0.004	0.003	0.026	1	0.13	0.248	0.021	113	0.22
1400	200S	0.08	<0.1	0.073	0.04	42.9	<0.005	0.008	<0.02	0.069	0.002	0.003	0.004	0.025	1	0.1	0.235	0.021	58.3	0.2
1400	250S	0.13	0.1	0.119	0.06	53.9	<0.005	0.015	<0.02	0.108	0.002	0.006	0.006	0.041	1	0.08	0.454	0.041	111.5	0.3

line	station	Scppm	Seppm	Smppm	Snppm	Srppm	Tappm	Tbppm	Teppm	Thppm	Ti%	Tlppm	Tmppm	Uppm	Vppm	Wppm	Yppm	Ybppm	Znppm	Zrppm
1400	300S	0.09	<0.1	0.119	0.06	54.5	<0.005	0.012	<0.02	0.119	0.002	0.006	0.005	0.053	1	0.12	0.33	0.029	72.2	0.34
1400	350S	0.11	<0.1	0.105	0.05	38.2	<0.005	0.009	<0.02	0.105	0.002	0.007	0.004	0.035	1	0.16	0.292	0.025	50.9	0.24
1400	400S	0.11	<0.1	0.113	0.06	31	<0.005	0.01	<0.02	0.105	0.002	0.006	0.004	0.036	1	0.09	0.293	0.024	60.2	0.27
1400	450S	0.06	<0.1	0.07	0.04	29.7	<0.005	0.007	<0.02	0.064	0.001	0.003	0.003	0.034	<1	0.09	0.19	0.016	62.2	0.12
1400	500S	0.09	<0.1	0.111	0.07	57.7	<0.005	0.011	<0.02	0.113	0.001	0.005	0.003	0.029	1	0.06	0.231	0.02	74	0.19
1400	550S	0.06	0.1	0.06	0.04	53.1	<0.005	0.006	<0.02	0.053	0.001	0.005	0.003	0.019	1	0.07	0.199	0.016	54.1	0.15
1400	600S	0.17	0.1	0.175	0.09	54.5	<0.005	0.016	<0.02	0.186	0.003	0.007	0.006	0.056	2	0.09	0.498	0.044	55	0.41
1400	650S	0.05	<0.1	0.101	0.06	70.1	<0.005	0.007	<0.02	0.077	0.001	0.004	0.002	0.022	<1	0.11	0.191	0.018	103.5	0.16
1400	700S	0.11	0.3	0.079	0.08	63.8	<0.005	0.009	<0.02	0.076	0.001	0.005	0.005	0.037	1	0.08	0.318	0.026	93.4	0.24
1400	750S																			
1400	800S	0.03	<0.1	0.076	0.06	29.5	<0.005	0.005	<0.02	0.077	0.001	0.002	0.001	0.015	<1	0.08	0.119	0.009	64.1	0.13
1400	800S	0.04	<0.1	0.058	0.04	31.1	<0.005	0.005	<0.02	0.064	0.001	0.002	0.001	0.012	<1	0.05	0.11	0.009	64.8	0.15
1600	0S	0.03	<0.1	0.099	0.07	54.1	<0.005	0.007	<0.02	0.092	0.001	0.005	0.002	0.02	1	0.08	0.161	0.013	135	0.17
1600	50S	0.06	<0.1	0.064	0.04	39.4	<0.005	0.007	<0.02	0.094	0.001	0.004	0.003	0.024	1	0.15	0.204	0.021	99.7	0.22
1600	100S	0.07	<0.1	0.176	0.13	56.6	<0.005	0.013	<0.02	0.171	0.001	0.004	0.004	0.036	1	0.09	0.271	0.023	80.1	0.21
1600	150S	0.07	<0.1	0.088	0.03	46.1	<0.005	0.007	<0.02	0.066	0.001	0.004	0.003	0.025	1	0.12	0.201	0.022	87.4	0.17
1600	200S	0.07	<0.1	0.111	0.08	62.4	<0.005	0.01	<0.02	0.121	0.001	0.007	0.003	0.033	1	0.11	0.224	0.02	83.5	0.22
1600	250S	0.1	0.1	0.109	0.05	88.8	<0.005	0.011	<0.02	0.092	0.002	0.006	0.005	0.039	1	0.11	0.347	0.03	74.7	0.26
1600	300S	0.07	<0.1	0.104	0.1	41.1	<0.005	0.01	<0.02	0.105	0.001	0.004	0.002	0.027	1	0.12	0.22	0.021	76.2	0.16
1600	350S	0.07	<0.1	0.096	0.05	54.4	<0.005	0.009	<0.02	0.093	0.001	0.004	0.003	0.03	1	0.13	0.217	0.019	93.7	0.21
1600	400S	0.06	<0.1	0.108	0.05	54.8	<0.005	0.01	<0.02	0.114	0.001	0.005	0.003	0.025	1	0.09	0.236	0.019	112	0.18
1600	450S	0.04	<0.1	0.14	0.08	47.1	<0.005	0.011	<0.02	0.176	0.001	0.006	0.002	0.024	<1	0.14	0.187	0.012	136.5	0.13
1600	500S	0.06	<0.1	0.082	0.06	26	<0.005	0.007	<0.02	0.089	0.001	0.003	0.002	0.023	1	0.07	0.175	0.015	41.7	0.16
1600	550S	0.06	<0.1	0.076	0.06	47.4	<0.005	0.008	<0.02	0.08	0.001	0.005	0.004	0.025	1	0.09	0.228	0.021	85.9	0.23
1600	600S	0.14	0.1	0.156	0.05	63	<0.005	0.015	<0.02	0.159	0.003	0.008	0.006	0.048	2	0.08	0.457	0.034	51.1	0.35
1600	650S	0.09	0.6	0.066	0.04	40	<0.005	0.008	<0.02	0.073	0.001	0.005	0.003	0.039	1	0.11	0.271	0.021	71.3	0.21
1600	700S																			
1600	750S																			
1600	800S	0.03	0.1	0.124	0.07	38	<0.005	0.008	<0.02	0.121	0.001	0.002	0.002	0.021	1	0.06	0.147	0.01	116	0.13
1601	800S																			
0E	30S	0.1	<0.1	0.168	0.1	50.7	<0.005	0.013	0.02	0.152	0.002	0.006	0.005	0.033	1	0.08	0.344	0.03	127.5	0.29
0E	30S	0.1	0.1	0.101	0.05	55.1	<0.005	0.01	<0.02	0.097	0.001	0.005	0.005	0.032	1	0.06	0.327	0.023	108.5	0.22
0E	15S	0.1	<0.1	0.15	0.07	48.5	<0.005	0.013	<0.02	0.13	0.002	0.007	0.006	0.04	1	0.1	0.372	0.034	63.1	0.35
0E		0.03	<0.1	0.064	0.07	30.9	<0.005	0.005	<0.02	0.077	0.001	0.004	0.002	0.015	<1	0.05	0.129	0.008	78.1	0.16
0E	15N	0.05	<0.1	0.139	0.08	43.7	<0.005	0.01	<0.02	0.13	0.001	0.005	0.002	0.029	1	0.1	0.198	0.015	60	0.15
0E	30N	0.05	0.1	0.25	0.06	49.9	<0.005	0.016	<0.02	0.255	0.001	0.005	0.003	0.028	1	0.08	0.257	0.014	105.5	0.16
0W	30S	0.03	0.1	0.186	0.08	38.7	<0.005	0.013	0.02	0.224	0.001	0.005	0.002	0.035	<1	0.08	0.203	0.013	96.5	0.1
0W	15S	0.07	0.2	0.081	0.06	31	<0.005	0.006	<0.02	0.078	0.001	0.003	0.002	0.017	1	0.06	0.18	0.012	66.4	0.11
0W		0.13	<0.1	0.074	0.04	47.2	<0.005	0.009	<0.02	0.067	0.002	0.004	0.004	0.036	1	0.06	0.28	0.021	60.7	0.2
0W	15N	0.1	<0.1	0.099	0.05	45.8	<0.005	0.01	<0.02	0.087	0.002	0.003	0.004	0.03	1	0.07	0.283	0.023	73.5	0.22
0W	30N	0.05	<0.1	0.048	0.03	40.2	<0.005	0.006	<0.02	0.047	0.001	0.006	0.002	0.015	<1	0.08	0.168	0.015	73.6	0.13

Appendix 7: Biogeochemistry – labrador tea

Laboratory methodology

MS Excel labrador tea sample database

MS Excel results from laboratory (digital only)

Assay certificate from laboratory

Contoured maps of As, Ba, Bi+Te, Co, Cr, Cu, Ni, Ni/Cu, PGE+Au and Sb distribution

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BIOGEOCHEMISTRY

This brochure highlights biogeochemical services offered by MEG, which include sample collection, sample preparation, quality assurance procedures, associate analytical services, and biogeochemical interpretation. MEG has developed leading technologies in biogeochemistry, which are available as case histories that can be sent by email on request.

OVERVIEW

MEG is an independent sample preparation laboratory working closely with several analytical laboratories to provide geochemical data for the mining and environmental industries. Established in 1984, it is now highly regarded for its sample preparation, quality control, geochemical interpretation, advanced mercury collection and mercury analysis. It is fully equipped to handle drill core and cuttings, rock chip, soil, sediment, vegetation, humus, and other exploration materials, providing special care to samples that may contain labile constituents at ppb and ppt concentrations.

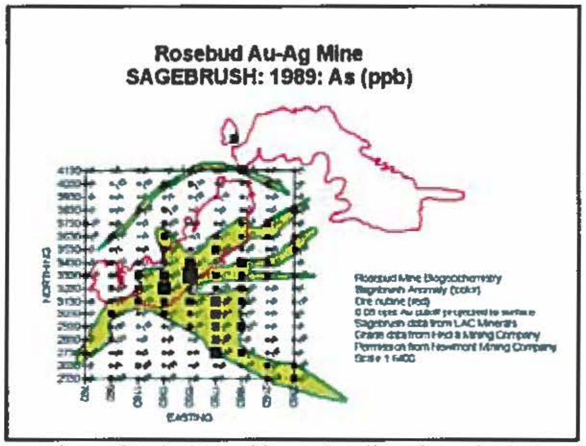
MEG is best known for its biogeochemical services. This work has provided several published minerals exploration case histories which have become the foundation for several widely attended short courses on the application of biogeochemistry in the natural resources and environmental industries.

BROCHURE 2010

LATE DEVELOPMENTS

As the mining industry has grown globally, so has MEG. We provide the best-known and respected biogeochemical service in the Western Hemisphere, and despite added shipping costs from remote exploration frontiers, MEG receives samples from around the world. We are also the preferred subcontractor for many major N.A. laboratories (eg. ALS Chemex, Actlabs, Acme, SGS-XRAL, American Assay, Alaska Assay, Becquerel, Eco-Tech, iPL, and Skyline).
Please note our import permits:
SOIL: P330-09-00260 (Expires 12-16-2012)
VEGETATION: PDEP-07-00480 (10-4-2010)

Permit and Quarantine Stickers must be applied to the outside of all shipping containers. Please notify MEG prior to shipping for late information on USDA import requirements.



Biogeochemical (A. tridentata), soil, and geophysical response to gold mineralization under 200 m of barren volcanics & alluvium, Rosebud Mine, Pershing Co., NV.

SAMPLE COLLECTION:

MEG is expert in survey design and sample collection. With30 years experience in varied terrains throughout N.A., we can lead you directly to success. From reconnaissance to detailed grids, we know what to do and how to get it done. We can collect several media in one traverse, giving good return for your field investment. Often, surveys cover both exposed and covered terrains and samples of just soils or vegetation alone are not enough. MEG can put one crew in the field to complete the entire geochemical survey and expedite the preparation and analysis of all your samples together. GPS, Brunton & chain control, fast and efficient collection, and coordination with the MEG Sample Preparation Laboratories for rapid return of data. We are happy to train and work with other contract or in-house crews. Bee pollen collection is also part of this infield service. Time and materials pricing. No padding.

Just honest pay for honest work.

SAMPLE PREPARATION:

MEG is Nevada's only independent full service sample preparation laboratory. This means you get the best prep, and because we work with all of the analytical labs in the industry, you get your choice of the best analysis without sacrificing one for the other. We are focused at MEG on preparing your samples cleanly, accurately, and consistently. Additionally, we are positioned to assure you unsurpassed quality since we incorporate QA/QC protocols you don't find at other laboratories. These include randomization and true-blind standards, replicates and blanks sent on for analysis. In this NI43-101 era, expert and thoughtful sample preparation is an important consideration to JV partners, stakeholders, and shareholders in your company.

And our vegetation prep equipment stands alone in the western US: Microwave dryers, Wiley Mill, Baird Pellet Press, 6 Temperature Controlled Ashing Kilns with smoke capture system. Since 1984, the vegetation lab (located 300 ft from the rock lab) has processed over 250,000 samples.

QUALITY CONTROL:

MEG Labs routinely adds standards (blind & known) to each job sent on to the analytical lab of your choice. We often randomize submittals (on your instructions, only) to monitor for systematic error during prep and analysis. A full spectrum of biogeochemical standard reference materials are available for immediate use including Au-Ag, Cu-Mo-Pb-Zn, Pt-Pd, Ni-Co-V. Submittals leaving MEG are visually uniform, providing no information to the analytical lab as to what is sample and what is QA/QC. This is your guarantee that the ***DATA IS AS GOOD AS IT GETS***.

CONSULTING SERVICES

MEG is expert in the field of biogeochemistry. MEG can provide detailed examples and discussions on methods for minerals exploration and environmental studies. Specific services include field and office training, data review, and interpretation leading to target selection and assessment.

MEG is expert in the area of quality assurance. Standards, replicates, blanks and randomization schemes are your measures of quality. If you are understaffed, or need help creating a quality assurance program, MEG can monitor your QA/QC stream as an impartial advocate to assure your data's accuracy and precision. This involvement is by invitation only; otherwise MEG is totally out of the data loop.

Office	US $105 /hour
Field	US $1050 /day

QUALITY CONTROL PROGRAM

Known controls and several blind standards, replicates & blanks are included with every job that leaves MEG. These QA/QC samples are strategically positioned so that every batch of 30 within the submittal is monitored for precision & accuracy. This adds only about 4% to 9% to the total cost.

Blind standards, replicates & blanks	US $5.90
Known controls ....each....	US $5.90
Randomization ....each.....	US $1.20

MEG LABS operates as an independent prep service to assure your geochemical samples are properly treated prior to analysis. MEG and the analytical labs will each invoice for their respective services. Data reporting is strictly proprietary, between you and the analytical laboratory. MEG is involved only to assure quality through randomization, controls, and blind standards, replicates and blanks. If you require QA/QC compilations, please refer to the services described above.

PROCEDURES

All samples are vigorously washed to thoroughly eliminate dust and other surface contaminants. Prior to washing or immediately thereafter, plant tissues can be separated to maximize chemical response and reduce variability. They are thoroughly dried in a microwave oven, and macerated to pass a 0.5mm sieve if they are to be pelletized, or a 2mm sieve if they are to be ashed. Ashed samples are submitted for either INAA, ICP/MS, ICP/OES, and/or GF/AAS analysis. Pelletized samples are analyzed by instrumental neutron activation analysis (INAA). Wet digestion of plant tissue and analysis by ICP/MS keeps prep costs low with superb metal detection.

DRY PULP / ICPMS PACKAGE:

Wash/dry/macerate/blend
& SPLIT .... US $9.55

15g PELLET PACKAGE:

Wash/dry/macerate/blend/weigh
& PELLETIZE .... US $10.95
Shrink wrap each pellet ....add US $1.90
Substitute 30 g pellet..................add US $1.90

30g ASH PACKAGE:

Wash/dry/macerate/blend/weigh
& ASH .... US $15..95
Each additional 30 g ....add US $ 5.55
Encapsulate ash for INAA ....add US $ 2.50

HUMUS PREP (Ao soils)

The preparation is designed to maximize the organic content of the sample while eliminating coarse and fine inorganics. The sample is then treated as vegetation described above. Itemized HUMUS and WEIGH charges are applied to the total prep cost.

ITEM PREP COSTS

Remove leaves & Prune.........	US $1.55
Pelletize (8 to 15 g)	US $3.90
Pelletize (30 grams)	US $5.80
Ash (40g/ 450 C)	US $5.55
Ash weight	US $1.20
Humus (see above)................	US $3.15
Duplicate Pulp	US $1.00
Randomize	US $1.20
Surcharges	US $65/hr
Rush jobs	add 50%
Shipping (UPS, etc.)	COST +$25 Handling
Veg Disposal (USDA Regulated)...	US $0.55

MEG package prices apply to 225 g (1/2 pound) vegetation and humus samples in 7 x 12 inch cloth, olefin, or finon bags.

FIELD SERVICES

Crew	US $ 295/day
Supervisor	US $ 470/day
Vehicle	US $ 0.70/mile
Expenses	Cost + 10%

HYDRO-BIOGEOCHEMICAL SURVEYS

Water quality issues can be addressed using biogeochemistry linked to ground water chemistry. See our "Consulting & Environ-mental Services Brochure". Call for details.

OTHER SERVICES

SAMPLE PREPARATION: `Rock Soil Sediment`
SURVEY & COLLECTION
GEOCHEMICAL INTERPRETATION
QUALITY ASSURANCE PROGRAMS
GEOCHEMICAL REFERENCE STANDARDS
MERCURY & RADON SOIL GAS ANALYSIS

Biogeochemistry

Plants may be viewed as geochemical sampling devices, with root systems that can selectively adsorb elements from a large 3D section of soil, groundwater and even bedrock. Typically, the relationship between the chemistry of a plant and that of the soil the plant grows in isn't one-to-one due to biological effects. The differences in element distribution and uptake in plants provide complementary information to soil surveys and may concentrate elements of interest where they are not present in soils.

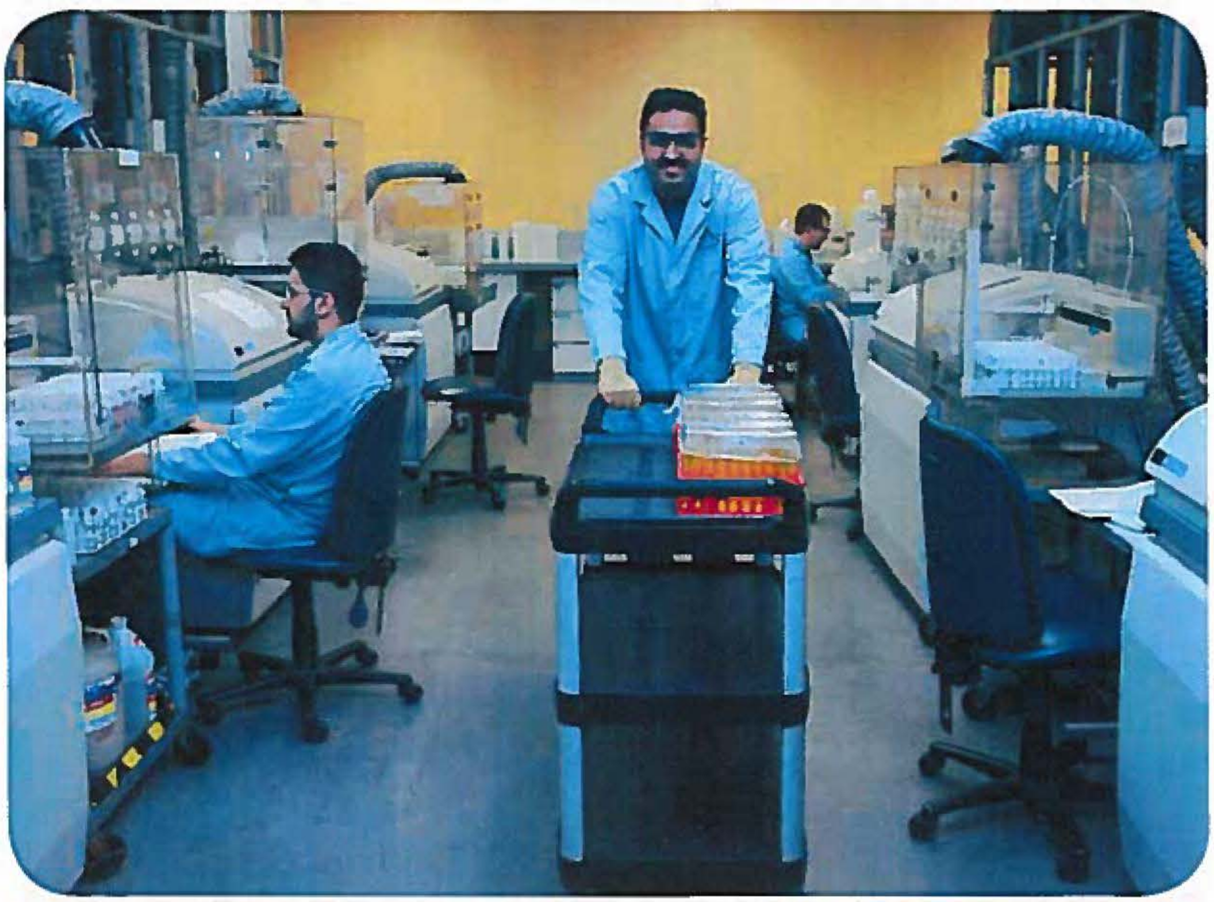
ALS Geochemistry can help you find resources on designing vegetation surveys and special preparation for various vegetation tissue types. Please contact client services for more information.

Results are reported on vegetation samples following a nitric/hydrochloric acid digestion on 1g of sample. Due to permit requirements, vegetation samples are not available for return to the client.

39 Elements in Vegetation by Nitric/Hydrochloric, ICP-AES and ICP-MS

ANALYTES & DETECTION LIMITS (ppm)								CODE	PRICE PER SAMPLE ($)
Ag	0.002	Cu	0.01	Nb	0.05	Ta	0.01	ME-VEG41	25.95 Sold only as a complete package.
Al	0.01%	Fe	0.001%	Ni	0.1	Te	0.02		
As	0.1	Ga	0.05	P	0.001%	Th	0.01		
Au	0.0002	Ge	0.05	Pb	0.01	Ti	0.001%		
B	10	Hf	0.02	Pd	0.002	Tl	0.02		
Ba	0.1	Hg	0.001	Pt	0.001	U	0.01		
Be	0.05	In	0.01	Rb	0.1	V	1		
Bi	0.01	K	0.01%	Re	0.001	W	0.05		
Ca	0.01%	La	0.01	S	0.01%	Y	0.005		
Cd	0.01	Li	0.1	Sb	0.02	Zn	0.1		
Ce	0.02	Mg	0.001%	Sc	0.1	Zr	0.1		
Co	0.01	Mn	1	Se	0.1				
Cr	0.5	Mo	0.01	Sn	0.2				
Cs	0.05	Na	0.001%	Sr	0.2				

REEs may be added on request.



ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

ALS Minerals

CERTIFICATE WH13170902

Project: Arch
P.O. No.: VEG- 01
This report is for 98 Vegetation samples submitted to our lab in Whitehorse, YT, Canada on 24- SEP- 2013.

The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND- 02	Find Sample for Addn Analysis

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME- VEG41	Vegetation - HNO3/HCl ICPAES- ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.
2103 Dollarton Hwy
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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Au ppm 0.0002	ME-VEG41 Pd ppm 0.001	ME-VEG41 Pt ppm 0.001	ME-VEG41 Ag ppm 0.001	ME-VEG41 Al % 0.01	ME-VEG41 As ppm 0.05	ME-VEG41 B ppm 10	ME-VEG41 Ba ppm 0.1	ME-VEG41 Be ppm 0.01	ME-VEG41 Bi ppm 0.001	ME-VEG41 Ca % 0.01	ME-VEG41 Cd ppm 0.002	ME-VEG41 Ce ppm 0.003	ME-VEG41 Co ppm 0.002	ME-VEG41 Cr ppm 0.5
S10000		<0.0002	<0.001	<0.001	0.008	0.01	0.22	50	23.6	<0.01	0.007	0.74	0.177	0.734	0.103	<0.5
S10050		0.0003	0.001	0.001	0.015	0.01	0.25	20	188.5	0.01	0.003	1.36	0.023	0.630	0.328	<0.5
S10100		0.0004	<0.001	0.001	0.011	0.02	0.32	30	164.5	<0.01	0.007	1.63	0.050	1.015	0.509	<0.5
S10150		<0.0002	<0.001	0.001	0.021	0.02	0.25	20	106.5	0.01	0.006	1.15	0.041	0.869	0.387	<0.5
S10200		<0.0002	0.001	0.001	0.010	0.02	0.18	30	209	0.01	0.006	1.41	0.040	1.080	0.505	1.5
S10250		<0.0002	<0.001	<0.001	0.013	0.01	0.16	20	179.0	0.01	0.009	1.43	0.030	1.775	0.255	0.9
S10350		<0.0002	0.001	0.002	0.012	0.01	0.26	20	99.3	<0.01	0.012	1.00	0.025	2.54	0.245	0.7
S10400		<0.0002	<0.001	<0.001	0.010	0.03	0.31	20	104.5	0.01	0.007	1.14	0.032	1.195	0.375	1.5
S10450		<0.0002	0.001	<0.001	0.018	0.02	0.31	10	100.5	0.01	0.006	0.95	0.024	1.260	0.354	1.1
S10500		0.0002	<0.001	0.001	0.016	0.03	0.34	<10	67.0	0.01	0.006	1.07	0.027	1.270	0.459	2.2
S10550		<0.0002	0.001	<0.001	0.024	0.04	0.54	10	197.5	0.02	0.009	1.54	0.040	1.905	0.591	2.8
S10600		<0.0002	0.001	0.002	0.025	0.03	0.40	10	204	0.01	0.006	1.86	0.046	1.265	0.558	1.7
S10650		<0.0002	<0.001	0.002	0.018	0.02	0.25	10	136.5	0.01	0.005	1.69	0.022	0.879	0.304	1.1
S10700		0.0002	0.001	0.001	0.051	0.02	0.21	10	197.0	0.01	0.007	1.61	0.040	1.640	0.461	1.1
S10700A		<0.0002	<0.001	0.001	0.014	0.03	0.50	20	182.5	0.01	0.008	1.29	0.058	1.390	0.715	<0.5
S10800		0.0006	<0.001	<0.001	0.014	0.01	0.22	20	151.5	0.01	0.004	1.05	0.028	0.638	0.366	<0.5
S12000		<0.0002	0.001	<0.001	0.042	0.01	0.23	20	192.0	0.01	0.007	0.92	0.022	1.310	0.298	<0.5
S12050		<0.0002	<0.001	<0.001	0.004	0.01	0.21	30	87.4	<0.01	0.008	0.50	0.009	1.325	0.244	<0.5
S12100		<0.0002	<0.001	0.001	0.011	0.01	0.18	20	99.9	<0.01	0.006	1.09	0.016	0.937	0.301	<0.5
S12150		<0.0002	<0.001	0.001	0.005	0.01	0.18	20	62.5	<0.01	0.011	0.54	0.005	1.875	0.261	<0.5
S12200		<0.0002	<0.001	<0.001	0.009	0.01	0.15	20	111.0	<0.01	0.006	1.14	0.015	0.830	0.286	<0.5
S12250		0.0002	0.001	<0.001	0.032	0.04	0.58	20	95.9	0.01	0.009	1.34	0.053	1.665	0.667	1.3
S12300		0.0003	<0.001	<0.001	0.037	0.01	0.16	20	86.9	0.01	0.006	1.07	0.016	0.871	0.309	<0.5
S12350		<0.0002	0.001	0.001	0.020	0.04	0.55	20	151.5	0.02	0.008	1.87	0.044	1.345	0.548	<0.5
S12400		<0.0002	0.001	<0.001	0.034	0.03	0.33	20	273	0.01	0.010	1.09	0.040	1.850	0.555	<0.5
S12450		0.0002	<0.001	<0.001	0.005	0.01	0.47	50	16.5	0.01	0.007	0.53	0.251	0.859	0.135	<0.5
S12500		0.0003	0.001	0.001	0.019	0.02	0.24	20	177.0	0.01	0.008	1.31	0.041	1.285	0.384	<0.5
S12550		0.0003	<0.001	0.002	0.046	0.02	0.35	20	119.0	0.01	0.006	1.07	0.046	0.866	0.521	1.7
S12600		<0.0002	<0.001	<0.001	0.018	0.02	0.27	20	160.0	0.01	0.007	1.11	0.029	1.065	0.389	<0.5
S12650		0.0006	<0.001	0.001	0.014	0.03	0.34	20	98.3	0.01	0.006	0.99	0.036	1.220	0.463	<0.5
S12750		<0.0002	0.001	<0.001	0.016	0.03	0.38	20	137.0	0.01	0.010	1.45	0.038	1.885	0.532	<0.5
S12800		0.0003	<0.001	<0.001	0.015	0.02	0.30	20	89.9	0.01	0.008	1.08	0.016	1.285	0.387	<0.5
S14000		<0.0002	<0.001	0.002	0.011	0.02	0.22	30	116.0	<0.01	0.005	1.24	0.021	1.065	0.354	1.3
S14050		0.0002	<0.001	<0.001	0.012	0.02	0.21	10	77.9	0.01	0.006	0.94	0.027	1.120	0.362	1.2
S14050A		<0.0002	0.002	<0.001	0.021	0.01	0.24	10	117.0	0.01	0.011	1.21	0.032	1.900	0.349	1.1
S14100		<0.0002	0.001	<0.001	0.007	0.01	0.30	20	305	<0.01	0.009	1.25	0.018	1.750	0.254	0.7
S14150		<0.0002	<0.001	<0.001	0.017	0.02	0.31	10	143.0	0.01	0.007	1.05	0.030	1.320	0.311	1.0
S14200		<0.0002	0.001	<0.001	0.008	0.02	0.29	10	188.0	0.01	0.013	1.18	0.025	2.29	0.400	1.2
S14250		<0.0002	0.001	<0.001	0.013	0.03	0.39	10	146.5	0.01	0.010	1.33	0.036	1.770	0.467	1.0
S14300		<0.0002	<0.001	<0.001	0.004	0.01	0.20	10	103.0	<0.01	0.010	0.61	0.007	1.890	0.155	1.2

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Cs ppm 0.005	ME-VEG41 Cu ppm 0.01	ME-VEG41 Dy ppm 0.005	ME-VEG41 Er ppm 0.003	ME-VEG41 Eu ppm 0.003	ME-VEG41 Fe % 0.001	ME-VEG41 Ga ppm 0.01	ME-VEG41 Gd ppm 0.005	ME-VEG41 Ge ppm 0.005	ME-VEG41 Hf ppm 0.002	ME-VEG41 Hg ppm 0.001	ME-VEG41 Ho ppm 0.001	ME-VEG41 In ppm 0.005	ME-VEG41 K % 0.01	ME-VEG41 La ppm 0.002
S10000		0.037	9.02	0.017	0.008	0.011	0.049	0.05	0.035	0.018	0.006	0.017	0.003	<0.005	1.39	0.413
S10050		0.019	3.56	0.027	0.015	0.010	0.057	0.05	0.036	0.009	0.006	0.034	0.005	<0.005	0.09	0.350
S10100		0.032	4.05	0.049	0.019	0.019	0.090	0.08	0.065	0.017	0.007	0.057	0.008	<0.005	0.12	0.539
S10150		0.025	3.67	0.041	0.021	0.015	0.075	0.08	0.059	0.017	0.007	0.027	0.007	<0.005	0.05	0.462
S10200		0.020	4.43	0.034	0.018	0.021	0.055	0.06	0.062	0.011	0.005	0.034	0.005	<0.005	0.14	0.618
S10250		0.016	3.94	0.047	0.017	0.032	0.044	0.06	0.096	<0.005	0.002	0.013	0.007	<0.005	0.08	0.978
S10350		0.017	4.83	0.057	0.016	0.049	0.047	0.06	0.123	<0.005	0.002	0.031	0.008	<0.005	0.16	1.420
S10400		0.044	3.60	0.059	0.029	0.025	0.122	0.11	0.084	0.006	0.006	0.034	0.010	<0.005	0.08	0.627
S10450		0.025	4.43	0.044	0.020	0.024	0.092	0.09	0.076	<0.005	0.005	0.040	0.008	<0.005	0.09	0.672
S10500		0.038	7.57	0.054	0.031	0.025	0.099	0.11	0.074	<0.005	0.008	0.063	0.010	<0.005	0.08	0.618
S10550		0.049	5.03	0.082	0.044	0.034	0.132	0.15	0.123	0.008	0.010	0.043	0.015	<0.005	0.08	0.944
S10600		0.041	5.82	0.067	0.036	0.027	0.105	0.12	0.096	0.007	0.009	0.024	0.013	<0.005	0.12	0.631
S10650		0.017	4.66	0.036	0.018	0.014	0.085	0.08	0.055	<0.005	0.002	0.033	0.006	<0.005	0.10	0.441
S10700		0.024	4.38	0.049	0.024	0.026	0.112	0.10	0.077	0.015	0.003	0.043	0.008	<0.005	0.07	0.835
S10700A		0.035	5.96	0.067	0.033	0.028	0.120	0.12	0.098	0.026	0.010	0.069	0.012	<0.005	0.32	0.755
S10800		0.012	3.69	0.027	0.013	0.013	0.072	0.06	0.042	0.009	0.005	0.039	0.005	<0.005	0.14	0.341
S12000		0.020	6.21	0.033	0.015	0.020	0.087	0.08	0.065	0.013	0.007	0.029	0.006	<0.005	0.06	0.712
S12050		0.025	5.48	0.022	0.009	0.023	0.143	0.09	0.060	0.020	0.004	0.008	0.003	<0.005	0.54	0.735
S12100		0.024	3.87	0.025	0.008	0.016	0.075	0.06	0.047	0.012	0.005	0.019	0.004	<0.005	0.21	0.516
S12150		0.029	6.53	0.028	0.009	0.024	0.136	0.10	0.081	0.023	0.005	0.008	0.003	<0.005	0.57	1.030
S12200		0.022	3.74	0.020	0.011	0.014	0.056	0.06	0.042	0.009	0.005	0.020	0.004	<0.005	0.18	0.465
S12250		0.078	6.95	0.077	0.033	0.031	0.233	0.17	0.102	0.032	0.009	0.024	0.013	<0.005	0.08	0.898
S12300		0.033	4.10	0.027	0.012	0.014	0.072	0.08	0.048	0.019	0.005	0.016	0.004	<0.005	0.08	0.493
S12350		0.062	4.63	0.076	0.035	0.031	0.120	0.15	0.099	0.017	0.011	0.034	0.016	<0.005	0.05	0.725
S12400		0.032	5.20	0.060	0.031	0.033	0.118	0.13	0.102	0.022	0.010	0.039	0.011	<0.005	0.08	1.025
S12450		0.081	7.84	0.026	0.010	0.013	0.040	0.06	0.049	0.020	0.005	0.023	0.004	<0.005	1.13	0.508
S12500		0.031	4.46	0.051	0.021	0.025	0.084	0.08	0.079	0.016	0.007	0.032	0.008	<0.005	0.10	0.719
S12550		0.026	5.88	0.035	0.017	0.016	0.066	0.08	0.061	0.028	0.006	0.017	0.006	<0.005	0.20	0.471
S12600		0.028	4.35	0.049	0.021	0.018	0.075	0.08	0.075	0.012	0.007	0.030	0.008	<0.005	0.09	0.565
S12650		0.037	4.79	0.058	0.030	0.023	0.093	0.12	0.083	0.017	0.006	0.022	0.010	<0.005	0.09	0.644
S12750		0.033	6.25	0.076	0.030	0.034	0.146	0.13	0.110	0.023	0.009	0.030	0.012	<0.005	0.07	1.010
S12800		0.032	5.35	0.051	0.024	0.024	0.075	0.09	0.077	0.015	0.007	0.026	0.010	<0.005	0.12	0.718
S14000		0.020	4.21	0.033	0.015	0.017	0.086	0.07	0.055	0.015	0.004	0.021	0.005	<0.005	0.06	0.556
S14050		0.030	6.29	0.039	0.018	0.018	0.116	0.09	0.062	<0.005	0.004	0.027	0.006	<0.005	0.10	0.586
S14050A		0.019	4.22	0.047	0.018	0.028	0.076	0.08	0.084	0.006	0.002	0.032	0.007	<0.005	0.17	0.993
S14100		0.015	4.71	0.036	0.014	0.030	0.068	0.06	0.083	<0.005	0.002	0.041	0.005	<0.005	0.24	0.952
S14150		0.021	3.67	0.045	0.021	0.026	0.066	0.08	0.071	<0.005	0.004	0.022	0.008	<0.005	0.06	0.716
S14200		0.021	3.85	0.057	0.024	0.041	0.102	0.10	0.119	<0.005	0.006	0.030	0.010	<0.005	0.11	1.235
S14250		0.032	5.05	0.065	0.030	0.034	0.088	0.11	0.109	0.005	0.005	0.023	0.011	<0.005	0.14	0.944
S14300		0.024	5.37	0.033	0.008	0.031	0.075	0.08	0.086	<0.005	0.002	0.006	0.005	<0.005	0.50	1.045

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method Analyte Units LOR	ME-VEG41 Li ppm 0.1	ME-VEG41 Lu ppm 0.001	ME-VEG41 Mg % 0.001	ME-VEG41 Mn ppm 1	ME-VEG41 Mo ppm 0.01	ME-VEG41 Na % 0.001	ME-VEG41 Nb ppm 0.002	ME-VEG41 Nd ppm 0.001	ME-VEG41 Ni ppm 0.04	ME-VEG41 P % 0.001	ME-VEG41 Pb ppm 0.01	ME-VEG41 Pr ppm 0.003	ME-VEG41 Rb ppm 0.01	ME-VEG41 Re ppm 0.001	ME-VEG41 S % 0.01
S10000		1.1	0.001	0.166	66	0.96	0.367	0.035	0.337	1.47	0.215	0.43	0.081	2.02	0.002	0.47
S10050		0.1	0.002	0.076	64	0.10	0.457	0.040	0.286	1.61	0.010	0.19	0.070	0.82	<0.001	0.43
S10100		0.2	0.003	0.068	65	0.12	0.315	0.055	0.466	3.30	0.016	0.30	0.118	1.01	<0.001	0.30
S10150		0.2	0.003	0.060	55	0.12	0.340	0.056	0.404	2.11	0.011	0.25	0.100	0.64	<0.001	0.33
S10200		0.2	0.002	0.075	106	0.12	0.464	0.038	0.487	6.63	0.011	0.23	0.125	0.98	<0.001	0.44
S10250		0.1	0.002	0.055	81	0.10	0.143	0.074	0.722	0.92	0.010	0.29	0.188	0.75	<0.001	0.14
S10350		0.2	0.002	0.058	48	0.10	0.105	0.077	0.967	0.69	0.014	0.48	0.264	0.86	<0.001	0.10
S10400		0.3	0.004	0.056	54	0.21	0.070	0.098	0.535	1.31	0.016	0.31	0.135	1.53	<0.001	0.06
S10450		0.2	0.003	0.056	51	0.11	0.051	0.083	0.556	1.10	0.014	0.31	0.138	0.74	<0.001	0.04
S10500		0.3	0.004	0.065	38	0.15	0.159	0.080	0.543	2.20	0.019	0.31	0.139	0.93	<0.001	0.15
S10550		0.4	0.006	0.079	59	0.16	0.196	0.111	0.806	2.65	0.017	0.40	0.215	0.91	<0.001	0.19
S10600		0.3	0.005	0.080	80	0.18	0.063	0.082	0.558	2.09	0.015	0.27	0.141	1.38	<0.001	0.06
S10650		0.2	0.002	0.058	39	0.13	0.012	0.058	0.364	0.94	0.015	0.22	0.096	0.56	<0.001	0.01
S10700		0.2	0.003	0.059	68	0.14	<0.001	0.083	0.673	1.14	0.010	0.43	0.178	0.59	<0.001	<0.01
S10700A		0.3	0.004	0.077	91	0.20	0.431	0.102	0.660	3.10	0.018	0.34	0.163	1.94	<0.001	0.41
S10800		0.1	0.002	0.059	59	0.23	0.423	0.047	0.291	2.76	0.010	0.20	0.072	0.89	<0.001	0.40
S12000		0.2	0.002	0.051	73	0.12	0.277	0.067	0.561	1.76	0.011	0.31	0.145	0.69	<0.001	0.25
S12050		0.1	0.002	0.136	307	0.37	0.443	0.088	0.549	2.38	0.140	0.23	0.149	8.69	<0.001	0.49
S12100		0.1	0.001	0.055	51	0.10	0.400	0.055	0.416	1.90	0.010	0.19	0.105	1.36	<0.001	0.37
S12150		0.1	0.001	0.127	422	0.39	0.304	0.098	0.803	2.72	0.145	0.29	0.197	7.99	<0.001	0.39
S12200		0.1	0.001	0.052	46	0.09	0.422	0.042	0.344	2.15	0.010	0.16	0.092	1.28	<0.001	0.39
S12250		0.3	0.005	0.073	76	0.40	0.386	0.179	0.734	4.08	0.020	0.38	0.199	1.41	<0.001	0.37
S12300		0.2	0.002	0.053	72	0.10	0.425	0.056	0.394	2.58	0.011	0.16	0.101	0.87	<0.001	0.40
S12350		0.4	0.006	0.093	60	0.21	0.356	0.109	0.637	2.90	0.020	0.34	0.162	1.38	<0.001	0.34
S12400		0.2	0.004	0.059	51	0.15	0.402	0.097	0.839	2.42	0.013	0.44	0.215	0.81	<0.001	0.38
S12450		0.8	0.002	0.127	47	1.13	0.339	0.030	0.377	2.04	0.174	0.46	0.095	1.89	0.002	0.40
S12500		0.2	0.003	0.058	74	0.14	0.289	0.074	0.591	1.67	0.011	0.26	0.157	0.93	<0.001	0.26
S12550		0.2	0.003	0.059	69	0.13	0.289	0.046	0.387	1.97	0.008	0.27	0.104	1.19	<0.001	0.26
S12600		0.2	0.003	0.061	70	0.13	0.332	0.056	0.481	1.69	0.012	0.30	0.115	1.12	<0.001	0.31
S12650		0.3	0.003	0.062	61	0.11	0.326	0.066	0.552	2.04	0.012	0.29	0.140	1.22	<0.001	0.32
S12750		0.2	0.004	0.094	78	0.24	0.377	0.104	0.869	2.75	0.015	0.43	0.219	0.53	<0.001	0.36
S12800		0.2	0.004	0.055	46	0.13	0.375	0.071	0.580	1.85	0.011	0.24	0.148	0.90	<0.001	0.35
S14000		0.1	0.002	0.049	36	0.11	0.039	0.055	0.452	1.91	0.014	0.21	0.113	0.48	<0.001	0.03
S14050		0.2	0.002	0.049	40	0.12	0.047	0.084	0.474	1.03	0.013	0.22	0.124	1.00	<0.001	0.05
S14050A		0.2	0.002	0.064	66	0.16	0.106	0.080	0.724	1.15	0.012	0.30	0.197	0.99	<0.001	0.11
S14100		0.1	0.001	0.047	51	0.09	0.089	0.071	0.690	0.85	0.014	0.26	0.184	1.10	<0.001	0.09
S14150		0.2	0.002	0.050	55	0.11	0.084	0.054	0.564	1.06	0.009	0.26	0.146	0.48	<0.001	0.08
S14200		0.2	0.002	0.058	64	0.12	0.137	0.101	0.965	1.16	0.009	0.41	0.243	0.78	<0.001	0.13
S14250		0.3	0.004	0.076	61	0.15	0.083	0.081	0.755	1.43	0.013	0.36	0.187	1.19	<0.001	0.08
S14300		0.1	0.001	0.141	267	0.17	0.065	0.067	0.772	1.22	0.148	0.26	0.201	7.04	<0.001	0.14

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Sb ppm 0.02	ME-VEG41 Sc ppm 0.01	ME-VEG41 Se ppm 0.1	ME-VEG41 Sm ppm 0.003	ME-VEG41 Sn ppm 0.01	ME-VEG41 Sr ppm 0.02	ME-VEG41 Ta ppm 0.005	ME-VEG41 Tb ppm 0.001	ME-VEG41 Te ppm 0.02	ME-VEG41 Th ppm 0.002	ME-VEG41 Ti % 0.001	ME-VEG41 Tl ppm 0.002	ME-VEG41 Tm ppm 0.001	ME-VEG41 U ppm 0.005	ME-VEG41 V ppm 1
S10000		0.02	0.03	0.1	0.061	0.08	38.6	<0.005	0.003	<0.02	0.061	<0.001	0.004	0.001	0.011	<1
S10050		0.03	0.03	<0.1	0.055	0.05	58.7	<0.005	0.005	<0.02	0.057	0.001	0.004	0.002	0.015	<1
S10100		0.05	0.06	<0.1	0.076	0.06	47.4	<0.005	0.008	<0.02	0.080	0.001	0.005	0.004	0.025	1
S10150		0.04	0.06	<0.1	0.064	0.04	39.4	<0.005	0.007	<0.02	0.094	0.001	0.004	0.003	0.024	1
S10200		0.04	0.05	<0.1	0.101	0.06	70.1	<0.005	0.007	<0.02	0.077	0.001	0.004	0.002	0.022	<1
S10250		0.04	0.04	<0.1	0.140	0.08	47.1	<0.005	0.011	<0.02	0.176	0.001	0.006	0.002	0.024	<1
S10350		0.03	0.03	0.1	0.186	0.08	38.7	<0.005	0.013	0.02	0.224	0.001	0.005	0.002	0.035	<1
S10400		0.06	0.11	<0.1	0.105	0.05	38.2	<0.005	0.009	<0.02	0.105	0.002	0.007	0.004	0.035	1
S10450		0.04	0.06	0.2	0.099	0.14	34.8	<0.005	0.009	<0.02	0.119	0.001	0.004	0.003	0.026	1
S10500		0.05	0.09	<0.1	0.105	0.04	36.5	<0.005	0.011	<0.02	0.121	0.002	0.005	0.003	0.036	1
S10550		0.07	0.14	0.1	0.156	0.05	63.0	<0.005	0.015	<0.02	0.159	0.003	0.008	0.006	0.048	2
S10600		0.06	0.12	0.1	0.119	0.06	79.4	<0.005	0.014	<0.02	0.111	0.002	0.009	0.005	0.041	1
S10650		0.03	0.06	<0.1	0.069	0.06	57.3	<0.005	0.007	<0.02	0.060	0.001	0.003	0.003	0.019	1
S10700		0.04	0.07	<0.1	0.111	0.08	62.4	<0.005	0.010	<0.02	0.121	0.001	0.007	0.003	0.033	1
S10700A		0.06	0.09	<0.1	0.119	0.06	54.5	<0.005	0.012	<0.02	0.119	0.002	0.006	0.005	0.053	1
S10800		0.03	0.04	<0.1	0.053	0.07	49.4	<0.005	0.005	0.02	0.054	0.001	0.004	0.002	0.018	<1
S12000		0.03	0.03	<0.1	0.099	0.07	54.1	<0.005	0.007	<0.02	0.092	0.001	0.005	0.002	0.020	1
S12050		0.09	0.02	<0.1	0.111	0.30	9.52	<0.005	0.007	<0.02	0.100	<0.001	0.005	0.001	0.015	<1
S12100		0.03	0.03	<0.1	0.076	0.06	29.5	<0.005	0.005	<0.02	0.077	0.001	0.002	0.001	0.015	<1
S12150		0.10	0.03	<0.1	0.142	0.30	7.77	<0.005	0.008	<0.02	0.167	<0.001	0.021	0.001	0.023	<1
S12200		0.03	0.04	<0.1	0.058	0.04	31.1	<0.005	0.005	<0.02	0.064	0.001	0.002	0.001	0.012	<1
S12250		0.07	0.10	<0.1	0.150	0.07	48.5	<0.005	0.013	<0.02	0.130	0.002	0.007	0.006	0.040	1
S12300		0.04	0.03	<0.1	0.064	0.07	30.9	<0.005	0.005	<0.02	0.077	0.001	0.004	0.002	0.015	<1
S12350		0.07	0.14	<0.1	0.134	0.06	56.2	<0.005	0.014	<0.02	0.126	0.003	0.008	0.006	0.040	1
S12400		0.06	0.11	<0.1	0.160	0.07	56.2	<0.005	0.012	<0.02	0.142	0.002	0.006	0.004	0.035	1
S12450		0.04	0.03	<0.1	0.066	0.10	47.1	<0.005	0.004	<0.02	0.052	<0.001	0.006	0.001	0.013	<1
S12500		0.05	0.06	<0.1	0.108	0.05	54.8	<0.005	0.010	<0.02	0.114	0.001	0.005	0.003	0.025	1
S12550		0.05	0.08	<0.1	0.069	0.05	45.9	<0.005	0.007	<0.02	0.083	0.001	0.005	0.002	0.025	1
S12600		0.06	0.07	<0.1	0.096	0.05	54.4	<0.005	0.009	<0.02	0.093	0.001	0.004	0.003	0.030	1
S12650		0.05	0.11	<0.1	0.113	0.06	31.0	<0.005	0.010	<0.02	0.105	0.002	0.006	0.004	0.036	1
S12750		0.06	0.10	<0.1	0.168	0.10	50.7	<0.005	0.013	0.02	0.152	0.002	0.006	0.005	0.033	1
S12800		0.05	0.07	<0.1	0.106	0.07	32.7	<0.005	0.009	<0.02	0.111	0.002	0.004	0.003	0.038	1
S14000		0.03	0.07	0.2	0.081	0.06	31.0	<0.005	0.006	<0.02	0.078	0.001	0.003	0.002	0.017	1
S14050		0.05	0.06	<0.1	0.082	0.08	26.0	<0.005	0.007	<0.02	0.089	0.001	0.003	0.002	0.023	1
S14050A		0.05	0.05	<0.1	0.139	0.08	43.7	<0.005	0.010	<0.02	0.130	0.001	0.005	0.002	0.029	1
S14100		0.03	0.03	0.1	0.124	0.07	38.0	<0.005	0.008	<0.02	0.121	0.001	0.002	0.002	0.021	1
S14150		0.05	0.07	<0.1	0.104	0.10	41.1	<0.005	0.010	<0.02	0.105	0.001	0.004	0.002	0.027	1
S14200		0.05	0.07	<0.1	0.176	0.13	56.6	<0.005	0.013	<0.02	0.171	0.001	0.004	0.004	0.036	1
S14250		0.06	0.10	<0.1	0.152	0.07	37.2	<0.005	0.012	<0.02	0.145	0.002	0.005	0.004	0.037	1
S14300		0.08	0.03	<0.1	0.138	0.20	11.15	<0.005	0.009	<0.02	0.103	0.001	0.006	0.001	0.018	<1

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 W ppm 0.01	ME-VEG41 Y ppm 0.003	ME-VEG41 Yb ppm 0.003	ME-VEG41 Zn ppm 0.1	ME-VEG41 Zr ppm 0.02
S10000		0.25	0.079	0.006	21.9	0.16
S10050		0.12	0.128	0.011	65.2	0.16
S10100		0.09	0.228	0.021	85.9	0.23
S10150		0.15	0.204	0.021	99.7	0.22
S10200		0.11	0.191	0.018	103.5	0.16
S10250		0.14	0.187	0.012	136.5	0.13
S10350		0.08	0.203	0.013	96.5	0.10
S10400		0.16	0.292	0.025	50.9	0.24
S10450		0.11	0.205	0.020	81.4	0.18
S10500		0.10	0.291	0.023	61.8	0.28
S10550		0.08	0.457	0.034	51.1	0.35
S10600		0.06	0.360	0.034	60.4	0.32
S10650		0.05	0.189	0.017	61.6	0.15
S10700		0.11	0.224	0.020	83.5	0.22
S10700A		0.12	0.330	0.029	72.2	0.34
S10800		0.10	0.138	0.011	87.8	0.15
S12000		0.08	0.161	0.013	135.0	0.17
S12050		0.04	0.078	0.007	31.1	0.13
S12100		0.08	0.119	0.009	64.1	0.13
S12150		0.04	0.101	0.007	27.0	0.15
S12200		0.05	0.110	0.009	64.8	0.15
S12250		0.10	0.372	0.034	63.1	0.35
S12300		0.05	0.129	0.008	78.1	0.16
S12350		0.07	0.408	0.038	62.1	0.37
S12400		0.14	0.310	0.026	78.2	0.30
S12450		0.20	0.104	0.006	18.1	0.18
S12500		0.09	0.236	0.019	112.0	0.18
S12550		0.19	0.204	0.016	73.8	0.22
S12600		0.13	0.217	0.019	93.7	0.21
S12650		0.09	0.293	0.024	60.2	0.27
S12750		0.08	0.344	0.030	127.5	0.29
S12800		0.07	0.261	0.021	78.6	0.23
S14000		0.06	0.180	0.012	66.4	0.11
S14050		0.07	0.175	0.015	41.7	0.16
S14050A		0.10	0.198	0.015	60.0	0.15
S14100		0.06	0.147	0.010	116.0	0.13
S14150		0.12	0.220	0.021	76.2	0.16
S14200		0.09	0.271	0.023	80.1	0.21
S14250		0.10	0.320	0.031	58.5	0.23
S14300		0.04	0.134	0.008	34.6	0.07

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Finalized Date: 3- OCT- 2013
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Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Au ppm 0.0002	ME-VEG41 Pd ppm 0.001	ME-VEG41 Pt ppm 0.001	ME-VEG41 Ag ppm 0.001	ME-VEG41 Al % 0.01	ME-VEG41 As ppm 0.05	ME-VEG41 B ppm 10	ME-VEG41 Ba ppm 0.1	ME-VEG41 Be ppm 0.01	ME-VEG41 Bi ppm 0.001	ME-VEG41 Ca % 0.01	ME-VEG41 Cd ppm 0.002	ME-VEG41 Ce ppm 0.003	ME-VEG41 Co ppm 0.002	ME-VEG41 Cr ppm 0.5
S14350		<0.0002	0.001	<0.001	0.008	0.01	0.26	30	114.0	0.01	0.017	0.61	0.009	3.81	0.120	0.8
S14400		<0.0002	<0.001	<0.001	0.003	0.01	0.10	10	94.0	<0.01	0.008	0.49	0.004	1.340	0.123	0.8
S14450		0.0003	<0.001	<0.001	0.045	0.06	0.82	10	203	0.02	0.014	1.87	0.059	2.58	0.801	2.1
S14500		<0.0002	0.001	<0.001	0.014	0.02	0.29	20	154.5	0.01	0.006	1.72	0.034	0.968	0.394	0.9
S14550		0.0004	<0.001	<0.001	0.006	0.01	0.21	50	24.2	<0.01	0.006	0.74	0.191	0.874	0.098	0.6
S14600		<0.0002	<0.001	<0.001	0.008	0.01	0.15	10	133.0	<0.01	0.006	0.76	0.012	0.740	0.144	0.6
S14650		<0.0002	0.001	<0.001	0.005	0.02	0.29	10	111.0	0.01	0.004	1.29	0.031	0.602	0.381	0.6
S14700		<0.0002	0.002	<0.001	0.068	0.03	0.32	10	226	0.01	0.007	1.64	0.047	1.080	0.458	1.0
S14800		<0.0002	<0.001	<0.001	0.024	0.02	0.33	10	156.0	0.01	0.006	1.23	0.036	0.857	0.355	0.8
S16000		<0.0002	<0.001	<0.001	0.010	0.01	0.11	20	158.0	<0.01	0.007	0.81	0.009	1.040	0.129	0.6
S16050		<0.0002	<0.001	<0.001	0.011	0.02	0.24	10	241	0.01	0.010	1.30	0.042	1.350	0.317	1.6
S16100		<0.0002	<0.001	<0.001	0.004	0.01	0.18	10	124.0	<0.01	0.006	0.60	0.009	0.839	0.189	1.0
S16150		0.0002	0.002	<0.001	0.014	0.03	0.48	10	224	0.01	0.006	1.73	0.064	0.986	0.520	1.4
S16200		<0.0002	<0.001	<0.001	0.019	0.03	0.34	10	82.1	0.01	0.005	1.38	0.035	1.000	0.803	1.9
S16250		<0.0002	0.001	<0.001	0.017	0.04	0.46	<10	158.5	0.01	0.008	1.28	0.047	1.320	0.455	1.3
S16300		0.0002	0.001	<0.001	0.036	0.02	0.31	10	348	0.01	0.005	1.23	0.039	0.847	0.403	1.0
S16350		<0.0002	<0.001	<0.001	0.004	0.01	0.23	10	124.5	<0.01	0.007	0.60	0.011	1.120	0.220	1.1
S16400		<0.0002	<0.001	<0.001	0.003	0.01	0.14	20	85.0	<0.01	0.009	0.55	0.011	0.724	0.097	0.6
S16450		<0.0002	<0.001	<0.001	0.019	0.03	0.30	10	127.5	0.01	0.005	1.27	0.031	0.867	0.560	1.4
S16500		<0.0002	0.002	<0.001	0.015	0.02	0.30	10	144.5	0.01	0.008	1.51	0.045	1.305	0.423	1.0
S16550		0.0002	<0.001	<0.001	0.012	0.03	0.37	10	171.5	0.01	0.007	1.53	0.039	1.515	0.512	1.2
S16600		<0.0002	0.001	<0.001	0.026	0.01	0.26	10	141.5	0.01	0.006	1.03	0.033	0.764	0.282	0.5
S16650		<0.0002	<0.001	0.002	0.016	0.02	0.21	<10	111.0	<0.01	0.005	0.90	0.031	0.817	0.280	0.6
S16800		0.0002	0.001	<0.001	0.010	0.03	0.36	<10	110.5	0.01	0.005	1.56	0.026	1.010	0.391	0.9
S16800A		<0.0002	<0.001	<0.001	0.026	0.05	0.55	<10	117.0	0.01	0.008	1.68	0.038	1.925	0.680	2.3
SOE30S		<0.0002	<0.001	0.001	0.048	0.03	0.38	<10	119.5	0.01	0.006	1.42	0.045	1.120	0.458	1.1
SOE30SA		<0.0002	<0.001	<0.001	0.025	0.04	0.52	<10	226	0.01	0.007	1.57	0.050	1.250	0.505	1.4
SOE15S		0.0002	<0.001	<0.001	0.032	0.02	0.35	10	215	<0.01	0.004	1.63	0.041	0.681	0.241	0.8
SOE		0.0006	0.001	0.004	0.019	0.02	0.32	30	117.5	0.01	0.005	1.18	0.031	0.883	0.368	0.7
SOE15N		0.0003	<0.001	<0.001	0.017	0.03	0.37	10	160.0	0.01	0.006	1.62	0.062	1.035	0.575	1.0
SOE30N		<0.0002	<0.001	0.001	0.024	0.02	0.29	<10	143.5	0.01	0.004	0.98	0.028	1.035	0.364	0.9
SOW30S		<0.0002	<0.001	0.001	0.031	0.02	0.24	10	170.5	0.01	0.004	1.40	0.036	0.669	0.303	2.1
SOW15S		<0.0002	0.001	<0.001	0.009	0.01	0.26	10	149.0	0.01	0.020	0.98	0.038	2.59	0.363	1.7
SOW		<0.0002	0.001	0.003	0.016	0.01	0.17	30	48.7	<0.01	0.004	1.02	0.014	0.793	0.191	0.5
SOW15N		<0.0002	0.001	<0.001	0.019	0.02	0.27	<10	214	0.01	0.007	1.23	0.030	1.310	0.450	1.1
SOW30N		<0.0002	<0.001	<0.001	0.004	0.01	0.13	<10	144.0	<0.01	0.006	0.63	0.006	1.265	0.137	0.9
L14000		0.0002	0.001	<0.001	0.011	0.02	0.23	<10	209	0.01	0.005	1.33	0.038	1.085	0.362	0.7
L14050		0.0002	<0.001	0.004	0.003	0.01	0.10	40	141.5	<0.01	0.005	0.63	0.006	0.911	0.103	<0.5
L14100		0.0004	<0.001	0.003	0.016	0.02	0.24	30	67.4	0.01	0.005	1.13	0.028	0.944	0.316	0.6
L14150		<0.0002	<0.001	<0.001	0.009	0.02	0.25	10	104.0	0.01	0.004	0.85	0.026	0.631	0.236	0.7

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WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
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Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Cs ppm 0.005	ME-VEG41 Cu ppm 0.01	ME-VEG41 Dy ppm 0.005	ME-VEG41 Er ppm 0.003	ME-VEG41 Eu ppm 0.003	ME-VEG41 Fe % 0.001	ME-VEG41 Ga ppm 0.01	ME-VEG41 Gd ppm 0.005	ME-VEG41 Ge ppm 0.005	ME-VEG41 Hf ppm 0.002	ME-VEG41 Hg ppm 0.001	ME-VEG41 Ho ppm 0.001	ME-VEG41 In ppm 0.005	ME-VEG41 K % 0.01	ME-VEG41 La ppm 0.002
S14350		0.017	5.78	0.081	0.016	0.067	0.056	0.08	0.197	<0.005	<0.002	0.008	0.009	<0.005	0.54	2.11
S14400		0.093	5.64	0.022	0.006	0.022	0.079	0.08	0.058	<0.005	0.009	0.002	0.003	<0.005	0.58	0.730
S14450		0.103	6.09	0.129	0.066	0.049	0.148	0.22	0.183	0.010	0.016	0.037	0.024	<0.005	0.10	1.340
S14500		0.022	4.92	0.043	0.027	0.020	0.074	0.07	0.063	<0.005	0.004	0.044	0.007	<0.005	0.13	0.511
S14550		0.039	9.23	0.016	0.007	0.010	0.049	0.05	0.035	<0.005	0.003	0.020	0.003	<0.005	1.34	0.363
S14600		0.032	7.00	0.021	0.012	0.012	0.030	0.07	0.038	<0.005	0.002	0.005	0.004	<0.005	0.52	0.399
S14650		0.026	4.34	0.028	0.016	0.014	0.038	0.05	0.042	<0.005	0.004	0.036	0.006	<0.005	0.15	0.328
S14700		0.031	6.26	0.061	0.034	0.023	0.070	0.10	0.080	<0.005	0.006	0.041	0.011	<0.005	0.08	0.593
S14800		0.024	5.23	0.038	0.022	0.016	0.042	0.07	0.053	<0.005	0.005	0.031	0.008	<0.005	0.15	0.460
S16000		0.038	7.32	0.021	0.009	0.018	0.030	0.07	0.050	<0.005	<0.002	0.012	0.003	<0.005	0.55	0.591
S16050		0.025	3.96	0.050	0.023	0.025	0.081	0.09	0.082	<0.005	0.006	0.033	0.009	<0.005	0.06	0.724
S16100		0.023	6.28	0.018	0.008	0.014	0.089	0.09	0.041	<0.005	<0.002	0.009	0.003	<0.005	0.57	0.445
S16150		0.030	6.10	0.067	0.040	0.022	0.063	0.09	0.078	<0.005	0.007	0.043	0.012	<0.005	0.22	0.506
S16200		0.035	8.15	0.057	0.034	0.020	0.070	0.10	0.077	<0.005	0.005	0.032	0.011	<0.005	0.18	0.535
S16250		0.054	6.47	0.079	0.042	0.026	0.080	0.13	0.096	<0.005	0.008	0.040	0.013	<0.005	0.07	0.689
S16300		0.027	4.88	0.046	0.025	0.014	0.054	0.08	0.065	<0.005	0.008	0.043	0.009	<0.005	0.08	0.445
S16350		0.025	7.46	0.026	0.011	0.018	0.108	0.09	0.054	0.005	0.003	0.009	0.004	<0.005	0.49	0.599
S16400		0.019	5.86	0.015	0.006	0.012	0.034	0.06	0.033	<0.005	<0.002	0.006	0.002	<0.005	0.51	0.387
S16450		0.029	5.96	0.045	0.025	0.017	0.060	0.09	0.068	<0.005	0.007	0.033	0.010	<0.005	0.12	0.459
S16500		0.029	5.95	0.066	0.031	0.023	0.052	0.09	0.080	<0.005	0.005	0.024	0.011	<0.005	0.04	0.686
S16550		0.057	4.64	0.066	0.030	0.027	0.107	0.12	0.093	<0.005	0.009	0.043	0.011	<0.005	0.13	0.806
S16600		0.046	5.59	0.031	0.015	0.014	0.029	0.05	0.053	<0.005	0.002	0.033	0.006	<0.005	0.20	0.436
S16650		0.024	3.88	0.031	0.017	0.015	0.041	0.06	0.051	<0.005	0.004	0.025	0.006	<0.005	0.09	0.457
S16800		0.037	4.62	0.049	0.023	0.019	0.054	0.10	0.073	<0.005	0.004	0.031	0.010	<0.005	0.04	0.525
S16800A		0.057	4.95	0.091	0.046	0.035	0.206	0.21	0.128	0.011	0.014	0.034	0.016	<0.005	0.06	0.999
S0E30S		0.039	4.81	0.066	0.038	0.024	0.074	0.11	0.085	<0.005	0.006	0.022	0.012	<0.005	0.03	0.595
S0E30SA		0.050	4.67	0.084	0.043	0.024	0.089	0.14	0.099	<0.005	0.009	0.036	0.016	<0.005	0.06	0.658
S0E15S		0.225	4.71	0.037	0.019	0.012	0.046	0.07	0.048	<0.005	0.003	0.031	0.006	<0.005	0.18	0.350
S0E		0.029	4.96	0.046	0.026	0.017	0.054	0.08	0.058	0.017	0.007	0.047	0.008	<0.005	0.17	0.448
S0E15N		0.040	7.19	0.067	0.032	0.024	0.060	0.09	0.072	<0.005	0.004	0.043	0.012	<0.005	0.18	0.564
S0E30N		0.023	4.95	0.051	0.027	0.019	0.074	0.09	0.073	<0.005	0.004	0.023	0.009	<0.005	0.08	0.555
S0W30S		0.034	6.39	0.036	0.021	0.014	0.039	0.07	0.049	<0.005	0.005	0.023	0.006	<0.005	0.08	0.363
S0W15S		0.073	6.00	0.069	0.022	0.058	0.066	0.08	0.161	<0.005	0.004	0.024	0.009	<0.005	0.26	1.365
S0W		0.014	6.06	0.025	0.010	0.014	0.047	0.05	0.044	0.011	0.003	0.027	0.004	<0.005	0.13	0.405
S0W15N		0.027	4.12	0.045	0.019	0.021	0.038	0.07	0.076	<0.005	0.004	0.030	0.007	<0.005	0.17	0.688
S0W30N		0.061	5.70	0.025	0.008	0.020	0.079	0.06	0.058	<0.005	0.002	0.005	0.003	<0.005	0.54	0.666
L14000		0.015	3.84	0.043	0.022	0.022	0.038	0.06	0.071	<0.005	0.002	0.043	0.007	<0.005	0.16	0.670
L14050		0.052	5.82	0.017	0.006	0.014	0.036	0.06	0.040	0.011	0.003	0.007	0.002	<0.005	0.56	0.461
L14100		0.023	4.31	0.036	0.021	0.018	0.045	0.06	0.056	0.010	0.005	0.032	0.007	<0.005	0.10	0.472
L14150		0.043	4.79	0.027	0.013	0.014	0.030	0.05	0.044	<0.005	0.003	0.047	0.005	<0.005	0.14	0.334

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method Analyte Units LOR	ME-VEG41 Li ppm 0.1	ME-VEG41 Lu ppm 0.001	ME-VEG41 Mg % 0.001	ME-VEG41 Mn ppm 1	ME-VEG41 Mo ppm 0.01	ME-VEG41 Na % 0.001	ME-VEG41 Nb ppm 0.002	ME-VEG41 Nd ppm 0.001	ME-VEG41 Ni ppm 0.04	ME-VEG41 P % 0.001	ME-VEG41 Pb ppm 0.01	ME-VEG41 Pr ppm 0.003	ME-VEG41 Rb ppm 0.01	ME-VEG41 Re ppm 0.001	ME-VEG41 S % 0.01
S14350		0.1	0.001	0.150	247	0.20	0.153	0.130	1.475	0.98	0.142	0.45	0.405	7.45	<0.001	0.25
S14400		0.1	0.001	0.133	428	0.25	0.097	0.049	0.524	1.21	0.152	0.19	0.143	11.00	<0.001	0.18
S14450		0.6	0.010	0.101	91	0.23	0.108	0.147	1.120	2.99	0.026	0.53	0.284	2.39	<0.001	0.11
S14500		0.2	0.003	0.073	55	0.12	0.059	0.058	0.417	1.10	0.015	0.22	0.107	0.80	<0.001	0.06
S14550		1.2	0.001	0.168	65	0.99	0.092	0.032	0.283	1.24	0.223	0.39	0.073	1.96	0.003	0.22
S14600		0.1	0.001	0.142	444	0.09	0.036	0.026	0.294	1.84	0.137	0.15	0.084	5.54	<0.001	0.13
S14650		0.2	0.002	0.063	57	0.06	0.050	0.027	0.254	1.43	0.015	0.18	0.065	1.02	<0.001	0.05
S14700		0.3	0.005	0.065	67	0.10	0.123	0.050	0.509	1.49	0.014	0.29	0.129	0.68	<0.001	0.12
S14800		0.2	0.002	0.072	70	0.07	0.071	0.032	0.379	1.16	0.012	0.25	0.092	1.16	<0.001	0.07
S16000		0.1	0.001	0.150	415	0.22	0.067	0.025	0.420	1.50	0.157	0.19	0.111	7.93	<0.001	0.17
S16050		0.2	0.003	0.062	67	0.13	0.135	0.079	0.600	1.48	0.013	0.29	0.151	0.99	<0.001	0.13
S16100		0.1	0.001	0.143	356	0.15	0.066	0.031	0.351	1.08	0.159	0.13	0.088	6.83	<0.001	0.16
S16150		0.3	0.005	0.075	65	0.11	0.092	0.054	0.434	1.92	0.018	0.26	0.106	1.32	<0.001	0.10
S16200		0.3	0.004	0.086	64	0.10	0.113	0.052	0.444	4.71	0.020	0.24	0.118	0.94	<0.001	0.12
S16250		0.3	0.005	0.071	54	0.12	0.091	0.066	0.580	1.97	0.017	0.37	0.152	1.17	<0.001	0.09
S16300		0.2	0.004	0.065	49	0.08	0.090	0.038	0.356	1.46	0.012	0.27	0.093	0.83	<0.001	0.09
S16350		0.1	0.001	0.138	244	0.24	0.056	0.061	0.456	1.44	0.129	0.21	0.124	8.48	<0.001	0.13
S16400		0.1	0.001	0.117	300	0.13	0.042	0.025	0.299	1.02	0.134	0.15	0.074	6.45	<0.001	0.13
S16450		0.3	0.004	0.074	48	0.08	0.062	0.050	0.408	3.31	0.016	0.25	0.095	0.74	<0.001	0.06
S16500		0.2	0.005	0.088	46	0.10	0.101	0.047	0.569	2.24	0.014	0.29	0.139	0.43	<0.001	0.10
S16550		0.3	0.004	0.073	90	0.14	0.056	0.085	0.678	1.54	0.018	0.34	0.169	1.88	<0.001	0.06
S16600		0.2	0.002	0.067	100	0.07	0.120	0.030	0.367	0.78	0.017	0.23	0.085	2.54	<0.001	0.11
S16650		0.2	0.003	0.048	59	0.06	0.136	0.033	0.367	0.77	0.011	0.20	0.094	1.03	<0.001	0.13
S16800		0.3	0.003	0.061	36	0.08	0.088	0.045	0.458	1.11	0.012	0.25	0.115	0.58	<0.001	0.09
S16800A		0.4	0.006	0.083	57	0.23	0.039	0.104	0.902	2.23	0.023	0.35	0.221	1.35	<0.001	0.04
S0E30S		0.3	0.005	0.077	41	0.11	0.136	0.057	0.521	1.50	0.013	0.29	0.125	0.54	<0.001	0.13
S0E30SA		0.4	0.006	0.078	59	0.13	0.166	0.059	0.571	1.76	0.017	0.32	0.147	0.98	<0.001	0.17
S0E15S		0.2	0.003	0.073	47	0.08	0.152	0.033	0.322	0.73	0.023	0.24	0.080	5.68	<0.001	0.16
S0E		0.2	0.004	0.066	50	0.11	0.039	0.045	0.384	1.22	0.016	0.25	0.096	1.19	<0.001	0.03
S0E15N		0.3	0.006	0.075	84	0.12	0.115	0.045	0.484	1.71	0.020	0.30	0.125	1.63	<0.001	0.12
S0E30N		0.2	0.004	0.049	47	0.09	0.212	0.054	0.479	1.04	0.011	0.25	0.119	0.71	<0.001	0.20
S0W30S		0.2	0.002	0.057	71	0.08	0.182	0.038	0.309	2.25	0.013	0.20	0.075	1.10	<0.001	0.17
S0W15S		0.2	0.003	0.065	75	0.12	0.073	0.086	1.245	1.93	0.012	0.50	0.309	2.41	<0.001	0.06
S0W		0.1	0.001	0.042	28	0.14	0.019	0.042	0.328	0.64	0.012	0.15	0.084	0.63	<0.001	0.01
S0W15N		0.2	0.003	0.075	61	0.10	0.124	0.047	0.558	1.78	0.015	0.29	0.146	2.98	<0.001	0.11
S0W30N		0.1	0.001	0.139	135	0.27	0.077	0.059	0.521	1.76	0.144	0.19	0.137	9.48	<0.001	0.15
L14000		0.2	0.003	0.063	62	0.08	0.128	0.041	0.483	1.04	0.014	0.27	0.126	0.79	<0.001	0.13
L14050		0.1	0.001	0.144	281	0.30	0.010	0.033	0.357	1.20	0.130	0.15	0.091	13.45	<0.001	0.09
L14100		0.2	0.003	0.052	34	0.09	0.022	0.037	0.406	1.02	0.015	0.26	0.101	0.60	<0.001	0.01
L14150		0.2	0.002	0.055	40	0.07	0.135	0.027	0.269	0.70	0.019	0.17	0.071	2.14	<0.001	0.13

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description / Method / Analyte / Units / LOR	ME-VEG41 Sb ppm 0.02	ME-VEG41 Sc ppm 0.01	ME-VEG41 Se ppm 0.1	ME-VEG41 Sm ppm 0.003	ME-VEG41 Sn ppm 0.01	ME-VEG41 Sr ppm 0.02	ME-VEG41 Ta ppm 0.005	ME-VEG41 Tb ppm 0.001	ME-VEG41 Te ppm 0.02	ME-VEG41 Th ppm 0.002	ME-VEG41 Ti % 0.001	ME-VEG41 Tl ppm 0.002	ME-VEG41 Tm ppm 0.001	ME-VEG41 U ppm 0.005	ME-VEG41 V ppm 1
S14350	0.07	0.01	<0.1	0.303	0.24	12.00	<0.005	0.021	0.02	0.363	<0.001	0.013	0.002	0.035	<1
S14400	0.09	0.01	<0.1	0.108	0.20	9.22	<0.005	0.006	<0.02	0.088	<0.001	0.046	0.001	0.013	<1
S14450	0.11	0.22	0.1	0.218	0.10	66.7	<0.005	0.026	<0.02	0.196	0.004	0.010	0.009	0.082	2
S14500	0.06	0.07	0.1	0.085	0.05	66.9	<0.005	0.008	<0.02	0.085	0.001	0.006	0.003	0.028	1
S14550	0.03	0.03	0.2	0.059	0.06	37.9	<0.005	0.004	<0.02	0.057	<0.001	0.004	0.001	0.012	<1
S14600	0.09	0.04	<0.1	0.058	0.13	15.80	<0.005	0.005	<0.02	0.053	0.001	0.011	0.001	0.013	<1
S14650	0.05	0.05	<0.1	0.048	0.03	40.2	<0.005	0.006	<0.02	0.047	0.001	0.006	0.002	0.015	<1
S14700	0.07	0.10	0.1	0.109	0.05	88.8	<0.005	0.011	<0.02	0.092	0.002	0.006	0.005	0.039	1
S14800	0.03	0.07	<0.1	0.088	0.03	46.1	<0.005	0.007	<0.02	0.066	0.001	0.004	0.003	0.025	1
S16000	0.10	0.03	<0.1	0.077	0.19	19.45	<0.005	0.005	<0.02	0.063	<0.001	0.008	0.001	0.013	<1
S16050	0.04	0.09	<0.1	0.111	0.07	57.7	<0.005	0.011	<0.02	0.113	0.001	0.005	0.003	0.029	1
S16100	0.07	0.02	<0.1	0.066	0.20	12.45	<0.005	0.004	<0.02	0.055	<0.001	0.003	0.001	0.019	<1
S16150	0.07	0.11	<0.1	0.087	0.03	67.8	<0.005	0.011	<0.02	0.084	0.002	0.006	0.005	0.047	1
S16200	0.06	0.10	0.1	0.100	0.04	38.4	<0.005	0.011	<0.02	0.100	0.002	0.006	0.005	0.048	1
S16250	0.06	0.14	0.1	0.114	0.04	42.6	<0.005	0.014	<0.02	0.109	0.003	0.007	0.004	0.035	1
S16300	0.05	0.11	<0.1	0.064	0.04	61.8	<0.005	0.008	<0.02	0.067	0.001	0.004	0.004	0.029	1
S16350	0.09	0.03	<0.1	0.088	0.28	9.79	<0.005	0.006	<0.02	0.082	0.001	0.004	0.001	0.022	<1
S16400	0.10	0.01	<0.1	0.057	0.15	9.88	<0.005	0.003	0.02	0.051	<0.001	0.004	0.001	0.009	<1
S16450	0.05	0.13	<0.1	0.074	0.04	47.2	<0.005	0.009	<0.02	0.067	0.002	0.004	0.004	0.036	1
S16500	0.05	0.10	0.1	0.101	0.05	55.1	<0.005	0.010	<0.02	0.097	0.001	0.005	0.005	0.032	1
S16550	0.06	0.12	0.1	0.122	0.04	48.0	<0.005	0.012	<0.02	0.127	0.002	0.006	0.005	0.037	1
S16600	0.02	0.04	<0.1	0.072	0.04	47.4	<0.005	0.006	<0.02	0.056	0.001	0.004	0.002	0.017	1
S16650	0.03	0.06	<0.1	0.070	0.04	29.7	<0.005	0.007	<0.02	0.064	0.001	0.003	0.003	0.034	<1
S16800	0.04	0.11	0.1	0.087	0.04	46.9	<0.005	0.010	<0.02	0.082	0.002	0.003	0.004	0.042	1
S16800A	0.08	0.17	0.1	0.175	0.09	54.5	<0.005	0.016	<0.02	0.186	0.003	0.007	0.006	0.056	2
S0E30S	0.06	0.12	0.1	0.112	0.04	46.4	<0.005	0.011	<0.02	0.091	0.002	0.004	0.005	0.033	1
S0E30SA	0.07	0.13	0.1	0.119	0.06	53.9	<0.005	0.015	<0.02	0.108	0.002	0.006	0.006	0.041	1
S0E15S	0.03	0.06	0.1	0.060	0.04	53.1	<0.005	0.006	<0.02	0.053	0.001	0.005	0.003	0.019	1
S0E	0.05	0.09	0.6	0.066	0.04	40.0	<0.005	0.008	<0.02	0.073	0.001	0.005	0.003	0.039	1
S0E15N	0.06	0.09	0.1	0.094	0.04	59.0	<0.005	0.011	<0.02	0.084	0.002	0.006	0.005	0.054	1
S0E30N	0.04	0.09	<0.1	0.098	0.05	44.8	<0.005	0.009	<0.02	0.091	0.002	0.004	0.003	0.034	1
S0W30S	0.03	0.07	<0.1	0.066	0.03	56.2	<0.005	0.007	0.02	0.056	0.001	0.003	0.003	0.023	1
S0W15S	0.04	0.05	0.1	0.250	0.06	49.9	<0.005	0.016	<0.02	0.255	0.001	0.005	0.003	0.028	1
S0W	0.03	0.04	0.3	0.061	0.05	42.3	<0.005	0.005	<0.02	0.068	0.001	0.002	0.001	0.019	<1
S0W15N	0.04	0.07	0.1	0.100	0.06	57.7	<0.005	0.008	<0.02	0.092	0.001	0.007	0.003	0.023	<1
S0W30N	0.05	0.03	<0.1	0.085	0.09	15.50	<0.005	0.006	<0.02	0.101	<0.001	0.017	0.001	0.015	<1
L14000	0.04	0.05	<0.1	0.102	0.03	61.6	<0.005	0.010	<0.02	0.081	0.001	0.005	0.003	0.033	<1
L14050	0.09	0.02	0.2	0.064	0.18	11.65	<0.005	0.004	<0.02	0.069	<0.001	0.004	0.001	0.010	<1
L14100	0.05	0.06	0.4	0.071	0.05	31.2	<0.005	0.007	<0.02	0.076	0.001	0.005	0.003	0.024	1
L14150	0.04	0.04	<0.1	0.058	0.02	34.1	<0.005	0.006	<0.02	0.049	0.001	0.003	0.002	0.018	1

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals
ALS Canada Ltd.
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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method Analyte Units LOR	ME- VEG41 W ppm 0.01	ME- VEG41 Y ppm 0.003	ME- VEG41 Yb ppm 0.003	ME- VEG41 Zn ppm 0.1	ME- VEG41 Zr ppm 0.02
S14350		0.03	0.213	0.011	35.4	0.08
S14400		0.02	0.067	0.004	23.4	0.07
S14450		0.09	0.675	0.057	78.5	0.52
S14500		0.07	0.234	0.024	72.5	0.17
S14550		0.25	0.071	0.005	20.5	0.11
S14600		0.02	0.101	0.008	34.0	0.08
S14650		0.08	0.168	0.015	73.6	0.13
S14700		0.11	0.347	0.030	74.7	0.26
S14800		0.12	0.201	0.022	87.4	0.17
S16000		0.04	0.090	0.007	31.7	0.07
S16050		0.06	0.231	0.020	74.0	0.19
S16100		0.02	0.079	0.006	38.7	0.07
S16150		0.08	0.363	0.035	105.5	0.28
S16200		0.06	0.341	0.032	62.4	0.21
S16250		0.08	0.389	0.032	83.4	0.28
S16300		0.08	0.257	0.024	88.3	0.20
S16350		0.05	0.116	0.008	27.9	0.12
S16400		0.03	0.058	0.005	34.1	0.07
S16450		0.06	0.280	0.021	60.7	0.20
S16500		0.06	0.327	0.023	108.5	0.22
S16550		0.09	0.334	0.032	76.0	0.24
S16600		0.10	0.152	0.016	102.0	0.12
S16650		0.09	0.190	0.016	62.2	0.12
S16800		0.06	0.269	0.024	71.6	0.18
S16800A		0.09	0.498	0.044	55.0	0.41
S0E30S		0.08	0.364	0.034	79.8	0.24
S0E30SA		0.08	0.454	0.041	111.5	0.30
S0E15S		0.07	0.199	0.016	54.1	0.15
S0E		0.11	0.271	0.021	71.3	0.21
S0E15N		0.09	0.315	0.031	81.3	0.25
S0E30N		0.07	0.274	0.024	67.5	0.19
S0W30S		0.05	0.190	0.017	85.0	0.17
S0W15S		0.08	0.257	0.014	105.5	0.16
S0W		0.09	0.117	0.007	75.1	0.08
S0W15N		0.08	0.210	0.017	73.4	0.16
S0W30N		0.03	0.079	0.007	27.5	0.10
L14000		0.10	0.224	0.019	84.3	0.15
L14050		0.03	0.072	0.005	27.4	0.07
L14100		0.08	0.233	0.019	45.1	0.15
L14150		0.05	0.144	0.014	60.4	0.12

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ALS Minerals

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41
	Analyte	Au	Pd	Pt	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOR	0.0002	0.001	0.001	0.001	0.01	0.05	10	0.1	0.01	0.001	0.01	0.002	0.003	0.002	0.5
L14200		0.0002	<0.001	0.004	0.020	0.02	0.22	30	118.5	0.01	0.006	1.32	0.034	1.005	0.343	0.7
L14250		0.0002	<0.001	0.001	0.025	0.03	0.37	<10	150.5	0.01	0.005	1.82	0.034	1.100	0.414	1.3
L14350		0.0004	<0.001	0.001	0.005	0.01	0.44	30	16.9	<0.01	0.008	0.53	0.234	0.924	0.108	1.0
L14400		<0.0002	0.001	0.001	0.034	0.03	0.44	<10	169.5	0.01	0.005	1.48	0.044	0.902	0.415	1.2
L14500		<0.0002	<0.001	<0.001	0.003	0.01	0.16	10	161.5	<0.01	0.004	0.84	0.009	0.839	0.107	0.7
L14550		<0.0002	<0.001	0.001	0.013	0.03	0.47	<10	208	0.01	0.005	1.58	0.040	1.195	0.518	1.4
LOE15S		<0.0002	<0.001	<0.001	0.025	0.01	0.17	10	117.0	<0.01	0.004	1.23	0.015	0.653	0.234	1.2
LOE		<0.0002	0.001	0.001	0.020	0.02	0.27	<10	198.0	0.01	0.004	2.00	0.045	0.679	0.455	0.9
LOE15N		<0.0002	<0.001	<0.001	0.003	0.01	0.10	10	114.0	<0.01	0.005	0.64	0.006	0.755	0.138	1.3
LOW15S		0.0002	<0.001	0.003	0.002	0.01	0.07	30	83.2	<0.01	0.004	0.56	0.005	0.582	0.052	<0.5
S10300		<0.0002	0.001	0.002	0.017	0.02	0.35	30	203	0.01	0.005	1.59	0.043	0.911	0.501	0.8
S14400S		<0.0002	0.001	<0.001	0.023	0.02	0.31	<10	137.0	0.01	0.004	1.14	0.029	0.769	0.297	0.8
S14500S		0.0002	0.002	0.001	0.015	0.03	0.34	10	118.5	0.01	0.006	1.11	0.042	1.220	0.456	1.3
S14800A		0.0002	0.002	0.003	0.046	0.03	0.30	<10	123.5	0.01	0.005	1.39	0.043	0.857	0.435	2.3
S16300S		<0.0002	<0.001	0.001	0.004	0.01	0.14	10	131.5	<0.01	0.004	0.74	0.006	0.678	0.107	2.1
L10100		0.0002	<0.001	0.001	0.019	0.02	0.46	<10	118.5	0.01	0.005	1.65	0.039	1.155	0.542	2.6
L14300		0.0002	<0.001	0.005	0.061	0.02	0.26	20	213	0.01	0.003	1.52	0.040	0.704	0.389	3.3
L14450		0.0002	<0.001	0.004	0.007	0.01	0.18	60	22.9	0.01	0.005	0.71	0.178	0.755	0.098	0.6

***** See Appendix Page for comments regarding this certificate *****

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description / Method / Analyte / Units / LOR	ME-VEG41 Cs ppm 0.005	ME-VEG41 Cu ppm 0.01	ME-VEG41 Dy ppm 0.005	ME-VEG41 Er ppm 0.003	ME-VEG41 Eu ppm 0.003	ME-VEG41 Fe % 0.001	ME-VEG41 Ga ppm 0.01	ME-VEG41 Gd ppm 0.005	ME-VEG41 Ge ppm 0.005	ME-VEG41 Hf ppm 0.002	ME-VEG41 Hg ppm 0.001	ME-VEG41 Ho ppm 0.001	ME-VEG41 In ppm 0.005	ME-VEG41 K % 0.01	ME-VEG41 La ppm 0.002
L14200	0.028	3.69	0.038	0.020	0.019	0.049	0.07	0.062	0.011	0.007	0.039	0.007	<0.005	0.07	0.494
L14250	0.039	4.54	0.064	0.032	0.022	0.058	0.10	0.076	<0.005	0.006	0.025	0.012	<0.005	0.12	0.579
L14350	0.064	7.56	0.024	0.010	0.016	0.039	0.05	0.051	<0.005	0.004	0.022	0.004	<0.005	1.09	0.541
L14400	0.034	3.93	0.049	0.026	0.020	0.054	0.09	0.067	<0.005	0.008	0.038	0.010	<0.005	0.23	0.485
L14500	0.035	5.45	0.021	0.009	0.014	0.030	0.06	0.041	<0.005	<0.002	0.009	0.003	<0.005	0.64	0.476
L14550	0.042	5.08	0.061	0.035	0.026	0.108	0.12	0.088	<0.005	0.007	0.052	0.012	<0.005	0.14	0.596
LOE15S	0.015	4.39	0.020	0.010	0.012	0.056	0.05	0.033	<0.005	0.002	0.018	0.004	<0.005	0.13	0.345
LOE	0.020	4.07	0.041	0.024	0.018	0.045	0.07	0.058	<0.005	0.005	0.037	0.009	<0.005	0.07	0.355
LOE15N	0.045	6.27	0.018	0.006	0.012	0.027	0.05	0.035	<0.005	<0.002	0.013	0.003	<0.005	0.53	0.404
LOW15S	0.015	5.11	0.010	0.003	0.009	0.017	0.04	0.024	0.007	0.002	0.006	0.001	<0.005	0.51	0.301
S10300	0.030	4.61	0.054	0.028	0.018	0.059	0.09	0.068	0.016	0.008	0.049	0.010	<0.005	0.13	0.447
S14400S	0.032	5.11	0.050	0.026	0.019	0.052	0.08	0.065	<0.005	0.006	0.024	0.007	<0.005	0.07	0.404
S14500S	0.034	4.27	0.056	0.028	0.022	0.060	0.09	0.071	0.009	0.005	0.030	0.010	<0.005	0.15	0.614
S14800A	0.044	4.39	0.051	0.026	0.018	0.060	0.09	0.068	<0.005	0.006	0.017	0.010	<0.005	0.03	0.418
S16300S	0.098	6.46	0.015	0.005	0.012	0.020	0.05	0.032	<0.005	<0.002	0.006	0.002	<0.005	0.64	0.365
L10100	0.047	6.67	0.045	0.026	0.020	0.088	0.09	0.077	0.007	0.006	0.031	0.009	<0.005	0.08	0.559
L14300	0.025	5.19	0.040	0.022	0.013	0.037	0.05	0.049	0.014	0.009	0.028	0.008	<0.005	0.11	0.346
L14450	0.039	9.36	0.016	0.009	0.011	0.046	0.05	0.033	0.032	0.006	0.017	0.002	<0.005	1.30	0.383

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description / Method	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41	ME-VEG41
Analyte	Li	Lu	Mg	Mn	Mo	Na	Nb	Nd	Ni	P	Pb	Pr	Rb	Re	S
Units	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
LOR	0.1	0.001	0.001	1	0.01	0.001	0.002	0.001	0.04	0.001	0.01	0.003	0.01	0.001	0.01
L14200	0.2	0.002	0.062	68	0.08	0.034	0.046	0.418	1.07	0.013	0.27	0.106	0.73	<0.001	0.02
L14250	0.3	0.004	0.067	58	0.11	0.138	0.054	0.506	1.40	0.015	0.26	0.132	1.03	<0.001	0.14
L14350	0.8	0.001	0.124	47	1.06	0.219	0.032	0.392	0.90	0.178	0.53	0.103	1.81	0.001	0.29
L14400	0.3	0.004	0.063	78	0.08	0.141	0.044	0.409	1.49	0.015	0.31	0.109	1.71	<0.001	0.14
L14500	0.1	0.001	0.167	222	0.27	0.153	0.027	0.351	1.26	0.169	0.20	0.093	5.36	<0.001	0.25
L14550	0.3	0.004	0.077	60	0.15	0.101	0.076	0.556	1.54	0.019	0.35	0.138	1.35	<0.001	0.10
L0E15S	0.1	0.001	0.069	55	0.07	0.159	0.042	0.282	1.00	0.015	0.14	0.073	1.12	<0.001	0.16
L0E	0.2	0.004	0.079	67	0.10	0.202	0.033	0.326	1.31	0.011	0.21	0.079	0.53	<0.001	0.20
L0E15N	0.1	0.001	0.149	194	0.21	0.201	0.022	0.337	1.53	0.142	0.13	0.079	7.78	<0.001	0.26
L0W15S	0.1	<0.001	0.120	207	0.11	0.005	0.017	0.227	0.71	0.131	0.10	0.061	6.42	<0.001	0.08
S10300	0.2	0.004	0.076	86	0.10	0.029	0.045	0.398	1.39	0.016	0.25	0.103	1.05	<0.001	0.03
S14400S	0.2	0.003	0.053	44	0.08	0.151	0.042	0.345	0.91	0.012	0.25	0.093	0.92	<0.001	0.14
S14500S	0.3	0.003	0.068	50	0.10	0.153	0.061	0.543	1.68	0.019	0.44	0.136	0.91	<0.001	0.13
S14800A	0.3	0.004	0.073	37	0.11	0.228	0.046	0.382	2.17	0.012	0.24	0.096	0.47	<0.001	0.22
S16300S	0.1	<0.001	0.146	259	0.41	0.072	0.021	0.286	2.09	0.142	0.11	0.070	10.70	<0.001	0.16
L10100	0.2	0.004	0.071	83	0.13	0.054	0.066	0.497	3.19	0.020	0.22	0.122	1.48	<0.001	0.05
L14300	0.2	0.003	0.065	66	0.10	0.019	0.030	0.310	1.85	0.010	0.27	0.072	1.31	<0.001	<0.01
L14450	1.2	0.001	0.162	63	1.01	0.124	0.031	0.392	1.37	0.209	0.47	0.079	2.00	0.002	0.21

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Finalized Date: 3- OCT- 2013
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Project: Arch

CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method / Analyte / Units / LOR	ME- VEG41 Sb ppm 0.02	ME- VEG41 Sc ppm 0.01	ME- VEG41 Se ppm 0.1	ME- VEG41 Sm ppm 0.003	ME- VEG41 Sn ppm 0.01	ME- VEG41 Sr ppm 0.02	ME- VEG41 Ta ppm 0.005	ME- VEG41 Tb ppm 0.001	ME- VEG41 Te ppm 0.02	ME- VEG41 Th ppm 0.002	ME- VEG41 Ti % 0.001	ME- VEG41 Tl ppm 0.002	ME- VEG41 Tm ppm 0.001	ME- VEG41 U ppm 0.005	ME- VEG41 V ppm 1
L14200		0.03	0.07	0.2	0.082	0.04	45.3	<0.005	0.007	<0.02	0.069	0.001	0.004	0.003	0.021	1
L14250		0.05	0.13	<0.1	0.116	0.04	50.8	<0.005	0.011	<0.02	0.104	0.002	0.006	0.005	0.041	1
L14350		0.05	0.02	0.1	0.080	0.12	44.4	<0.005	0.005	<0.02	0.055	<0.001	0.005	0.001	0.014	<1
L14400		0.05	0.08	0.1	0.085	0.03	46.5	<0.005	0.009	<0.02	0.076	0.002	0.006	0.004	0.030	1
L14500		0.06	0.03	<0.1	0.062	0.10	15.35	<0.005	0.004	<0.02	0.049	0.001	0.007	0.001	0.013	<1
L14550		0.05	0.12	0.1	0.110	0.05	68.5	<0.005	0.013	<0.02	0.114	0.002	0.006	0.005	0.045	1
L0E15S		0.02	0.03	<0.1	0.052	0.04	33.0	<0.005	0.004	<0.02	0.070	0.001	0.003	0.001	0.013	<1
L0E		0.04	0.10	0.1	0.063	0.03	79.2	<0.005	0.009	<0.02	0.058	0.001	0.003	0.004	0.028	1
L0E15N		0.06	0.01	<0.1	0.062	0.09	12.55	<0.005	0.004	<0.02	0.053	<0.001	0.003	0.001	0.014	<1
L0W15S		0.09	0.02	0.2	0.040	0.17	7.83	<0.005	0.002	<0.02	0.041	<0.001	0.005	0.001	0.006	<1
S10300		0.05	0.11	0.3	0.079	0.08	63.8	<0.005	0.009	<0.02	0.076	0.001	0.005	0.005	0.037	1
S14400S		0.05	0.08	<0.1	0.073	0.04	42.9	<0.005	0.008	<0.02	0.069	0.002	0.003	0.004	0.025	1
S14500S		0.05	0.10	<0.1	0.099	0.05	45.8	<0.005	0.010	<0.02	0.087	0.002	0.003	0.004	0.030	1
S14800A		0.10	0.12	<0.1	0.077	0.04	48.5	<0.005	0.008	<0.02	0.065	0.002	0.003	0.004	0.027	1
S16300S		0.08	0.02	<0.1	0.057	0.06	14.05	<0.005	0.004	<0.02	0.045	<0.001	0.004	0.001	0.010	<1
L10100		0.05	0.08	0.1	0.091	0.04	49.6	<0.005	0.009	<0.02	0.098	0.001	0.004	0.004	0.027	1
L14300		0.05	0.08	<0.1	0.055	0.03	59.8	<0.005	0.007	<0.02	0.050	0.001	0.004	0.003	0.026	1
L14450		0.03	0.03	0.1	0.054	0.05	38.9	<0.005	0.005	<0.02	0.058	<0.001	0.004	0.001	0.011	<1

***** See Appendix Page for comments regarding this certificate *****

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CERTIFICATE OF ANALYSIS WH13170902

Sample Description	Method	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41	ME- VEG41
	Analyte	W	Y	Yb	Zn	Zr
	Units	ppm	ppm	ppm	ppm	ppm
	LOR	0.01	0.003	0.003	0.1	0.02
L14200		0.08	0.220	0.017	68.7	0.18
L14250		0.07	0.322	0.026	57.9	0.25
L14350		0.18	0.097	0.008	17.2	0.16
L14400		0.11	0.290	0.025	123.0	0.22
L14500		0.03	0.086	0.006	43.3	0.08
L14550		0.08	0.353	0.033	68.0	0.28
L0E15S		0.06	0.101	0.008	123.5	0.10
L0E		0.08	0.265	0.024	104.0	0.21
L0E15N		0.02	0.065	0.006	28.2	0.08
L0W15S		0.02	0.039	0.003	29.5	0.04
S10300		0.08	0.318	0.026	93.4	0.24
S14400S		0.10	0.235	0.021	58.3	0.20
S14500S		0.07	0.283	0.023	73.5	0.22
S14800A		0.06	0.290	0.029	81.0	0.24
S16300S		0.02	0.055	0.004	25.5	0.07
L10100		0.07	0.242	0.023	62.6	0.22
L14300		0.13	0.248	0.021	113.0	0.22
L14450		0.26	0.087	0.006	21.2	0.17

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 3- OCT- 2013
Account: MIDMIN

Project: Arch

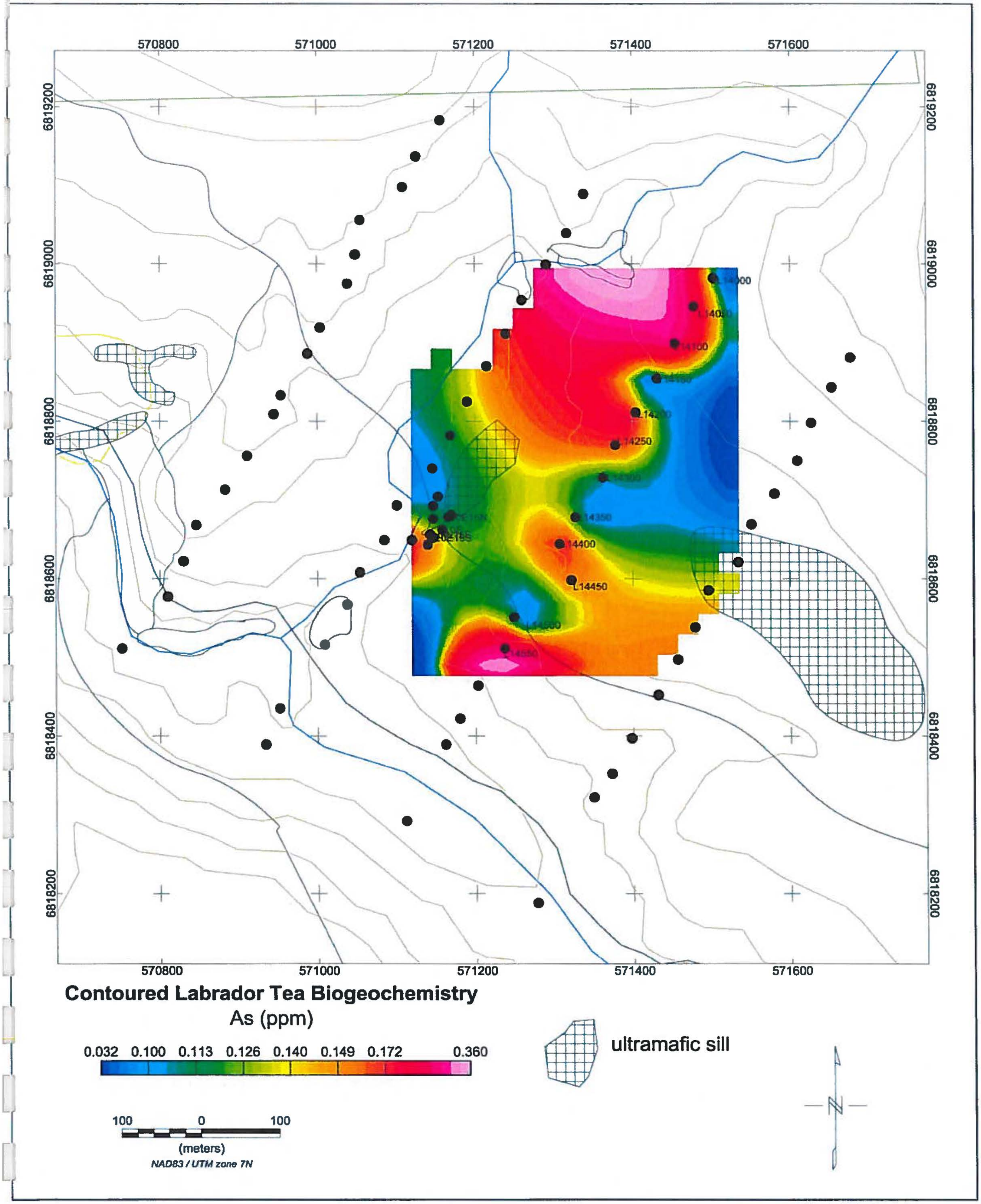
CERTIFICATE OF ANALYSIS WH13170902

CERTIFICATE COMMENTS

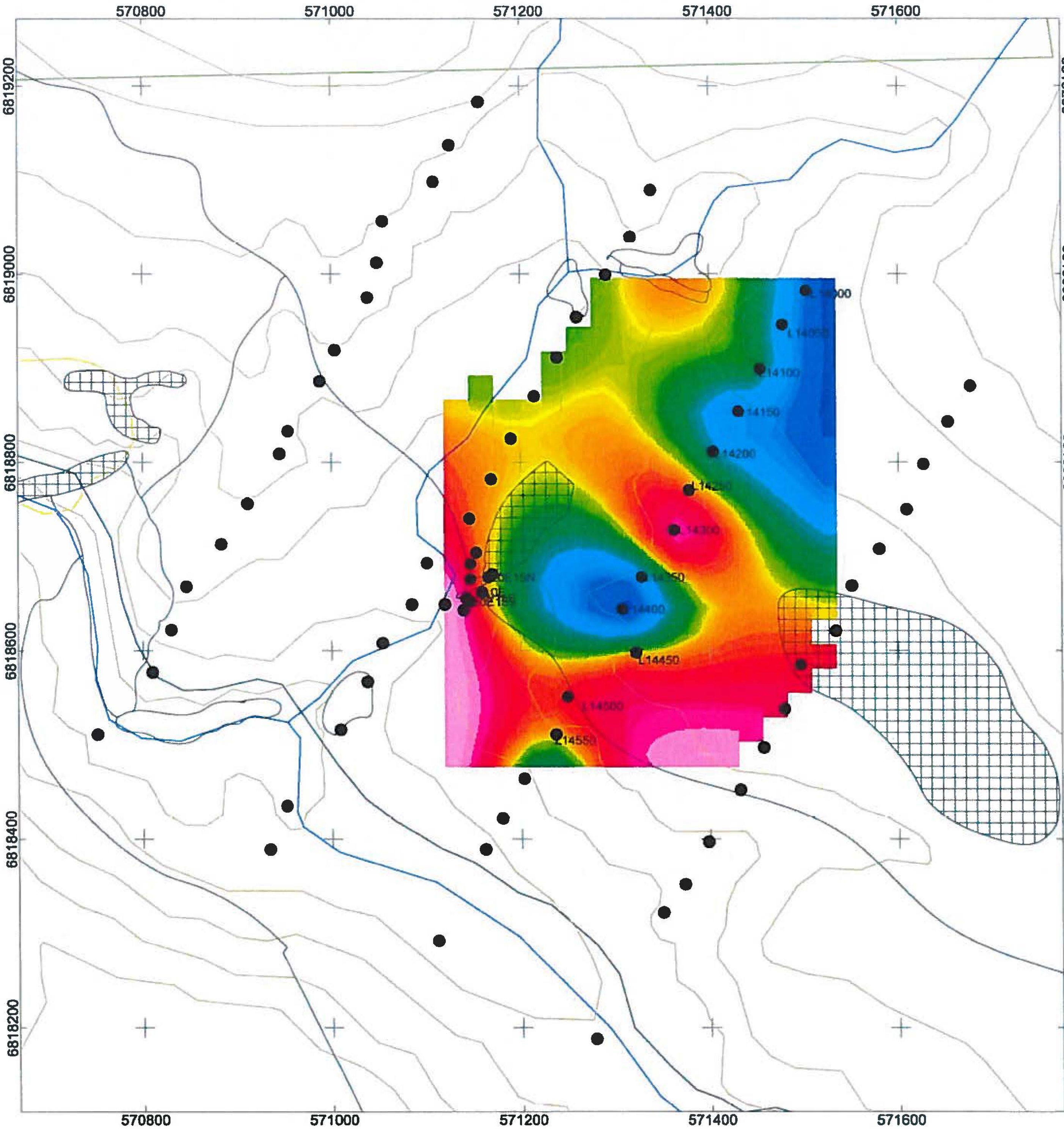
LABORATORY ADDRESSES

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

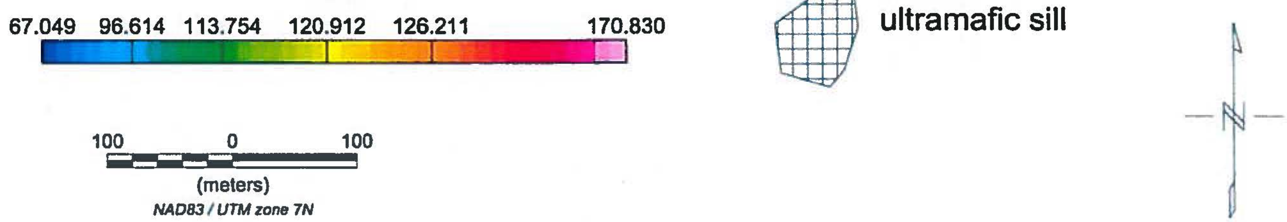
Applies to Method:	FND- 02	ME- VEG41

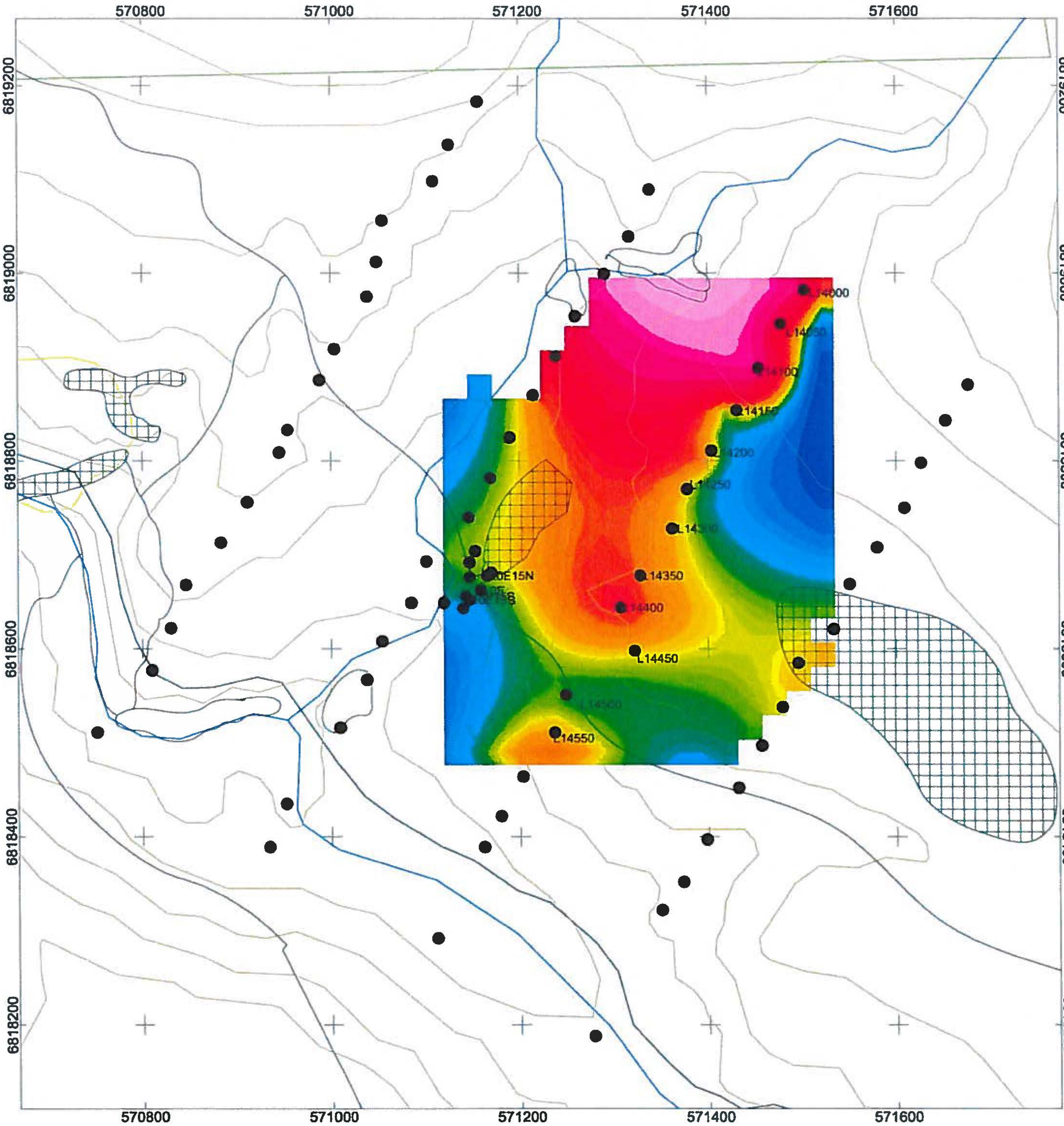


Contoured Labrador Tea Biogeochemistry
As (ppm)

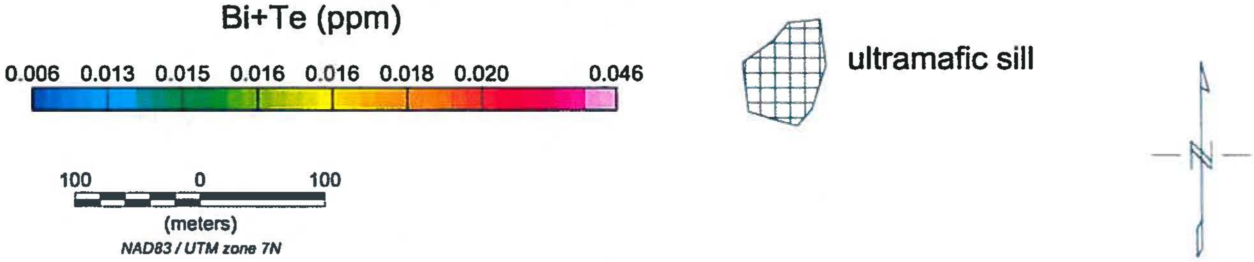


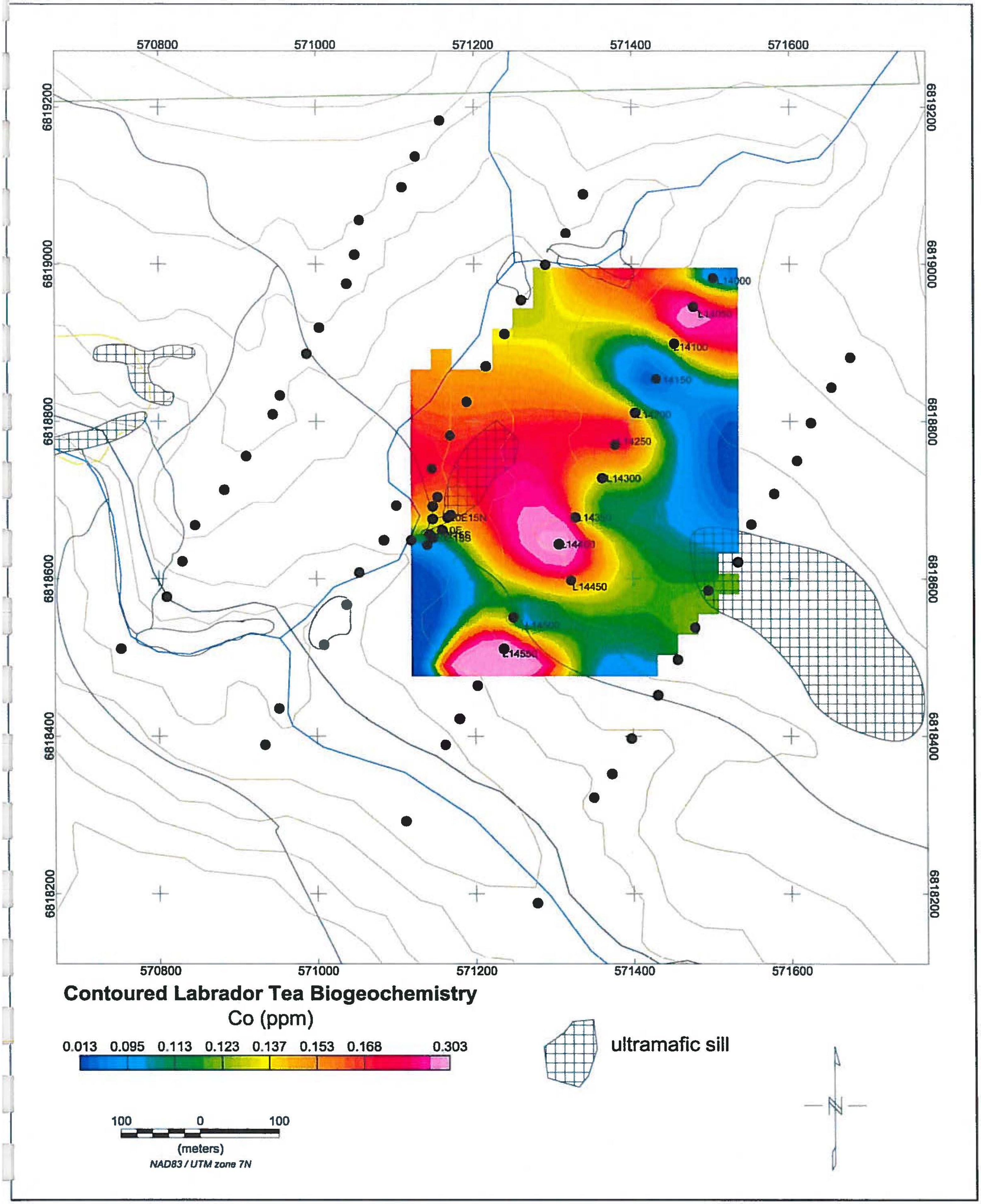
Contoured Labrador Tea Biogeochemistry
Ba (ppm)





Contoured Labrador Tea Biogeochemistry
Bi+Te (ppm)

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571000
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571600
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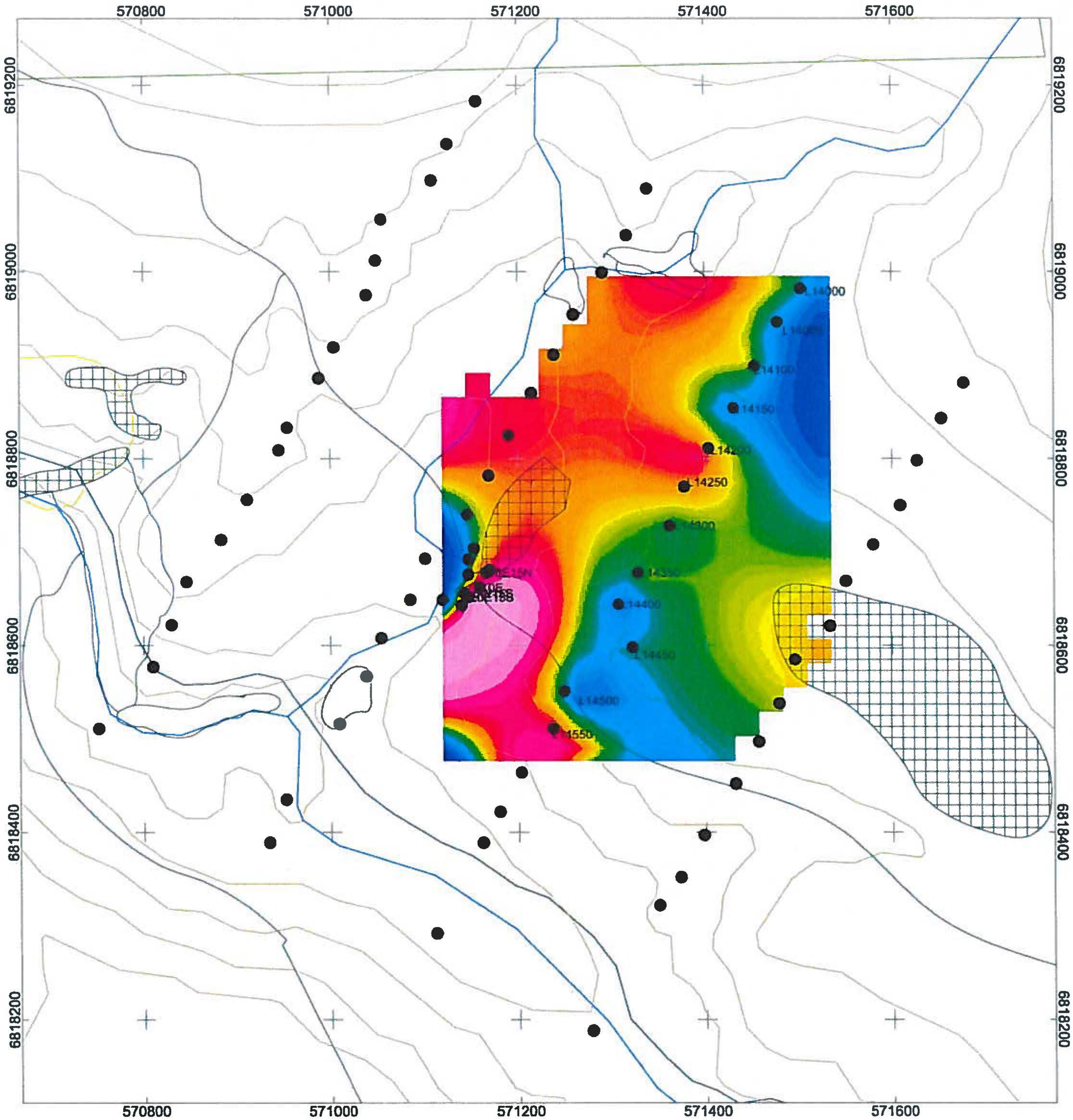
L14100
L14150
L14200
L14250
L14300
L14350
L14400
L14450
L14500
L14550
0E15N
Contoured Labrador Tea Biogeochemistry
Co (ppm)
0.013 0.095 0.113 0.123 0.137 0.153 0.168 0.303
ultramafic sill
100 0 100
(meters)
NAD83 / UTM zone 7N
N



Contoured Labrador Tea Biogeochemistry

Cr (ppm)

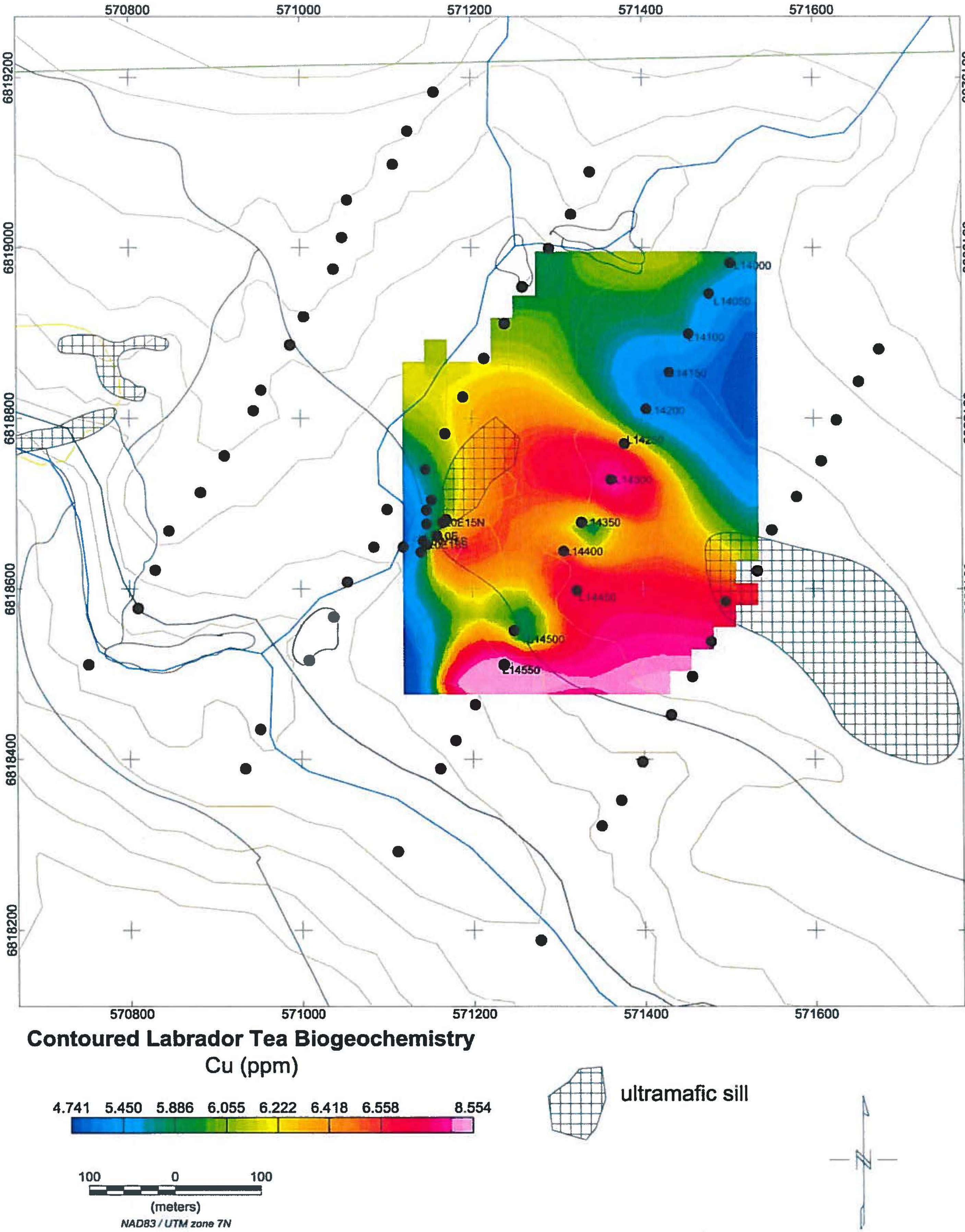
-0.143 0.468 0.634 0.722 0.824 0.973 1.031 2.104

ultramafic sill

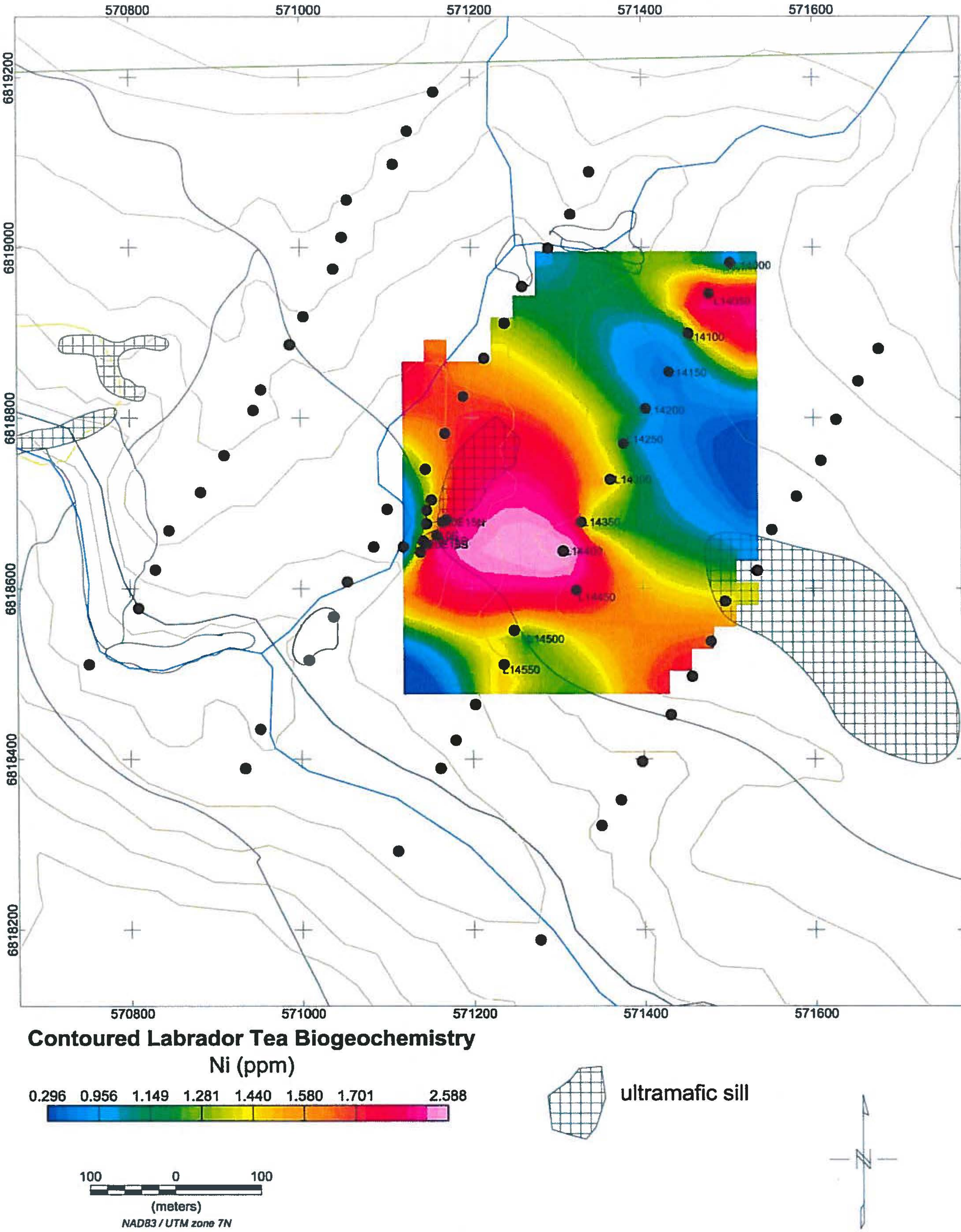
100 0 100

(meters)

NAD83 / UTM zone 7N



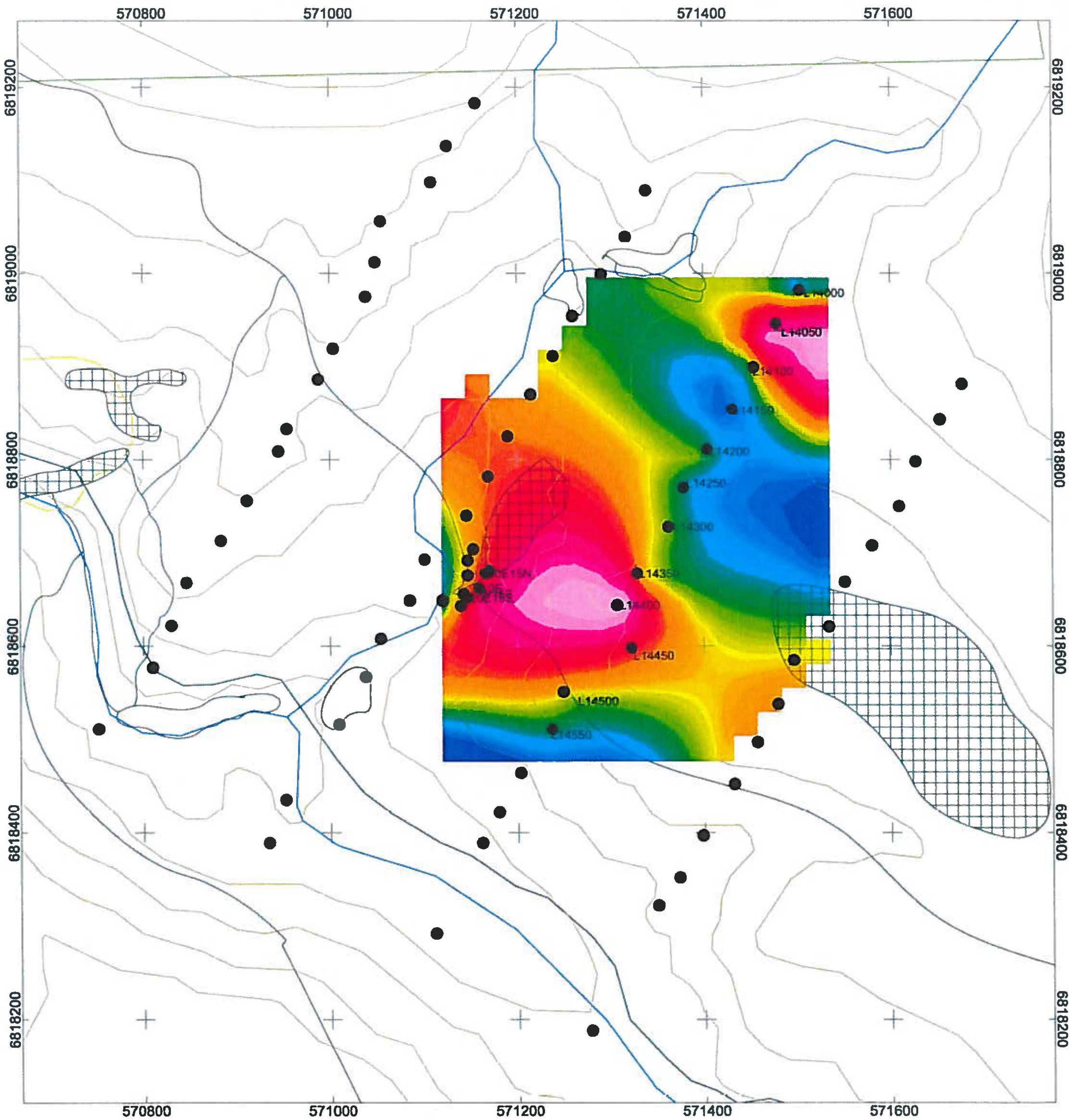
Contoured Labrador Tea Biogeochemistry
Cu (ppm)



Contoured Labrador Tea Biogeochemistry

Ni (ppm)

0.296 0.956 1.149 1.281 1.440 1.580 1.701 2.588



Contoured Labrador Tea Biogeochemistry

Ni/Cu ratio (ppm)

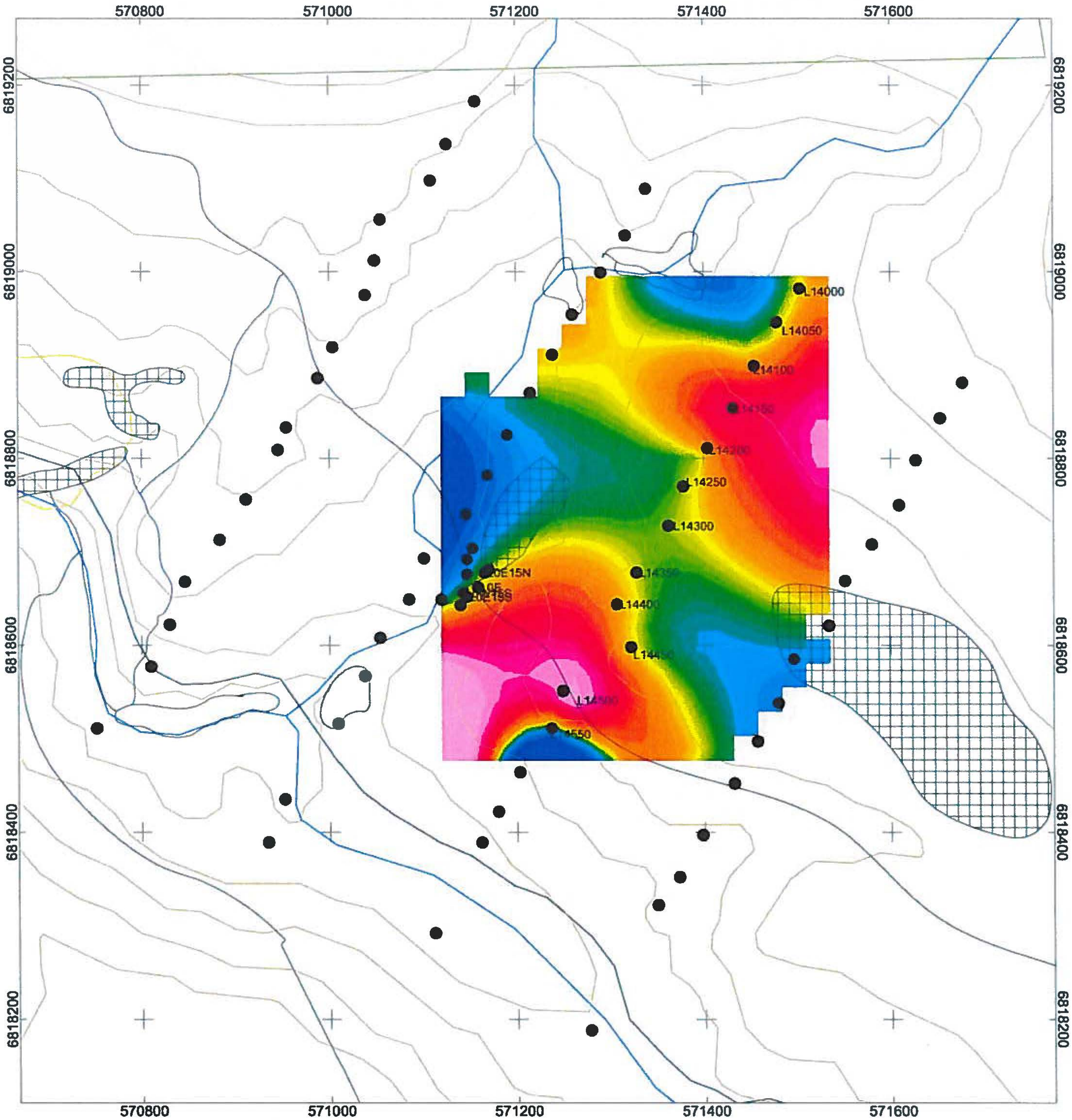
0.117 0.165 0.190 0.206 0.223 0.243 0.270 0.398

ultramafic sill

100 0 100

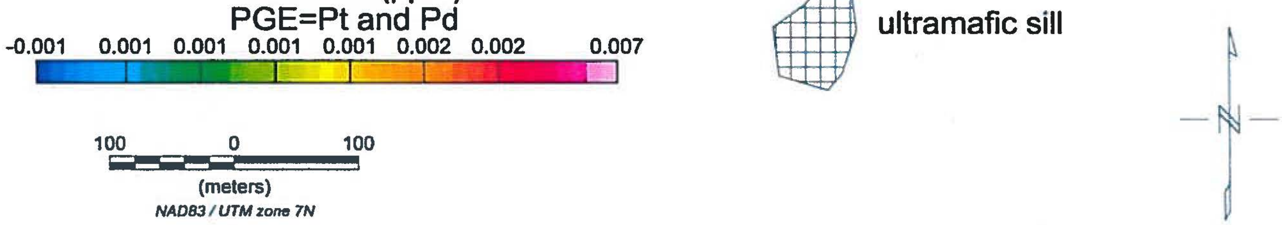
(meters)

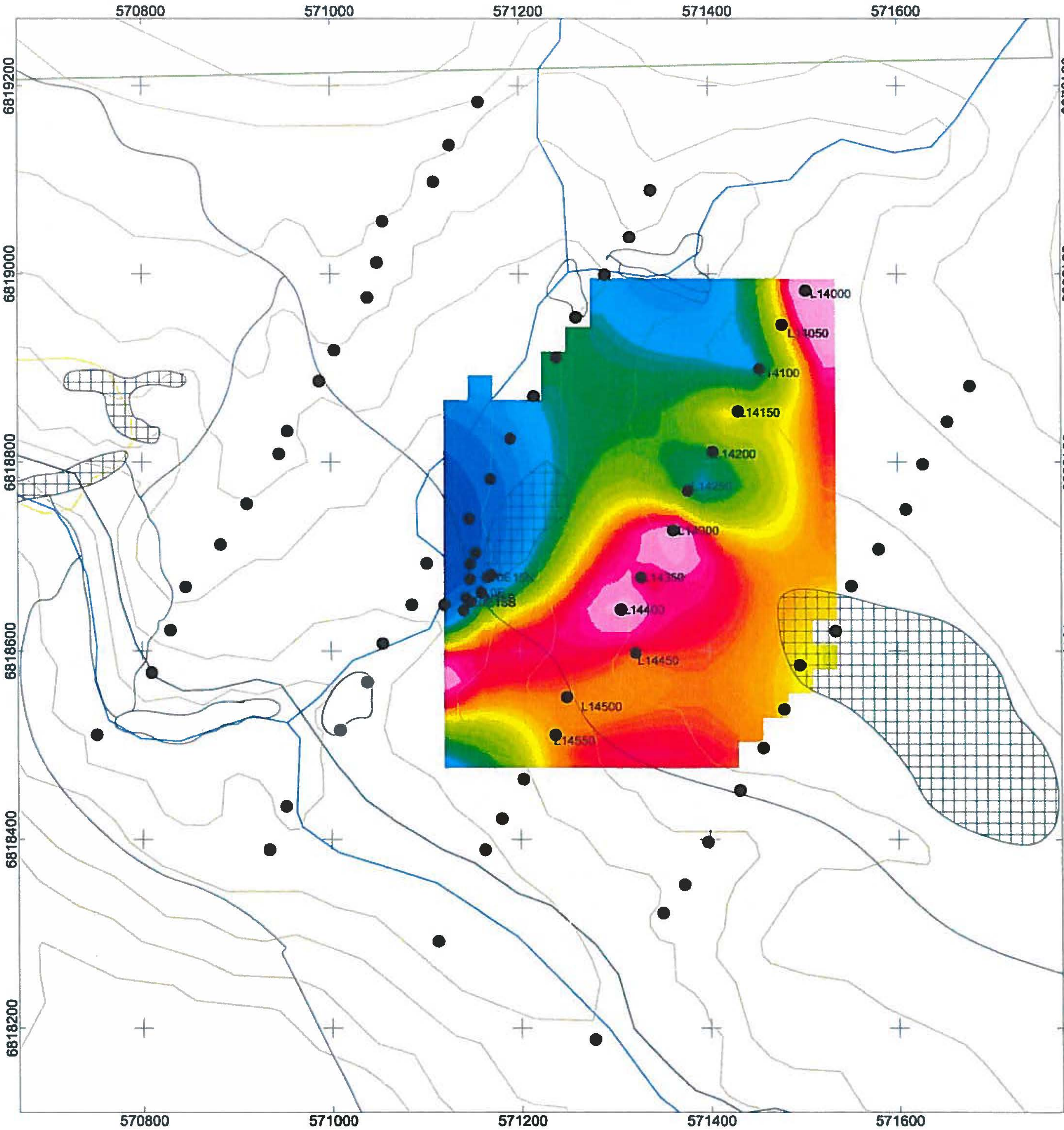
NAD83 / UTM zone 7N



Contoured Labrador Tea Biogeochemistry

PGE + Au (ppm)
PGE=Pt and Pd





Contoured Labrador Tea Biogeochemistry

Sb (ppm)

0.020 0.069 0.076 0.082 0.088 0.090 0.092 0.111

ultramafic sill

100 0 100

(meters)

NAD83 / UTM zone 7N

line	station	map_easting	map_northing	ELEVATION	date	sampler	labtea_no	labtea_easting	labtea_northin	health	drainage
1400	0S			1220	aug 18/13	DEB	L14000	571506	6818979		
1400	050S			1207	aug 18/13	DEB	L14050	571482	6818937		
1400	100S	571455	6818898	1193	aug 11/13 and 18/13	DEB, WINSTON, CODY	L14100	571451	6818895	MOD	POOR TO MOD
1400	150S	571430	6818854	1191	aug 11/13 AND 18/13	DEB, WINSTON, CODY	L14150	571430	6818853	mod	POOR TO MOD
1400	200S	571405	6818811	1185	aug 11/13 AND 18/13	DEB, WINSTON, CODY	L14200	571404	6818809	MOD	MODERATE TO POOR
1400	250S	571380	6818768	1176	aug 11/13 AND 18/13	DEB, WINSTON, CODY	L14250	571379	6818775	GOOD	MODERATE
1400	300S	571355	6818724	1161	aug 11/13 AND 18/13	DEB, WINSTON, CODY	L14300	571365	6818728	MOD	MODERATE TO GOOD
1400	350S	571330	6818681		aug 11/13 AND 18/13	DEB AND WINSTON	L14350	571328	6818678	MOD	MODERATE TO POOR
1400	400S	571305	6818638		aug 11/13 AND 18/13	DEB, WINSTON, CODY	L14400	571307	6818644		POOR
1400	450S	571280	6818595		AUG 18/13	DEB, WINSTON, CODY	L14450	571322	6818590	MOD TO GOOD	MODERATE
1400	500S	571255	6818551		AUG 11/13 AND 18/13	DEB, WINSTON, CODY	L14500	571262	6818541	GOOD HEALTH	GOOD
1400	550S	571230	6818508	1136	AUG 11/13 and 18/13	DEB, WINSTON, CODY	L14550	571233	6818505	HEALTHIER THAN DOWNSLOOE	GOOD
0E	15S			1089	AUG 18/13	DEB, WINSTON, CODY	L0E15S	571147	6818652		MODERATE
0E				1091	AUG 18/13	DEB, WINSTON, CODY	L0E	571159	6818662		MODERATE
0E	15N				AUG 18/13	DEB, WINSTON, CODY	L0E15N	571166	6818678	GOOD	MODERATE
0W	15S				AUG 18/13	DEB, WINSTON, CODY	L0W15S	571143	6818656		MODERATE

line	station	slope	aspect	vegetation	rock_chips	angularity	ash	ash location	disturbance	notes
1400	0S									
1400	050S									
1400	100S	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, BOGGY, GRASS, BLUEBERRY, LOW BUSH CRANBERRY, HORSETAIL			Y	BENEATH		OPEN SPRUCE FOREST, SUB ALPINE RIDGE TOP. HUMMOCKY, MIXED AGE. MOD HEALTH. Lots of willow and birch.
1400	150S	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, SUB ALPINE, MOSSBERRY, BLUEBERRY, GRASS, LOW BUSH			Y	BENEATH		OPEN SPRUCE FOREST, SUB ALPINE, BOGGY, MIXED AGE, MOD HEALTH.
1400	200S	RIDGE	SW	SPRUCE, WILLOW, DWARF BIRCH, LAB TEA, GRASS, BLUEBERRY, MOSSBERRY, BOGGY, LOW BUSH			Y	BENEATH	OLD CUTLINE TO NW	HUMMOCKY RIDGETOP. SPRUCE DOMINANT, OPEN FOREST, MIXED AGE. SOME DEAD, REST MOD HEALTH.
1400	250S	SLOPE	SW	SPRUCE, LAB TEA, ROSE, WILLOW, SUB ALPINE, BOGGY, WINTERGREEN, BIG OVAL, LOW BUSH CRANBERRY, PEA, DWARF BIRCH, MOSSBERRY,			Y	BENEATH		AT EDGE OF BENCH. NEAR TOP OF GLACIAL OVERBURDEN? MOD TO GOOD HEALTH STAND, OPEN FOREST, SPRUCE DOMINANT,
1400	300S	SLOPE	NW	SPRUCE, WILLOW, ALDER, LESSER LAB TEA, SOAPBERRY, MOSSBERRY, LOW BUSH CRANBERRY, BIG OVAL			Y	BENEATH	LINE OF OLD FLAGGING	SPRUCE DOMINANT, VARIABLY OPEN, MIXED AGE SPRUCE, SOME DEAD, MAJORITY MOD HEALTH.
1400	350S	SLOPE	N	SPRUCE, ALDER, WILLOW, SUB-ALPINE, SOME LAB TEA, CRANBERRY, HORSETAIL, BLUEBERRY	BENEATH		N		OLD FLAGGING	HUMMOCKY, SOLIFLUCTION SLOPE OF SIDE OF DRAW. MOD HEALTH, STUNTED OR SUB ALPINE. PERMAFROST BELOW SAMPLE. SPRUCE AND ALDER DOMINANT, FAIRLY OPEN.
1400	400S	RIDGE TOP	FLAT	SPRUCE, LAB TEA, DWARF BIRCH, SUB ALPINE, LOW BUSH CRANBERRY, BIG OVAL, GRASS, HORSETAIL			Y	BENEATH		FLAT, HUMMOCKY, SLIGHTLY BOGGY, SPRUCE, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE
1400	450S	RIDGE TOP	FLAT	SPRUCE, DWARF BIRCH, LAB TEA, GRASS, STUNTED TREES, BLUBERRY, WILLOW			Y	BENEATH		MOVED 36M EAST OFF LINE TO SAMPLE. STAKE IN MIDDLE OF STEEP DRAW. ON TOP OF GRAVEL BOWL, OPEN FOREST, MIXED AGE, MOD HEALTH, MOSTLY SPRUCE.
1400	500S	RIDGETOP	S	SPRUCE, POPLAR, ALDER, BIG OVAL, SOAPBERRY			Y	BENEATH AND SOME IN SAMPLE		ON EDGE OF BIG GRAVEL BOWL, SPRUCE DOMINANT, OLD GROWTH FOREST, LIMITED VEGT UNDER CANOPY, GOOD HEALTH, VERY DRY
1400	550S	SLOPE	S	SPRUCE, WILLOW, ALDER, GRASS, POPLAR, LAB TEA, BIG OVAL, FIREWEED. TREE DOMINANT			N			MATURE FOREST, MODERATE HEALTH. OLD GROWTH, SPRUCE DOMINANT, CLOSED CANOPY
0E	15S	SLOPE	NW	SPRUCE, WILLOW, ALDER			N		OLD FLAGGING. ABOVE TECK SHOWING	MINI GRID AROUND TECK SHOWING. MODERATELY OPEN, MOD TO GOOD EHALTH.
0E		SLOPE	NW	SPRUCE, ALDER, LAB TEA, CRANBERRY, WILLOW, MOSSBERRY, BLUEBERRY, GRASS	BENEATH SAMPLE		N		OLD FLAGGING L8+25E 9+25N. ABOVE TECK SHOWING O/C	MINI GRID AROUND TECK SHOWING. FAIRLY OPEN, MIXED AGE, MODERATE HEALTH, ALDER AND SPRUCE DOMINANT
0E	15N	SLOPE	N	SPRUCE, ALDER, CRANBERRY, LAB TEA, WINTERGREEN			N		OLD FLAGGING 8+25E 9+40N	MINI GRID AROUND TECK SHOWING. ALDER DOMINANT. CLAY AND GRAVEL UNDER SAMPLE.
0W	15S	SLOPE	N	SPRUCE, WILLOW, WINTERGREEN, LAB TEA, OVAL LEAF			N		O/C ABOVE	MINI GRID AROUND TECK SHOWING. MIXED AGE, MOD HEALTH. ON SLOPE ABOVE CREEK.

line	station	COMMENTS	Auppm	Pdppm	Ptppm	Agppm	Al%	Asppm	Bppm	Bappm	Beppm	Bippm	Ca%	Cdppm	Ceppm	Coppm	Crppm
1400	0S		<0.0002	<0.001	<0.001	0.003	0.01	0.14	20	85	<0.01	0.009	0.55	0.011	0.724	0.097	0.6
1400	050S		<0.0002	<0.001	<0.001	0.004	0.01	0.21	30	87.4	<0.01	0.008	0.5	0.009	1.325	0.244	<0.5
1400	100S		<0.0002	0.001	<0.001	0.008	0.01	0.26	30	114	0.01	0.017	0.61	0.009	3.81	0.12	0.8
1400	150S		0.0002	<0.001	0.003	0.002	0.01	0.07	30	83.2	<0.01	0.004	0.56	0.005	0.582	0.052	<0.5
1400	200S		<0.0002	<0.001	<0.001	0.004	0.01	0.2	10	103	<0.01	0.01	0.61	0.007	1.89	0.155	1.2
1400	250S	SGH SAMPLED LATER	<0.0002	<0.001	<0.001	0.004	0.01	0.18	10	124	<0.01	0.006	0.6	0.009	0.839	0.189	1
1400	300S	SGH SAMPLED LATER	<0.0002	<0.001	<0.001	0.01	0.01	0.11	20	158	<0.01	0.007	0.81	0.009	1.04	0.129	0.6
1400	350S		<0.0002	<0.001	<0.001	0.003	0.01	0.1	10	94	<0.01	0.008	0.49	0.004	1.34	0.123	0.8
1400	400S		<0.0002	<0.001	0.001	0.005	0.01	0.18	20	62.5	<0.01	0.011	0.54	0.005	1.875	0.261	<0.5
1400	450S		<0.0002	<0.001	<0.001	0.008	0.01	0.15	10	133	<0.01	0.006	0.76	0.012	0.74	0.144	0.6
1400	500S		<0.0002	<0.001	0.004	0.003	0.01	0.1	40	141.5	<0.01	0.005	0.63	0.006	0.911	0.103	<0.5
1400	550S		<0.0002	<0.001	<0.001	0.004	0.01	0.23	10	124.5	<0.01	0.007	0.6	0.011	1.12	0.22	1.1
0E	15S		<0.0002	<0.001	0.001	0.004	0.01	0.14	10	131.5	<0.01	0.004	0.74	0.006	0.678	0.107	2.1
0E			<0.0002	<0.001	<0.001	0.004	0.01	0.13	<10	144	<0.01	0.006	0.63	0.006	1.265	0.137	0.9
0E	15N		<0.0002	<0.001	<0.001	0.003	0.01	0.1	10	114	<0.01	0.005	0.64	0.006	0.755	0.138	1.3
0W	15S		<0.0002	<0.001	<0.001	0.003	0.01	0.16	10	161.5	<0.01	0.004	0.84	0.009	0.839	0.107	0.7

line	station	Csppm	Cuppm	Dyppm	Erppm	Euppm	Fe%	Gappm	Gdppm	Geppm	Hfppm	Hgppm	Hoppm	Inppm	K%	Lappm	Lippm	Luppm	Mg%
1400	0S	0.019	5.86	0.015	0.006	0.012	0.034	0.06	0.033	<0.005	<0.002	0.006	0.002	<0.005	0.51	0.387	0.1	0.001	0.117
1400	050S	0.025	5.48	0.022	0.009	0.023	0.143	0.09	0.06	0.02	0.004	0.008	0.003	<0.005	0.54	0.735	0.1	0.002	0.136
1400	100S	0.017	5.78	0.081	0.016	0.067	0.056	0.08	0.197	<0.005	<0.002	0.008	0.009	<0.005	0.54	2.11	0.1	0.001	0.15
1400	150S	0.015	5.11	0.01	0.003	0.009	0.017	0.04	0.024	0.007	0.002	0.006	0.001	<0.005	0.51	0.301	0.1	<0.001	0.12
1400	200S	0.024	5.37	0.033	0.008	0.031	0.075	0.08	0.086	<0.005	0.002	0.006	0.005	<0.005	0.5	1.045	0.1	0.001	0.141
1400	250S	0.023	6.28	0.018	0.008	0.014	0.089	0.09	0.041	<0.005	<0.002	0.009	0.003	<0.005	0.57	0.445	0.1	0.001	0.143
1400	300S	0.038	7.32	0.021	0.009	0.018	0.03	0.07	0.05	<0.005	<0.002	0.012	0.003	<0.005	0.55	0.591	0.1	0.001	0.15
1400	350S	0.093	5.64	0.022	0.006	0.022	0.079	0.08	0.058	<0.005	0.009	0.002	0.003	<0.005	0.58	0.73	0.1	0.001	0.133
1400	400S	0.029	6.53	0.028	0.009	0.024	0.136	0.1	0.081	0.023	0.005	0.008	0.003	<0.005	0.57	1.03	0.1	0.001	0.127
1400	450S	0.032	7	0.021	0.012	0.012	0.03	0.07	0.038	<0.005	0.002	0.005	0.004	<0.005	0.52	0.399	0.1	0.001	0.142
1400	500S	0.052	5.82	0.017	0.006	0.014	0.036	0.06	0.04	0.011	0.003	0.007	0.002	<0.005	0.56	0.461	0.1	0.001	0.144
1400	550S	0.025	7.46	0.026	0.011	0.018	0.108	0.09	0.054	0.005	0.003	0.009	0.004	<0.005	0.49	0.599	0.1	0.001	0.138
0E	15S	0.098	6.46	0.015	0.005	0.012	0.02	0.05	0.032	<0.005	<0.002	0.006	0.002	<0.005	0.64	0.365	0.1	<0.001	0.146
0E		0.061	5.7	0.025	0.008	0.02	0.079	0.06	0.058	<0.005	0.002	0.005	0.003	<0.005	0.54	0.666	0.1	0.001	0.139
0E	15N	0.045	6.27	0.018	0.006	0.012	0.027	0.05	0.035	<0.005	<0.002	0.013	0.003	<0.005	0.53	0.404	0.1	0.001	0.149
0W	15S	0.035	5.45	0.021	0.009	0.014	0.03	0.06	0.041	<0.005	<0.002	0.009	0.003	<0.005	0.64	0.476	0.1	0.001	0.167

line	station	Mnppm	Moppm	Na%	Nbppm	Ndppm	Nippm	P%	Pbppm	Prppm	Rbppm	Reppm	S%	Sbppm	Scppm	Seppm	Smppm	Snppm	Srppm
1400	0S	300	0.13	0.042	0.025	0.299	1.02	0.134	0.15	0.074	6.45	<0.001	0.13	0.1	0.01	<0.1	0.057	0.15	9.88
1400	050S	307	0.37	0.443	0.088	0.549	2.38	0.14	0.23	0.149	8.69	<0.001	0.49	0.09	0.02	<0.1	0.111	0.3	9.52
1400	100S	247	0.2	0.153	0.13	1.475	0.98	0.142	0.45	0.405	7.45	<0.001	0.25	0.07	0.01	<0.1	0.303	0.24	12
1400	150S	207	0.11	0.005	0.017	0.227	0.71	0.131	0.1	0.061	6.42	<0.001	0.08	0.09	0.02	0.2	0.04	0.17	7.83
1400	200S	267	0.17	0.065	0.067	0.772	1.22	0.148	0.26	0.201	7.04	<0.001	0.14	0.08	0.03	<0.1	0.138	0.2	11.15
1400	250S	356	0.15	0.066	0.031	0.351	1.08	0.159	0.13	0.088	6.83	<0.001	0.16	0.07	0.02	<0.1	0.066	0.2	12.45
1400	300S	415	0.22	0.067	0.025	0.42	1.5	0.157	0.19	0.111	7.93	<0.001	0.17	0.1	0.03	<0.1	0.077	0.19	19.45
1400	350S	428	0.25	0.097	0.049	0.524	1.21	0.152	0.19	0.143	11	<0.001	0.18	0.09	0.01	<0.1	0.108	0.2	9.22
1400	400S	422	0.39	0.304	0.098	0.803	2.72	0.145	0.29	0.197	7.99	<0.001	0.39	0.1	0.03	<0.1	0.142	0.3	7.77
1400	450S	444	0.09	0.036	0.026	0.294	1.84	0.137	0.15	0.084	5.54	<0.001	0.13	0.09	0.04	<0.1	0.058	0.13	15.8
1400	500S	281	0.3	0.01	0.033	0.357	1.2	0.13	0.15	0.091	13.45	<0.001	0.09	0.09	0.02	0.2	0.064	0.18	11.65
1400	550S	244	0.24	0.056	0.061	0.456	1.44	0.129	0.21	0.124	8.48	<0.001	0.13	0.09	0.03	<0.1	0.088	0.28	9.79
0E	15S	259	0.41	0.072	0.021	0.286	2.09	0.142	0.11	0.07	10.7	<0.001	0.16	0.08	0.02	<0.1	0.057	0.06	14.05
0E		135	0.27	0.077	0.059	0.521	1.76	0.144	0.19	0.137	9.48	<0.001	0.15	0.05	0.03	<0.1	0.085	0.09	15.5
0E	15N	194	0.21	0.201	0.022	0.337	1.53	0.142	0.13	0.079	7.78	<0.001	0.26	0.06	0.01	<0.1	0.062	0.09	12.55
0W	15S	222	0.27	0.153	0.027	0.351	1.26	0.169	0.2	0.093	5.36	<0.001	0.25	0.06	0.03	<0.1	0.062	0.1	15.35

line	station	Tappm	Tbppm	Teppm	Thppm	Ti%	Tlppm	Tmppm	Uppm	Vppm	Wppm	Yppm	Ybppm	Znppm	Zrppm
1400	0S	0.0025	0.003	0.02	0.051	<0.001	0.004	0.001	0.009	<1	0.03	0.058	0.005	34.1	0.07
1400	050S	0.0025	0.007	<0.02	0.1	<0.001	0.005	0.001	0.015	<1	0.04	0.078	0.007	31.1	0.13
1400	100S	0.0025	0.021	<0.02	0.363	<0.001	0.013	0.002	0.035	<1	0.03	0.213	0.011	35.4	0.08
1400	150S	0.0025	0.002	<0.02	0.041	<0.001	0.005	0.001	0.006	<1	0.02	0.039	0.003	29.5	0.04
1400	200S	0.0025	0.009	<0.02	0.103	0.001	0.006	0.001	0.018	<1	0.04	0.134	0.008	34.6	0.07
1400	250S	0.0025	0.004	<0.02	0.055	<0.001	0.003	0.001	0.019	<1	0.02	0.079	0.006	38.7	0.07
1400	300S	0.0025	0.005	<0.02	0.063	<0.001	0.008	0.001	0.013	<1	0.04	0.09	0.007	31.7	0.07
1400	350S	0.0025	0.006	<0.02	0.088	<0.001	0.046	0.001	0.013	<1	0.02	0.067	0.004	23.4	0.07
1400	400S	0.0025	0.008	<0.02	0.167	<0.001	0.021	0.001	0.023	<1	0.04	0.101	0.007	27	0.15
1400	450S	0.0025	0.005	<0.02	0.053	0.001	0.011	0.001	0.013	<1	0.02	0.101	0.008	34	0.08
1400	500S	0.0025	0.004	<0.02	0.069	<0.001	0.004	0.001	0.01	<1	0.03	0.072	0.005	27.4	0.07
1400	550S	0.0025	0.006	<0.02	0.082	0.001	0.004	0.001	0.022	<1	0.05	0.116	0.008	27.9	0.12
0E	15S	0.0025	0.004	<0.02	0.045	<0.001	0.004	0.001	0.01	<1	0.02	0.055	0.004	25.5	0.07
0E		0.0025	0.006	<0.02	0.101	<0.001	0.017	0.001	0.015	<1	0.03	0.079	0.007	27.5	0.1
0E	15N	0.0025	0.004	<0.02	0.053	<0.001	0.003	0.001	0.014	<1	0.02	0.065	0.006	28.2	0.08
0W	15S	0.0025	0.004	<0.02	0.049	0.001	0.007	0.001	0.013	<1	0.03	0.086	0.006	43.3	0.08

Appendix 8: Comparison – Biogeochemical Sampling

In this comparison the 4 biogeochemical sample media are compared to each other and scored out of 10 points on cost, analytical methodology, collection accuracy and suitability for use on other Ni-cu-PGE projects in the Kluane Ranges.

COST

- Increased analysis costs over regular soil samples because more elaborate sample preparation and ultra trace analysis methods.
- But, biogeochemical samples are cheaper to collect than soil samples because of faster sampling time
- Samples must be washed, dried then macerated or ashed prior to analysis.
- Ultra trace methods are best for vegetation because of the relatively low concentration of elements compared to rocks or soils.
- May incur additional charges to include Pt, Pd and Au or to have lower detection limits for those elements.

Sample Media and Method	2013 analysis cost*	Projected cost late 2013 or early 2014	Score
Humus – SGH	52.76 per sample (reduced costs for this survey)	55.07 per sample + $250 for GIS package	1
Humus – Actlabs B1 prep and 2E method	41.63 per sample	42.00 (shipping added)	4
Bark – ALS Chemex PRP-VEG01 and ME-VEG41	50.24 per sample (incl QAQC at 1.90 per sample)	50.24	2.5
Labrador Tea – ALS Chemex PRP-VEG01 and ME-VEG41	50.24 per sample (incl QAQC at 1.90 per sample)	50.24	2.5
ACME 1D ICP-ES and Fire assay/ICP-MS for Au, Pt and Pd. (soil sample for comparison)	35.00 per sample	37.00	Comparison only

*includes: shipping, admin fees, disposal, preparation, analysis, GST

Discussion

- May not be worthwhile spending extra to get Au, Pd, Pt. If already included in ultra trace group then fine, but don't bother spending extra. Ni and other elements may be better pointers at reconnaissance level.

ANALYTICAL METHODOLY

Sample Media and Method	Preparation	Analysis Method	DL Au ppb	DL Pt ppb	DL Pd ppb	Final product	Pro	Con	Score
SGH (humus)	Dry at 40 degrees C, sieve at -60 mesh	Measure heavy hydrocarbons	Na to method. Measures hydrocarbons in ppt.			Report, target maps, spreadsheet of results	2nd fastest turnaround.	Specialized, only useable with interpretation report	4
Actlabs 2E (humus)	Dry and blend, Ashed @ 480 degrees C,	Ash digested in acid, read using ICP/MS	5	2	3	Spreadsheet of results	Shortest turnaround. Ru included in elements.	DL too high for exploration precious metals. Ashing not as satisfactory a method.	1
ALS Chemex VEG41 bark)	Wash, randomize, dry, macerate (-177 um), archive	HNO3/HCl ICPAES and ICPMS	0.2	1	1	Spreadsheet of results	Low DLs, no ashing	Slow, preparation done in US. Good preparation and analysis method.	2.5
ALS Chemex VEG41 (lab tea)	See bark above								2.5

Discussion

- Ashing was traditional for vegetation but is being superseded by other methods. ALS Chemex has the leading method for non ashed vegetation with ultra trace detection limits.

COLLECTION

- All methods are faster than a traditional soil sample that requires digging into mineral soil. All media are above permafrost and the ash layer often found in this area.
- A ground and vegetation survey is required prior to starting survey. Look for the most widespread and consistent sample medium.
- All collection methods are suitable for Class I activities under current YG regulations.

Sample Media and Method	tools and equipment	Speed and ease of collection	Evidence of sample collection	Pro	Con	Score
Humus – SGH	Trowel, Ziploc brand plastic bags	Some digging required, but only through moss and organics.	Cone-shaped hole in moss up to 12" wide at top. Can be covered by replacing plug of moss.	Multiple media types can be collected in one survey (including snow). Cheap sample bags. Wider sample spacing than most other surveys)	Cannot collect ground samples if frozen or covered with snow.	3.5
Humus – Actlabs 2E	Trowel, polypropylene sample bags	Some digging required, but only through moss and organics.	Cone-shaped hole in moss up to 12" wide at top. Can be covered by replacing plug of moss.	Found almost everywhere there is some vegetation. Expensive sample bags	Cannot collect if ground is frozen or covered with snow	2
Bark – ALS Chemex VEG41	Paint scraper, dustpan, Kraft paper soil bags	Easy and fast	Band of lighter bark left around tree. On thin trees band is quite tall.	Can be collected year round. Cheap sample bags.	Difficulty of distinguishing black and white spruce. No trees in alpine or in active river floodplains.	3.5
Labrador Tea – ALS Chemex VEG41	Snippers, polypropylene sample bags	Easy and fast	Barely noticeable unless there were only a few plants.	Cannot collect if covered with snow. Expensive sample bags	Limited distribution. On mini grid, only 4 of 10 sites had lab tea.	1

Discussion

- All collection methods are efficient and non-intrusive. None require packing heavy and awkward long shovels, soil augers or mechanized sampling equipment.
- Although not tested in this survey, SGH samples can be snow, which would make for efficient winter or early spring sampling.

ACCURACY

- Accuracy was judged on the mini grid placed around the Teck Showing, one of the few rock outcrops in the grid and a known mineralized area. Rock samples were collected from the Teck Showing and these are shown for comparison. See maps
- SGH maps redox cells so does not produce the same type of anomaly as the other methods. Compared redox cell locations to mapped location of ultramafic sill

Sample Media and Method	Results (# of anomalous samples in mini grid). Anomalous is >/= 90th percentile in at least one of Au, Pd, Pt, Cu, Ni, Ru	Anomalous elements	Above background (51 to 89th percentile)	Above background elements	Score
Humus – SGH	Grid included in larger, overlapping redox cells with Ni and Cu signatures.				3.5
Humus – Actlabs 2E	3 of 10 (0.3)	1 in Ru, 1 in Ni and Au, 1 in Cu and Ni.	6 of 10 (.6)	4 in Cu +Ni 2 in Cu	2
Bark – ALS Chemex VEG-41	6 of 10 (.6)	1 in Au, 2 in Pd, I in Cu and Ni, 1 in Cu, 1 in Ni	3 of 10 (.3)	1 in Cu, 1 in Ni, 1 in Cu + Ni	3.5
Labrador Tea – ALS Chemex VEG-41	0 of 4		3 of 10 (0.3)	2 in Cu + Ni, 1 in Ni	1
Rocks for comparison	6 of 14 (.43)	Cu, Pt, Au + Pd, Au+Cu+Pd, all 5	2 of 14 (.14)	Au+Ni+Pd+Pt, Cu+Pt, Au+Cu+Pd, all 5	

Discussion

- Humus and Bark both have 9 samples out of 10 above background in at least one element, but bark has 6 anomalous samples while humus has 3.
- Humus and bark have a better success rate (9/10) than rocks (8/14).
- Nickel shows up more often as anomalous or above background in biogeochem samples than in rock.

FLEXIBILITY – suitability for use on other Ni-Cu PGE projects in Kluane Ranges

- Not all sample media are present at each site.
- For example, on the Arch grid all samples were below treeline, but if the lines were further north then the grid would have gone into the alpine where there were no spruce trees.
- There are historical soil geochemistry surveys. The need to mesh and compare datasets is part of the flexibility criteria.

Sample Media and Method	Used in combination with other geochemical surveys	Sample spacing	Comments	Score
Humus – SGH	No. Compliment only	Depending on target, can be wide	Minimum of 50 samples required. Best used on grid or parallel transects. Can sample any media in same survey but all must be analyzed by SGH. Can be used to compliment other types of surveys but maps redox cells rather than element concentrations. Not suitable for single line contour or ridgeline surveys.	1.5
Humus – Actlabs 2E	Yes		No minimum number of samples. Can be combined with results from other media, but need to normalize or treat each sample media separately and need to sample reasonable number of each type to get statically valid information.	3.5
Bark – ALS Chemex VEG41	Yes	Minimum 25m	No minimum number of samples. Can be combined with results from other media, but need to normalize or treat each sample media separately and need to sample reasonable number of each type to get statically valid information.	3.5
Labrador Tea – ALS Chemex VEG41	Yes		Limited distribution. No minimum number of samples. Can be combined with results from other media, but need to normalize or treat each sample media separately and need to sample reasonable number of each type to get statically valid information.	1.5

Discussion

- Vegetation and humus can be combined with regular soil samples and each other which is more useful to a prospector
- SGH better for company able to afford a minimum 50 sample grid.

FINAL SCORES

Sample Media and Method	COST	Analysis methodology	Collection	Accuracy	flexibility	total
Humus – SGH	1	4	3.5	3.5	1.5	13.5
Humus – Actlabs 2E	4	1	2	2	3.5	12.5
Bark – ALS Chemex VEG41	2.5	2.5	3.5	3.5	3.5	15.5
Labrador Tea – ALS Chemex VEG41	2.5	2.5	1	1	1.5	8.5

Discussion

- Other than Labrador tea, which was not tested thoroughly in this orientation survey, the scores are close for the different media. No one method stands out as a clear favourite, instead all methods would be useful in their place.
- SGH is difficult to compare directly because it needs specialized interpretation and it detects redox cells instead of element concentrations.

PREDICTION

How successfully are the biogeochemical samples in predicting the location of the ultramafic sill that traverses the grid?

The Teck Showing is the only known mineralization on the Arch Grid and was discussed in the Accuracy section of this report. An ultramafic sill (Donjek complex) crosses the grid. Outside of the Teck Showing, few outcrops and no significant mineralization have been found so far. The predicted location is based on mapping and historic magnetic surveys.

The sill has been located in outcrop in 2 locations; one starts at the Teck showing and extends north to 12350 station and another is in the Arch Creek canyon 100m west of line 1000. Rock sampling at the Teck Showing 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.

A linear anomaly is seen in most elements in both bark and humus that trends NW across the grid, parallel to the sill, but the anomaly may be offset from the mapped location 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 that has weakened and/or offset the sill.

The SGH Cu redox cell is bisected by the peridotite sill and the Ni redox cell is centred on the southwest side of the sill. The star indicating the highest possibility of Ni-Cu PGE mineralization is located in the middle of the sill. The deep Ni trend is at a steeper angle (NNW) than the peridotite sill.

Conwest Showing

The Conwest showing is located 500m due north, directly upslope and upstream from station 10000 so is not covered by the Arch grid. However the Arch grid is downslope and there could be some downslope movement of material from the Conwest. This is indicated by anomalous point values at station 10000 in precious metals in humus and in precious and base metals in bark samples.

Appendix 9: Geochemistry – Rock Samples

Laboratory methodology

MS Excel rock sample database

Laboratory assay certificate

MS Excel results from laboratory (digital only)

Maps

SAMPLE PREPARATION PACKAGE

PREP- 31B

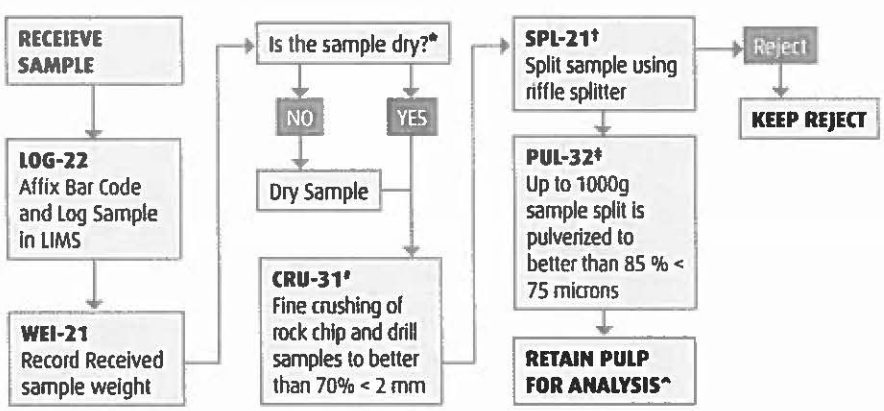
STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE

Sample preparation is the most critical step in the entire laboratory operation. The purpose of preparation is to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory.

The sample is logged in the tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 1000 g is taken and pulverized to better than 85 % passing a 75 micron (Tyler 200 mesh) screen. This method is appropriate for rock chip or drill samples.

METHOD CODE	DESCRIPTION
LOG-22	Sample is logged in tracking system and a bar code label is attached.
DRY-21	Drying of excessively wet samples in drying ovens. This is the default drying procedure for most rock chip and drill samples.
CRU-31	Fine crushing of rock chip and drill samples to better than 70% of the sample passing 2 mm.
SPL-21	Split sample using riffle splitter.
PUL-32	A sample split of up to 1000g is pulverized to better than 85% of the sample passing 75 microns.

FLOW CHART - SAMPLE PREPARATION PACKAGE – PREP-31B
STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE



*If samples air-dry overnight, no charge to client. If samples are excessively wet, the sample should be dried to a maximum of 120°C. (DRY-21)

ǂQC testing of crushing efficiency is conducted on random samples (CRU-QC).

†The sample reject is saved or dumped pending client instructions. Prolonged storage (> 45 days) of rejects will be charged to the client.

‡QC testing of pulverizing efficiency is conducted on random samples (PUL-QC).

^Lab splits are required when analyses must be performed at a location different than where samples received.

ALS Minerals

GEOCHEMICAL PROCEDURE

ME- MS41

ULTRA- TRACE LEVEL METHODS USING ICP- MS AND ICP- AES

SAMPLE DECOMPOSITION

Aqua Regia Digestion (GEO-AR01)

ANALYTICAL METHOD

Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES)
Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

A prepared sample (0.50 g) is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, ment spectral interferences.

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Silver	Ag	ppm	0.01	100
Aluminum	Al	%	0.01	25
Arsenic	As	ppm	0.1	10 000
Gold	Au	ppm	0.2	25
Boron	B	ppm	10	10 000
Barium	Ba	ppm	10	10 000
Beryllium	Be	ppm	0.05	1 000
Bismuth	Bi	ppm	0.01	10 000
Calcium	Ca	%	0.01	25
Cadmium	Cd	ppm	0.01	1 000
Cerium	Ce	ppm	0.02	500
Cobalt	Co	ppm	0.1	10 000
Chromium	Cr	ppm	1	10 000
Cesium	Cs	ppm	0.05	500
Copper	Cu	ppm	0.2	10 000
Iron	Fe	%	0.01	50
Gallium	Ga	ppm	0.05	10 000
Germanium	Ge	ppm	0.05	500
Hafnium	Hf	ppm	0.02	500

ALS Minerals

ME- MS41

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Mercury	Hg	ppm	0.01	10 000
Indium	In	ppm	0.005	500
Potassium	K	%	0.01	10
Lanthanum	La	ppm	0.2	10 000
Lithium	Li	ppm	0.1	10 000
Magnesium	Mg	%	0.01	25
Manganese	Mn	ppm	5	50 000
Molybdenum	Mo	ppm	0.05	10 000
Sodium	Na	%	0.01	10
Niobium	Nb	ppm	0.05	500
Nickel	Ni	ppm	0.2	10 000
Phosphorus	P	ppm	10	10 000
Lead	Pb	ppm	0.2	10 000
Rubidium	Rb	ppm	0.1	10 000
Rhenium	Re	ppm	0.001	50
Sulphur	S	%	0.01	10
Antimony	Sb	ppm	0.05	10 000
Scandium	Sc	ppm	0.1	10 000
Selenium	Se	ppm	0.2	1 000
Tin	Sn	ppm	0.2	500
Strontium	Sr	ppm	0.2	10 000
Tantalum	Ta	ppm	0.01	500
Tellurium	Te	ppm	0.01	500
Thorium	Th	ppm	0.2	10000
Titanium	Ti	%	0.005	10
Thallium	Tl	ppm	0.02	10 000
Uranium	U	ppm	0.05	10 000
Vanadium	V	ppm	1	10 000
Tungsten	W	ppm	0.05	10 000
Yttrium	Y	ppm	0.05	500
Zinc	Zn	ppm	2	10 000
Zirconium	Zr	ppm	0.5	500

NOTE: In the majority of geological matrices, data reported from an aqua regia leach should be considered as representing only the leachable portion of the particular analyte.

SAMPLE #	TYPE	LENGTH(m)	OCCURRENCE	map easting	map northing	date sampled	sampler	LOCATION	COLOUR	ROCK TYPE
M896809	GRAB	0	OUTCROP	571220	6818750	AUG 22/13	DJ	ULTRAMAFIC OUTCROP ALONG SMALL CREEK NORTHEAST OF TECK SHOWING		ULTRAMAFIC
M896810	GRAB	0	TRENCH	571212	6818766	AUG 22/13	DJ	HAND TRENCH ON OPPOSITE SIDE OF CREEK NEAR M896809		ULTRAMAFIC
M896811	GRAB	0	OUTCROP	571268	6818959	AUG 22/13	DJ	CLOSE TO SERPENTINE CREEK, NEAR 1200 LINE		ANDESITE?
M896812	GRAB	0	OUTCROP	571169	6818729	AUG 22/13	DJ	NEWLY EXPOSED O/C UNDER TREE ROOT NE OF LARGE UM O/C.		ULTRAMAFIC
M896813	GRAB	0	OUTCROP	571179	6818714	AUG 22/13	DJ	LARGE UM O/C NEAR TECK		ULTRAMAFIC
M896814	GRAB	0	OUTCROP/SUBCROP	571134	6818658	AUG 22/13	DJ			ANDESITE?
M896815	GRAB	0	OUTCROP	571026	6818537	AUG 23/13	DJ	LARGE O/C OF SILICIFIED TUFFS AT MOUTH OF SERPENTINE CREEK		TUFF
M896816	GRAB	1.3	OUTCROP	571156	6818675	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896817	GRAB	0.8	OUTCROP	571156	6818675	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896818	GRAB	0.65	OUTCROP	571155	6818674	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896819	GRAB	0.45	OUTCROP	571153	6818674	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896820	GRAB	0.75	OUTCROP	571151	6818673	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896821	GRAB	0.6	OUTCROP	571149	6818673	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896822	GRAB	1.1	OUTCROP	571147	6818672	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896823	GRAB	1.9	OUTCROP	571145	6818672	AUG 23/13	DJ	TECK-RUSTY SHEAR O/C		TUFF
M896824	GRAB	0	OUTCROP	571143	6818662	AUG 23/13	DJ	SOUTH OF TECK SHOWING		TUFF
M896825	GRAB	1.8	OUTCROP	571164	6818691	AUG 23/13	DJ	TECK -TRENCH		TUFF OR LISTWANITE
M896826	GRAB	1.5	OUTCROP	571164	6818689	AUG 23/13	DJ	TECK -TRENCH		TUFF OR LISTWANITE
M896827	GRAB	0	OUTCROP	571163	6818685	AUG 23/13	DJ	TECK -TRENCH		ULTRAMAFIC
M896828	GRAB	0	OUTCROP	571163	6818680	AUG 23/13	DJ	TECK -TRENCH		TUFF OR UM
M896829	not Arch		different property							
M896830	GRAB	0	OUTCROP	571361	6818996	AUG 23/13	DJ	SERPENTINE CK		ARGILLITE

				Au	Ag	Al	As	B	Ba	Be	Bi	Ca
SAMPLE #	DESCRIPTION	PHOTO	COMMENTS	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%
M896809	Cliff forming. Greenish Black eathered surface. Fresh surface green black, fine to medium grained. Magnetic, 1% disseminated pyrrhotite. Serpentinized.	YES		0.01	0.355	1.45	0.81	50	19.3	0.11	0.053	0.66
M896810	Same as M896809 but slighlty more altered.	yes		0.0083	0.244	1.65	2.46	50	55.8	0.11	0.048	1.57
M896811	Grey weathered surface with local hematite. Fresh surface fine grained, grey-green. Weakly magnetic, epidote and calcite veins.			0.0003	0.013	2.35	11.85	360	67.4	0.6	0.008	5.77
M896812	Magnetic, fine grained, trace visible sulphides. Serpentinized.			0.0031	0.075	1.53	0.53	40	66.2	0.1	0.015	1.16
M896813	Serpentinized	YES		0.0094	0.214	1.49	0.46	60	55.8	0.11	0.024	0.62
M896814	Trace pyrite on one piece.			0.0041	0.085	2.41	6.47	10	119.5	0.44	0.009	4.51
M896815	Fine grained, massive, siliceous, med green gray, resistant.			0.0004	0.039	2.88	48	10	48.9	0.6	0.078	1
M896816	North end of o/c. Non-mag, soft, altered and veined. Qtz veins>calcite veins. Host rock tuff, med green-grey, fine grained, massive. Minor limonite staining.	YES		0.0075	0.253	2.99	12.35	10	195.5	0.35	0.054	8.3
M896817	Lapilli tuff or breccia. Soft, calcite veins>> qtz veins on north side.Local limonite.	YES		0.0061	0.28	3.42	82.1	10	732	0.4	0.053	5.92
M896818	PYRITE SHEAR. Faulted/sheared, friable, limonite stained lapilli tuff. Less calcite alteration and veining than previous samples. 10% limonite.	YES	old sample 116065	0.0165	1.015	4.24	45	10	254	0.53	0.28	1.01
M896819	NON MIN BETWEEN 2 pyrite SHEARS. Soft, calcite altered (little veining), friable tuff. Lapilli not visible but may be destroyed by alteration.	YES		0.0088	0.56	4.01	38.8	10	343	0.45	0.124	4.61
M896820	PYRITE SHEAR. Strongly (15%) limonite stained, friable, sheared tuff(?). Stronger staining than M896818.	YES	old sample 116066. rock with ribbon moved, may not be exact location.	0.0805	1.25	2.61	21	10	129.5	0.44	2.11	0.8
M896821	PYRITE SHEAR. Similar to M896820 but limonite 10%, increate in jarosite and calcite.	YES		0.035	1.85	2.98	306	10	501	0.64	1.44	0.61
M896822	Friable, sheared tuff. 5% calcite veining, 1% limonite.	YES		0.0071	0.229	2.31	33.7	10	771	0.45	0.092	5.69
M896823	End of sheared and mineralized zone. Grey, fine grained tuff. Minor clacite alteration.	YES		0.0002	0.039	0.9	2.62	20	577	0.32	0.021	0.87
M896824		YES		<0.0002	0.024	0.67	0.62	20	177.5	0.25	0.012	1.24
M896825	Blocks of calcite altered tuff or listwanite. Medium-grained, possible higher SG than tuff. 1-2% limonite, calcite veining.	YES		0.02	0.737	1.45	6.44	10	441	0.2	0.068	9.23
M896826	More alteration than M896825. Limonite stained and broken. Limonite 5%. Calcite and limonite veining.	YES		0.0154	0.698	1.5	6	10	39.9	0.14	0.034	11.2
M896827	Very friable, altered and limontie stained ultramafic. Green black, med grained. Calcite alteration.	YES		0.0951	2.03	1.47	15.4	30	49.9	0.14	0.094	5.83
M896828	Calcite altered tuff or ultramafic. Possible lapilli, but "fresher" rock in balck.	YES		0.0103	0.576	1.84	3	10	122.5	0.2	0.046	10.1
M896829												
M896830		YES		0.0207	0.449	2.13	46.4	<10	21.4	0.17	0.041	3.63

	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn
SAMPLE #	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm
M896809	0.086	4.78	133	375	0.315	381	7.88	3.16	0.169	0.055	0.024	0.015	0.03	2.07	6.3	17.55	1090
M896810	0.108	4	124.5	395	0.37	324	7.41	3.13	0.174	0.062	0.053	0.017	0.04	1.855	14.2	16.35	1250
M896811	0.107	19.95	21.3	118.5	0.224	41	4.14	7.97	0.16	0.595	0.008	0.023	0.19	8.72	17.2	1.98	969
M896812	0.042	3.85	117	335	0.957	104	7.49	2.97	0.162	0.035	0.012	0.012	0.04	1.795	6.5	17.05	1065
M896813	0.073	4.53	127	365	1.28	344	7.73	3.12	0.183	0.034	0.033	0.019	0.06	2.03	10.2	17.55	1105
M896814	0.116	15.35	35.5	44	0.685	195.5	6.79	12	0.164	0.566	0.188	0.066	0.16	6	18	2.15	1180
M896815	0.038	26.6	24.1	31.4	1.625	40.8	4.98	9.38	0.073	0.033	0.07	0.018	0.28	11.2	40	1.38	512
M896816	0.179	4.83	53.2	478	1.02	287	5.21	6.3	0.076	0.049	0.288	0.026	0.02	1.935	29.4	6.96	871
M896817	0.368	8.38	59.4	788	1.11	313	6.05	8.48	0.134	0.073	0.274	0.029	0.04	3.59	42.6	7.92	1115
M896818	0.715	25.8	118.5	937	2.35	1290	10.05	11.95	0.218	0.11	0.98	0.1	0.08	11.55	60.9	6.7	856
M896819	0.377	12.4	73.3	688	1.56	496	7.49	9.98	0.168	0.09	0.168	0.044	0.07	5.46	55.2	7.4	1240
M896820	0.546	25.5	31.9	115.5	1.235	1005	8.24	11.6	0.184	0.043	0.736	0.09	0.06	11.95	33	2.88	622
M896821	0.491	31.4	31.1	103.5	1.28	1080	10.4	11	0.19	0.031	0.551	0.164	0.06	12.9	38.4	2.35	513
M896822	0.232	21.6	28.3	434	1.965	103.5	4.66	7.18	0.079	0.051	0.097	0.058	0.08	9.97	28.7	4.43	930
M896823	0.01	8.75	1.74	3.33	3.81	5.96	0.93	3.67	0.031	0.069	0.141	0.006	0.3	3.69	6.4	0.34	232
M896824	0.006	5.24	1.45	2.92	3.39	1.77	0.89	2.29	0.023	0.042	0.014	0.01	0.24	2.07	3.5	0.17	214
M896825	0.353	3.22	104	637	0.343	586	6.11	3.19	0.07	0.073	0.635	0.027	0.01	1.29	7.2	8.25	1260
M896826	0.451	3.25	102.5	629	0.141	508	6.45	3.19	0.098	0.041	0.461	0.031	<0.01	1.285	7.2	5.93	1050
M896827	1.005	4.32	154.5	554	0.845	1660	7.7	3.09	0.158	0.061	0.329	0.037	0.01	1.915	10.6	11.85	1110
M896828	0.285	3.97	90	1040	0.232	451	6.64	4.07	0.112	0.065	0.281	0.023	0.02	1.73	8.2	6.43	987
M896829																	
M896830	4.48	5.59	25.7	58.7	0.121	111	4.55	9.05	0.17	0.531	0.254	0.025	0.03	2.35	9.6	1.52	665

	Mo	Na	Nb	Ni	P	Pb	Pd	Pt	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta
SAMPLE #	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
M896809	0.17	0.008	0.011	1440	0.019	1.95	0.06	0.033	1.585	0.002	0.11	0.02	9.24	1.1	0.14	13.7	0.005
M896810	0.14	0.013	0.005	2080	0.019	1.69	0.059	0.05	2.05	0.001	0.07	0.065	8.51	0.6	0.11	24	<0.005
M896811	0.32	0.059	0.154	28.2	0.133	1.75	0.005	0.003	6.34	<0.001	0.01	0.232	22.1	0.6	0.38	75.3	0.007
M896812	0.18	0.022	0.005	1320	0.016	1.71	0.033	0.034	2.88	<0.001	0.05	0.021	7.95	0.9	0.05	50.8	0.006
M896813	0.15	0.022	0.007	1380	0.017	1.125	0.068	0.025	2.99	0.002	0.11	0.045	8.52	1.1	0.1	29.6	0.005
M896814	0.21	0.087	0.086	46.6	0.059	0.847	0.02	0.004	5.09	<0.001	0.04	0.518	30.8	0.9	0.58	84.3	0.006
M896815	0.12	0.035	0.016	46	0.064	2.74	0.002	<0.002	8.44	<0.001	0.01	0.446	9.37	0.4	0.15	9.01	0.005
M896816	0.29	0.008	0.004	756	0.018	3.05	0.052	0.025	0.846	0.001	0.07	0.244	9.95	0.8	0.24	289	<0.005
M896817	0.23	0.012	0.007	649	0.033	2.98	0.048	0.016	1.495	0.001	0.05	0.832	15.65	0.6	0.35	189	0.005
M896818	2.47	0.028	0.006	1375	0.058	7.63	0.178	0.052	3.18	0.003	0.34	1.585	23.8	15.2	1.13	27.2	0.005
M896819	0.39	0.014	0.011	762	0.033	2.75	0.046	0.027	2.99	0.001	0.06	0.57	19.7	0.9	0.49	57.2	0.005
M896820	1.49	0.058	0.018	389	0.07	10.5	0.431	0.031	2.28	0.003	1.07	0.931	13.05	23.2	1.08	26.6	0.005
M896821	3.23	0.04	0.005	673	0.167	13.75	0.346	0.016	2.04	0.014	0.42	5.87	11.45	22.5	1.23	21.9	0.005
M896822	0.46	0.036	0.013	286	0.055	4.28	0.035	0.012	2.87	0.001	0.09	0.51	11.65	0.9	0.62	349	0.005
M896823	0.08	0.093	0.11	5.47	0.021	4.76	0.001	<0.002	10.75	<0.001	0.04	0.064	1.01	0.1	0.11	19.2	0.005
M896824	0.06	0.071	0.194	1.95	0.02	5.02	<0.001	<0.002	9.11	<0.001	0.02	0.074	0.874	0.1	0.1	54.8	<0.005
M896825	0.33	0.01	0.007	1395	0.008	2.8	0.087	0.061	0.272	0.003	0.19	0.13	13.1	3.7	0.16	279	<0.005
M896826	0.53	0.006	0.007	1545	0.014	1.305	0.094	0.093	0.237	0.001	0.04	0.257	9.64	1.5	0.12	233	<0.005
M896827	0.13	0.006	0.004	2130	0.017	2.06	0.251	0.189	0.873	0.004	0.15	0.075	9.44	3.3	0.24	92.8	<0.005
M896828	0.19	0.009	0.008	1295	0.011	1.28	0.091	0.054	0.47	0.002	0.11	0.107	11.15	0.7	0.21	98.4	<0.005
M896829																	
M896830	1.48	0.072	0.063	49.6	0.082	41	0.01	0.005	0.633	0.008	0.77	0.604	6.77	4.1	0.37	31.3	<0.005

	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr
SAMPLE #	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
M896809	0.08	0.26	0.038	0.029	0.09	24.3	0.02	4.08	70.3	3.68
M896810	0.1	0.188	0.047	0.066	0.113	22.1	0.026	3.46	54.5	3.07
M896811	0.01	1.295	0.302	0.023	0.674	169.5	0.206	14.65	59.1	20.5
M896812	0.05	0.146	0.044	0.02	0.069	22.7	0.014	2.93	58.1	2.25
M896813	0.11	0.184	0.047	0.047	0.052	25.5	0.021	3.4	61.2	1.81
M896814	<0.01	0.33	0.383	0.039	0.112	286	0.033	22.2	82.2	16.5
M896815	0.04	1.77	0.012	0.05	0.168	119	0.072	11.05	35.2	0.94
M896816	0.19	0.26	0.003	0.012	0.073	61.2	0.006	4.37	29.7	0.7
M896817	0.2	0.405	0.017	0.021	0.071	108	0.007	7.38	70.9	1.13
M896818	1.53	0.992	0.024	0.183	0.191	197.5	0.033	13.7	119.5	2.37
M896819	0.31	0.524	0.034	0.072	0.128	147.5	0.028	9.33	73.2	1.6
M896820	3.52	1.385	0.012	0.131	0.14	204	0.059	10.1	106.5	0.85
M896821	3.32	2.11	0.005	0.105	0.474	166	0.115	16.15	88.6	0.75
M896822	0.17	0.907	0.006	0.034	0.198	105.5	0.025	11.75	68.3	1.17
M896823	0.01	0.566	0.002	0.07	0.091	3.6	0.016	1.415	24.4	1.52
M896824	<0.01	0.289	0.005	0.063	0.058	3.3	0.012	1.18	24.9	0.75
M896825	0.22	0.159	0.006	0.017	0.056	43.6	0.013	3.66	31.5	1.56
M896826	0.14	0.124	0.006	0.014	0.115	40.6	0.017	3.11	36.6	0.94
M896827	0.47	0.21	0.021	0.044	0.08	38.8	0.008	3.14	55.7	2.35
M896828	0.14	0.094	0.009	0.023	0.07	57.3	0.006	4.12	27.2	1.37
M896829										
M896830	0.15	0.592	0.303	0.014	0.805	205	0.227	10.9	205	14.7

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
This copy reported on
13- SEP- 2013
Account: MIDMIN

CERTIFICATE WH13155455

Project: Arch
P.O. No.: Rock1
This report is for 22 Rock samples submitted to our lab in Whitehorse, YT, Canada on 26- AUG- 2013.
The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
CRU- 31	Fine crushing - 70% <2mm
SPL- 21	Split sample - riffle splitter
PUL- 32	Pulverize 1000g to 85% < 75 um
BAG- 01	Bulk Master for Storage

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME- MS41L	51 anal. aqua regia ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Minerals

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Finalized Date: 12- SEP- 2013
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Project: Arch

CERTIFICATE OF ANALYSIS WH13155455

Sample Description	Method	WEI- 21	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
	Analyte	Recvd Wt.	Au	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs
	Units	kg	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
	LOR	0.02	0.0002	0.001	0.01	0.01	10	0.5	0.01	0.001	0.01	0.001	0.003	0.001	0.01	0.005
M896809		3.36	0.0100	0.355	1.45	0.81	50	19.3	0.11	0.053	0.66	0.086	4.78	133.0	375	0.315
M896810		2.72	0.0083	0.244	1.65	2.46	50	55.8	0.11	0.048	1.57	0.108	4.00	124.5	395	0.370
M896811		3.46	0.0003	0.013	2.35	11.85	360	67.4	0.60	0.008	5.77	0.107	19.95	21.3	118.5	0.224
M896812		1.98	0.0031	0.075	1.53	0.53	40	66.2	0.10	0.015	1.16	0.042	3.85	117.0	335	0.957
M896813		2.33	0.0094	0.214	1.49	0.46	60	55.8	0.11	0.024	0.62	0.073	4.53	127.0	365	1.280
M896814		2.36	0.0041	0.085	2.41	6.47	10	119.5	0.44	0.009	4.51	0.116	15.35	35.5	44.0	0.685
M896815		2.40	0.0004	0.039	2.88	48.0	10	48.9	0.60	0.078	1.00	0.038	26.6	24.1	31.4	1.625
M896816		2.07	0.0075	0.253	2.99	12.35	10	195.5	0.35	0.054	8.30	0.179	4.83	53.2	478	1.020
M896817		2.80	0.0061	0.280	3.42	82.1	10	732	0.40	0.053	5.92	0.368	8.38	59.4	788	1.110
M896818		1.91	0.0165	1.015	4.24	45.0	10	254	0.53	0.280	1.01	0.715	25.8	118.5	937	2.35
M896819		1.64	0.0088	0.560	4.01	38.8	10	343	0.45	0.124	4.61	0.377	12.40	73.3	688	1.560
M896820		1.47	0.0805	1.250	2.61	21.0	10	129.5	0.44	2.11	0.80	0.546	25.5	31.9	115.5	1.235
M896821		1.87	0.0350	1.850	2.98	306	10	501	0.64	1.440	0.61	0.491	31.4	31.1	103.5	1.280
M896822		1.89	0.0071	0.229	2.31	33.7	10	771	0.45	0.092	5.69	0.232	21.6	28.3	434	1.965
M896823		1.87	0.0002	0.039	0.90	2.62	20	577	0.32	0.021	0.87	0.010	8.75	1.740	3.33	3.81
M896824		1.64	<0.0002	0.024	0.67	0.62	20	177.5	0.25	0.012	1.24	0.006	5.24	1.450	2.92	3.39
M896825		2.03	0.0200	0.737	1.45	6.44	10	441	0.20	0.068	9.23	0.353	3.22	104.0	637	0.343
M896826		2.26	0.0154	0.698	1.50	6	10	39.9	0.14	0.034	11.20	0.451	3.25	102.5	629	0.141
M896827		2.51	0.0951	2.03	1.47	15.40	30	49.9	0.14	0.094	5.83	1.005	4.32	154.5	554	0.845
M896828		2.32	0.0103	0.576	1.84	3	10	122.5	0.20	0.046	10.10	0.285	3.97	90.0	1040	0.232
M896829		0.52	0.0003	0.056	0.27	0.31	<10	79.7	0.06	0.018	0.19	0.040	44.0	1.250	12.05	0.090
M896830		2.42	0.0207	0.449	2.13	46.4	<10	21.4	0.17	0.041	3.63	4.48	5.59	25.7	58.7	0.121

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13155455

Sample Description	Method / Analyte / Units / LOR	ME- MS41L Cu ppm 0.01	ME- MS41L Fe % 0.001	ME- MS41L Ga ppm 0.004	ME- MS41L Ge ppm 0.005	ME- MS41L Hf ppm 0.002	ME- MS41L Hg ppm 0.004	ME- MS41L In ppm 0.005	ME- MS41L K % 0.01	ME- MS41L La ppm 0.002	ME- MS41L Li ppm 0.1	ME- MS41L Mg % 0.01	ME- MS41L Mn ppm 0.1	ME- MS41L Mo ppm 0.01	ME- MS41L Na % 0.001	ME- MS41L Nb ppm 0.002
M896809		381	7.88	3.16	0.169	0.055	0.024	0.015	0.03	2.07	6.3	17.55	1090	0.17	0.008	0.011
M896810		324	7.41	3.13	0.174	0.062	0.053	0.017	0.04	1.855	14.2	16.35	1250	0.14	0.013	0.005
M896811		41.0	4.14	7.97	0.160	0.595	0.008	0.023	0.19	8.72	17.2	1.98	969	0.32	0.059	0.154
M896812		104.0	7.49	2.97	0.162	0.035	0.012	0.012	0.04	1.795	6.5	17.05	1065	0.18	0.022	0.005
M896813		344	7.73	3.12	0.183	0.034	0.033	0.019	0.06	2.03	10.2	17.55	1105	0.15	0.022	0.007
M896814		195.5	6.79	12.00	0.164	0.566	0.188	0.066	0.16	6.00	18.0	2.15	1180	0.21	0.087	0.086
M896815		40.8	4.98	9.38	0.073	0.033	0.070	0.018	0.28	11.20	40.0	1.38	512	0.12	0.035	0.016
M896816		287	5.21	6.30	0.076	0.049	0.288	0.026	0.02	1.935	29.4	6.96	871	0.29	0.008	0.004
M896817		313	6.05	8.48	0.134	0.073	0.274	0.029	0.04	3.59	42.6	7.92	1115	0.23	0.012	0.007
M896818		1290	10.05	11.95	0.218	0.110	0.980	0.100	0.08	11.55	60.9	6.70	856	2.47	0.028	0.006
M896819		498	7.49	9.98	0.168	0.090	0.168	0.044	0.07	5.46	55.2	7.40	1240	0.39	0.014	0.011
M896820		1005	8.24	11.60	0.184	0.043	0.736	0.090	0.06	11.95	33.0	2.88	622	1.49	0.058	0.018
M896821		1080	10.40	11.00	0.190	0.031	0.551	0.164	0.06	12.90	38.4	2.35	513	3.23	0.040	0.005
M896822		103.5	4.66	7.18	0.079	0.051	0.097	0.058	0.08	9.97	28.7	4.43	930	0.46	0.036	0.013
M896823		5.96	0.930	3.67	0.031	0.069	0.141	0.006	0.30	3.69	6.4	0.34	232	0.08	0.093	0.110
M896824		1.77	0.890	2.29	0.023	0.042	0.014	0.010	0.24	2.07	3.5	0.17	214	0.06	0.071	0.194
M896825		586	6.11	3.19	0.070	0.073	0.635	0.027	0.01	1.290	7.2	8.25	1260	0.33	0.010	0.007
M896826		508	6.45	3.19	0.098	0.041	0.461	0.031	<0.01	1.285	7.2	5.93	1050	0.53	0.006	0.007
M896827		1660	7.70	3.09	0.158	0.061	0.329	0.037	0.01	1.915	10.6	11.85	1110	0.13	0.006	0.004
M896828		451	6.64	4.07	0.112	0.065	0.281	0.023	0.02	1.730	8.2	6.43	987	0.19	0.009	0.008
M896829		6.07	1.460	1.300	0.052	0.040	0.006	0.025	0.16	19.75	2.1	0.07	260	0.18	0.064	0.415
M896830		111.0	4.55	9.05	0.170	0.531	0.254	0.025	0.03	2.35	9.6	1.52	665	1.48	0.072	0.063

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221   Fax: 604 984 0218   www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13155455

Sample Description	Method Analyte Units LOR	ME-MS41L Ni ppm 0.04	ME-MS41L P % 0.001	ME-MS41L Pb ppm 0.005	ME-MS41L Pd ppm 0.001	ME-MS41L Pt ppm 0.002	ME-MS41L Rb ppm 0.005	ME-MS41L Re ppm 0.001	ME-MS41L S % 0.01	ME-MS41L Sb ppm 0.005	ME-MS41L Sc ppm 0.005	ME-MS41L Se ppm 0.1	ME-MS41L Sn ppm 0.01	ME-MS41L Sr ppm 0.01	ME-MS41L Ta ppm 0.005	ME-MS41L Te ppm 0.01
M896809		1440	0.019	1.950	0.060	0.033	1.585	0.002	0.11	0.020	9.24	1.1	0.14	13.70	0.005	0.08
M896810		2080	0.019	1.690	0.059	0.050	2.05	0.001	0.07	0.065	8.51	0.6	0.11	24.0	<0.005	0.10
M896811		28.2	0.133	1.750	0.005	0.003	6.34	<0.001	0.01	0.232	22.1	0.6	0.38	75.3	0.007	0.01
M896812		1320	0.016	1.710	0.033	0.034	2.88	<0.001	0.05	0.021	7.95	0.9	0.05	50.8	0.006	0.05
M896813		1380	0.017	1.125	0.068	0.025	2.99	0.002	0.11	0.045	8.52	1.1	0.10	29.6	0.005	0.11
M896814		46.6	0.059	0.847	0.020	0.004	5.09	<0.001	0.04	0.518	30.8	0.9	0.58	84.3	0.006	<0.01
M896815		46.0	0.064	2.74	0.002	<0.002	8.44	<0.001	0.01	0.446	9.37	0.4	0.15	9.01	0.005	0.04
M896816		756	0.018	3.05	0.052	0.025	0.846	0.001	0.07	0.244	9.95	0.8	0.24	289	<0.005	0.19
M896817		649	0.033	2.98	0.048	0.016	1.495	0.001	0.05	0.832	15.65	0.6	0.35	189.0	0.005	0.20
M896818		1375	0.058	7.63	0.178	0.052	3.18	0.003	0.34	1.585	23.8	15.2	1.13	27.2	0.005	1.53
M896819		762	0.033	2.75	0.046	0.027	2.99	0.001	0.06	0.570	19.70	0.9	0.49	57.2	0.005	0.31
M896820		389	0.070	10.50	0.431	0.031	2.28	0.003	1.07	0.931	13.05	23.2	1.08	26.6	0.005	3.52
M896821		673	0.167	13.75	0.346	0.016	2.04	0.014	0.42	5.87	11.45	22.5	1.23	21.9	0.005	3.32
M896822		286	0.055	4.28	0.035	0.012	2.87	0.001	0.09	0.510	11.65	0.9	0.62	349	0.005	0.17
M896823		5.47	0.021	4.76	0.001	<0.002	10.75	<0.001	0.04	0.064	1.010	0.1	0.11	19.20	0.005	0.01
M896824		1.95	0.020	5.02	<0.001	<0.002	9.11	<0.001	0.02	0.074	0.874	0.1	0.10	54.8	<0.005	<0.01
M896825		1395	0.008	2.80	0.087	0.061	0.272	0.003	0.19	0.130	13.10	3.7	0.16	279	<0.005	0.22
M896826		1545	0.014	1.305	0.094	0.093	0.237	0.001	0.04	0.257	9.64	1.5	0.12	233	<0.005	0.14
M896827		2130	0.017	2.06	0.251	0.189	0.873	0.004	0.15	0.075	9.44	3.3	0.24	92.8	<0.005	0.47
M896828		1295	0.011	1.280	0.091	0.054	0.470	0.002	0.11	0.107	11.15	0.7	0.21	98.4	<0.005	0.14
M896829		15.80	0.005	1.190	0.002	<0.002	3.67	<0.001	0.01	0.061	0.709	0.4	0.08	5.02	<0.005	0.04
M896830		49.6	0.082	41.0	0.010	0.005	0.633	0.008	0.77	0.604	6.77	4.1	0.37	31.3	<0.005	0.15

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ALS Minerals

To: MIDNIGHT MINING SERVICES
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WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13155455

Sample Description	ME-MS41L Th ppm 0.002	ME-MS41L Ti % 0.001	ME-MS41L Tl ppm 0.002	ME-MS41L U ppm 0.005	ME-MS41L V ppm 0.1	ME-MS41L W ppm 0.001	ME-MS41L Y ppm 0.003	ME-MS41L Zn ppm 0.1	ME-MS41L Zr ppm 0.01
M896809	0.260	0.038	0.029	0.090	24.3	0.020	4.08	70.3	3.68
M896810	0.188	0.047	0.066	0.113	22.1	0.026	3.46	54.5	3.07
M896811	1.295	0.302	0.023	0.674	169.5	0.206	14.65	59.1	20.5
M896812	0.146	0.044	0.020	0.069	22.7	0.014	2.93	58.1	2.25
M896813	0.184	0.047	0.047	0.052	25.5	0.021	3.40	61.2	1.81
M896814	0.330	0.383	0.039	0.112	286	0.033	22.2	82.2	16.50
M896815	1.770	0.012	0.050	0.168	119.0	0.072	11.05	35.2	0.94
M896816	0.260	0.003	0.012	0.073	61.2	0.006	4.37	29.7	0.70
M896817	0.405	0.017	0.021	0.071	108.0	0.007	7.38	70.9	1.13
M896818	0.992	0.024	0.183	0.191	197.5	0.033	13.70	119.5	2.37
M896819	0.524	0.034	0.072	0.128	147.5	0.028	9.33	73.2	1.60
M896820	1.385	0.012	0.131	0.140	204	0.059	10.10	106.5	0.85
M896821	2.11	0.005	0.105	0.474	166.0	0.115	16.15	88.6	0.75
M896822	0.907	0.006	0.034	0.198	105.5	0.025	11.75	68.3	1.17
M896823	0.566	0.002	0.070	0.091	3.6	0.016	1.415	24.4	1.52
M896824	0.289	0.005	0.063	0.058	3.3	0.012	1.180	24.9	0.75
M896825	0.159	0.006	0.017	0.056	43.6	0.013	3.66	31.5	1.56
M896826	0.124	0.006	0.014	0.115	40.6	0.017	3.11	36.6	0.94
M896827	0.210	0.021	0.044	0.080	38.8	0.008	3.14	55.7	2.35
M896828	0.094	0.009	0.023	0.070	57.3	0.006	4.12	27.2	1.37
M896829	4.22	0.016	0.029	0.614	1.3	0.062	5.54	38.4	0.65
M896830	0.592	0.303	0.014	0.805	205	0.227	10.90	205	14.70

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ALS Minerals

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To: MIDNIGHT MINING SERVICES
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WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13155455

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Interference: Samples with Ca> 10% on ICP- MS As. ICP- AES As results reported (2 ppm DL)
Applies to Method: ME- MS41L

Gold determinations by this method are semi- quantitative due to the small sample weight used (0.5g).
Applies to Method: ME- MS41L

LABORATORY ADDRESSES

Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

Applies to Method:	BAG- 01	CRU- 31	CRU- QC	LOG- 22
	PUL- 32	PUL- QC	SPL- 21	WEI- 21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.
Applies to Method: ME- MS41L

ALS Minerals

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WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
This copy reported on 13- SEP- 2013
Account: MIDMIN

QC CERTIFICATE WH13155455

Project: Arch
P.O. No.: Rock1
This report is for 22 Rock samples submitted to our lab in Whitehorse, YT, Canada on 26- AUG- 2013.
The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
CRU- 31	Fine crushing - 70% <2mm
SPL- 21	Split sample - riffle splitter
PUL- 32	Pulverize 1000g to 85% < 75 um
BAG- 01	Bulk Master for Storage

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME- MS41L	51 anal. aqua regia ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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ALS Minerals

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27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13155455

Sample Description	ME- MS41L Au ppm 0.0002	ME- MS41L Ag ppm 0.001	ME- MS41L Al % 0.01	ME- MS41L As ppm 0.01	ME- MS41L B ppm 10	ME- MS41L Ba ppm 0.5	ME- MS41L Be ppm 0.01	ME- MS41L Bi ppm 0.001	ME- MS41L Ca % 0.01	ME- MS41L Cd ppm 0.001	ME- MS41L Ce ppm 0.003	ME- MS41L Co ppm 0.001	ME- MS41L Cr ppm 0.01	ME- MS41L Cs ppm 0.005	ME- MS41L Cu ppm 0.01
STANDARDS															
GBM908- 10	0.369	2.89	0.91	50.9	10	102.5	0.29	1.130	0.63	1.695	81.5	13.90	21.6	0.744	3530
GBM908- 10	0.394	2.85	0.98	49.9	<10	106.5	0.30	0.961	0.70	1.655	83.1	13.35	21.3	0.727	3680
Target Range - Lower Bound	0.401	2.70	0.85	49.5	<10	88.8	0.26	1.130	0.62	1.530	79.3	12.95	21.0	0.715	3380
Upper Bound	0.491	3.30	1.06	60.5	30	121.5	0.34	1.385	0.79	1.870	97.0	15.85	25.7	0.885	3880
OREAS 90	0.0005	0.046	2.36	5.25	<10	53.2	0.67	0.953	0.39	0.002	61.0	15.00	39.4	1.060	112.0
Target Range - Lower Bound	<0.0002	0.053	2.09	4.04	<10	42.0	0.54	0.827	0.33	0.003	54.5	13.75	36.4	0.904	102.5
Upper Bound	0.0010	0.067	2.57	4.96	20	58.0	0.68	1.015	0.43	0.007	66.7	16.85	44.5	1.115	117.5
BLANKS															
BLANK	<0.0002	0.001	<0.01	<0.01	<10	<0.5	<0.01	0.001	<0.01	<0.001	0.003	0.002	0.02	<0.005	0.01
BLANK	<0.0002	0.001	<0.01	0.01	<10	<0.5	<0.01	0.001	<0.01	0.001	<0.003	0.002	0.01	<0.005	0.02
Target Range - Lower Bound	<0.0002	<0.001	<0.01	<0.01	<10	<0.5	<0.01	<0.001	<0.01	<0.001	<0.003	<0.001	<0.01	<0.005	<0.01
Upper Bound	0.0004	0.002	0.02	0.02	20	1.0	0.02	0.002	0.02	0.002	0.006	0.002	0.02	0.010	0.02
DUPLICATES															
ORIGINAL	0.0014	0.113	1.97	5.33	30	287	0.79	0.178	1.69	0.384	38.6	7.76	28.0	3.37	22.6
DUP	0.0012	0.111	2.00	6.04	30	294	0.80	0.182	1.72	0.351	38.8	8.07	27.8	3.47	23.3
Target Range - Lower Bound	0.0010	0.105	1.88	5.39	20	268	0.75	0.170	1.61	0.348	36.8	7.52	26.5	3.24	22.1
Upper Bound	0.0016	0.119	2.09	5.98	40	313	0.84	0.190	1.80	0.387	40.6	8.31	29.3	3.60	23.8
ORIGINAL	0.0006	1.075	0.95	6.19	<10	138.5	0.41	0.256	0.59	3.27	33.3	4.23	11.30	0.565	663
DUP	0.0006	1.105	0.97	5.97	<10	140.0	0.45	0.256	0.60	3.49	35.2	4.13	10.90	0.579	671
Target Range - Lower Bound	0.0004	1.035	0.90	5.77	<10	128.5	0.40	0.242	0.56	3.21	32.5	3.97	10.55	0.538	644
Upper Bound	0.0008	1.145	1.02	6.39	20	150.0	0.46	0.270	0.63	3.55	36.0	4.39	11.65	0.606	690

***** See Appendix Page for comments regarding this certificate *****

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WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13155455

Sample Description	Method / Analyte / Units / LOR	ME-MS41L Fe % 0.001	ME-MS41L Ga ppm 0.004	ME-MS41L Ge ppm 0.005	ME-MS41L Hf ppm 0.002	ME-MS41L Hg ppm 0.004	ME-MS41L In ppm 0.005	ME-MS41L K % 0.01	ME-MS41L La ppm 0.002	ME-MS41L Li ppm 0.1	ME-MS41L Mg % 0.01	ME-MS41L Mn ppm 0.1	ME-MS41L Mo ppm 0.01	ME-MS41L Na % 0.001	ME-MS41L Nb ppm 0.002	ME-MS41L Ni ppm 0.04
STANDARDS																
GBM908-10		2.58	4.55	0.134	0.555	0.015	0.024	0.40	44.9	6.2	0.52	286	63.5	0.126	0.355	2250
GBM908-10		2.75	4.59	0.117	0.713	0.009	0.014	0.43	43.5	6.1	0.52	312	60.8	0.133	0.348	2190
Target Range -	Lower Bound	2.38	4.23	0.113	0.640	0.007	0.012	0.37	43.4	5.6	0.47	264	57.9	0.107	0.347	2030
	Upper Bound	2.88	5.17	0.149	0.787	0.026	0.034	0.48	53.0	7.1	0.59	322	70.8	0.133	0.429	2480
OREAS 90		3.99	6.22	0.081	0.692	<0.004	0.025	0.36	29.5	19.3	1.37	643	0.38	0.015	0.383	85.7
Target Range -	Lower Bound	3.40	5.82	0.071	0.628	<0.004	0.016	0.31	28.1	17.8	1.21	520	0.35	0.012	0.347	76.7
	Upper Bound	4.16	7.13	0.099	0.772	0.008	0.038	0.40	34.3	22.0	1.50	636	0.45	0.018	0.429	93.8
BLANKS																
BLANK		<0.001	0.005	0.008	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01	<0.001	<0.002	<0.04
BLANK		<0.001	0.006	0.007	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	0.01	0.001	<0.002	<0.04
Target Range -	Lower Bound	<0.001	<0.004	<0.005	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01	<0.001	<0.002	<0.04
	Upper Bound	0.002	0.008	0.010	0.004	0.008	0.010	0.02	0.004	0.2	0.02	0.2	0.02	0.002	0.004	0.08
DUPLICATES																
ORIGINAL		2.39	6.16	0.118	0.325	0.021	0.041	0.72	18.20	27.6	0.81	436	0.58	0.064	0.433	22.6
DUP		2.40	6.05	0.108	0.348	0.026	0.034	0.73	18.55	27.3	0.82	443	0.58	0.064	0.387	22.7
Target Range -	Lower Bound	2.27	5.80	0.102	0.318	0.018	0.031	0.68	17.45	26.0	0.76	417	0.54	0.060	0.388	21.5
	Upper Bound	2.52	6.41	0.124	0.355	0.029	0.044	0.77	19.30	28.9	0.87	462	0.62	0.068	0.433	23.8
ORIGINAL		1.880	5.16	0.060	0.198	0.032	0.110	0.18	15.25	18.3	0.36	413	1.74	0.036	0.015	3.14
DUP		1.910	5.05	0.050	0.214	0.037	0.120	0.18	16.25	19.0	0.37	421	1.73	0.040	0.017	3.32
Target Range -	Lower Bound	1.800	4.85	0.047	0.194	0.028	0.104	0.16	14.95	17.6	0.34	396	1.64	0.035	0.013	3.03
	Upper Bound	1.990	5.36	0.063	0.218	0.041	0.126	0.20	16.55	19.7	0.39	438	1.83	0.041	0.019	3.43

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Project: Arch

QC CERTIFICATE OF ANALYSIS WH13155455

Sample Description	Method / Analyte / Units / LOR	ME- MS41L P % 0.001	ME- MS41L Pb ppm 0.005	ME- MS41L Pd ppm 0.001	ME- MS41L Pt ppm 0.002	ME- MS41L Rb ppm 0.005	ME- MS41L Re ppm 0.001	ME- MS41L S % 0.01	ME- MS41L Sb ppm 0.005	ME- MS41L Sc ppm 0.005	ME- MS41L Se ppm 0.1	ME- MS41L Sn ppm 0.01	ME- MS41L Sr ppm 0.01	ME- MS41L Ta ppm 0.005	ME- MS41L Te ppm 0.01	ME- MS41L Th ppm 0.002
STANDARDS																
GBM908- 10		0.085	2070	<0.001	0.007	28.8	<0.001	0.39	1.195	1.990	1.0	1.55	32.4	0.006	0.05	16.20
GBM908- 10		0.086	2020	0.002	0.006	27.9	0.001	0.41	1.245	2.03	1.0	1.63	34.4	<0.005	0.07	15.20
Target Range -	Lower Bound	0.076	1860			27.7	<0.001	0.33	1.100	1.885	0.7	1.52	31.0	<0.005	0.02	14.50
	Upper Bound	0.096	2270			33.9	0.003	0.43	1.500	2.32	1.1	1.88	37.9	0.021	0.07	17.75
OREAS 90		0.066	5.06	0.002	<0.002	21.4	<0.001	0.09	0.359	2.19	1.0	1.21	11.50	0.015	0.03	16.35
Target Range -	Lower Bound	0.057	4.95			19.00	<0.001	0.05	0.378	2.15	0.6	1.15	10.70	0.009	<0.01	14.50
	Upper Bound	0.072	6.06			23.2	0.002	0.09	0.523	2.63	1.1	1.43	13.10	0.031	0.05	17.70
BLANKS																
BLANK		<0.001	<0.005	<0.001	<0.002	<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	<0.01	0.02	<0.005	<0.01	<0.002
BLANK		<0.001	0.010	<0.001	<0.002	<0.005	<0.001	0.01	0.005	<0.005	<0.1	0.01	<0.01	<0.005	0.01	<0.002
Target Range -	Lower Bound	<0.001	<0.005			<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	<0.01	<0.01	<0.005	<0.01	<0.002
	Upper Bound	0.002	0.010			0.010	0.002	0.02	0.010	0.010	0.2	0.02	0.02	0.010	0.02	0.004
DUPLICATES																
ORIGINAL		0.086	9.08	0.003	<0.002	30.1	<0.001	0.02	0.765	4.76	0.6	1.52	104.5	<0.005	0.03	6.15
DUP		0.087	9.24	0.003	<0.002	30.8	<0.001	0.03	0.754	4.77	0.6	1.79	107.0	<0.005	<0.01	6.25
Target Range -	Lower Bound	0.081	8.70	0.002	<0.002	28.9	<0.001	<0.01	0.698	4.52	0.5	1.56	100.5	<0.005	<0.01	5.89
	Upper Bound	0.092	9.62	0.004	0.004	32.0	0.002	0.04	0.821	5.01	0.7	1.75	111.0	0.010	0.03	6.51
ORIGINAL		0.047	38.3	<0.001	<0.002	10.35	<0.001	0.03	0.477	1.725	0.3	0.37	13.95	0.005	<0.01	6.02
DUP		0.049	40.0	<0.001	<0.002	10.30	<0.001	0.03	0.537	1.600	0.3	0.47	14.00	0.005	<0.01	6.41
Target Range -	Lower Bound	0.045	37.2	<0.001	<0.002	9.80	<0.001	0.02	0.464	1.575	0.2	0.39	13.25	<0.005	<0.01	5.90
	Upper Bound	0.051	41.1	0.002	0.004	10.85	0.002	0.04	0.550	1.750	0.4	0.45	14.70	0.010	0.02	6.53

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13155455

Sample Description	Method / Analyte / Units / LOR	ME-MS41L Ti % 0.001	ME-MS41L Tl ppm 0.002	ME-MS41L U ppm 0.005	ME-MS41L V ppm 0.1	ME-MS41L W ppm 0.001	ME-MS41L Y ppm 0.003	ME-MS41L Zn ppm 0.1	ME-MS41L Zr ppm 0.01
STANDARDS									
GBM908-10		0.296	0.200	1.215	45.3	1.740	18.85	1005	25.5
GBM908-10		0.321	0.206	1.215	45.5	1.750	18.25	1035	25.4
Target Range -	Lower Bound	0.280	0.178	1.190	42.2	1.620	17.60	941	24.5
	Upper Bound	0.344	0.245	1.470	51.8	2.20	21.5	1150	33.1
OREAS 90		0.092	0.117	2.22	20.7	0.414	16.55	56.7	22.6
Target Range -	Lower Bound	0.075	0.092	1.860	19.7	0.358	15.45	52.6	21.1
	Upper Bound	0.094	0.129	2.28	24.3	0.484	18.90	64.5	28.6
BLANKS									
BLANK		<0.001	<0.002	<0.005	<0.1	0.001	<0.003	0.1	<0.01
BLANK		<0.001	<0.002	<0.005	<0.1	0.001	<0.003	0.1	<0.01
Target Range -	Lower Bound	<0.001	<0.002	<0.005	<0.1	<0.001	<0.003	<0.1	<0.01
	Upper Bound	0.002	0.004	0.010	0.2	0.002	0.006	0.2	0.02
DUPLICATES									
ORIGINAL		0.101	0.237	0.780	47.2	0.415	12.55	66.1	16.00
DUP		0.101	0.233	0.771	48.1	0.385	13.00	68.5	16.40
Target Range -	Lower Bound	0.095	0.215	0.732	45.2	0.369	12.15	63.8	15.00
	Upper Bound	0.107	0.255	0.819	50.1	0.431	13.40	70.8	17.45
ORIGINAL		0.002	0.072	1.330	10.0	0.029	9.07	498	7.02
DUP		0.002	0.066	1.400	9.7	0.026	9.37	509	6.69
Target Range -	Lower Bound	<0.001	0.062	1.290	9.3	0.024	8.76	478	6.33
	Upper Bound	0.003	0.076	1.440	10.4	0.031	9.68	529	7.38

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
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WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
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QC CERTIFICATE OF ANALYSIS WH13155455

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

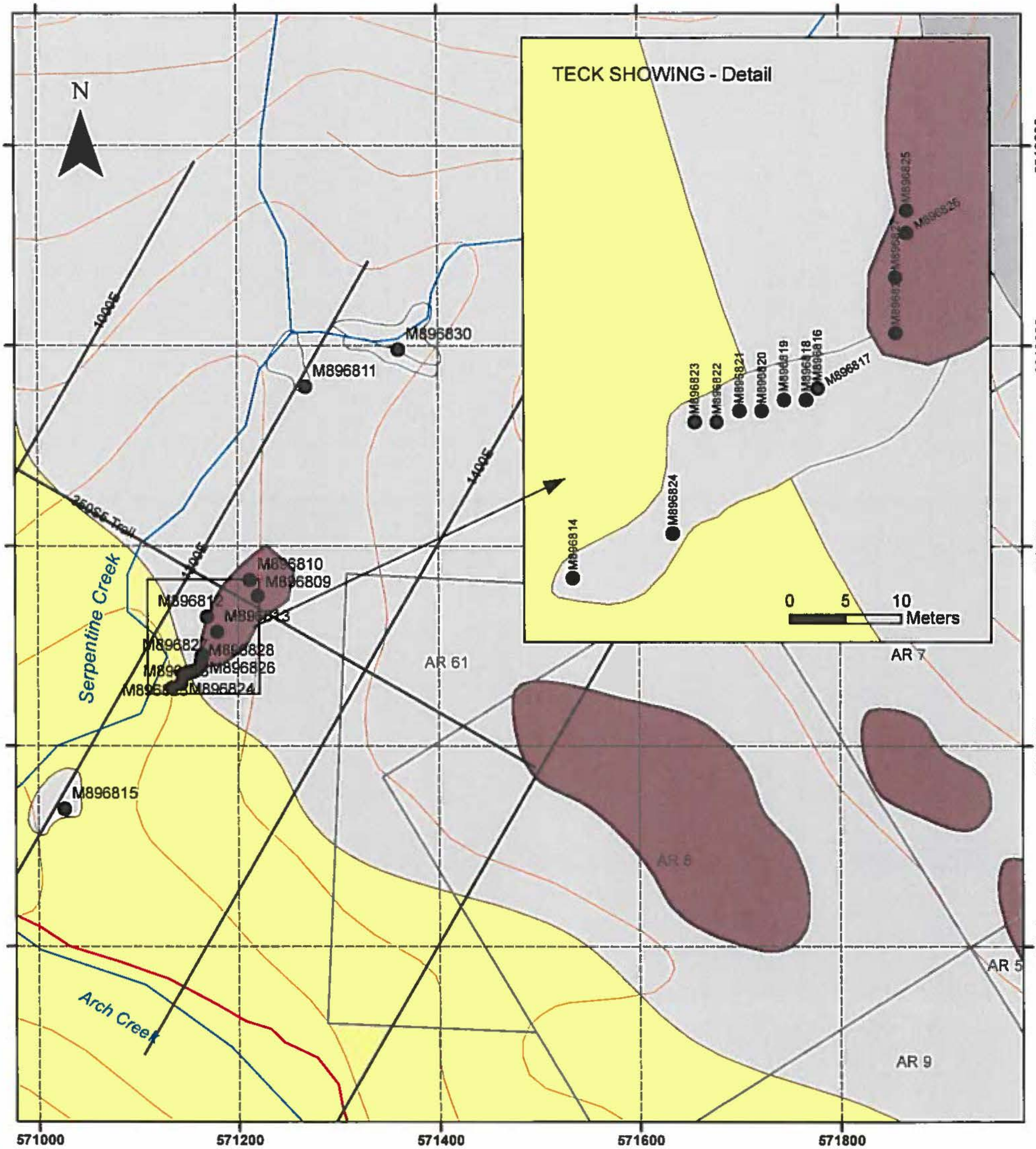
Interference: Samples with Ca> 10% on ICP- MS As. ICP- AES As results reported (2 ppm DL)
Applies to Method: ME- MS41L

Gold determinations by this method are semi- quantitative due to the small sample weight used (0.5g).
Applies to Method: ME- MS41L

LABORATORY ADDRESSES

Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.
Applies to Method: BAG- 01, CRU- 31, CRU- QC, LOG- 22, PUL- 32, PUL- QC, SPL- 21, WEI- 21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.
Applies to Method: ME- MS41L



Arch Grid 2013 Rock Samples Location Map

UTM Z7 NAD83

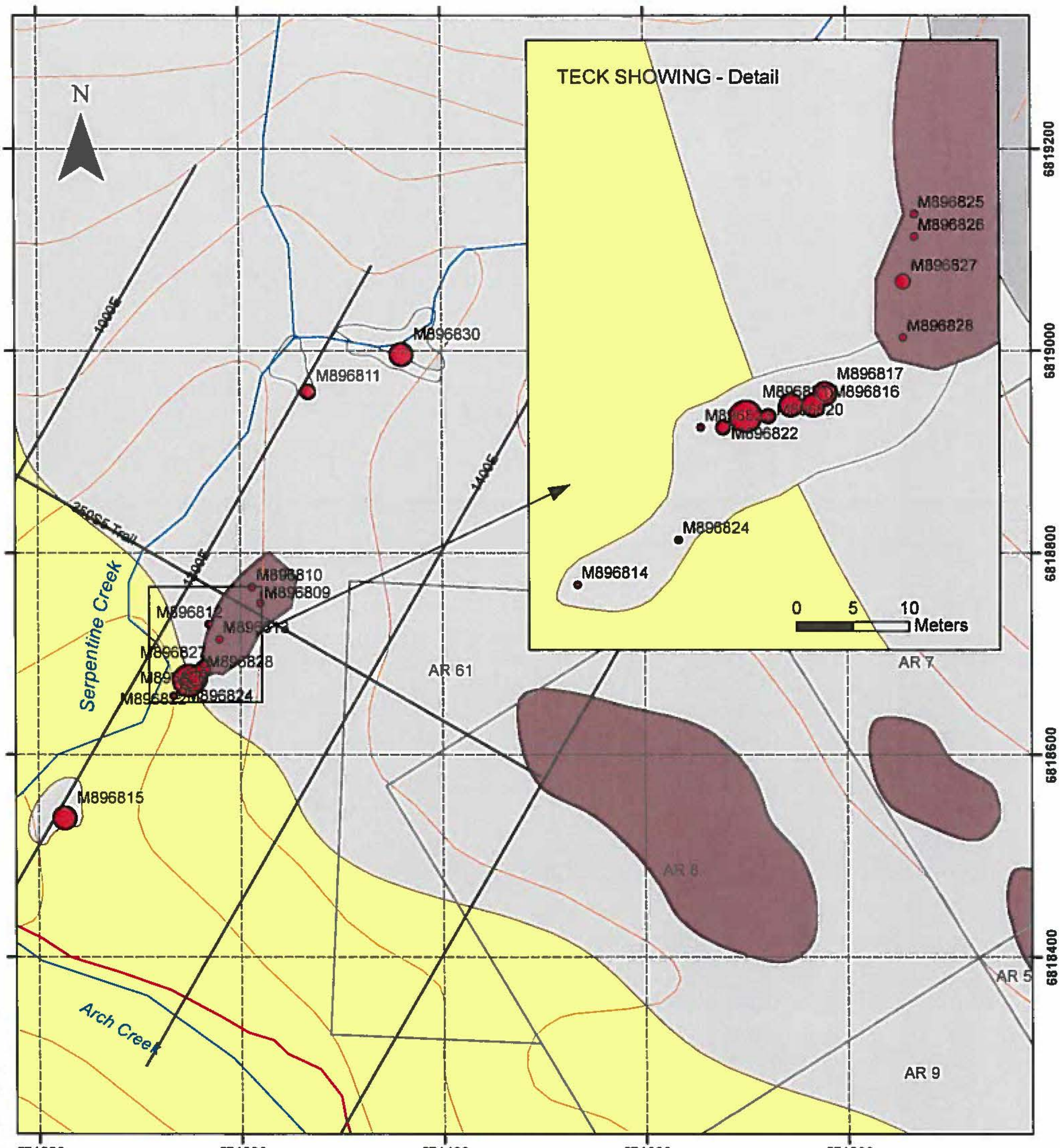
0 100 200 Meters

Legend

- 2013 Rock Samples
- Donjek Arch Claims
- 2013 Arch Grid

Geology

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



Arch Grid
2013 Rock Samples
As (ppm)

UTM Z7 NAD83

0 100 200 Meters

Legend

Asppm

- 0.460000 - 6.470000
- 6.470001 - 33.700000
- 33.700001 - 82.100000
- 82.100001 - 306.000000

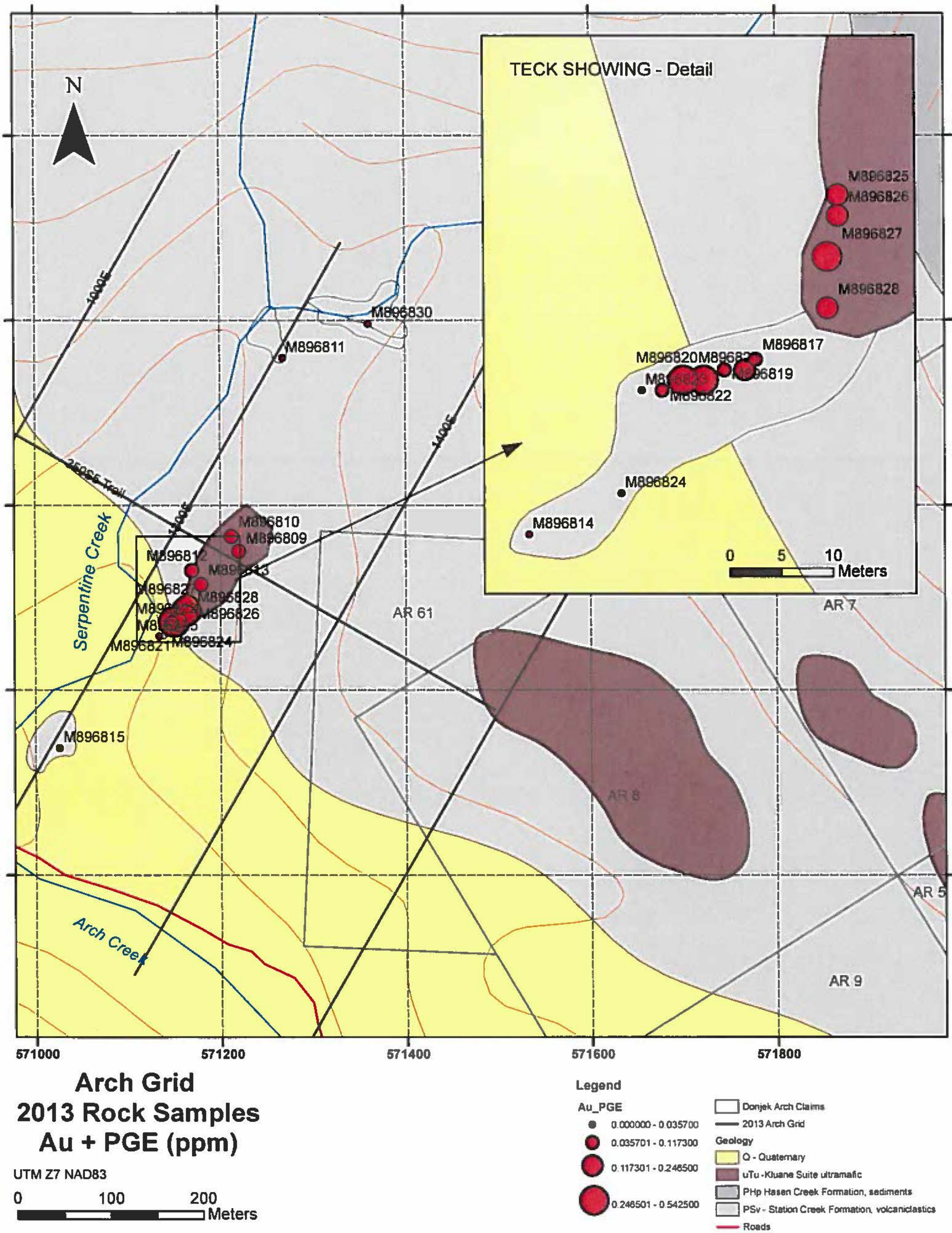
Donjek Arch

2013 Arch

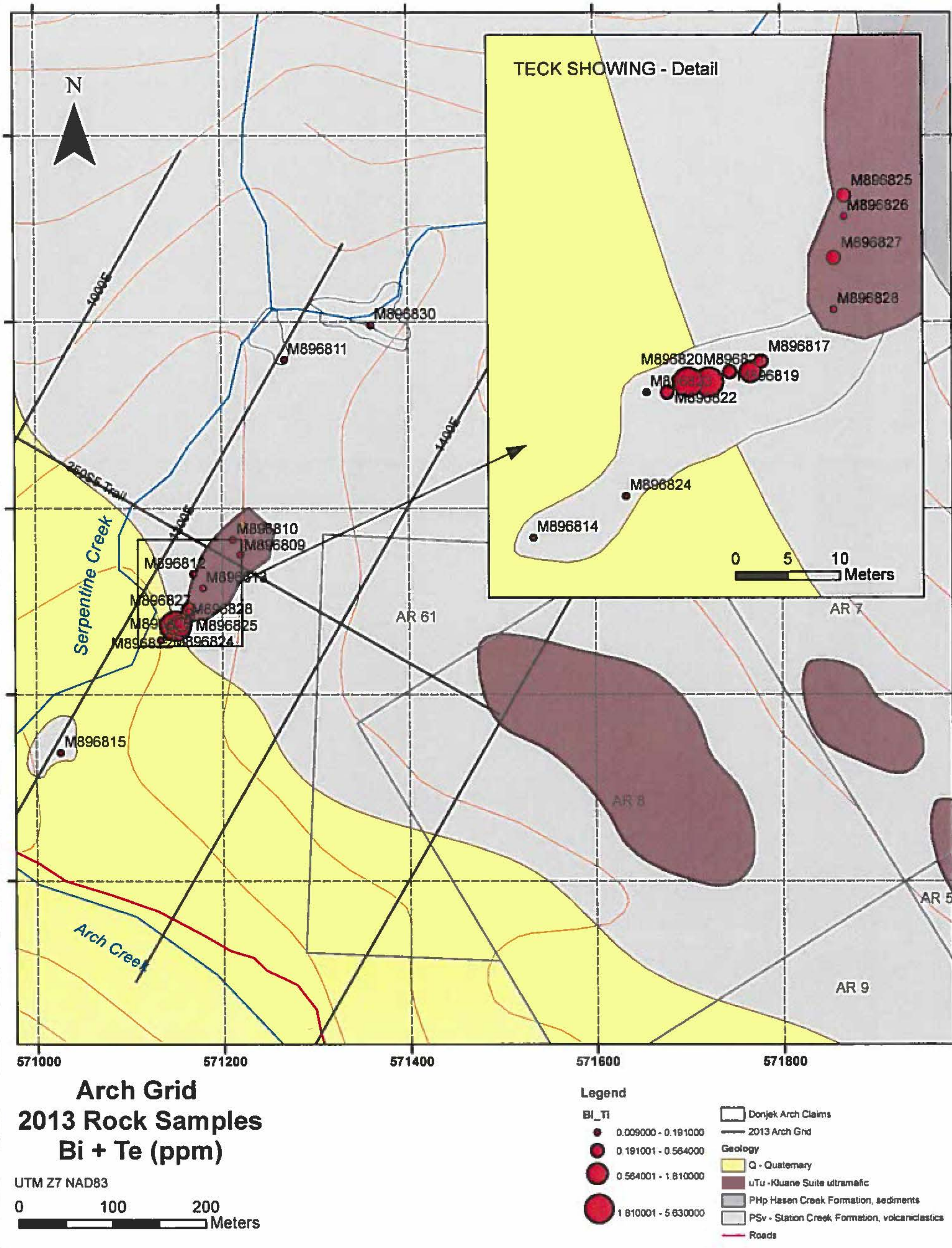
Geology

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

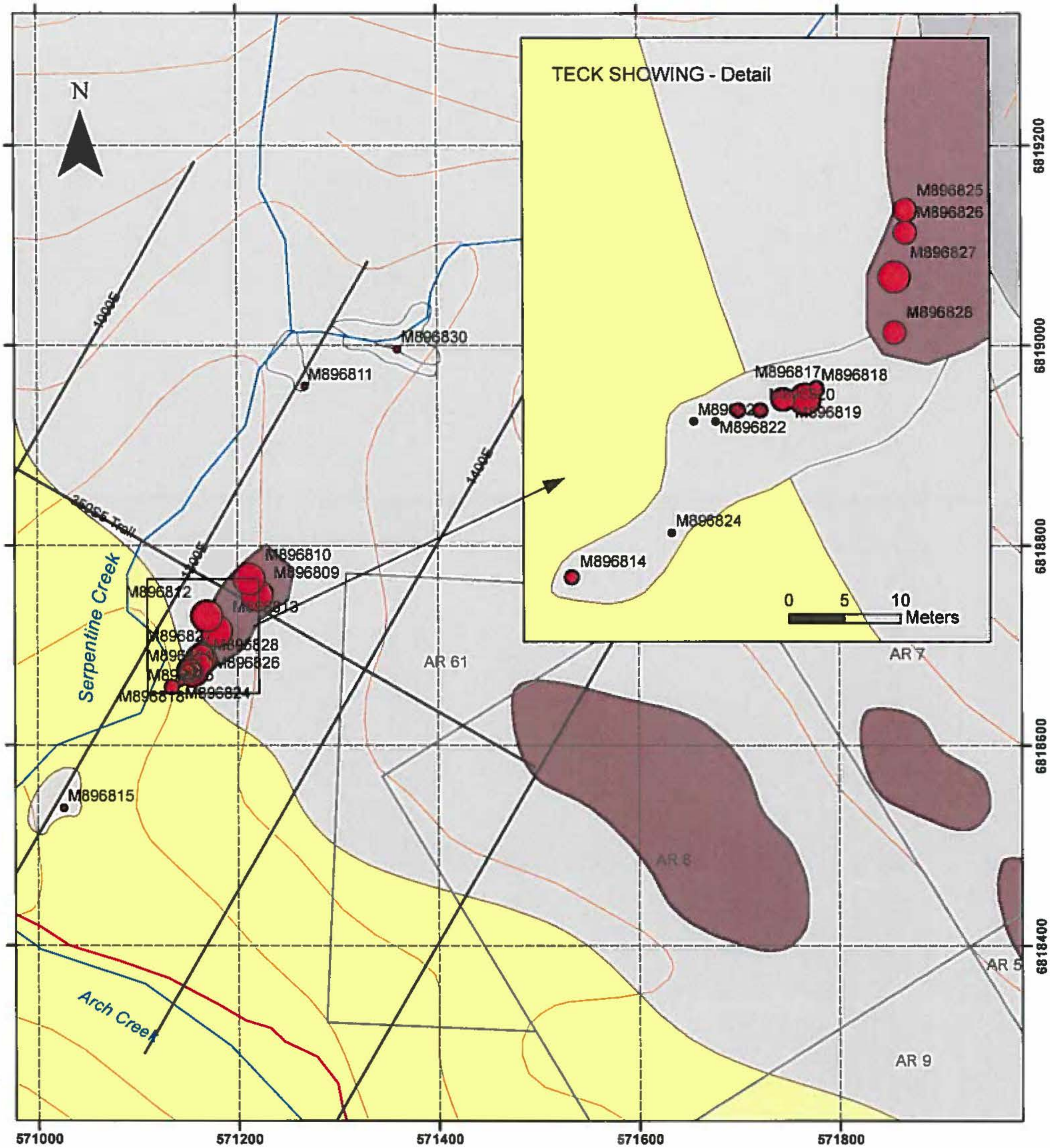
Roads



TECK SHOWING - Detail
N
M896825
M896826
M896827
M896828
M896817
M896819
M896820
M896822
M896824
M896814
0 5 10 Meters
M896830
M896811
M896810
M896809
M896812
M896828
M896826
M896821
M896824
M896815
Serpentine Creek
Arch Creek
AR 61
AR 7
AR 8
AR 5
AR 9
571000
571200
571400
571600
571800
6819200
6819000
6818800
6818600
6818400
Arch Grid
2013 Rock Samples
Au + PGE (ppm)
UTM Z7 NAD83
0 100 200 Meters
Legend
Au_PGE
0.000000 - 0.035700
0.035701 - 0.117300
0.117301 - 0.246500
0.246501 - 0.542500
Donjek Arch Claims
2013 Arch Grid
Geology
Q - Quaternary
uTu - Kluane Suite ultramafic
PHp Hasen Creek Formation, sediments
PSv - Station Creek Formation, volcaniclastics
Roads



Arch Grid
2013 Rock Samples
Bi + Te (ppm)



Arch Grid 2013 Rock Samples Co (ppm)

UTM Z7 NAD83

0 100 200 Meters

Legend

Coppm

- 1.450000 - 28.300000
- 28.300001 - 59.400000
- 59.400001 - 104.000000
- 104.000001 - 154.500000

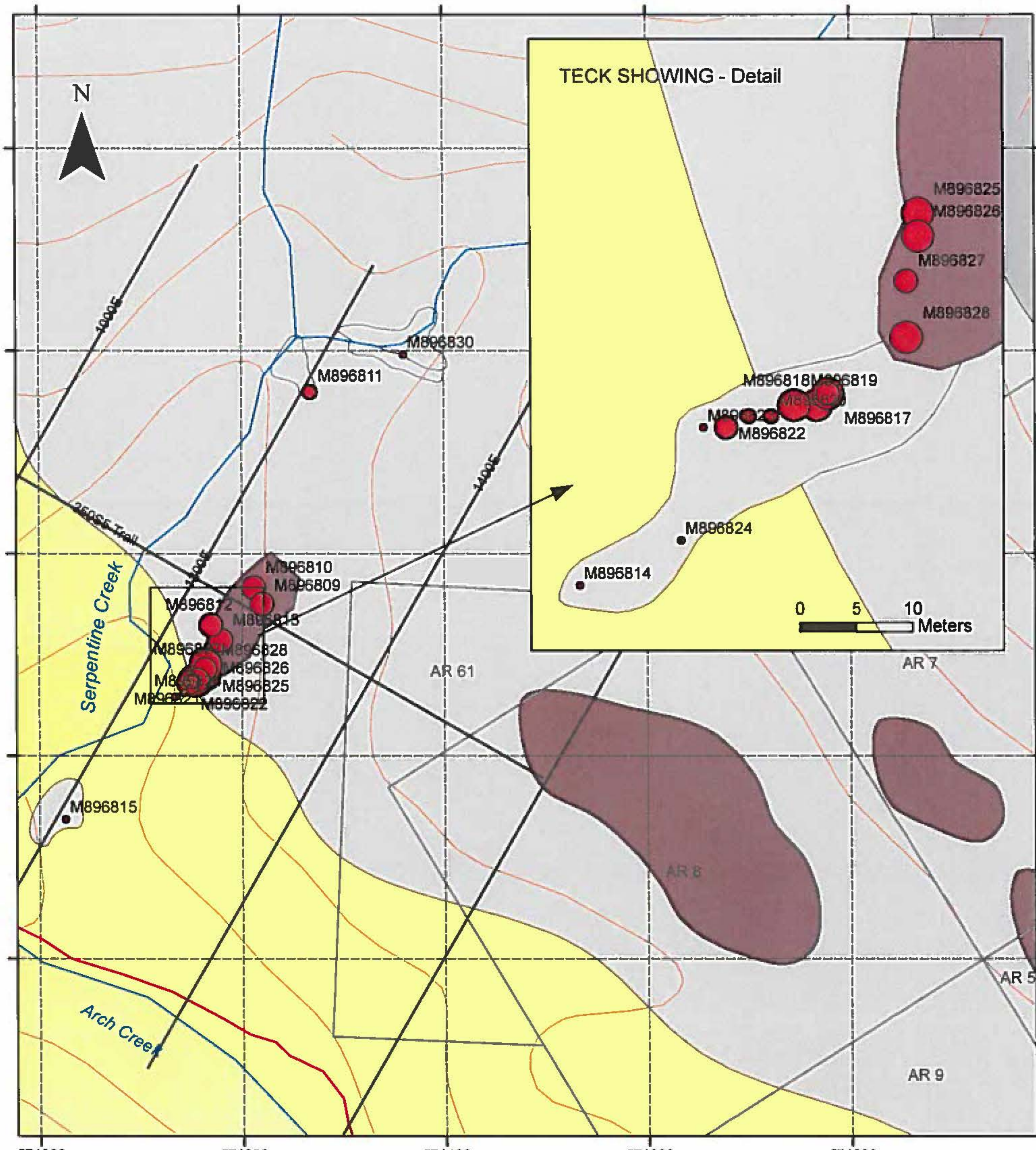
Donjek Arch Claims

2013 Arch Grid

Geology

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

Roads



Arch Grid
2013 Rock Samples
Cr (ppm)

UTM Z7 NAD83

0 100 200 Meters

Legend

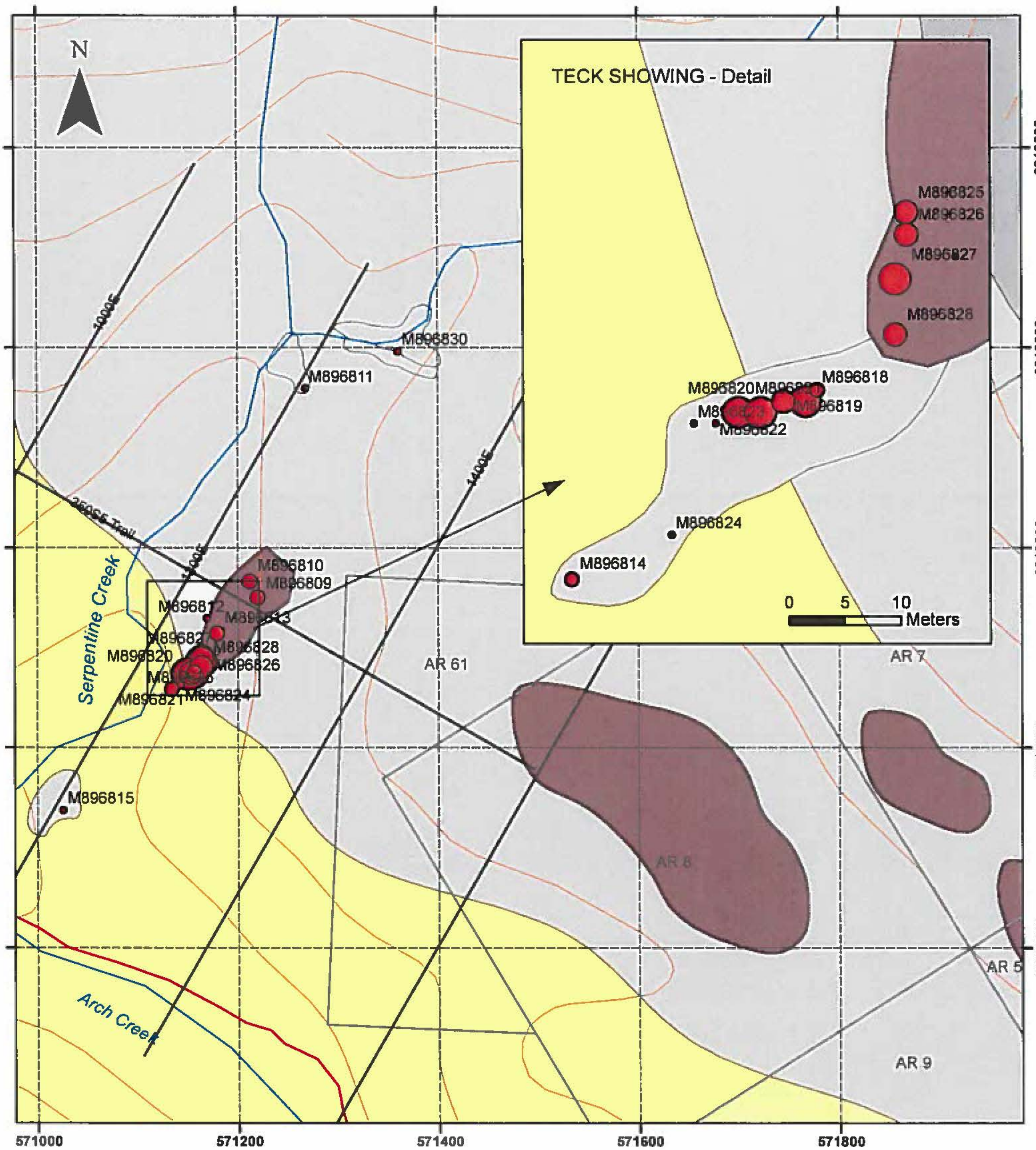
Crppm

- 2.920000 - 58.700000
- 58.700001 - 118.500000
- 118.500001 - 554.000000
- 554.000001 - 1040.000000

- Donjek Arch Claims
- 2013 Arch Grid

Geology

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



Arch Grid 2013 Rock Samples Cu (ppm)

UTM Z7 NAD83

0 100 200 Meters

Legend

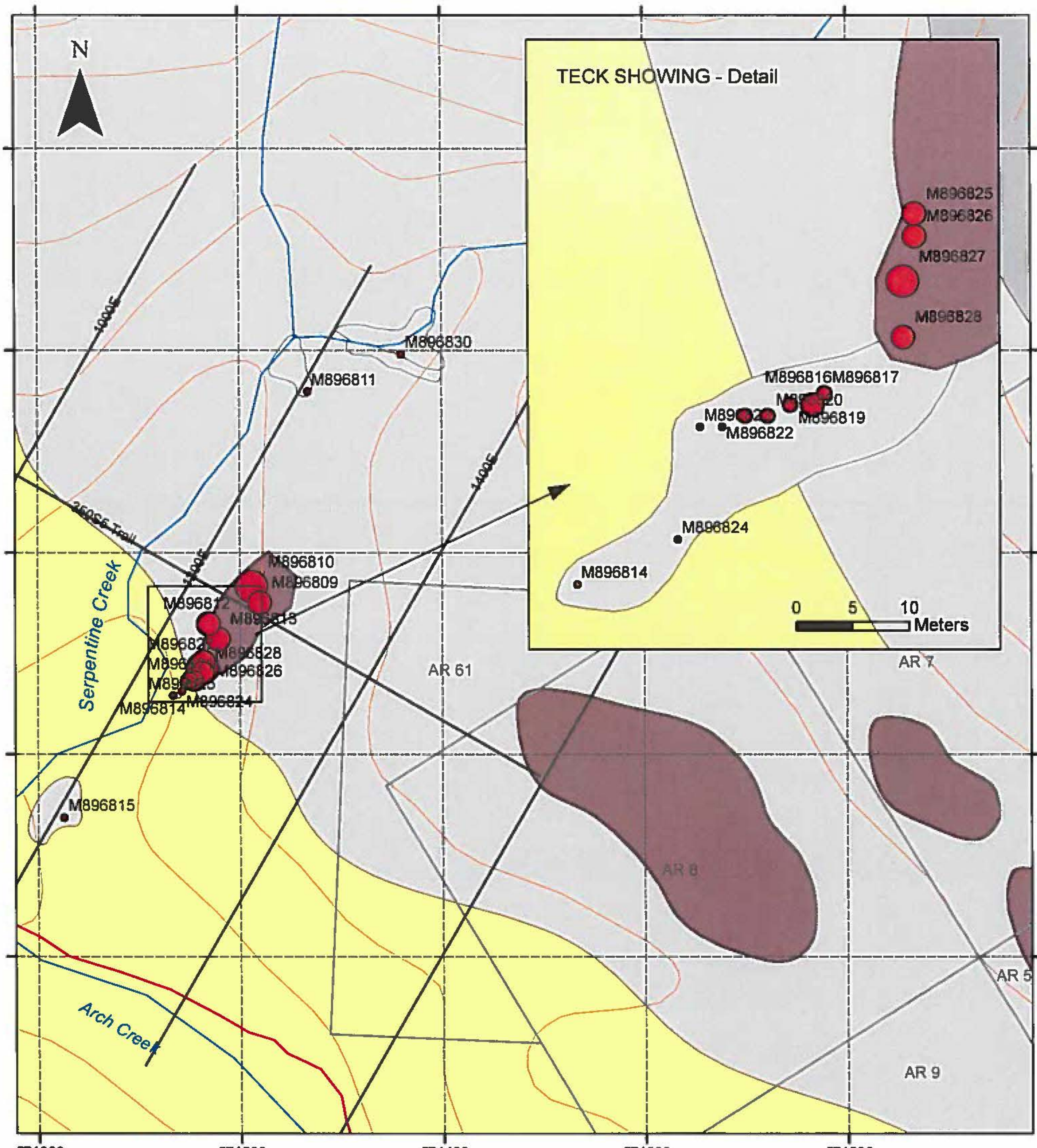
Cuppm

- 1.770000 - 111.000000
- 111.000001 - 381.000000
- 381.000001 - 586.000000
- 586.000001 - 1660.000000

- Donjek Arch Claims
- 2013 Arch Grid

Geology

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



Arch Grid 2013 Rock Samples Ni (ppm)

UTM Z7 NAD83

0 100 200 Meters

Legend

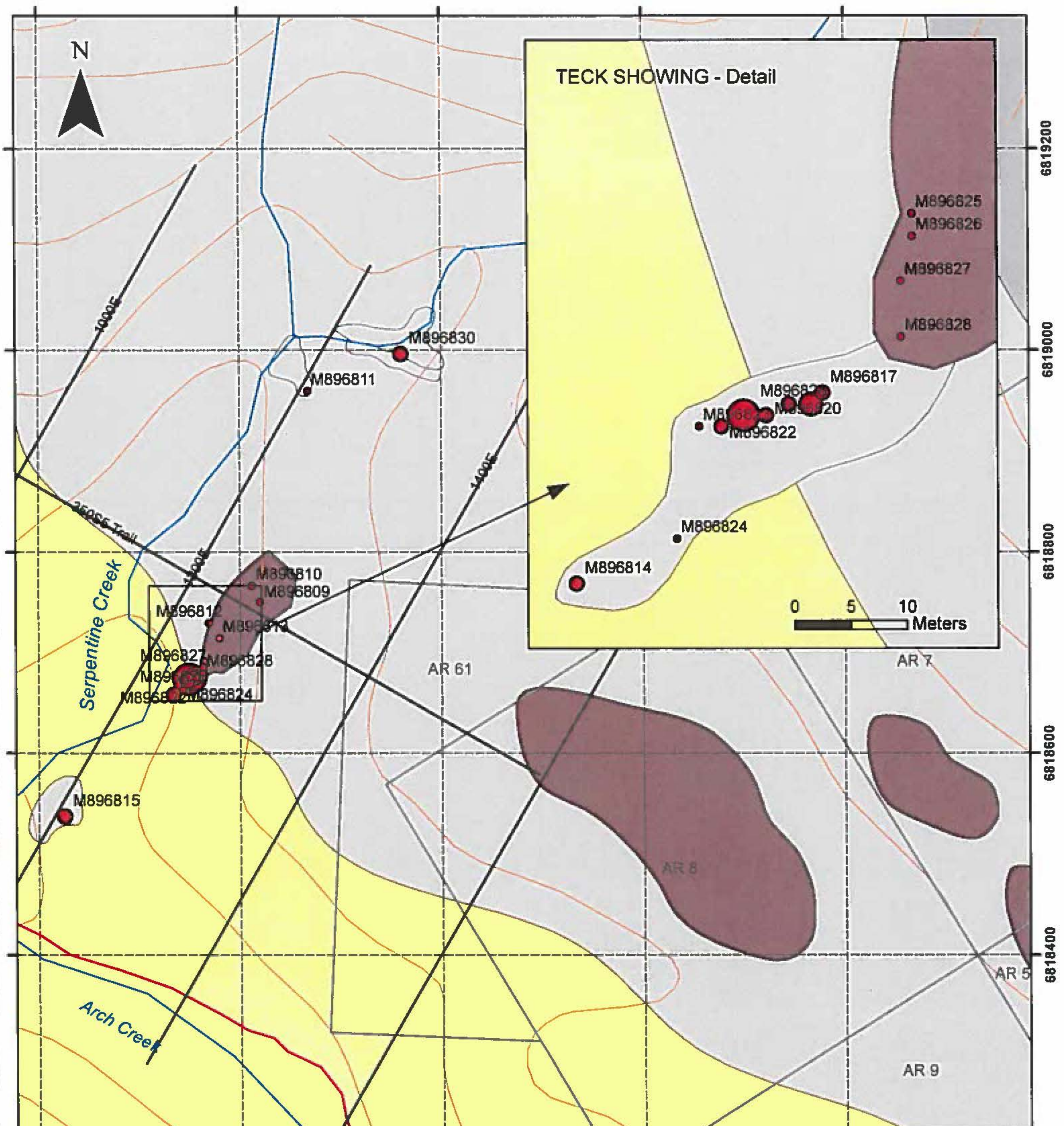
Nippm

- 1.950000 - 286.000000
- 286.000001 - 762.000000
- 762.000001 - 1545.000000
- 1545.000001 - 2130.000000

- Donjek Arch Claims
- 2013 Arch Grid

Geology

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



Arch Grid
2013 Rock Samples
Sb (ppm)

UTM Z7 NAD83

0 100 200 Meters

Legend

Sbppm

- 0.020000 - 0.257000
- 0.257001 - 0.931000
- 0.931001 - 1.585000
- 1.585001 - 5.870000

- Donjek Arch Claims
- 2013 Arch Grid

Geology

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

Appendix 10: Geochemistry – Stream Sediment & Silt Samples

Laboratory methodology

MS Excel stream sample database

Laboratory assay certificates

MS Excel results from laboratory (digital only)

Maps

ALS Minerals

SAMPLE PREPARATION PACKAGE

PREP- 41

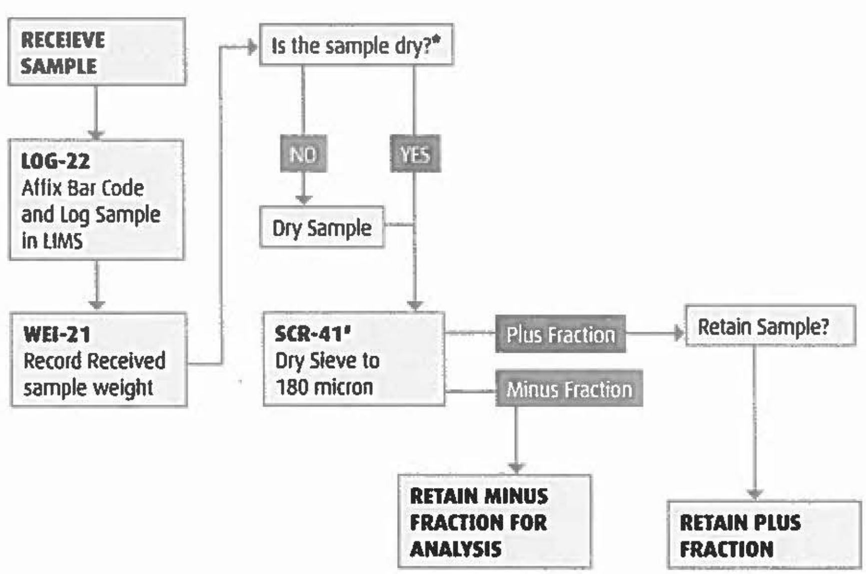
STANDARD PREPARATION: DRY SAMPLE AND DRY- SIEVE TO –180 MICRON

Sample preparation is the most critical step in the entire laboratory operation. The purpose of preparation is to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory.

An entire sample is dried and then dry-sieved using a 180 micron (Tyler 80 mesh) screen. The plus fraction is retained unless disposal is requested. This method is appropriate for soil or sediment samples up to 1 kg in weight.

METHOD CODE	DESCRIPTION
LOG-22	Sample is logged in tracking system and a bar code label is attached.
DRY-22	Low temperature drying of excessively wet samples where the oven temperature is not to exceed 60°C. This method is suitable for more soil and sediment samples that are analyzed for volatile elements.
SCR-41	Sample is dry-sieved to – 180 micron and both the plus and minus fractions are retained.

SAMPLE PREPARATION FLOWCHART PACKAGE –PREP- 41



*If samples air-dry overnight, no charge to client. If samples are excessively wet, the sample should be dried to a maximum of 120°C. (DRY-21)

#The plus fraction is the material remaining on the screen. The minus fraction is the material passing through the screen.

†The plus fraction is retained unless disposal is requested.

ALS Minerals

GEOCHEMICAL PROCEDURE

ME- MS41

ULTRA- TRACE LEVEL METHODS USING ICP- MS AND ICP- AES

SAMPLE DECOMPOSITION

Aqua Regia Digestion (GEO-AR01)

ANALYTICAL METHOD

Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES)
Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

A prepared sample (0.50 g) is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, ment spectral interferences.

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Silver	Ag	ppm	0.01	100
Aluminum	Al	%	0.01	25
Arsenic	As	ppm	0.1	10 000
Gold	Au	ppm	0.2	25
Boron	B	ppm	10	10 000
Barium	Ba	ppm	10	10 000
Beryllium	Be	ppm	0.05	1 000
Bismuth	Bi	ppm	0.01	10 000
Calcium	Ca	%	0.01	25
Cadmium	Cd	ppm	0.01	1 000
Cerium	Ce	ppm	0.02	500
Cobalt	Co	ppm	0.1	10 000
Chromium	Cr	ppm	1	10 000
Cesium	Cs	ppm	0.05	500
Copper	Cu	ppm	0.2	10 000
Iron	Fe	%	0.01	50
Gallium	Ga	ppm	0.05	10 000
Germanium	Ge	ppm	0.05	500
Hafnium	Hf	ppm	0.02	500

ALS Minerals

ME- MS41

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Mercury	Hg	ppm	0.01	10 000
Indium	In	ppm	0.005	500
Potassium	K	%	0.01	10
Lanthanum	La	ppm	0.2	10 000
Lithium	Li	ppm	0.1	10 000
Magnesium	Mg	%	0.01	25
Manganese	Mn	ppm	5	50 000
Molybdenum	Mo	ppm	0.05	10 000
Sodium	Na	%	0.01	10
Niobium	Nb	ppm	0.05	500
Nickel	Ni	ppm	0.2	10 000
Phosphorus	P	ppm	10	10 000
Lead	Pb	ppm	0.2	10 000
Rubidium	Rb	ppm	0.1	10 000
Rhenium	Re	ppm	0.001	50
Sulphur	S	%	0.01	10
Antimony	Sb	ppm	0.05	10 000
Scandium	Sc	ppm	0.1	10 000
Selenium	Se	ppm	0.2	1 000
Tin	Sn	ppm	0.2	500
Strontium	Sr	ppm	0.2	10 000
Tantalum	Ta	ppm	0.01	500
Tellurium	Te	ppm	0.01	500
Thorium	Th	ppm	0.2	10000
Titanium	Ti	%	0.005	10
Thallium	Tl	ppm	0.02	10 000
Uranium	U	ppm	0.05	10 000
Vanadium	V	ppm	1	10 000
Tungsten	W	ppm	0.05	10 000
Yttrium	Y	ppm	0.05	500
Zinc	Zn	ppm	2	10 000
Zirconium	Zr	ppm	0.5	500

NOTE: In the majority of geological matrices, data reported from an aqua regia leach should be considered as representing only the leachable portion of the particular analyte.

SAMPLE #	TYPE	CREEK	map easting	map northing	ELEVATION	date sampled	sampler	ANGULARITY	COLOUR	GRAVEL%	SAND%	SILT%	CLAY%	ORGANICS%	ASPECT	SLOPE ANGLE	STREAM FLOW	VEGETATION	PHOTO	COMMENTS	CERTIFICATE
SSED1	STREAM SED	TECH GULCH	574641	6816077	1352	AUG 13/13	DEB, WINSTON	SA AND A	DARK GREY	70	20	5	2	3	N	MOD	FAST	WILLOW>FIREWEED >DWARF BIRCH>ALPINE	?	ROCKS IN CREEK MOSTLY BASALT, LESSER LIMESTONE AND SEDS. REMAINS OF OLD ROAD BESIDE CREEK	WH13150727
M896801	STREAM SED		573662	6816798	1290	AUG 13/13	DEB, WINSTON	SA	GREY	70	10	7	3	10	N	MOD	DRY	ALDER>>WILLOW	YES	DRY, INTERMITTENT CREEK ON ALLUVIAL FAN	WH13150727
M896802	STREAM SED		573461	6817046	1213	AUG 17/13	DEB, WINSTON, CODY	SA	DARK GREY	50	30	10	5	5	N	GENTLE TO MOD	MOD	WILLOW, DWARF BIRCH, GRASS, A FEW SPRUCE, FIREWEED, BIG OVAL	YES	UPSTREAM FROM PLACER ALONG ARCH CREEK	WH13150727
M896803	STREAM SED	TRIB TO ARCH	573051	6817343	1203	AUG 17/13	DEB, WINSTON, CODY	SA	DARK GREY BROWN	65	20	10	2	3	N	MOD	DRY	WILLOW, ALDER, POPLAR, GRASS, VETCH, SOAPBERRY, SPRUCE ON BANKS	YES	INTERMITTENT	WH13150727
M896804	STREAM SED	TRIB TO ARCH	572725	6817433	1177	AUG 17/13	DEB, WINSTON, CODY	SA	GREY BROWN	65	15	12	3	5	W	GENTLE	MOD TO FAST	WILLOW, MINOR SPRUCE, DWARF BIRCH, FIREWEED, BIG OVAL, POSS WINTERGREEN, GRASS	YES	FLOWS, DRAINS OUT OF GROUND AT BASE OF TILL MOUND	WH13150727
M896805	STREAM SED	TRIB TO ARCH	571841	6817904		AUG 17/13	DEB, WINSTON, CODY	SA	DARK GREY	50	30	8	2	10	W	MOD	FAST	WILLOW, DWARF FIREWEED	YES	MOD SLOPE AT SITE, STEEP ABOVE. CLOSE TO ROAD.	WH13150727
M896806	STREAM SED	TRIB TO ARCH	571552	6818093	1105	AUG 17/13	DEB, WINSTON, CODY	SA	BROWN GREY	75	10	7	5	3	S	MOD TO STEEP	FAST	WILLOW, POPLAR, ASPEN, GRASS	YES	5M FROM ROAD	WH13150727
SILT1	SILT		571374	6818354		AUG 12/13	DEB, WINSTON	SA	BROWN						W	MODERATE TO STEEP		SPRUCE, WILLOW	NO	5M SOUTH OF L1600 600S	WH13150727
M896807	SILT		571345	6818707	1158	AUG 18/13	DEB	SA	GREY						W			W SPRUCE, WILLOW, ALDER, GRASS	NO	25M NORTH OF L1400 350S	WH13150727
M896808	SILT		571143	6818638		AUG 22/13	DEB	SR TO SA	GREY	60	20	10	10	0	N	MOD	DRY	ALDER	NO	INTERMITTENT CREEK JUST SOUTH OF TECK SHOWING, DRAINING BOWL OF TILL	WH13160020

SAMPLE #	Au_ppm	Ag_ppm	Al_ppm	As_ppm	B_ppm	Ba_ppm	Be_ppm	Bi_ppm	Ca_%	Cd_ppm	Ce_ppm	Co_ppm	Cr_ppm
SSED1	0.0044	0.18	2.23	17.75	30	146.5	0.38	0.072	1.75	0.349	15.15	24.3	102
M896801	0.0034	0.173	1.63	31.8	90	146.5	0.46	0.102	1.57	0.371	23.9	19.15	48.8
M896802	0.0018	0.128	1.83	24	50	206	0.31	0.066	1.11	0.414	16.95	23.7	76.1
M896803	0.0022	0.572	1.8	44	30	372	0.44	0.097	2.3	1.01	16.65	23.6	52.4
M896804	0.004	0.53	2.35	22.2	40	307	0.41	0.081	1.5	0.435	18.1	26.1	96.2
M896805	0.0032	0.12	2.08	21.9	20	136.5	0.41	0.07	2.16	0.27	15.25	26.9	116.5
M896806	0.003	0.884	2.16	44.9	30	371	0.41	0.112	3.03	1.405	14.75	29.5	76.9
SILT1	0.0028	0.093	1.98	17.95	10	112	0.35	0.057	1.8	0.221	13.75	24.9	107
M896807	0.003	0.102	1.79	14.15	10	97.1	0.34	0.073	1.45	0.319	17	21.1	88
M896808	0.0006	0.084	1.51	8.37	<10	70.9	0.27	0.053	3.39	0.188	16.2	16	60

SAMPLE #	Cs_ppm	Cu_ppm	Fe_%	Ga_ppm	Ge_ppm	Hf_ppm	Hg_ppm	In_ppm	K_%	La_ppm	Li_ppm	Mg_%	Mn_ppm	Mo_ppm
SSED1	1.44	106	4.46	6.9	0.123	0.115	0.27	0.027	0.07	7.52	19.1	2.17	545	1.21
M896801	2.91	79.2	3.44	5.22	0.069	0.046	0.633	0.038	0.07	12.35	15.8	1	753	1.33
M896802	1.56	67.2	5.64	7.96	0.092	0.069	0.198	0.032	0.05	8.42	14.6	1.22	661	1.69
M896803	1.8	76.9	4.67	5.28	0.1	0.106	0.491	0.039	0.07	8.85	16.6	1.7	540	5.53
M896804	1.42	143.5	4.81	6.62	0.117	0.096	0.266	0.038	0.07	10.45	17.7	2.05	752	2.2
M896805	0.995	93.3	4.9	6.4	0.123	0.242	0.211	0.029	0.06	7.46	17.4	2.21	606	1
M896806	1.8	113	5.1	6.82	0.124	0.16	0.315	0.04	0.06	7.86	13.3	2.05	641	7.33
SILT1	0.789	85.5	4.51	5.96	0.119	0.163	0.233	0.025	0.06	6.77	15	2.1	616	0.95
M896807	0.716	72.1	3.85	5.53	0.08	0.08	0.11	0.026	0.06	8.39	13.4	1.66	605	0.96
M896808	0.457	46.6	2.93	4.94	0.114	0.232	0.024	0.015	0.07	7.53	10.7	1.3	556	0.95

SAMPLE #	Na_%	Nb_ppm	Ni_ppm	P_%	Pb_ppm	Pd_ppm	Pt_ppm	Rb_ppm	Re_ppm	S_%	Sb_ppm	Sc_ppm	Se_ppm
SSED1	0.027	0.715	96.5	0.091	6.62	0.01	0.005	4.38	<0.001	0.06	1.215	9.47	1.5
M896801	0.026	0.645	42.5	0.092	6.93	0.008	<0.002	5.96	<0.001	0.13	1.79	7.75	1.8
M896802	0.029	0.59	49.1	0.095	4.92	0.003	<0.002	4.24	<0.001	0.06	1.015	8.36	1
M896803	0.033	0.247	73.5	0.099	8.36	0.007	0.003	3.37	0.008	0.18	2.07	10.8	4.3
M896804	0.024	0.633	96.7	0.093	9.41	0.016	0.004	4.12	0.001	0.09	1.46	13.95	2.2
M896805	0.027	0.191	149	0.075	5.44	0.018	0.007	3.53	0.002	0.05	1.28	10.2	1.1
M896806	0.033	0.237	93.6	0.113	7.63	0.012	0.006	3.18	0.011	0.16	3.3	13.65	4.9
SIL71	0.03	0.306	130	0.071	4.8	0.024	0.009	3.33	0.001	0.02	1.125	9.09	0.8
M896807	0.03	0.773	92.7	0.073	4.86	0.01	0.005	4.93	0.001	0.04	0.971	6.99	0.9
M896808	0.035	0.145	43.4	0.087	4.15	0.006	0.003	3.61	0.001	0.07	0.537	5.68	1

SAMPLE #	Sn_ppm	Sr_ppm	Ta_ppm	Te_ppm	Th_ppm	Ti_%	Tl_ppm	U_ppm	V_ppm	W_ppm	Y_ppm	Zn_ppm	Zr_ppm
SSED1	0.3	40.9	0.006	0.04	0.973	0.116	0.046	0.411	99.8	0.102	11.1	99.8	4.17
M896801	0.26	43.2	<0.005	0.03	0.65	0.053	0.079	0.593	70.8	0.13	13.3	95.4	1.69
M896802	0.34	27.6	<0.005	0.03	0.742	0.158	0.048	0.38	162.5	0.116	8.42	112	1.88
M896803	0.28	57.5	<0.005	0.04	0.778	0.075	0.127	0.609	100.5	0.079	11.15	164.5	3.84
M896804	0.3	36.1	<0.005	0.04	0.811	0.12	0.085	0.467	111.5	0.116	16.75	114	3.41
M896805	0.31	43.6	<0.005	0.06	1.03	0.127	0.047	0.338	111	0.099	9.96	89.7	8.97
M896806	0.31	56.4	0.006	0.06	0.87	0.11	0.119	0.737	131.5	0.121	14.45	200	7.38
SIL71	0.27	42.4	<0.005	0.03	0.92	0.128	0.041	0.301	106.5	0.097	9.19	79.6	6.06
M896807	0.29	41.8	<0.005	0.02	1.065	0.114	0.056	0.423	89.5	0.147	8.67	76.7	2.88
M896808	0.25	102	0.005	0.03	1.35	0.117	0.047	0.477	70.3	0.067	9.59	53.6	8.08

Stream Sediment Sampling Key	
ANGULARITY WR well rounded R rounded SR subrounded SA subangular A angular	**SLOPE DIRECTION** N, NE, E, SE W, NW, S, SW
	SLOPE ANGLE 1 flat (<5°) 2 gentle (<5°-15°) 3 moderate (<15°-25°) 4 steep (>25°)
COLOR D dark L light GY grey BK black RD red BR brown YE yellow OR orange GR green PK pink TA tan CW cream RBR red brown	**STREAM FLOW** 1 dry 2 stagnent 3 slow 4 moderate 5 fast **VEGETATION** D deciduous C coniferous A absent
SEDIMENT COMP must add to 10 or 100% >2mm gravel >0.16mm sand	

ALS Canada Ltd.
2103 Dollarton Hwy
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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
This copy reported on 13- SEP- 2013
Account: MIDMIN

CERTIFICATE WH13150727

Project: Arch
P.O. No.: SED1
This report is for 9 Sediment samples submitted to our lab in Whitehorse, YT, Canada on 20- AUG- 2013.

The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
SCR- 41	Screen to - 180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME- MS41L	51 anal. aqua regia ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13150727

Sample Description	Method / Analyte / Units / LOR	WEI- 21 Recvd Wt. kg 0.02	ME- MS41L Au ppm 0.0002	ME- MS41L Ag ppm 0.001	ME- MS41L Al % 0.01	ME- MS41L As ppm 0.01	ME- MS41L B ppm 10	ME- MS41L Ba ppm 0.5	ME- MS41L Be ppm 0.01	ME- MS41L Bi ppm 0.001	ME- MS41L Ca % 0.01	ME- MS41L Cd ppm 0.001	ME- MS41L Ce ppm 0.003	ME- MS41L Co ppm 0.001	ME- MS41L Cr ppm 0.01	ME- MS41L Cs ppm 0.005
Silt 1		0.69	0.0028	0.093	1.98	17.95	10	112.0	0.35	0.057	1.80	0.221	13.75	24.9	107.0	0.789
M896807		0.49	0.0030	0.102	1.79	14.15	10	97.1	0.34	0.073	1.45	0.319	17.00	21.1	88.0	0.736
M896801		1.09	0.0034	0.173	1.63	31.8	90	146.5	0.46	0.102	1.57	0.371	23.9	19.15	48.8	2.91
M896802		4.87	0.0018	0.128	1.83	24.0	50	206	0.31	0.066	1.11	0.414	16.95	23.7	76.1	1.560
M896803		7.12	0.0022	0.572	1.80	44.0	30	372	0.44	0.097	2.30	1.010	16.65	23.6	52.4	1.800
M896804		2.99	0.0040	0.530	2.35	22.2	40	307	0.41	0.081	1.50	0.435	18.10	26.1	96.2	1.420
M896805		3.27	0.0032	0.120	2.08	21.9	20	136.5	0.41	0.070	2.16	0.270	15.25	26.9	116.5	0.995
M896806		3.73	0.0030	0.884	2.16	44.9	30	371	0.41	0.112	3.03	1.405	14.75	29.5	76.9	1.800
SSED1		3.04	0.0044	0.180	2.23	17.75	30	146.5	0.38	0.072	1.75	0.349	15.15	24.3	102.0	1.440

***** See Appendix Page for comments regarding this certificate *****

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13150727

Sample Description	Method	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
	Analyte	Cu	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm
	LOR	0.01	0.001	0.004	0.005	0.002	0.004	0.005	0.01	0.002	0.1	0.01	0.1	0.01	0.001	0.002
Silt 1		85.5	4.51	5.96	0.119	0.163	0.233	0.025	0.06	6.77	15.0	2.10	616	0.95	0.030	0.306
M896807		72.1	3.85	5.53	0.080	0.080	0.110	0.026	0.06	8.39	13.4	1.66	605	0.96	0.030	0.771
M896801		79.2	3.44	5.22	0.069	0.046	0.633	0.038	0.07	12.35	15.8	1.00	753	1.33	0.026	0.645
M896802		62.2	5.64	7.96	0.092	0.069	0.198	0.032	0.05	8.42	14.6	1.22	661	1.69	0.029	0.590
M896803		76.9	4.67	5.28	0.100	0.106	0.491	0.039	0.07	8.85	16.6	1.70	540	5.53	0.033	0.247
M896804		143.5	4.81	6.62	0.117	0.096	0.266	0.038	0.07	10.45	17.7	2.05	752	2.20	0.024	0.633
M896805		93.3	4.90	6.40	0.123	0.242	0.211	0.029	0.06	7.46	17.4	2.21	606	1.00	0.027	0.191
M896806		113.0	5.10	6.82	0.124	0.160	0.315	0.040	0.06	7.86	13.3	2.05	641	7.33	0.033	0.237
SSED1		106.0	4.46	6.90	0.123	0.115	0.270	0.027	0.07	7.52	19.1	2.17	545	1.21	0.027	0.715

***** See Appendix Page for comments regarding this certificate *****

ALS
Minerals

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North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13150727

Sample Description	Method Analyte Units LOR	ME- MS41L Ni ppm 0.04	ME- MS41L P % 0.001	ME- MS41L Pb ppm 0.005	ME- MS41L Pd ppm 0.001	ME- MS41L Pt ppm 0.002	ME- MS41L Rb ppm 0.005	ME- MS41L Re ppm 0.001	ME- MS41L S % 0.01	ME- MS41L Sb ppm 0.005	ME- MS41L Sc ppm 0.005	ME- MS41L Se ppm 0.1	ME- MS41L Sn ppm 0.01	ME- MS41L Sr ppm 0.01	ME- MS41L Ta ppm 0.005	ME- MS41L Te ppm 0.01
Silt 1		130.0	0.071	4.80	0.024	0.009	3.33	0.001	0.02	1.125	9.09	0.8	0.27	42.4	<0.005	0.03
M896807		92.7	0.073	4.86	0.010	0.005	4.93	0.001	0.04	0.971	6.99	0.9	0.29	41.8	<0.005	0.02
M896801		42.5	0.092	6.91	0.008	<0.002	5.96	<0.001	0.13	1.790	7.75	1.8	0.26	43.2	<0.005	0.03
M896802		49.1	0.095	4.92	0.003	<0.002	4.24	<0.001	0.06	1.015	8.36	1.0	0.34	27.6	<0.005	0.03
M896803		73.5	0.099	8.36	0.007	0.003	3.37	0.008	0.18	2.07	10.80	4.3	0.28	57.5	<0.005	0.04
M896804		96.7	0.093	9.41	0.016	0.004	4.12	0.001	0.09	1.460	13.95	2.2	0.30	36.1	<0.005	0.04
M896805		149.0	0.075	5.44	0.018	0.007	3.53	0.002	0.05	1.280	10.20	1.1	0.31	43.6	<0.005	0.06
M896806		93.6	0.113	7.63	0.012	0.006	3.18	0.011	0.16	3.30	13.65	4.9	0.31	56.4	0.006	0.06
SSED1		96.5	0.091	6.62	0.010	0.005	4.38	<0.001	0.06	1.215	9.47	1.5	0.30	40.9	0.006	0.04

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13150727

Sample Description	Method / Analyte / Units / LOR	ME-MS41L Th ppm 0.002	ME-MS41L Ti % 0.001	ME-MS41L Tl ppm 0.002	ME-MS41L U ppm 0.005	ME-MS41L V ppm 0.1	ME-MS41L W ppm 0.001	ME-MS41L Y ppm 0.003	ME-MS41L Zn ppm 0.1	ME-MS41L Zr ppm 0.01
Silt 1		0.920	0.128	0.041	0.301	106.5	0.097	9.19	79.6	6.06
M896807		1.065	0.114	0.056	0.423	89.5	0.147	8.67	76.7	2.88
M896801		0.650	0.053	0.079	0.593	70.8	0.130	13.30	95.4	1.69
M896802		0.742	0.158	0.048	0.380	162.5	0.116	8.42	112.0	1.88
M896803		0.778	0.075	0.127	0.609	100.5	0.079	11.15	164.5	3.84
M896804		0.811	0.120	0.085	0.467	111.5	0.116	16.75	114.0	3.41
M896805		1.030	0.127	0.047	0.338	111.0	0.099	9.96	89.7	8.97
M896806		0.870	0.110	0.119	0.737	131.5	0.121	14.45	200	7.38
SSED1		0.923	0.116	0.046	0.411	99.8	0.102	11.10	99.8	4.17

***** See Appendix Page for comments regarding this certificate *****

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WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

CERTIFICATE OF ANALYSIS WH13150727

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Gold determinations by this method are semi- quantitative due to the small sample weight used (0.5g).

Applies to Method: ME- MS41L

LABORATORY ADDRESSES

Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

Applies to Method: LOG- 22 SCR- 41 WEI- 21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method: ME- MS41L

ALS Canada Ltd.
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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12-SEP-2013
This copy reported on
13-SEP-2013
Account: MIDMIN

QC CERTIFICATE WH13160020

Project: Arch
P.O. No.: Rock1
This report is for 1 Soil sample submitted to our lab in Whitehorse, YT, Canada on 26-AUG-2013.
The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SCR-41	Screen to -180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-MS41L	51 anal. aqua regia ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Minerals

ALS Canada Ltd.

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North Vancouver BC V7H 0A7
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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method / Analyte / Units / LOR	ME- MS41L Au ppm 0.0002	ME- MS41L Ag ppm 0.001	ME- MS41L Al % 0.01	ME- MS41L As ppm 0.01	ME- MS41L B ppm 10	ME- MS41L Ba ppm 0.5	ME- MS41L Be ppm 0.01	ME- MS41L Bi ppm 0.001	ME- MS41L Ca % 0.01	ME- MS41L Cd ppm 0.001	ME- MS41L Ce ppm 0.003	ME- MS41L Co ppm 0.001	ME- MS41L Cr ppm 0.01	ME- MS41L Cs ppm 0.005	ME- MS41L Cu ppm 0.01
STANDARDS																
GBM908- 10		0.369	2.89	0.91	50.9	10	102.5	0.29	1.130	0.63	1.695	81.5	13.90	21.6	0.744	3530
Target Range -	Lower Bound	0.401	2.70	0.85	49.5	<10	88.8	0.26	1.130	0.62	1.530	79.3	12.95	21.0	0.715	3380
	Upper Bound	0.491	3.30	1.06	60.5	30	121.5	0.34	1.385	0.79	1.870	97.0	15.85	25.7	0.885	3880
BLANKS																
BLANK		<0.0002	0.001	<0.01	<0.01	<10	<0.5	<0.01	0.001	<0.01	<0.001	0.003	0.002	0.02	<0.005	0.01
Target Range -	Lower Bound	<0.0002	<0.001	<0.01	<0.01	<10	<0.5	<0.01	<0.001	<0.01	<0.001	<0.003	<0.001	<0.01	<0.005	<0.01
	Upper Bound	0.0004	0.002	0.02	0.02	20	1.0	0.02	0.002	0.02	0.002	0.006	0.002	0.02	0.010	0.02
DUPLICATES																
ORIGINAL		0.0006	1.075	0.95	6.19	<10	138.5	0.41	0.256	0.59	3.27	33.3	4.23	11.30	0.565	663
DUP		0.0006	1.105	0.97	5.97	<10	140.0	0.45	0.256	0.60	3.49	35.2	4.13	10.90	0.579	671
Target Range -	Lower Bound	0.0004	1.035	0.90	5.77	<10	128.5	0.40	0.242	0.56	3.21	32.5	3.97	10.55	0.538	644
	Upper Bound	0.0008	1.145	1.02	6.39	20	150.0	0.46	0.270	0.63	3.55	36.0	4.39	11.65	0.606	690

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method / Analyte / Units / LOR	ME-MS41L Fe % 0.001	ME-MS41L Ga ppm 0.004	ME-MS41L Ge ppm 0.005	ME-MS41L Hf ppm 0.002	ME-MS41L Hg ppm 0.004	ME-MS41L In ppm 0.005	ME-MS41L K % 0.01	ME-MS41L La ppm 0.002	ME-MS41L Li ppm 0.1	ME-MS41L Mg % 0.01	ME-MS41L Mn ppm 0.1	ME-MS41L Mo ppm 0.01	ME-MS41L Na % 0.001	ME-MS41L Nb ppm 0.002	ME-MS41L Ni ppm 0.04
STANDARDS																
GBM908- 10		2.58	4.55	0.134	0.555	0.015	0.024	0.40	44.9	6.2	0.52	286	63.5	0.126	0.355	2250
Target Range -	Lower Bound	2.36	4.23	0.113	0.840	0.007	0.012	0.37	43.4	5.6	0.47	264	57.9	0.107	0.347	2030
	Upper Bound	2.88	5.17	0.149	0.787	0.026	0.034	0.46	53.0	7.1	0.59	322	70.8	0.133	0.429	2480
BLANKS																
BLANK		<0.001	0.005	0.008	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01	<0.001	<0.002	<0.04
Target Range -	Lower Bound	<0.001	<0.004	<0.005	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01	<0.001	<0.002	<0.04
	Upper Bound	0.002	0.008	0.010	0.004	0.008	0.010	0.02	0.004	0.2	0.02	0.2	0.02	0.002	0.004	0.08
DUPLICATES																
ORIGINAL		1.880	5.16	0.060	0.198	0.032	0.110	0.18	15.25	18.3	0.36	413	1.74	0.036	0.015	3.14
DUP		1.910	5.05	0.050	0.214	0.037	0.120	0.18	16.25	19.0	0.37	421	1.73	0.040	0.017	3.32
Target Range -	Lower Bound	1.800	4.85	0.047	0.194	0.028	0.104	0.16	14.95	17.6	0.34	396	1.64	0.035	0.013	3.03
	Upper Bound	1.990	5.36	0.063	0.218	0.041	0.126	0.20	16.55	19.7	0.39	438	1.83	0.041	0.019	3.43

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

ALS Canada Ltd

2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method / Analyte / Units / LOR	ME- MS41L P % 0.001	ME- MS41L Pb ppm 0.005	ME- MS41L Pd ppm 0.001	ME- MS41L Pt ppm 0.002	ME- MS41L Rb ppm 0.005	ME- MS41L Re ppm 0.001	ME- MS41L S % 0.01	ME- MS41L Sb ppm 0.005	ME- MS41L Sc ppm 0.005	ME- MS41L Se ppm 0.1	ME- MS41L Sn ppm 0.01	ME- MS41L Sr ppm 0.01	ME- MS41L Ta ppm 0.005	ME- MS41L Te ppm 0.01	ME- MS41L Th ppm 0.002
STANDARDS																
GBM908- 10		0.085	2070	<0.001	0.007	28.8	<0.001	0.39	1.195	1.990	1.0	1.55	32.4	0.006	0.05	16.20
Target Range -	Lower Bound	0.076	1860			27.7	<0.001	0.33	1.100	1.885	0.7	1.52	31.0	<0.005	0.02	14.50
	Upper Bound	0.096	2270			33.9	0.003	0.43	1.500	2.32	1.1	1.88	37.9	0.021	0.07	17.75
BLANKS																
BLANK		<0.001	<0.005	<0.001	<0.002	<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	<0.01	0.02	<0.005	<0.01	<0.002
Target Range -	Lower Bound	<0.001	<0.005			<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	<0.01	<0.01	<0.005	<0.01	<0.002
	Upper Bound	0.002	0.010			0.010	0.002	0.02	0.010	0.010	0.2	0.02	0.02	0.010	0.02	0.004
DUPLICATES																
ORIGINAL		0.047	38.3	<0.001	<0.002	10.35	<0.001	0.03	0.477	1.725	0.3	0.37	13.95	0.005	<0.01	6.02
DUP		0.049	40.0	<0.001	<0.002	10.30	<0.001	0.03	0.537	1.600	0.3	0.47	14.00	0.005	<0.01	6.41
Target Range -	Lower Bound	0.045	37.2	<0.001	<0.002	9.80	<0.001	0.02	0.484	1.575	0.2	0.39	13.25	<0.005	<0.01	5.90
	Upper Bound	0.051	41.1	0.002	0.004	10.85	0.002	0.04	0.550	1.750	0.4	0.45	14.70	0.010	0.02	6.53

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method / Analyte / Units / LOR	ME-MS41L Ti % 0.001	ME-MS41L Tl ppm 0.002	ME-MS41L U ppm 0.005	ME-MS41L V ppm 0.1	ME-MS41L W ppm 0.001	ME-MS41L Y ppm 0.003	ME-MS41L Zn ppm 0.1	ME-MS41L Zr ppm 0.01
STANDARDS									
GBM908-10		0.296	0.200	1.215	45.3	1.740	18.85	1005	25.5
Target Range -	Lower Bound	0.280	0.178	1.190	42.2	1.620	17.60	941	24.5
	Upper Bound	0.344	0.245	1.470	51.8	2.20	21.5	1150	33.1
BLANKS									
BLANK		<0.001	<0.002	<0.005	<0.1	0.001	<0.003	0.1	<0.01
Target Range -	Lower Bound	<0.001	<0.002	<0.005	<0.1	<0.001	<0.003	<0.1	<0.01
	Upper Bound	0.002	0.004	0.010	0.2	0.002	0.006	0.2	0.02
DUPLICATES									
ORIGINAL		0.002	0.072	1.330	10.0	0.029	9.07	498	7.02
DUP		0.002	0.066	1.400	9.7	0.026	9.37	509	6.69
Target Range -	Lower Bound	<0.001	0.062	1.290	9.3	0.024	8.76	478	6.33
	Upper Bound	0.003	0.076	1.440	10.4	0.031	9.68	529	7.38

***** See Appendix Page for comments regarding this certificate *****

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QC CERTIFICATE OF ANALYSIS WH13160020

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Gold determinations by this method are semi- quantitative due to the small sample weight used (0.5g).

Applies to Method: ME- MS41L

LABORATORY ADDRESSES

Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

Applies to Method: LOG- 22 SCR- 41 WEI- 21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method: ME- MS41L

ALS Canada Ltd.
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To: MIDNIGHT MINING SERVICES
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WHITEHORSE YT Y1A 4L1

Finalized Date: 10-SEP-2013
This copy reported on
13-SEP-2013
Account: MIDMIN

QC CERTIFICATE WH13150727

Project: Arch
P.O. No.: SED1
This report is for 9 Sediment samples submitted to our lab in Whitehorse, YT, Canada on 20-AUG-2013.
The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SCR-41	Screen to -180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-MS41L	51 anal. aqua regia ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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ALS Minerals

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WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13150727

Sample Description	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
Method Analyte	Au	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu
Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
LOR	0.0002	0.001	0.01	0.01	10	0.5	0.01	0.001	0.01	0.001	0.003	0.001	0.01	0.005	0.01
STANDARDS															
GBM908- 10	0.422	3.06	0.96	58.5	<10	106.0	0.31	1.180	0.72	1.615	88.4	15.30	23.6	0.850	3750
Target Range - Lower Bound	0.401	2.70	0.85	49.5	<10	88.8	0.26	1.130	0.62	1.530	79.3	12.95	21.0	0.715	3380
Upper Bound	0.491	3.30	1.06	60.5	30	121.5	0.34	1.385	0.79	1.870	97.0	15.85	25.7	0.885	3880
OREAS 90	0.0003	0.042	2.38	4.75	<10	51.4	0.61	1.010	0.39	0.005	58.6	15.95	42.1	0.920	112.0
Target Range - Lower Bound	<0.0002	0.053	2.09	4.04	<10	42.0	0.54	0.827	0.33	0.003	54.5	13.75	36.4	0.904	102.5
Upper Bound	0.0010	0.067	2.57	4.96	20	58.0	0.68	1.015	0.43	0.007	66.7	16.85	44.5	1.115	117.5
OREAS- 45b	0.0264	0.201	3.94	3.22	<10	150.0	0.70	0.174	0.31	0.092	38.0	77.4	647	1.300	446
Target Range - Lower Bound	0.0277	0.179	3.73	2.69	<10	130.0	0.66	0.161	0.28	0.089	36.2	66.4	600	1.265	418
Upper Bound	0.0343	0.221	4.58	3.31	20	177.0	0.82	0.199	0.36	0.111	44.2	81.2	734	1.555	480
STSD- 3	0.0022	0.426	1.56	23.9	<10	640	1.16	1.220	1.26	1.045	36.5	13.35	30.6	2.69	36.0
Target Range - Lower Bound	0.0026	0.359	1.44	19.80	<10	589	0.98	1.215	1.12	0.899	35.4	12.60	30.6	2.49	35.3
Upper Bound	0.0037	0.441	1.78	24.2	30	798	1.23	1.485	1.39	1.100	43.2	15.40	37.4	3.05	40.7
BLANKS															
BLANK	<0.0002	<0.001	<0.01	0.01	<10	<0.5	<0.01	0.001	<0.01	0.001	<0.003	<0.001	0.01	<0.005	0.08
BLANK	<0.0002	<0.001	<0.01	<0.01	<10	<0.5	<0.01	0.001	<0.01	<0.001	<0.003	0.002	0.01	<0.005	0.10
Target Range - Lower Bound	<0.0002	<0.001	<0.01	<0.01	<10	<0.5	<0.01	<0.001	<0.01	<0.001	<0.003	<0.001	<0.01	<0.005	<0.01
Upper Bound	0.0004	0.002	0.02	0.02	20	1.0	0.02	0.002	0.02	0.002	0.006	0.002	0.02	0.010	0.02
DUPLICATES															
ORIGINAL	0.0020	0.126	1.26	0.27	<10	52.3	0.08	0.052	1.93	9.89	5.31	9.33	8.91	0.090	100.5
DUP	0.0018	0.128	1.30	0.30	<10	55.4	0.11	0.063	1.96	10.15	5.39	9.07	8.87	0.084	100.0
Target Range - Lower Bound	0.0016	0.120	1.21	0.26	<10	49.3	0.08	0.054	1.84	9.52	5.08	8.74	8.44	0.078	96.7
Upper Bound	0.0022	0.134	1.35	0.31	20	58.4	0.11	0.061	2.05	10.50	5.62	9.66	9.34	0.096	104.0
ORIGINAL	0.0005	0.031	1.43	2.49	<10	102.5	0.34	0.126	5.43	0.007	29.7	7.72	22.3	0.883	12.90
DUP	0.0007	0.031	1.45	2.14	<10	105.0	0.35	0.121	5.57	0.024	29.2	7.43	21.3	0.895	12.80
Target Range - Lower Bound	0.0004	0.028	1.38	2.19	<10	95.5	0.32	0.116	5.22	0.014	28.0	7.20	20.7	0.840	12.40
Upper Bound	0.0008	0.034	1.52	2.44	20	112.0	0.37	0.131	5.79	0.017	30.9	7.95	22.9	0.938	13.30

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13150727

Sample Description	Method / Analyte / Units / LOR	ME- MS41L Fe % 0.001	ME- MS41L Ga ppm 0.004	ME- MS41L Ge ppm 0.005	ME- MS41L Hf ppm 0.002	ME- MS41L Hg ppm 0.004	ME- MS41L In ppm 0.005	ME- MS41L K % 0.01	ME- MS41L La ppm 0.002	ME- MS41L Li ppm 0.1	ME- MS41L Mg % 0.01	ME- MS41L Mn ppm 0.1	ME- MS41L Mo ppm 0.01	ME- MS41L Na % 0.001	ME- MS41L Nb ppm 0.002	ME- MS41L Ni ppm 0.04
STANDARDS																
GBM908- 10		2.70	4.97	0.119	0.777	0.022	0.021	0.44	47.4	6.7	0.56	298	63.3	0.138	0.405	2270
Target Range -	Lower Bound	2.36	4.23	0.113	0.640	0.007	0.012	0.37	43.4	5.6	0.47	264	57.9	0.107	0.347	2030
	Upper Bound	2.88	5.17	0.149	0.787	0.026	0.034	0.48	53.0	7.1	0.59	322	70.8	0.133	0.429	2480
OREAS 90		3.97	6.71	0.089	0.715	<0.004	0.026	0.35	29.5	18.6	1.47	608	0.41	0.016	0.324	90.5
Target Range -	Lower Bound	3.40	5.82	0.071	0.628	<0.004	0.016	0.31	28.1	17.8	1.21	520	0.35	0.012	0.347	76.7
	Upper Bound	4.16	7.13	0.099	0.772	0.008	0.038	0.40	34.3	22.0	1.50	636	0.45	0.018	0.429	93.8
OREAS- 45b		14.80	21.3	0.116	0.692	0.043	0.088	0.07	18.20	7.4	0.12	772	1.38	0.017	1.110	211
Target Range -	Lower Bound	13.35	19.55	0.112	0.655	0.028	0.085	0.05	17.45	7.3	0.09	732	1.10	0.014	0.925	177.5
	Upper Bound	16.35	23.9	0.148	0.805	0.052	0.115	0.09	21.3	9.1	0.15	894	1.36	0.020	1.135	217
STSD- 3		3.18	5.26	0.077	0.022	0.098	0.048	0.12	22.2	18.6	0.74	2390	6.15	0.036	1.160	25.9
Target Range -	Lower Bound	3.06	4.96	0.070	0.016	0.073	0.038	0.09	21.3	18.2	0.66	2370	6.29	0.035	1.125	22.5
	Upper Bound	3.74	6.07	0.099	0.026	0.108	0.063	0.15	26.0	22.4	0.83	2890	7.71	0.045	1.380	27.5
BLANKS																
BLANK		<0.001	0.004	0.014	<0.002	<0.004	<0.005	<0.01	<0.002	0.1	<0.01	0.1	<0.01	<0.001	<0.002	<0.04
BLANK		<0.001	0.007	0.012	<0.002	<0.004	0.007	<0.01	<0.002	0.2	<0.01	<0.1	<0.01	0.002	<0.002	<0.04
Target Range -	Lower Bound	<0.001	<0.004	<0.005	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01	<0.001	<0.002	<0.04
	Upper Bound	0.002	0.008	0.010	0.004	0.008	0.010	0.02	0.004	0.2	0.02	0.2	0.02	0.002	0.004	0.08
DUPLICATES																
ORIGINAL		1.900	3.46	0.023	0.035	0.045	0.131	0.09	2.32	7.9	0.82	4110	1.49	0.031	0.069	6.41
DUP		1.930	3.34	0.013	0.036	0.036	0.139	0.10	2.44	7.6	0.82	4180	1.65	0.034	0.073	6.56
Target Range -	Lower Bound	1.820	3.23	0.012	0.032	0.033	0.123	0.08	2.26	7.3	0.77	3940	1.48	0.030	0.065	6.12
	Upper Bound	2.01	3.57	0.024	0.039	0.048	0.147	0.11	2.50	8.2	0.87	4350	1.66	0.035	0.077	6.85
ORIGINAL		2.10	4.15	0.040	0.025	0.005	0.012	0.30	14.25	16.7	1.10	356	0.68	0.063	0.266	18.65
DUP		2.12	3.86	0.038	0.027	<0.004	0.010	0.31	14.05	17.0	1.11	365	0.52	0.064	0.260	17.95
Target Range -	Lower Bound	2.00	3.80	0.032	0.023	<0.004	<0.005	0.28	13.45	15.9	1.04	342	0.56	0.059	0.248	17.35
	Upper Bound	2.22	4.21	0.046	0.029	0.008	0.017	0.33	14.85	17.8	1.17	379	0.64	0.068	0.278	19.25

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13150727

Sample Description	Method / Analyte / Units / LOR	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
	Analyte	P	Pb	Pd	Pt	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th
	Units	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.001	0.005	0.001	0.002	0.005	0.001	0.01	0.005	0.005	0.1	0.01	0.01	0.005	0.01	0.002
STANDARDS																
GBM908- 10		0.086	2130	0.004	0.008	30.1	<0.001	0.41	1.415	2.22	1.1	1.82	34.4	0.008	0.05	16.55
Target Range -	Lower Bound	0.076	1880			27.7	<0.001	0.33	1.100	1.885	0.7	1.52	31.0	<0.005	0.02	14.50
	Upper Bound	0.096	2270			33.9	0.003	0.43	1.500	2.32	1.1	1.88	37.9	0.021	0.07	17.75
OREAS 90		0.067	5.11	0.002	0.002	19.55	<0.001	0.08	0.416	2.24	1.1	1.21	10.95	0.018	0.05	15.25
Target Range -	Lower Bound	0.057	4.95			19.00	<0.001	0.05	0.378	2.15	0.6	1.15	10.70	0.009	<0.01	14.50
	Upper Bound	0.072	6.06			23.2	0.002	0.09	0.523	2.63	1.1	1.43	13.10	0.031	0.05	17.70
OREAS- 45b		0.045	20.2	0.031	0.050	8.66	<0.001	0.04	0.349	46.0	0.8	2.00	16.10	<0.005	0.02	6.67
Target Range -	Lower Bound	0.040	18.90			8.64	<0.001	<0.01	0.259	41.6	0.8	1.69	15.55	<0.005	0.02	6.62
	Upper Bound	0.052	23.1			10.60	0.002	0.06	0.362	50.8	1.3	2.33	19.05	0.010	0.06	8.10
STSD- 3		0.143	38.2	0.002	<0.002	14.70	0.001	0.18	2.75	2.88	2.4	1.52	65.4	<0.005	0.06	0.864
Target Range -	Lower Bound	0.134	35.1	<0.001	<0.002	14.45	<0.001	0.14	2.04	2.80	2.1	1.32	59.0	<0.005	0.05	0.798
	Upper Bound	0.166	42.9	0.004	0.004	17.70	0.004	0.20	2.77	3.44	2.8	1.64	72.1	0.021	0.10	0.980
BLANKS																
BLANK		<0.001	<0.005	<0.001	<0.002	0.008	<0.001	0.01	<0.005	<0.005	<0.1	0.01	0.01	<0.005	<0.01	<0.002
BLANK		<0.001	<0.005	<0.001	<0.002	<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	0.01	<0.01	0.005	0.01	<0.002
Target Range -	Lower Bound	<0.001	<0.005			<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	<0.01	<0.01	<0.005	<0.01	<0.002
	Upper Bound	0.002	0.010			0.010	0.002	0.02	0.010	0.010	0.2	0.02	0.02	0.010	0.02	0.004
DUPLICATES																
ORIGINAL		0.030	0.684	0.003	<0.002	1.445	0.001	0.42	0.106	0.902	0.3	0.16	32.1	<0.005	0.05	1.090
DUP		0.030	0.766	0.002	<0.002	1.415	<0.001	0.42	0.134	0.854	0.4	0.15	33.9	<0.005	0.05	1.175
Target Range -	Lower Bound	0.028	0.684	<0.001	<0.002	1.355	<0.001	0.39	0.106	0.829	0.2	0.14	31.3	<0.005	0.04	1.075
	Upper Bound	0.033	0.766	0.004	0.004	1.505	0.002	0.45	0.134	0.927	0.5	0.17	34.7	0.010	0.06	1.190
ORIGINAL		0.052	6.91	0.003	<0.002	19.65	<0.001	0.06	0.081	2.65	0.5	0.35	138.0	0.007	0.01	6.30
DUP		0.054	6.80	0.001	<0.002	19.15	<0.001	0.07	0.068	2.56	0.5	0.34	137.0	0.009	0.03	6.18
Target Range -	Lower Bound	0.049	6.51	<0.001	<0.002	18.45	<0.001	0.05	0.064	2.47	0.4	0.32	130.5	<0.005	<0.01	5.93
	Upper Bound	0.057	7.20	0.003	0.004	20.4	0.002	0.08	0.085	2.74	0.6	0.37	144.5	0.010	0.03	6.55

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13150727

Sample Description	Method	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
	Analyte	Ti	Tl	U	V	W	Y	Zn	Zr
	Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.001	0.002	0.005	0.1	0.001	0.003	0.1	0.01
STANDARDS									
GBM908- 10		0.319	0.224	1.315	49.1	2.11	20.2	1020	28.3
Target Range -	Lower Bound	0.260	0.178	1.190	42.2	1.820	17.60	941	24.5
	Upper Bound	0.344	0.245	1.470	51.8	2.20	21.5	1150	33.1
OREAS 90		0.080	0.113	1.960	21.7	0.411	16.50	60.1	24.4
Target Range -	Lower Bound	0.076	0.092	1.860	19.7	0.356	15.45	52.6	21.1
	Upper Bound	0.094	0.129	2.28	24.3	0.484	18.90	64.5	28.8
OREAS- 45b		0.214	0.107	1.160	217	0.027	8.00	168.5	27.0
Target Range -	Lower Bound	0.206	0.092	1.120	199.0	0.016	7.77	155.5	24.7
	Upper Bound	0.254	0.129	1.380	243	0.024	9.51	190.5	33.5
STSD- 3		0.041	0.235	7.65	49.7	1.190	18.65	187.0	0.63
Target Range -	Lower Bound	0.039	0.219	7.37	49.7	1.145	17.80	172.5	0.55
	Upper Bound	0.049	0.301	9.01	61.0	1.555	21.7	211	0.77
BLANKS									
BLANK		<0.001	0.002	<0.005	0.1	0.001	<0.003	0.1	<0.01
BLANK		<0.001	<0.002	<0.005	0.1	0.001	<0.003	0.1	<0.01
Target Range -	Lower Bound	<0.001	<0.002	<0.005	<0.1	<0.001	<0.003	<0.1	<0.01
	Upper Bound	0.002	0.004	0.010	0.2	0.002	0.006	0.2	0.02
DUPLICATES									
ORIGINAL		0.053	0.008	0.505	13.8	0.124	2.69	5030	0.38
DUP		0.057	0.009	0.511	14.3	0.140	2.82	5050	0.37
Target Range -	Lower Bound	0.051	0.006	0.478	13.2	0.121	2.61	4790	0.34
	Upper Bound	0.059	0.011	0.538	14.9	0.143	2.90	5290	0.41
ORIGINAL		0.044	0.126	0.792	14.3	0.437	6.70	28.8	0.99
DUP		0.046	0.129	0.759	14.0	0.616	6.51	28.0	0.90
Target Range -	Lower Bound	0.042	0.116	0.732	13.3	0.486	6.27	26.9	0.86
	Upper Bound	0.048	0.139	0.819	15.0	0.567	6.94	29.9	1.03

***** See Appendix Page for comments regarding this certificate *****

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 10- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13150727

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Gold determinations by this method are semi- quantitative due to the small sample weight used (0.5g).

Applies to Method: ME- MS41L

LABORATORY ADDRESSES

Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

Applies to Method: LOG- 22 SCR- 41 WEI- 21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method: ME- MS41L

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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
This copy reported on
13- SEP- 2013
Account: MIDMIN

QC CERTIFICATE WH13160020

Project: Arch
P.O. No.: Rock1
This report is for 1 Soil sample submitted to our lab in Whitehorse, YT, Canada on 26- AUG- 2013.
The following have access to data associated with this certificate:

SUSAN CRAIG	DEBBIE JAMES	DERRICK STRICKLAND

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
SCR- 41	Screen to - 180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME- MS41L	51 anal. aqua regia ICPMS

To: MIDNIGHT MINING SERVICES
ATTN: DEBBIE JAMES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Minerals

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WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
	Analyte	Au	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu
	Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.0002	0.001	0.01	0.01	10	0.5	0.01	0.001	0.01	0.001	0.003	0.001	0.01	0.005	0.01
STANDARDS																
GBM908- 10		0.369	2.89	0.91	50.9	10	102.5	0.29	1.130	0.63	1.695	81.5	13.90	21.6	0.744	3530
Target Range -	Lower Bound	0.401	2.70	0.85	40.5	<10	88.8	0.26	1.130	0.62	1.530	79.3	12.95	21.0	0.715	3380
	Upper Bound	0.491	3.30	1.06	60.5	30	121.5	0.34	1.385	0.79	1.870	97.0	15.85	25.7	0.885	3880
BLANKS																
BLANK		<0.0002	0.001	<0.01	<0.01	<10	<0.5	<0.01	0.001	<0.01	<0.001	0.003	0.002	0.02	<0.005	0.01
Target Range -	Lower Bound	<0.0002	<0.001	<0.01	<0.01	<10	<0.5	<0.01	<0.001	<0.01	<0.001	<0.003	<0.001	<0.01	<0.005	<0.01
	Upper Bound	0.0004	0.002	0.02	0.02	20	1.0	0.02	0.002	0.02	0.002	0.006	0.002	0.02	0.010	0.02
DUPLICATES																
ORIGINAL		0.0006	1.075	0.95	6.19	<10	138.5	0.41	0.256	0.59	3.27	33.3	4.23	11.30	0.565	663
DUP		0.0006	1.105	0.97	5.97	<10	140.0	0.45	0.256	0.60	3.49	35.2	4.13	10.90	0.579	671
Target Range -	Lower Bound	0.0004	1.035	0.90	5.77	<10	128.5	0.40	0.242	0.56	3.21	32.5	3.97	10.55	0.538	644
	Upper Bound	0.0008	1.145	1.02	6.39	20	150.0	0.46	0.270	0.63	3.55	36.0	4.39	11.65	0.606	690

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals
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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
	Analyte	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni
	Units	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm
	LOR	0.001	0.004	0.005	0.002	0.004	0.005	0.01	0.002	0.1	0.01	0.1	0.01	0.001	0.002	0.04
STANDARDS																
GBM908- 10		2.58	4.55	0.134	0.555	0.015	0.024	0.40	44.9	6.2	0.52	286	63.5	0.126	0.355	2250
Target Range -	Lower Bound	2.38	4.23	0.113	0.840	0.007	0.012	0.37	43.4	5.8	0.47	264	57.9	0.107	0.347	2030
	Upper Bound	2.88	5.17	0.149	0.787	0.026	0.034	0.48	53.0	7.1	0.59	322	70.8	0.133	0.429	2480
BLANKS																
BLANK		<0.001	0.005	0.008	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01	<0.001	<0.002	<0.04
Target Range -	Lower Bound	<0.001	<0.004	<0.005	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01	<0.001	<0.002	<0.04
	Upper Bound	0.002	0.008	0.010	0.004	0.008	0.010	0.02	0.004	0.2	0.02	0.2	0.02	0.002	0.004	0.08
DUPLICATES																
ORIGINAL		1.880	5.16	0.060	0.198	0.032	0.110	0.18	15.25	18.3	0.36	413	1.74	0.036	0.015	3.14
DUP		1.910	5.05	0.050	0.214	0.037	0.120	0.18	16.25	19.0	0.37	421	1.73	0.040	0.017	3.32
Target Range -	Lower Bound	1.800	4.85	0.047	0.194	0.028	0.104	0.16	14.95	17.6	0.34	396	1.64	0.035	0.013	3.03
	Upper Bound	1.990	5.36	0.063	0.218	0.041	0.126	0.20	16.55	19.7	0.39	438	1.83	0.041	0.019	3.43

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
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ALS Minerals

To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method / Analyte / Units / LOR	ME- MS41L P % 0.001	ME- MS41L Pb ppm 0.005	ME- MS41L Pd ppm 0.001	ME- MS41L Pt ppm 0.002	ME- MS41L Rb ppm 0.005	ME- MS41L Re ppm 0.001	ME- MS41L S % 0.01	ME- MS41L Sb ppm 0.005	ME- MS41L Sc ppm 0.005	ME- MS41L Se ppm 0.1	ME- MS41L Sn ppm 0.01	ME- MS41L Sr ppm 0.01	ME- MS41L Ta ppm 0.005	ME- MS41L Te ppm 0.01	ME- MS41L Th ppm 0.002
STANDARDS																
GBM908- 10		0.085	2070	<0.001	0.007	28.8	<0.001	0.39	1.195	1.990	1.0	1.55	32.4	0.006	0.05	16.20
Target Range -	Lower Bound	0.076	1860			27.7	<0.001	0.33	1.100	1.885	0.7	1.52	31.0	<0.005	0.02	14.50
	Upper Bound	0.096	2270			33.9	0.003	0.43	1.500	2.32	1.1	1.88	37.9	0.021	0.07	17.75
BLANKS																
BLANK		<0.001	<0.005	<0.001	<0.002	<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	<0.01	0.02	<0.005	<0.01	<0.002
Target Range -	Lower Bound	<0.001	<0.005			<0.005	<0.001	<0.01	<0.005	<0.005	<0.1	<0.01	<0.01	<0.005	<0.01	<0.002
	Upper Bound	0.002	0.010			0.010	0.002	0.02	0.010	0.010	0.2	0.02	0.02	0.010	0.02	0.004
DUPLICATES																
ORIGINAL		0.047	38.3	<0.001	<0.002	10.35	<0.001	0.03	0.477	1.725	0.3	0.37	13.95	0.005	<0.01	6.02
DUP		0.049	40.0	<0.001	<0.002	10.30	<0.001	0.03	0.537	1.600	0.3	0.47	14.00	0.005	<0.01	6.41
Target Range -	Lower Bound	0.045	37.2	<0.001	<0.002	9.80	<0.001	0.02	0.464	1.575	0.2	0.39	13.25	<0.005	<0.01	5.90
	Upper Bound	0.051	41.1	0.002	0.004	10.85	0.002	0.04	0.550	1.750	0.4	0.45	14.70	0.010	0.02	6.53

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals
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To: MIDNIGHT MINING SERVICES
27A MACDONALD RD
WHITEHORSE YT Y1A 4L1

Finalized Date: 12- SEP- 2013
Account: MIDMIN

Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

Sample Description	Method	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L	ME- MS41L
	Analyte	Ti	Tl	U	V	W	Y	Zn	Zr
	Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.001	0.002	0.005	0.1	0.001	0.003	0.1	0.01
STANDARDS									
GBM908- 10		0.296	0.200	1.215	45.3	1.740	18.85	1005	25.5
Target Range - Lower Bound		0.260	0.178	1.190	42.2	1.620	17.60	941	24.5
Upper Bound		0.344	0.245	1.470	51.8	2.20	21.5	1150	33.1
BLANKS									
BLANK		<0.001	<0.002	<0.005	<0.1	0.001	<0.003	0.1	<0.01
Target Range - Lower Bound		<0.001	<0.002	<0.005	<0.1	<0.001	<0.003	<0.1	<0.01
Upper Bound		0.002	0.004	0.010	0.2	0.002	0.006	0.2	0.02
DUPLICATES									
ORIGINAL		0.002	0.072	1.330	10.0	0.029	9.07	498	7.02
DUP		0.002	0.066	1.400	9.7	0.026	9.37	509	6.69
Target Range - Lower Bound		<0.001	0.062	1.290	9.3	0.024	8.76	478	6.33
Upper Bound		0.003	0.076	1.440	10.4	0.031	9.68	529	7.38

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 12- SEP- 2013
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Project: Arch

QC CERTIFICATE OF ANALYSIS WH13160020

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Gold determinations by this method are semi- quantitative due to the small sample weight used (0.5g).

Applies to Method: ME- MS41L

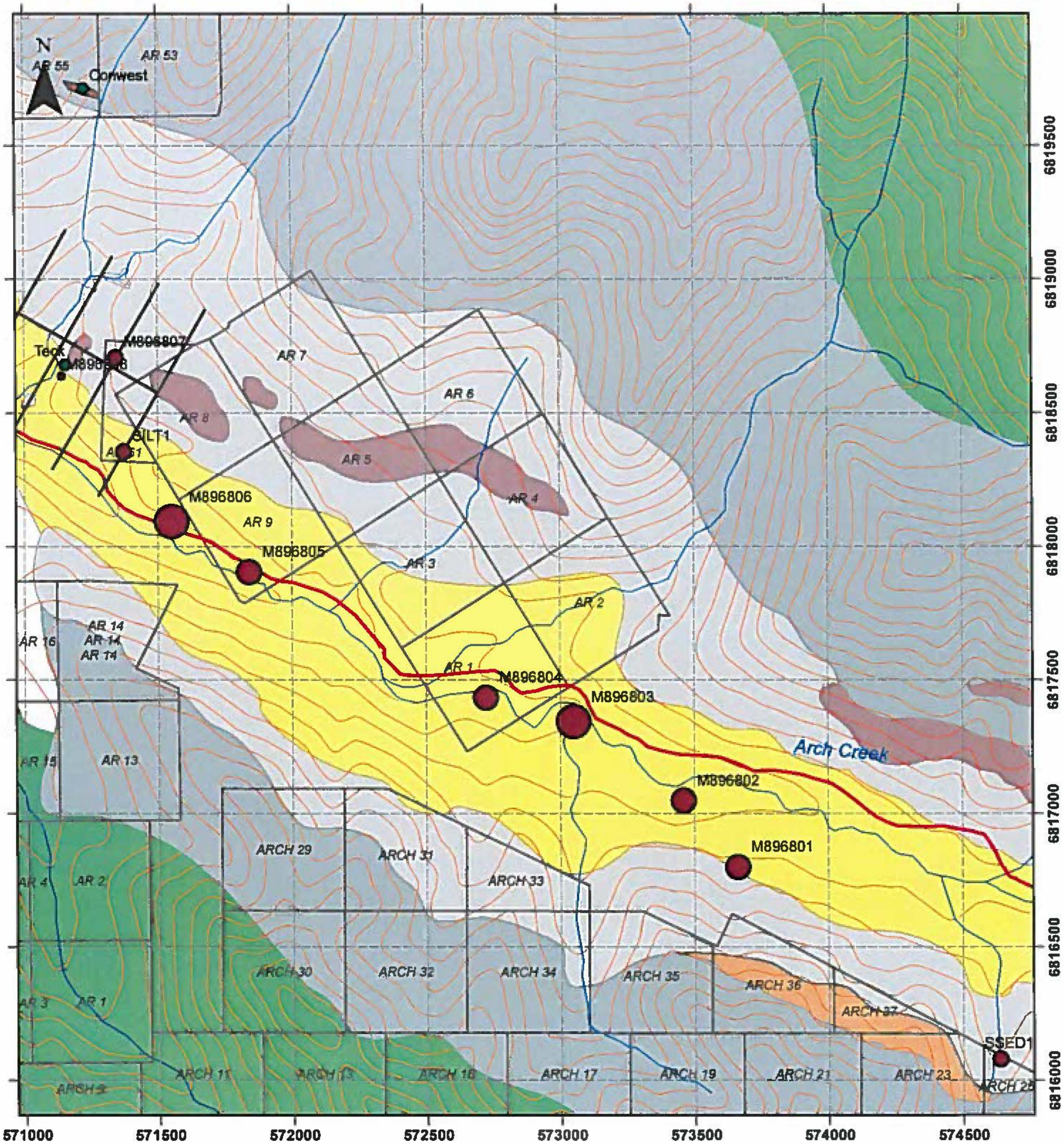
LABORATORY ADDRESSES

Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

Applies to Method: LOG- 22 SCR- 41 WEI- 21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method: ME- MS41L



Stream Sediment & Silt Samples As (ppm)

Legend

As_ppm

- 8.370000
- 8.370001 - 17.950000
- 17.950001 - 31.800000
- 31.800001 - 44.900000

Arch Grid

Roads

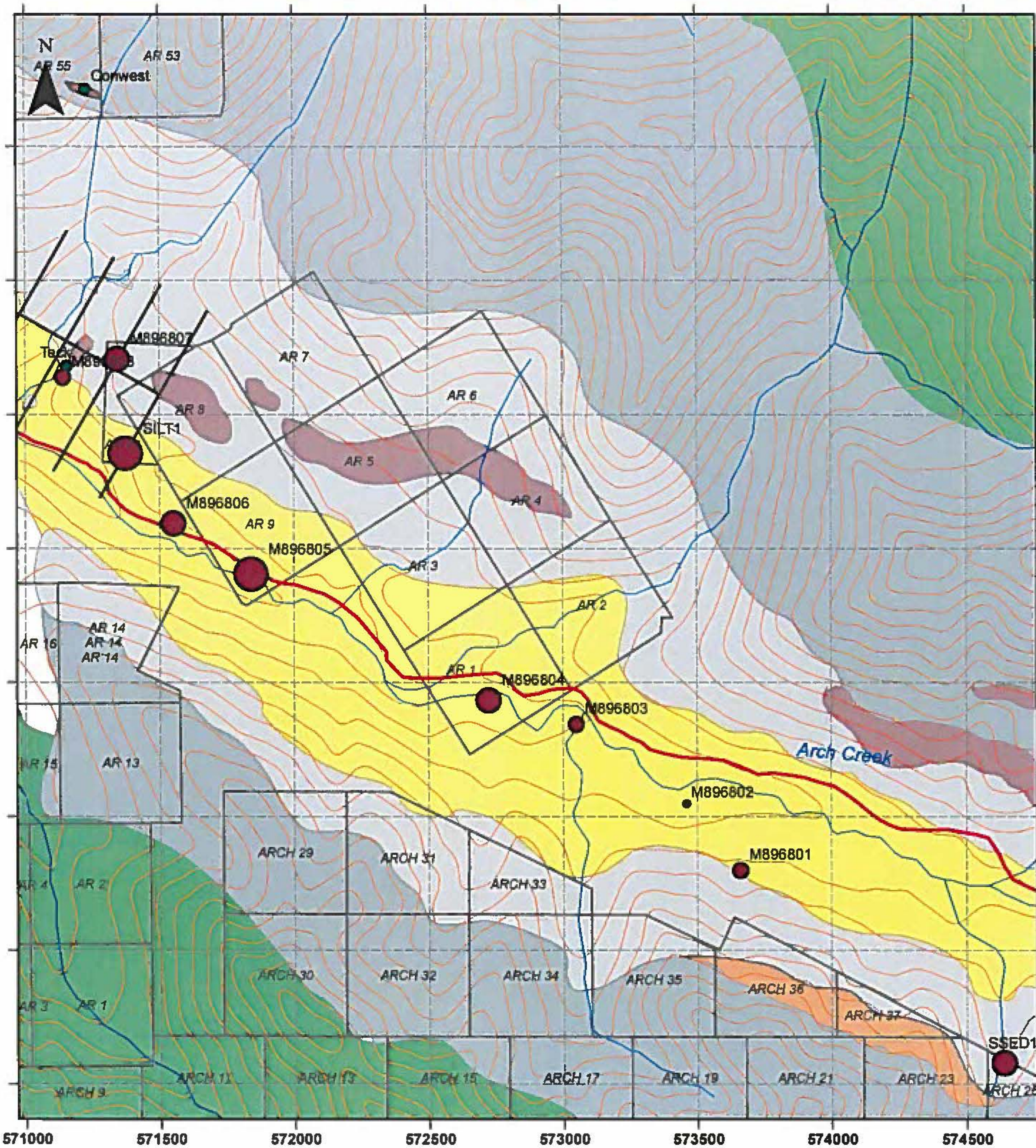
Donjek Arch Claims

Geology

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

UTM Z7 NAD83

0 250 500 1,000 Meters



Stream Sediment & Silt Samples Au + PGE (ppm)

Legend

PGE_Au

- 0.005800
- 0.005801 - 0.012400
- 0.012401 - 0.024000
- 0.024001 - 0.035800

Arch Grid

Roads

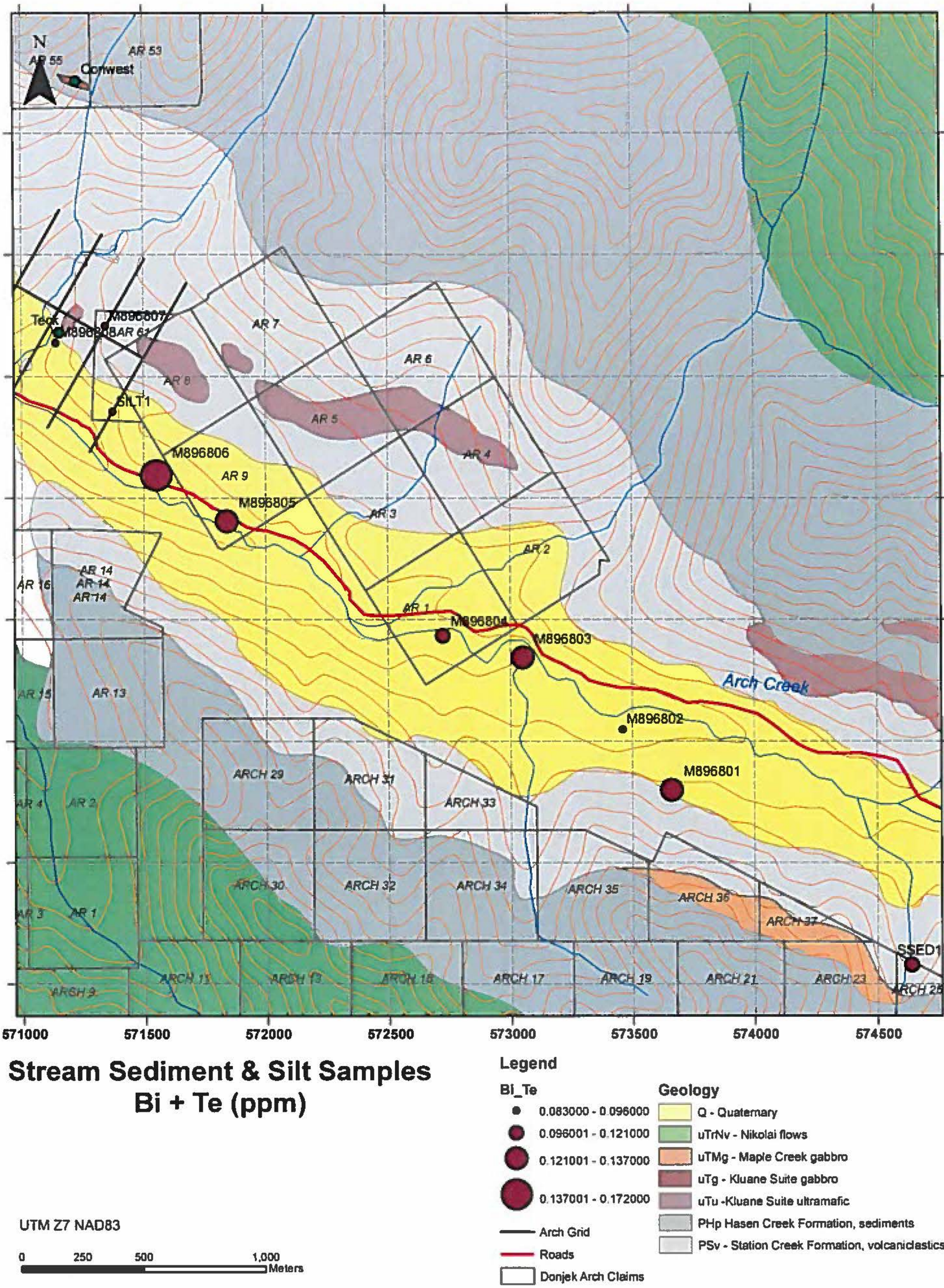
Donjek Arch Claims

Geology

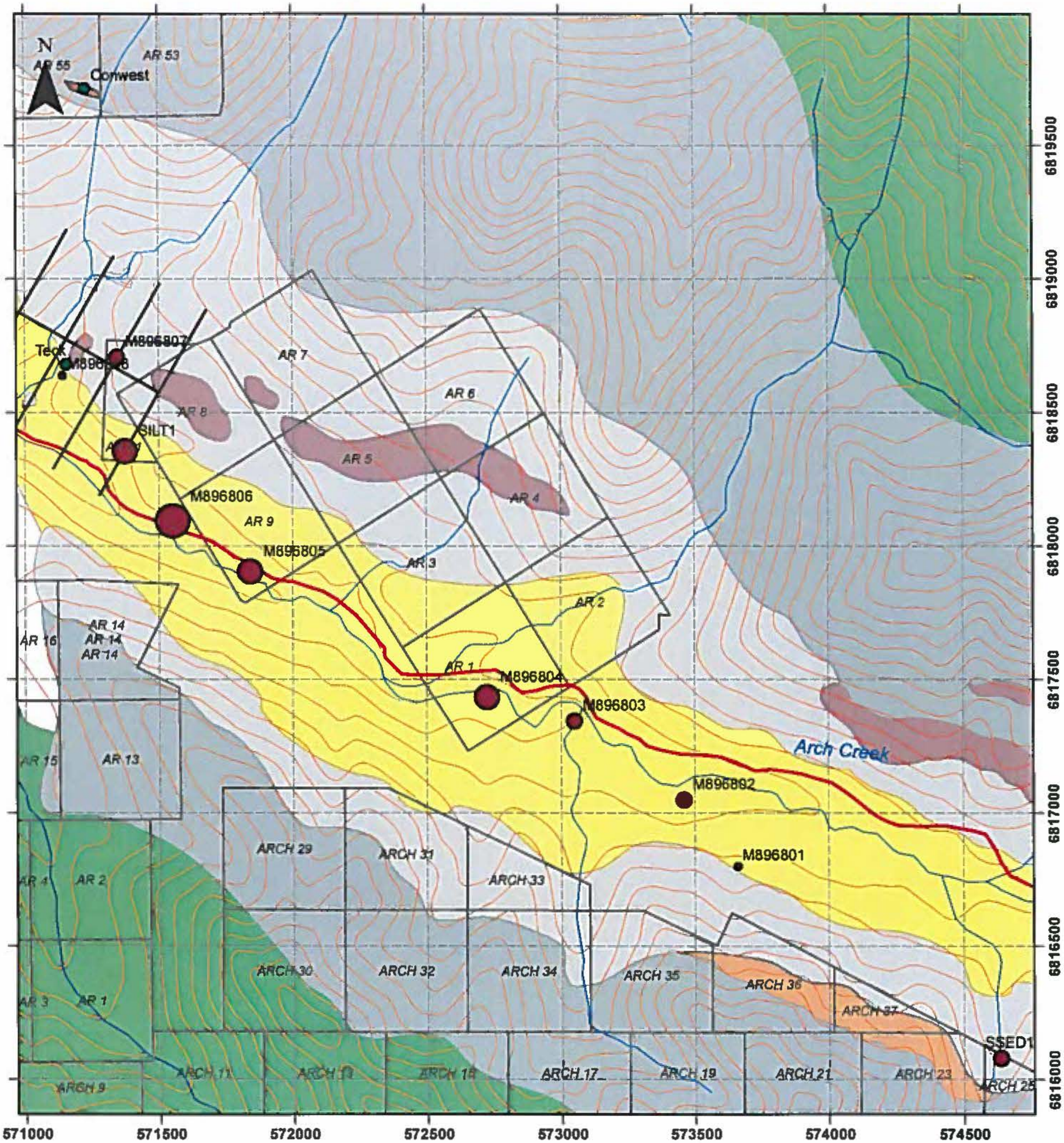
- Q - Quaternary
- uTrNv - Nikolai flows
- uTMg - Maple Creek gabbro
- uTg - Kluane Suite gabbro
- uTu - Kluane Suite ultramafic
- PHp Hasen Creek Formation, sediments
- PSv - Station Creek Formation, volcaniclastics

UTM Z7 NAD83

0 250 500 1,000 Meters



Stream Sediment & Silt Samples
Bi + Te (ppm)



Stream Sediment & Silt Samples Co (ppm)

UTM Z7 NAD83

0 250 500 1,000 Meters

Legend

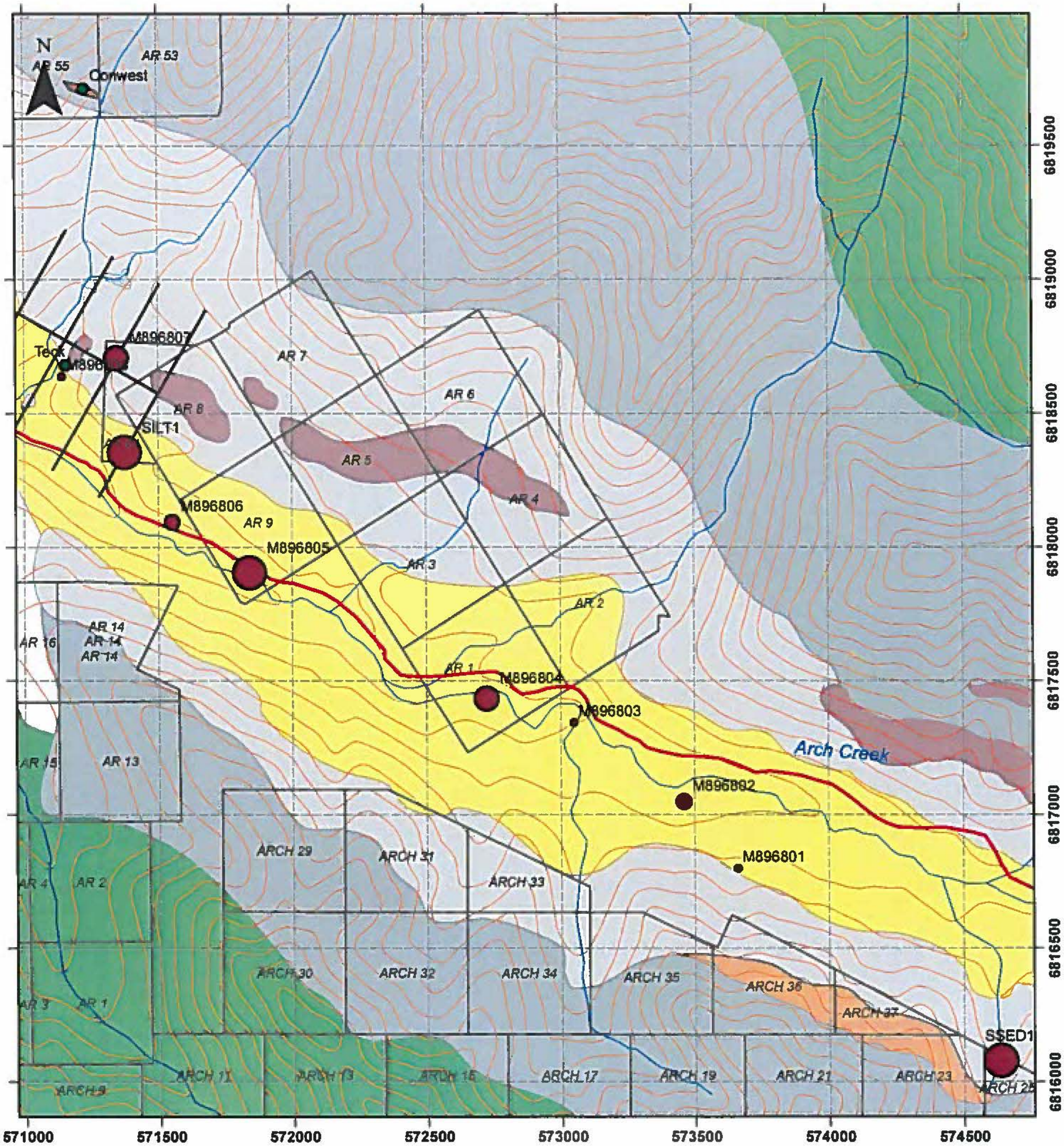
Co_ppm

- 16.000000 - 19.150000
- 19.150001 - 24.300000
- 24.300001 - 26.900000
- 26.900001 - 29.500000

- Arch Grid
- Roads
- Donjek Arch Claims

Geology

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



Stream Sediment & Silt Samples Cr (ppm)

UTM Z7 NAD83

0 250 500 1,000 Meters

Legend

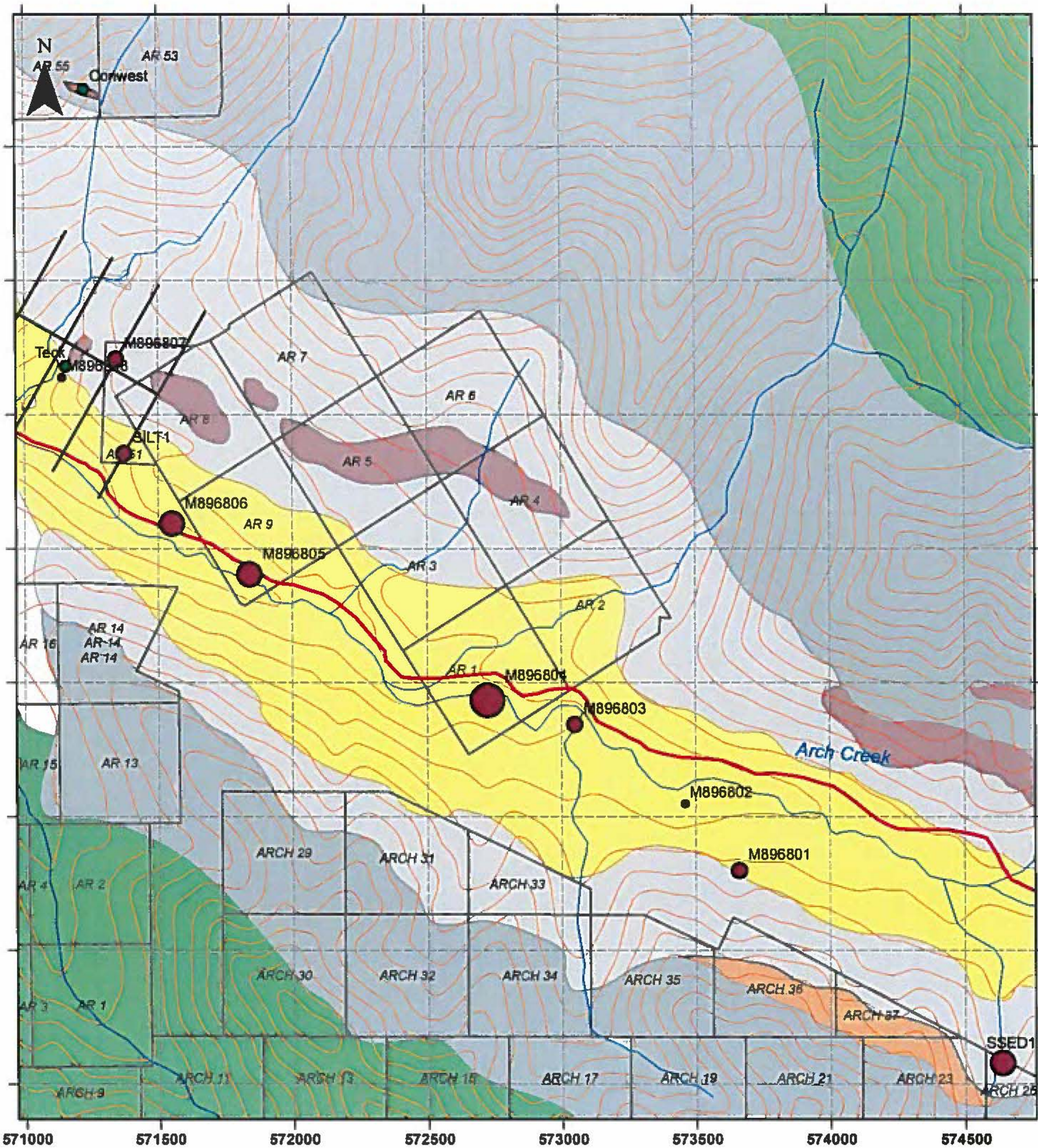
Cr_ppm

- 48.800000 - 60.000000
- 60.000001 - 76.900000
- 76.900001 - 96.200000
- 96.200001 - 116.500000

- Arch Grid
- Roads
- Donjek Arch Claims

Geology

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



Stream Sediment & Silt Samples Cu (ppm)

Legend

Cu_ppm

- 46.600000 - 62.200000
- 62.200001 - 85.500000
- 85.500001 - 113.000000
- 113.000001 - 143.500000

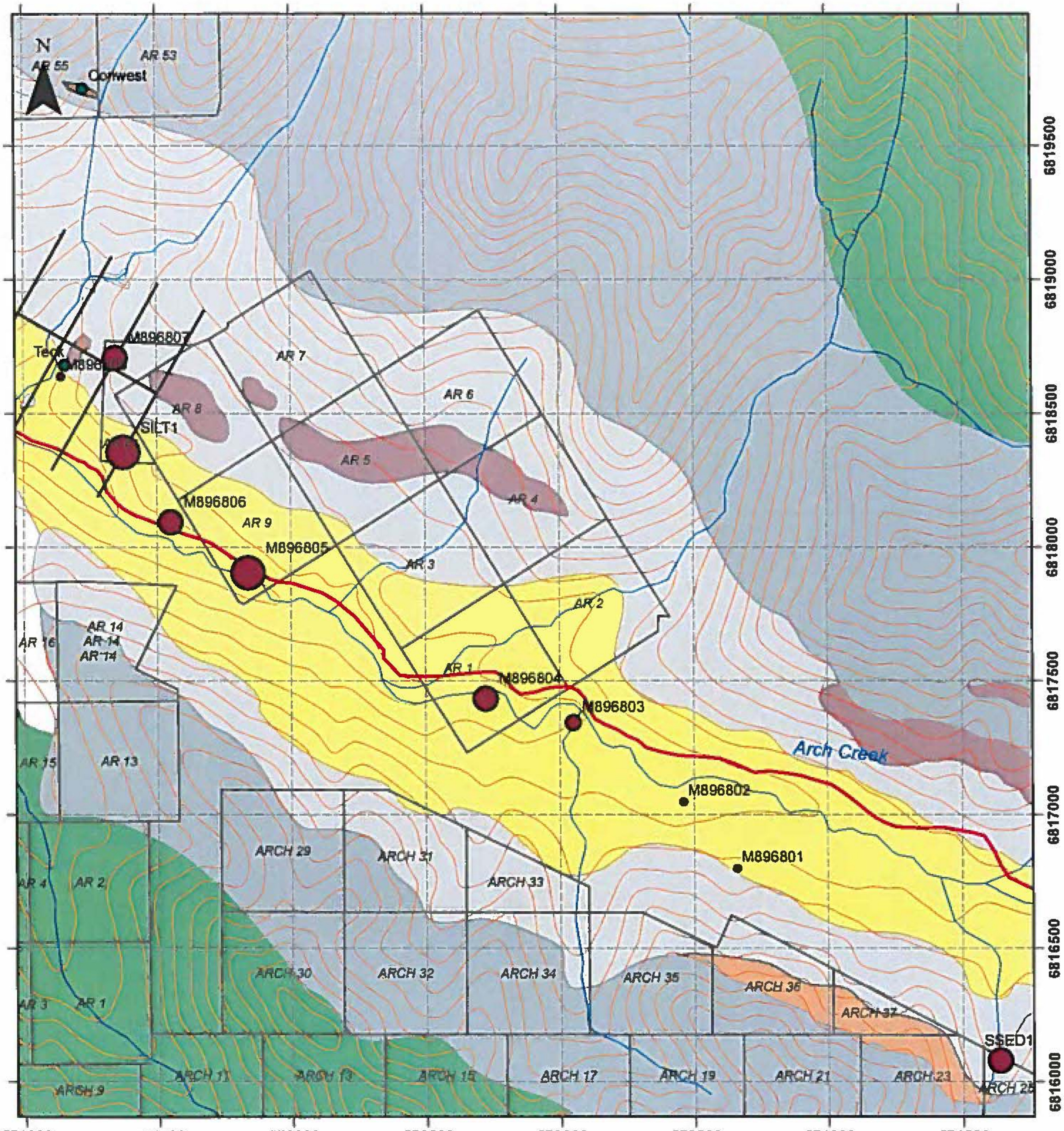
- Arch Grid
- Roads
- Donjek Arch Claims

Geology

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

UTM Z7 NAD83

0 250 500 1,000 Meters



Stream Sediment & Silt Samples
Ni (ppm)

UTM Z7 NAD83

0 250 500 1,000 Meters

Legend

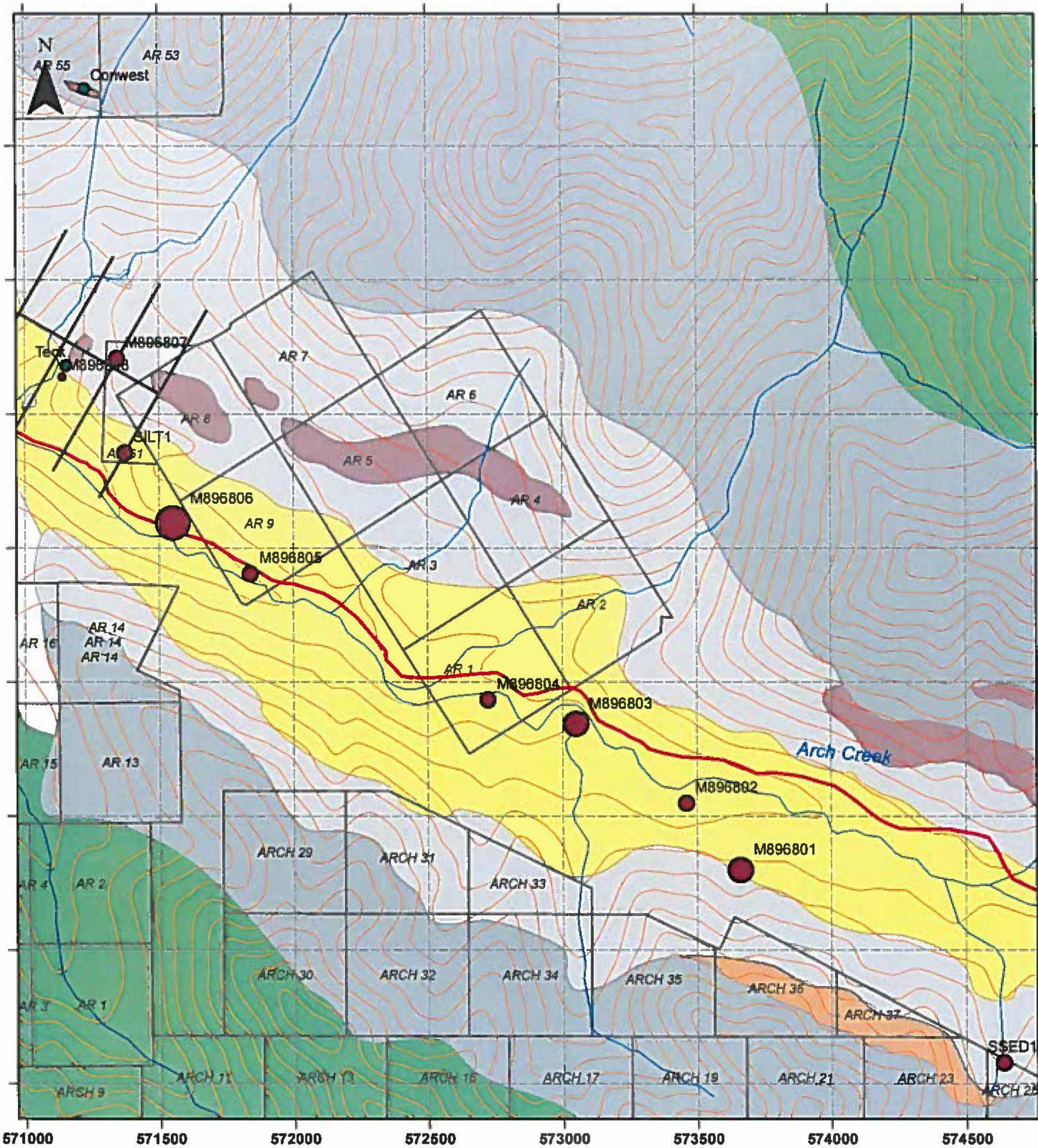
Ni_ppm

- 42.500000 - 49.100000
- 49.100001 - 73.500000
- 73.500001 - 96.700000
- 96.700001 - 149.000000

- Arch Grid
- Roads
- Donjek Arch Claims

Geology

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



Stream Sediment & Silt Samples
Sb (ppm)

UTM Z7 NAD83

0 250 500 1,000 Meters

Legend

Sb_ppm
- 0.537000
- 0.537001 - 1.460000
- 1.460001 - 2.070000
- 2.070001 - 3.300000

- Arch Grid
- Roads
- Donjek Arch Claims

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

Appendix 11: Work Summary

Crews

Budget

Timeline

Donjek - Arch Project

PROJECT TIMELINE

prior to Aug 3	4-Aug	5-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug
						sun and cloud a.m. Hot and sunny p.m.	Hot and sunny all day	Hot and sunny all day	Hot and sunny with a few clouds and a breeze	Hot and sunny, smoky haze. Clouds in p.m.
Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity
Planning	Site visit - D. James and B. Harris	planning and sorting camp equipment	Mobbed into camp. Reconnaisance visit to Teck Showing.	Training day with L. Lewis, test pits	Helicopter overview of claims, test pits. Linecutters arrived, started work	Flagging and cutting lines. Testing sample methodology	Flagging and line cutting. Biogeochemical sampling.	Biogeochemical sampling	Stream sediment sampling in a.m. Biogeochemical sampling in p.m.	Biogeochemical sampling.

!7-August 27 - 15 full days in camp, 18 days including mobe and demobe, 4 planning

item	name	rate	unit/days	Cost	notes
Geologist	Debbie James	500	20	10,000.00	
Geotech	Cody Bassett	350	18	6,300.00	
Geotech	Winston Billy	275	10	2,750.00	
Camp hand	Mark Pierson	275	2	550.00	
Geologist	Linda Lewis	500	1	500.00	
Prospector	Bill Harris	350	10	3,500.00	
SUBTOTAL				*23,600.00*	
2 trucks 4X4		50	30	1,500.00	
2 ATVs		40	36	1,440.00	
ATV trailer		55	18	990.00	
chainsaw		35	7	245.00	
5000 W generator		200	2.6	520.00	weekly rate
field expenses		100	55	5,500.00	
fuel				966.44	
report writing				3,500.00	
SUBTOTAL				*14,661.44*	

Sub-contractors

company	service	cost
All-In Exploratio	line cutting	4,136.00
Aurora	geophysics	11,524.50
kluane Helicopt	helicopter	4,300.00
SUBTOTAL		*19,960.50*

Project specific expenses - not covered under camp costs or equipment costs

supplier	product/service		
ALS Chemex	sample prep and analysis	6,273.09	
ActLabs	sample prep and analysis	7,173.76	
shipping	samples	142.76	Purolator samples to Actlabs
SUBTOTAL		*13,589.61*	

TOTAL	*71,811.55*

Appendix 12: Wellgreen Soil Sampling

Correlation table Wellgreen soil

Correlation table – Arch grid humus and bark

Map

Spruce Bark Element Correlation

	Auppm	Pdppm	Ptppm	agppm	Al%	Asppm	Bppm	Bappm	Beppm	Bippm	Ca%	Cdppm	Ceppm	Coppm	Crppm	Csppm
Auppm	1															
Pdppm	-0.12191	1														
Ptppm	0.246861	-0.01905	1													
agppm	0.038795	0.18281	0.232186	1												
Al%	-0.01271	0.014315	-0.13239	0.184636	1											
Asppm	0.007469	0.042904	-0.19249	0.157558	0.863156	1										
Bppm	0.334906	-0.12676	0.443246	-0.13112	-0.31314	-0.27335	1									
Bappm	-0.14376	0.189493	-0.17573	0.224476	0.062022	0.178486	-0.1573	1								
Beppm	0.04556	0.090711	-0.14863	0.209999	0.575077	0.578112	-0.17227	0.136464	1							
Bippm	-0.14482	0.150091	-0.27191	-0.11607	0.150762	0.269743	-0.00948	0.099578	0.244093	1						
Ca%	-0.08055	0.114631	0.000306	0.223668	0.498646	0.503941	-0.16758	0.419906	0.333196	-0.04266	1					
Cdppm	0.066916	0.20981	-0.05696	0.2622	0.613461	0.639287	-0.17368	0.386169	0.377957	0.167816	0.560668	1				
Ceppm	-0.15448	0.13473	-0.23329	-0.09152	0.283151	0.381026	-0.06604	0.096625	0.276613	0.906411	0.051571	0.138294	1			
Coppm	0.061054	0.014412	-0.15422	0.156234	0.770912	0.75179	-0.13315	0.101992	0.509195	0.198719	0.500223	0.673388	0.299324	1		
Crppm	-0.19494	0.028418	0.169453	0.329692	0.416447	0.34764	-0.39352	0.109194	0.27868	0.079575	0.311542	0.283928	0.189674	0.376659	1	
Csppm	0.039408	-0.0932	-0.16028	0.183829	0.382281	0.462889	-0.18752	0.097193	0.139697	0.153813	0.276155	0.339477	0.130329	0.203464	0.167182	1
Cuppm	-0.05623	0.006913	-0.09566	0.2092	0.323083	0.374476	-0.16772	-0.11993	0.14273	0.108473	0.083621	0.294374	0.124691	0.470177	0.346478	0.201333
Dyppm	-0.03582	0.107518	-0.21652	0.123733	0.843952	0.849873	-0.25546	0.186861	0.578388	0.553004	0.459523	0.625393	0.65688	0.726763	0.34687	0.366959
Erppm	-0.00197	0.092887	-0.15782	0.20661	0.91195	0.879206	-0.32743	0.218635	0.627756	0.287838	0.545918	0.671198	0.409752	0.7766	0.440047	0.349859
Euppm	-0.15936	0.142539	-0.22782	-0.12143	0.347927	0.4448	-0.11016	0.096417	0.323319	0.907196	0.115782	0.247833	0.957714	0.344966	0.208692	0.170813
Fe%	-0.00551	-0.07417	-0.24455	0.066101	0.602065	0.602447	-0.003	-0.07694	0.33603	0.381792	0.22767	0.27344	0.521371	0.601687	0.197607	0.235278
Gappm	-0.00349	-0.02047	-0.24567	0.178463	0.884567	0.852054	-0.23735	0.043779	0.577463	0.395272	0.409152	0.485553	0.5371	0.752767	0.331789	0.378141
Gdppm	-0.13817	0.1049	-0.2509	-0.01043	0.563247	0.63936	-0.1903	0.167025	0.470441	0.841534	0.239663	0.387304	0.910642	0.532282	0.302963	0.273315
Geppm	0.346058	-0.10324	0.25271	0.18543	0.092771	0.156399	0.633856	-0.19552	0.093545	0.072019	-0.04389	0.1634	0.064762	0.31327	-0.22786	0.007835
Hfppm	0.102241	-0.0893	0.042685	0.271769	0.75512	0.754003	0.017329	0.162144	0.569906	0.188245	0.385598	0.502501	0.25983	0.699586	0.29063	0.262728
Hgppm	0.087651	0.045248	-0.05035	-0.1512	0.23394	0.304198	0.017181	0.285225	0.141791	-0.04052	0.233458	0.357985	0.001905	0.321402	-0.03417	0.029974
Hoppm	-0.02511	0.074102	-0.17053	0.178511	0.900821	0.897583	-0.30517	0.190874	0.647167	0.394863	0.533645	0.64058	0.506115	0.771716	0.374243	0.349949
Inppm	-1.3E-15	1.32E-15	5.66E-16	-1.1E-15	1.32E-15	-7.8E-16	9.87E-17	-6.7E-16	2.15E-15	1.41E-15	1.35E-15	-9.4E-16	7.98E-16	-8.9E-16	-1.1E-16	-5.3E-16
K%	0.011806	0.084495	-0.05557	-0.20815	-0.22415	0.015531	0.055405	0.112969	-0.23088	0.173152	-0.10914	0.131125	0.061645	0.056624	-0.11663	0.072139
Lappm	-0.15924	0.129081	-0.26271	-0.10883	0.243171	0.341988	-0.05157	0.102408	0.245361	0.909363	0.019752	0.118959	0.994153	0.267374	0.132471	0.106924
Lippm	-0.01055	0.084744	-0.16248	0.245333	0.919536	0.84388	-0.37045	0.074248	0.666595	0.266602	0.45191	0.611169	0.360145	0.731148	0.407934	0.400899
Luppm	0.072473	0.059842	-0.12253	0.288221	0.874703	0.858313	-0.28751	0.203201	0.639737	0.237475	0.551233	0.694149	0.322039	0.767329	0.377187	0.401053
Mg%	-0.04243	0.133437	-0.15823	0.117731	0.644661	0.685801	-0.18643	0.258987	0.516291	0.186621	0.663954	0.620479	0.228078	0.754481	0.281106	0.374416
Mnppm	-0.04674	-0.00426	-0.1833	0.152702	0.097263	0.232617	0.068134	0.351464	0.266106	0.281515	0.299004	0.505315	0.226728	0.409031	0.050734	0.076136
Moppm	0.104749	-0.00408	-0.13276	0.061645	0.484939	0.540918	0.141347	-0.08526	0.34133	0.365197	0.215462	0.328982	0.444468	0.542247	0.118162	0.211325
Na%	0.240742	-0.06294	-0.22791	-0.01441	-0.07502	-0.01865	0.289089	-0.03766	0.079951	0.007003	-0.13982	0.025624	-0.07939	0.116593	-0.40972	-0.00937
Nbppm	-0.06467	0.023337	-0.2671	-0.00592	0.518854	0.588679	-0.00206	-0.03465	0.43029	0.645439	0.157691	0.254682	0.754551	0.51518	0.185211	0.235426
Ndppm	-0.14577	0.108838	-0.26426	-0.08308	0.343368	0.429726	-0.0889	0.09968	0.314217	0.920365	0.081096	0.199294	0.985722	0.361787	0.192176	0.183322
Nippm	0.09621	-0.05518	-0.11859	0.04465	0.349015	0.303995	0.19317	-0.00124	0.275904	0.09228	0.212783	0.345115	0.089464	0.665754	0.249196	0.081592
P%	-0.03578	-0.04487	-0.17598	-0.0348	0.649109	0.702081	-0.21265	-0.00248	0.279865	0.06677	0.415008	0.441415	0.166632	0.540542	0.286621	0.591705
Pbppm	-0.06983	0.197498	-0.15537	0.090388	0.48102	0.539005	-0.13307	0.17586	0.393374	0.758054	0.142867	0.42306	0.840213	0.44808	0.224889	0.250409
Prppm	-0.14625	0.125073	-0.26532	-0.07798	0.328747	0.418822	-0.08299	0.097737	0.305819	0.916412	0.072139	0.188918	0.99164	0.346466	0.182907	0.169718
Rbppm	0.005296	-0.13671	-0.16996	0.054718	0.10472	0.265052	-0.17124	0.179464	-0.0146	0.11863	0.102224	0.243602	0.042646	0.053883	0.062583	0.816689
Reppm	-1.3E-15	1.32E-15	5.66E-16	-1.1E-15	1.32E-15	-7.8E-16	9.87E-17	-6.7E-16	2.15E-15	1.41E-15	1.35E-15	-9.4E-16	7.98E-16	-8.9E-16	-1.1E-16	-5.3E-16
S%	0.23589	-0.06198	-0.25432	-0.01837	-0.05483	0.001967	0.264578	-0.02331	0.084536	0.006146	-0.1135	0.04656	-0.07643	0.133267	-0.40678	0.008588
Sbppm	0.06236	0.250077	-0.07389	0.274636	0.809029	0.73881	-0.18899	0.08373	0.578264	0.276888	0.435915	0.606329	0.347237	0.725226	0.396043	0.262789
Scppm	0.007431	0.043342	-0.0544	0.22214	0.9192	0.811898	-0.32287	0.171666	0.590299	0.145771	0.54749	0.588798	0.265999	0.736194	0.465963	0.329308
Seppm	0.309892	0.021937	0.549127	-0.07888	-0.04239	-0.01046	0.432589	-0.16952	-0.06782	-0.11011	-0.01735	-0.10317	-0.07692	-0.07489	-0.05634	-0.01791
Smppm	-0.18482	0.127083	-0.2791	-0.07646	0.39691	0.474636	-0.13859	0.102706	0.3518	0.901868	0.129128	0.240257	0.96031	0.389956	0.222906	0.207274
Snppm	-0.04878	0.031426	-0.19473	-0.06413	0.036301	0.115963	0.150568	0.000112	0.100399	0.533161	-0.09419	-0.14169	0.628452	0.105838	-0.08342	-0.04965
Srppm	-0.15754	0.338073	-0.05195	0.356156	0.267453	0.299637	-0.16155	0.677582	0.35662	0.053552	0.698308	0.560997	0.073423	0.371783	0.243843	0.103374
Tappm	-1.3E-15	1.32E-15	5.66E-16	-1.1E-15	1.32E-15	-7.8E-16	9.87E-17	-6.7E-16	2.15E-15	1.41E-15	1.35E-15	-9.4E-16	7.98E-16	-8.9E-16	-1.1E-16	-5.3E-16
Tbppm	-0.10208	0.088763	-0.23657	0.065628	0.739267	0.774588	-0.29723	0.209238	0.569657	0.671758	0.411318	0.538618	0.769838	0.650781	0.358414	0.312148
Teppm	0.112656	-0.03484	-0.00886	-0.05577	-0.13918	-0.09622	0.1076	-0.0602	-0.09406	0.079765	-0.09215	-0.07756	0.127105	-0.10852	-0.08896	-0.10145
Thppm	-0.16009	0.052412	-0.25157	-0.11921	0.279833	0.375143	-0.08394	0.022224	0.268653	0.884333	0.04922	0.135818	0.957333	0.302732	0.197806	0.141934
Ti%	-0.02541	0.087763	-0.21499	0.15197	0.885372	0.811851	-0.32404	0.002145	0.595268	0.220055	0.388812	0.448259	0.351508	0.671189	0.319078	0.332432
Tlppm	0.052527	0.037452	-0.18893	0.197082	0.650241	0.668572	-0.11218	0.207869	0.581776	0.361973	0.4795	0.583295	0.455274	0.643516	0.225301	0.33779
Tmppm	0.006882	0.080795	-0.15123	0.207742	0.885562	0.87336	-0.27584	0.250045	0.597785	0.251376	0.623243	0.698938	0.354921	0.80573	0.341989	0.38257
Uppm	0.048551	0.028919	-0.13296	0.118294	0.804869	0.793822	-0.25994	0.139182	0.517463	0.353699	0.442422	0.595602	0.492185	0.770278	0.329701	0.249958
Vppm	-0.02234	-0.0202	-0.08317	0.259206	0.684685	0.682486	-0.202	0.124086	0.564071	0.291043	0.353653	0.400292	0.381763	0.535372	0.468678	0.352529
Wppm	0.101431	-0.0571	0.082971	0.190006	-0.04175	0.002748	0.21722	-0.00675	0.064069	0.05189	-0.16405	0.194028	0.02869	0.053619	-0.04238	-0.12084
Yppm	-0.0094	0.087178	-0.11291	0.20731	0.92394	0.889629	-0.27249	0.196093	0.626743	0.34927	0.547971	0.656077	0.470342	0.792738	0.423468	0.365438
Ybppm	-0.03826	0.094528	-0.14574	0.211778	0.925504	0.885055	-0.32119	0.212381	0.60483	0.228535	0.591451	0.704273	0.34765	0.805779	0.390333	0.336067
Znppm	-0.13577	0.139096	-0.0531	0.139576	-0.27961	-0.16669	0.125006	0.379982	-0.1448	0.163532	0.019756	0.069262	0.089682	-0.17235	-0.1365	-0.22222
Zrppm	0.086937	0.031573	-0.115	0.281881	0.884904	0.8845	-0.17346	0.171793	0.6539	0.280218	0.526666	0.662647	0.388131	0.824432	0.353073	0.343706

	Cuppm	Dyppm	Erppm	Euppm	Fe%	Gappm	Gdppm	Geppm	Hfppm	Hgppm	Hoppm	Inppm	K%	Lappm	Lippm	Luppm
Cuppm	1															
Dyppm	0.342516201	1														
Erppm	0.38996235	0.929256	1													
Euppm	0.175676294	0.715634	0.483458	1												
Fe%	0.256709952	0.639887	0.550688	0.474921	1											
Gappm	0.324459399	0.898182	0.870173	0.547959	0.835086	1										
Gdppm	0.24545381	0.870596	0.691001	0.943243	0.578026	0.737637	1									
Geppm	0.064206534	0.095579	0.014522	0.008286	0.455493	0.245928	0.046343	1								
Hfppm	0.229188892	0.715143	0.752072	0.297504	0.615214	0.787555	0.504278	0.38749	1							
Hgppm	0.146548331	0.210586	0.298001	0.046533	0.111196	0.160085	0.080099	-0.01794	0.260793	1						
Hoppm	0.335670143	0.958822	0.955625	0.578141	0.588883	0.896576	0.764863	0.063037	0.77288	0.244706	1					
Inppm	-4.69098E-16	-6.3E-16	-5.4E-16	-1.5E-16	-1.3E-15	-1.4E-15	-1.3E-16	1.43E-16	1.53E-15	-8.2E-16	1.22E-15	1				
K%	0.151996071	-0.09216	-0.13649	0.114272	-0.22847	-0.24201	0.027906	[illegible]	-0.2064	0.266611	-0.14282	-5.7E-17	1			
Lappm	0.104329647	0.62521	0.365831	0.953683	0.492821	0.497692	[illegible]	0.066612	0.220799	-0.01856	0.468776	3.2E-16	0.084092	1		
Lippm	0.32858616	0.849954	0.899094	0.434459	[illegible]	0.843105	0.631802	0.002509	0.705052	0.243845	0.910411	-1.8E-15	-0.12276	0.323085	1	
Luppm	0.37124062	0.877072	0.930578	0.40878	0.504898	0.820177	0.623144	0.085019	0.757448	0.272534	0.929216	1.46E-15	-0.14935	0.285227	0.877035	1
Mg%	0.293092901	0.647814	0.685162	0.300297	0.36942	0.594093	0.454354	0.099548	0.594131	0.284246	0.705676	-5.9E-16	0.054383	0.199644	0.637392	0.68912
Mnppm	0.138090929	0.268654	0.224543	0.246411	0.152559	0.187247	0.286411	0.238298	0.278963	0.116726	0.242996	8.79E-17	0.258815	0.245751	0.185402	0.235691
Moppm	0.253082747	0.565585	0.449817	0.431789	0.865936	0.687476	0.499904	0.546314	0.535595	0.08729	0.512787	-7.8E-16	-0.12169	0.425766	0.390495	0.459966
Na%	-0.098867051	-0.05976	-0.1314	-0.08624	0.181432	0.033288	-0.0834	0.542042	0.179624	-0.10002	-0.07284	3.56E-16	0.007905	-0.03707	-0.08531	-0.05153
Nbppm	0.24292216	0.704898	0.537341	0.718107	0.889761	0.776129	0.763567	0.367772	0.518941	0.067497	0.620245	-1.4E-16	-0.11211	0.735314	0.496669	0.487672
Ndppm	0.155979146	0.708593	0.464064	0.96941	0.561803	0.59382	0.941295	0.094894	0.330238	0.010956	0.561967	5.76E-16	0.068235	0.979297	0.413575	0.385985
Nippm	0.342248884	0.272359	0.292014	0.112332	0.371508	0.345067	0.19771	0.402258	0.427633	0.077557	0.285174	3.38E-16	0.014121	0.088299	0.308119	0.307406
P%	0.427637647	0.562201	0.615254	0.221267	0.39617	0.571317	0.354253	-0.04938	0.425635	0.430136	0.594646	2E-15	0.140481	0.129932	0.634834	0.620359
Pbppm	0.174438505	0.76329	0.577747	0.848699	0.500401	0.614343	0.860917	0.127835	0.423057	0.187392	0.6533	-3.2E-16	0.048776	0.820356	0.547767	0.508321
Prppm	0.153505998	0.697588	0.447864	0.96854	0.557517	0.581333	0.931533	0.098707	0.302028	0.007526	0.545168	-6.4E-16	0.067882	0.98716	0.400588	0.370506
Rbppm	0.114147355	0.132412	0.101137	0.075127	-0.02244	0.084922	0.125078	-0.08009	0.051216	0.094691	0.100016	-4.6E-16	0.45131	0.036124	0.171271	0.166285
Reppm	-4.69098E-16	-6.3E-16	-5.4E-16	-1.5E-16	-1.3E-15	-1.4E-15	-1.3E-16	1.43E-16	1.53E-15	-8.2E-16	1.22E-15	1	-5.7E-17	3.2E-16	-1.8E-15	1.46E-15
S%	-0.091758007	-0.0411	-0.10931	-0.08155	0.188561	0.050184	-0.07403	0.523049	0.181285	-0.08958	-0.05227	-1.3E-16	0.009455	-0.03384	-0.06543	-0.03191
Sbppm	0.290225972	0.796117	0.81827	0.407518	0.537876	0.755345	0.588896	0.136992	0.699704	0.153139	0.813411	-2.7E-15	-0.16878	0.311139	0.79733	0.820521
Scppm	0.280827698	0.832333	0.913808	0.331903	0.497221	0.839106	0.567134	0.024215	0.757663	0.188456	0.903299	-5.2E-16	-0.2604	0.214425	0.870296	0.87963
Seppm	0.000322825	-0.04297	0.010993	-0.06601	-0.12549	-0.06376	-0.07316	0.120716	0.036196	0.188927	-0.03354	-1.1E-15	0.058585	-0.10591	-0.08433	0.047383
Smppm	0.201633949	0.749357	0.520894	0.973186	0.543269	0.616974	0.954984	0.042544	0.340205	-0.01029	0.611682	-6E-16	0.073499	0.955024	0.468136	0.432767
Snppm	-0.133600764	0.287133	0.095582	0.530949	0.468629	0.336597	0.482106	0.202792	0.141323	-0.09771	0.198373	2.11E-16	-0.13814	0.633578	0.030527	0.046498
Srppm	0.099075771	0.337723	0.416571	0.140788	0.091017	0.225092	0.233966	-0.07068	0.299152	0.308583	0.374874	7.64E-17	-0.03003	0.060277	0.294143	0.41548
Tappm	-4.69098E-16	-6.3E-16	-5.4E-16	-1.5E-16	-1.3E-15	-1.4E-15	-1.3E-16	1.43E-16	1.53E-15	-8.2E-16	1.22E-15	1	-5.7E-17	3.2E-16	-1.8E-15	1.46E-15
Tbppm	0.308047323	0.952452	0.853556	0.827809	0.573719	0.828376	0.936642	0.004369	0.618715	0.184899	0.905681	1.64E-15	-0.05266	0.744824	0.786901	0.789953
Teppm	0.076751831	-0.0161	-0.11743	0.133953	-0.00511	-0.07237	0.049695	0.049715	-0.05749	-0.059	-0.08004	2.31E-15	-0.02578	0.149162	-0.16493	-0.13474
Thppm	0.156827699	0.661844	0.41913	0.959396	0.514368	0.540184	0.910979	0.053096	0.280811	-0.02631	0.512945	4.04E-16	0.056763	0.95246	0.355741	0.342122
Ti%	0.361028536	0.833908	0.865857	0.423638	0.543575	0.8429	0.604873	0.034738	0.690654	0.143736	0.870543	1.28E-15	-0.14634	0.318156	0.866221	0.828326
Tlppm	0.231226521	0.746308	0.734644	0.499124	0.514668	0.689297	0.619923	0.166207	0.57323	0.245707	0.735355	1.89E-15	-0.00661	0.432199	0.683181	0.72812
Tmppm	0.321106792	0.888313	0.923585	0.435032	0.563406	0.84667	0.64642	0.097942	0.758115	0.298868	0.935058	1.43E-15	-0.14086	0.316275	0.872079	0.910153
Uppm	0.396133787	0.876458	0.891671	0.554523	0.508427	0.798223	0.712944	0.059159	0.643516	0.330527	0.899428	-7.8E-16	0.025299	0.466247	0.836433	0.862679
Vppm	0.275477597	0.67619	0.718941	0.378052	0.544306	0.727502	0.559208	0.080458	0.639064	0.218073	0.693302	1.05E-16	-0.17827	0.323251	0.682514	0.661753
Wppm	-0.142676774	0.005759	-0.01836	0.02159	0.050145	-0.02344	0.019431	0.321499	0.106446	0.026898	-0.03349	7.46E-17	0.097068	0.045392	-0.05362	0.004521
Yppm	0.342853216	0.952728	0.978385	0.542013	0.588893	0.899684	0.742699	0.081332	0.788084	0.259734	0.979441	3.43E-16	-0.14019	0.429251	0.911481	0.939349
Ybppm	0.340265723	0.89824	0.95996	0.425878	0.572307	0.866872	0.636871	0.046657	0.763872	0.280782	0.952436	-1.1E-15	-0.1669	0.310094	0.899412	0.92249
Znppm	-0.063619835	-0.07609	-0.16983	0.095138	-0.21919	-0.23245	0.026193	0.025183	-0.06091	-0.05451	-0.11185	-3.4E-16	0.114687	0.125067	-0.24649	-0.15599
Zrppm	0.342636038	0.881731	0.912707	0.442025	0.707928	0.918473	0.647781	0.313537	0.878959	0.288597	0.919749	8.55E-16	-0.15602	0.345135	0.856977	0.892642

Spruce Bark Element Correlation

Mg%	Mnppm	Moppm	Na%	Nbppm	Ndppm	Nippm	P%	Pbppm	Prppm	Rbppm	Reppm	S%	Sbppm	Scppm	Seppm	Smppm	Snppm	Srppm	Tappm	Tbppm	Teppm	Thppm	Ti%	Tlppm	Tmppm	Uppm	Vppm	Wppm	Yppm	Ybppm	Znppm	Zrppm
1																																
0.440332	1																															
0.39086	0.226657	1																														
0.107744	0.255277	0.306483	1																													
0.336293	0.212936	0.830158	0.141532	1																												
0.288446	0.269999	0.478637	-0.03342	0.770242	1																											
0.485027	0.422791	0.429912	0.499438	0.291174	0.141736	1																										
0.602999	0.106952	0.330526	-0.21577	0.354153	0.20268	0.227411	1																									
0.394353	0.259263	0.44494	-0.07267	0.682655	0.857563	0.12389	0.296969	1																								
0.265582	0.254622	0.480854	-0.03019	0.775326	0.99543	0.133584	0.191824	0.854135	1																							
0.272241	0.221161	0.027598	-0.03119	0.028822	0.082183	-0.02517	0.501985	0.116869	0.067037	1																						
-5.9E-16	8.79E-17	-7.8E-16	3.56E-16	-1.4E-16	5.76E-16	3.38E-16	2E-15	-3.2E-16	-6.4E-16	-4.6E-16	1																					
0.131937	0.26056	0.309061	0.998225	0.14627	-0.03065	0.504363	-0.19402	-0.07256	-0.02658	-0.02041	-1.3E-16	1																				
0.584052	0.134344	0.490547	-0.00227	0.514131	0.389733	0.340945	0.460488	0.453331	0.379538	0.00187	-2.7E-15	0.013908	1																			
0.651471	0.096237	0.391437	-0.17848	0.435862	0.32469	0.264637	0.544527	0.455155	0.30172	0.05712	-5.2E-16	-0.1599	0.788928	1																		
-0.06739	-0.19119	-0.08693	-0.37214	-0.13289	-0.09214	-0.17433	0.135365	-0.07196	-0.09567	-0.03467	-1.1E-15	-0.38567	-0.02553	0.035278	1																	
0.350084	0.288637	0.481026	-0.03796	0.750103	0.982281	0.16439	0.240435	0.842459	0.977824	0.095115	-6E-16	-0.03161	0.42579	0.376065	-0.11433	1																
0.009188	0.116249	0.392569	0.07803	0.562974	0.60724	0.045771	-0.0974	0.447325	0.606705	-0.14305	2.11E-16	0.07161	0.134266	0.030025	0.01634	0.539561	1															
0.509385	0.447143	0.165254	-0.02117	0.07171	0.109667	0.183979	0.132589	0.219534	0.096944	0.065428	7.64E-17	-0.0104	0.30479	0.355387	-0.09538	0.155321	-0.03294	1														
-5.9E-16	8.79E-17	-7.8E-16	3.56E-16	-1.4E-16	5.76E-16	3.38E-16	2E-15	-3.2E-16	-6.4E-16	-4.6E-16	1	-1.3E-16	-2.7E-15	-5.2E-16	-1.1E-15	-6E-16	2.11E-16	7.64E-17	1													
0.585644	0.293541	0.501613	-0.1169	0.712686	0.808782	0.223301	0.485956	0.807738	0.798974	0.106591	1.64E-15	-0.10016	0.697307	0.737002	-0.05927	0.843321	0.3654	0.352596	1.64E-15	1												
0.025823	0.035732	0.176828	0.208761	0.03287	0.104718	0.078711	-0.09385	0.135392	0.113597	-0.10547	2.31E-15	0.207418	-0.16349	-0.14299	-0.07519	0.109166	0.154071	-0.0126	2.31E-15	-0.00239	1											
0.239446	0.205655	0.432166	-0.04963	0.729465	0.965047	0.093362	0.17241	0.800902	0.964728	0.041638	4.04E-16	-0.04585	0.342172	0.273197	-0.07154	0.954717	0.573429	0.046731	4.04E-16	0.772142	0.132867	1										
0.583012	0.061646	0.448754	0.034469	0.531011	0.40709	0.301834	0.579237	0.490921	0.396214	0.082144	1.28E-15	0.053024	0.742184	0.84683	-0.11599	0.465731	0.045039	0.177443	1.28E-15	0.738092	-0.08316	0.369981	1									
0.622449	0.408608	0.513768	-0.0382	0.562832	0.486391	0.273332	0.494754	0.56897	0.491157	0.255976	1.89E-15	-0.02227	0.611934	0.608291	-0.00901	0.52358	0.176169	0.408476	1.89E-15	0.714593	-0.05624	0.473514	0.617695	1								
0.725312	0.283765	0.484613	-0.05407	0.540369	0.420745	0.333949	0.629373	0.551871	0.403694	0.131015	1.43E-15	-0.03101	0.786916	0.887455	-0.00878	0.475037	0.099878	0.452963	1.43E-15	0.794926	-0.08276	0.353416	0.801134	0.677513	1							
0.584124	0.236867	0.435842	-0.1143	0.548665	0.533209	0.257384	0.550331	0.590453	0.521191	0.076578	-7.8E-16	-0.09194	0.731667	0.81189	0.051588	0.571078	0.176517	0.339587	-7.8E-16	0.845431	-0.07815	0.49586	0.785015	0.659243	0.855812	1						
0.398668	0.06353	0.336626	-0.22775	0.472421	0.421631	0.108239	0.482737	0.469507	0.401731	0.109021	1.05E-16	-0.22012	0.600119	0.708028	0.062082	0.425566	0.160165	0.233613	1.05E-16	0.618194	-0.16854	0.358881	0.619921	0.42868	0.66908	0.628423	1					
-0.07805	0.269692	0.169723	0.166244	0.053947	0.031736	-0.00252	-0.28411	0.153252	0.02922	-0.02119	7.46E-17	0.154044	0.056185	-0.06819	-0.02999	0.011926	0.088177	0.032192	7.46E-17	-0.01609	-0.10172	0.074468	-0.09553	0.154004	-0.07999	0.026932	-0.03566	1				
0.700479	0.226199	0.496807	-0.1048	0.582389	0.527984	0.312788	0.606236	0.624193	0.51207	0.103528	3.43E-16	-0.08492	0.836165	0.925835	0.036607	0.579792	0.153355	0.395909	3.43E-16	0.884457	-0.0986	0.476056	0.871572	0.733679	0.943064	0.89826	0.725704	-0.02477	1			
0.7324	0.253863	0.48257	-0.09348	0.51754	0.407658	0.319462	0.608543	0.528867	0.388114	0.089608	-1.1E-15	-0.06991	0.842975	0.910873	-0.02326	0.466105	0.106415	0.429263	-1.1E-15	0.80849	-0.12119	0.351188	0.834677	0.698676	0.943335	0.866933	0.689649	-0.01103	0.964972	1		
0.003849	0.396539	-0.13277	0.165547	-0.12837	0.090598	0.003081	-0.2682	0.095318	0.090619	-0.1133	-3.4E-16	0.165185	-0.18043	-0.26726	-0.12655	0.071768	0.074452	0.189937	-3.4E-16	-0.02241	0.219099	0.100277	-0.23308	-0.08956	-0.1624	-0.18083	-0.21764	0.151954	-0.1477	-0.15204	1	
0.697576	0.297613	0.630184	0.124615	0.652875	0.454756	0.410082	0.554267	0.564011	0.435701	0.098866	8.55E-16	0.139933	0.818796	0.862183	-0.06901	0.485895	0.182107	0.394098	8.55E-16	0.785056	-0.1011	0.39778	0.835438	0.724594	0.89949	0.825022	0.710516	0.089247	0.922519	0.911044	-0.15589	1

Wellgreen Soil Samples - Element correlations

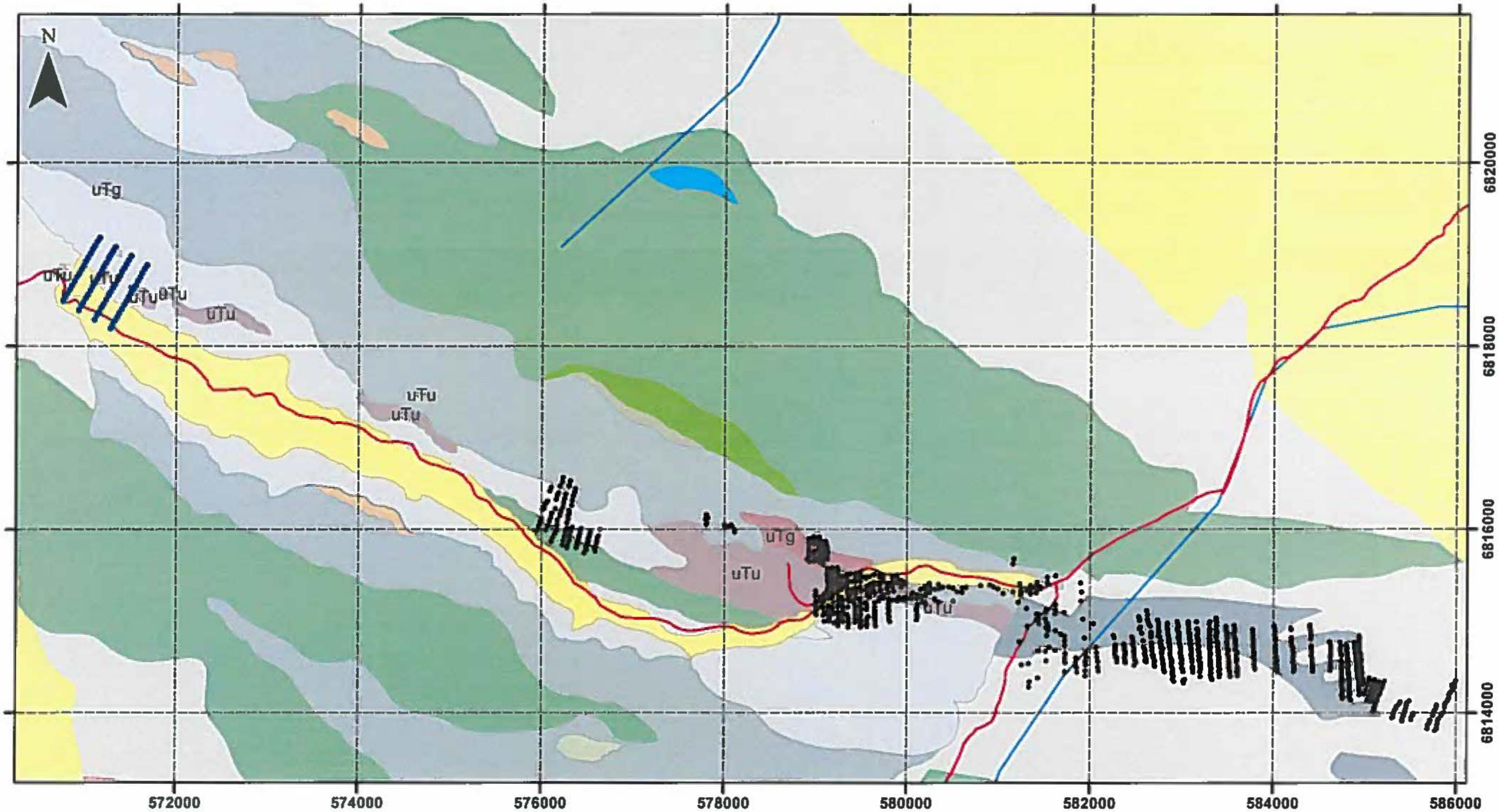
	Ag_ppm	Al_pct	As_ppm	B_ppm	Ba_ppm	Be_ppm	Bi_ppm	Ca_pct	Cd_ppm	Co_ppm
Ag_ppm	1									
Al_pct	0.027822778	1								
As_ppm	0.207627988	0.029465613	1							
B_ppm	0.28611086	-0.036032436	-0.035776415	1						
Ba_ppm	-0.069403215	0.033032483	0.097794859	-0.214233432	1					
Be_ppm	0.094476801	0.154089552	0.271767764	-0.280111969	0.298532708	1				
Bi_ppm	0.121884735	0.055700674	0.069523475	0.0039805	-0.065192376	0.087992401	1			
Ca_pct	-0.028471456	-0.093116495	0.02926032	0.049696295	0.017269505	0.017584221	0.038011298	1		
Cd_ppm	0.376056571	0.043201071	0.216437095	0.18078233	0.12901052	0.209517189	0.144499511	0.25487514	1	
Co_ppm	0.582283614	-0.0003086	0.009416979	0.599544107	-0.314446905	-0.239993375	0.053942437	-0.133882662	0.159280273	1
Cr_ppm	0.326718126	0.144909646	-0.048271063	0.452864522	-0.37392724	-0.31934924	0.027091088	-0.114902401	-0.002769687	0.634882212
Cu_ppm	0.759146262	0.058049137	0.042006218	0.440604558	-0.208950727	-0.114114472	0.068272122	-0.011694114	0.239687003	0.76610012
Fe_pct	0.60059144	0.324474624	0.212111157	0.412397472	-0.232518624	0.105892552	0.149270882	-0.121505972	0.231169454	0.724581497
Ga_ppm	-0.216892005	0.565814246	0.028927567	-0.188088385	0.180018804	0.175976987	-0.00430757	0.0026995	-0.015768512	-0.288780433
Hg_ppm	0.022447353	0.010834258	-0.000172597	-0.066284349	0.003775439	0.094200529	0.033577353	0.024863111	-0.001282972	-0.06328723
K_pct	-0.118915279	0.181414329	0.163573154	-0.290846974	0.401928833	0.341340201	-0.014475525	0.068576874	0.053861834	-0.378112483
La_ppm	-0.070625438	0.122786964	0.165315278	-0.267683676	0.282381731	0.284427415	0.032988514	-0.067267594	0.068916771	-0.321513339
Mg_pct	0.323166838	-0.038200372	-0.083933908	0.668096005	-0.40413137	-0.367435973	0.021139453	-0.146077956	-0.008731418	0.836206914
Mn_ppm	0.413747477	0.194741884	0.077943292	0.391513303	-0.095544884	0.03524228	0.063584353	-0.082558658	0.167022315	0.737633031
Mo_ppm	0.14824897	0.004778243	0.167972802	-0.161819645	0.349283089	0.426815326	-0.013921219	-0.006287619	0.333487434	-0.212799249
Na_pct	-0.306289581	-0.03642388	-0.039763192	-0.269272858	0.225413089	-0.005087195	-0.110853529	-0.037380887	-0.003359594	-0.403290625
Ni_ppm	0.556971907	-0.079392879	-0.033927679	0.643348624	-0.361449058	-0.321954045	0.035762537	-0.109568036	0.103315614	0.923326584
P_ppm	-0.057651958	0.04335367	0.133098524	-0.423562357	0.376797	0.481782657	0.044331896	0.10642841	0.18794426	-0.516520055
Pb_ppm	0.35927183	0.126336062	0.29213802	-0.081961907	0.136166191	0.433364688	0.168174526	0.114247708	0.687960315	0.012859773
S_pct	0.438663285	-0.031586454	0.209371541	0.019950894	0.102137061	0.206696924	0.03731874	0.112797441	0.278602817	0.073321188
Sb_ppm	0.226585733	-0.02541633	0.712786553	-0.098754666	0.140082762	0.359392264	0.132773047	0.082123678	0.329818865	-0.000785708
Sc_ppm	0.165067002	0.431451779	0.135755106	0.094035121	0.012777345	0.226018749	0.058290726	0.058862409	0.157460126	0.175540297
Sr_ppm	-0.024890323	-0.067513726	0.11141672	-0.113746717	0.151016023	0.137835592	-0.017097647	0.548700768	0.108398296	-0.221453537
Ti_pct	-0.281784639	0.520596174	-0.137399727	0.024164502	0.053339676	-0.238715791	-0.109213491	-0.052920546	-0.151401313	-0.136090215
V_ppm	-0.13105259	0.743395497	0.016639319	-0.164097921	0.239929343	0.196776802	-0.002138999	-0.007292453	0.043726606	-0.220196263
Zn_ppm	0.304072475	0.124048456	0.442125597	-0.117141793	0.13143965	0.454050596	0.153787458	0.123398627	0.671591458	-0.054388522
Au_ppb	0.41146916	0.025879971	0.08503944	0.168154102	-0.16535746	0.033223122	0.044116412	0.036650627	0.123458806	0.331934692
Pt_ppb	0.65326489	0.00132547	-0.006089195	0.448100168	-0.197248694	-0.203401121	0.047372993	-0.053632407	0.133814768	0.728705498
Pd_ppb	0.631154032	-0.03494276	-0.006461789	0.502388619	-0.29937164	-0.230254047	0.051969488	-0.011396458	0.124739392	0.780824903

Wellgreen Soil Samples - Element correlations

Cr_ppm	Cu_ppm	Fe_pct	Ga_ppm	Hg_ppm	K_pct	La_ppm	Mg_pct	Mn_ppm	Mo_ppm	Na_pct	Ni_ppm
1											
0.466892238	1										
0.575684178	0.656348868	1									
-0.169728486	-0.161900166	-0.0753198	1								
0.002190475	-0.027367474	0.012453462	-0.04311001	1							
-0.379815138	-0.227355078	-0.14042737	0.300355821	0.071011017	1						
-0.33095527	-0.257948136	-0.1573692	0.182238963	-0.00119668	0.315170183	1					
0.767015023	0.51926357	0.6087692	-0.32060101	-0.05182272	-0.45436716	-0.42358798	1				
0.447462818	0.465619127	0.63823878	-0.08927524	-0.02605455	-0.17002895	-0.12968034	0.601272916	1			
-0.238876591	-0.119503027	0.012872675	0.028425919	0.0474526	0.196978831	0.256958012	-0.33104247	-0.04649325	1		
-0.350137524	-0.311793532	-0.4486283	0.163617377	-0.04957613	0.223482004	0.261743746	-0.44259762	-0.35089066	0.119005018	1	
0.702303838	0.76978959	0.64091788	-0.33716273	-0.05384231	-0.43529185	-0.38643395	0.86714049	0.59008899	-0.26460554	-0.38934948	1
-0.542944672	-0.334934014	-0.25740043	0.195739345	0.071590141	0.461117309	0.422183499	-0.65778602	-0.28767578	0.552274482	0.315538296	-0.5705029
-0.128580508	0.148070221	0.21816472	0.060967057	0.035970271	0.189616476	0.240839328	-0.19063189	0.122472038	0.271125874	-0.03084282	-0.0792399
-0.117682258	0.398219167	0.203227599	-0.05695888	0.054029197	0.107545423	0.108346959	-0.15232945	-0.04316094	0.197501392	-0.02732722	0.057293166
-0.072988092	0.057826495	0.225110664	0.007921906	0.012453427	0.151633369	0.183006145	-0.14538293	0.074078857	0.337455026	-0.00787309	-0.05129103
0.211985193	0.144685168	0.4966549	0.19743614	0.001552485	0.037029629	-0.03791753	0.10434159	0.411868292	0.111801716	-0.19514471	0.091894494
-0.202756086	-0.077961953	-0.14374129	0.020242347	0.033389539	0.146071315	0.023666672	-0.25096588	-0.13382282	0.088829773	0.038612847	-0.18692864
-0.05472358	-0.123858709	-0.08754595	0.401405588	-0.09859729	0.228144073	0.05938188	-0.0651041	-0.08995062	-0.22022749	0.204339599	-0.15756038
-0.108433045	-0.088383198	0.083998294	0.5556424	-0.02108846	0.264443142	0.14899247	-0.303942	0.041910086	0.121511877	0.118296588	-0.29868223
-0.169861663	0.015590339	0.243022986	0.064158695	0.075573351	0.21541877	0.258221579	-0.2141746	0.05508264	0.358011893	-0.0563689	-0.15687553
0.204512263	0.443769183	0.366735705	-0.08491549	-0.01657755	-0.13749108	-0.13647622	0.195658686	0.264230669	0.014283698	-0.20892929	0.306669642
0.476273607	0.890484248	0.64197356	-0.19311456	-0.04116293	-0.21863941	-0.28401278	0.5457935	0.407288509	-0.16931986	-0.31012	0.75142539
0.583698643	0.800759681	0.60650698	-0.2572424	-0.02641322	-0.34063485	-0.3203131	0.64818508	0.50071618	-0.20036684	-0.36188061	0.86645315

Wellgreen Soil Samples - Element correlations

P_ppm	Pb_ppm	S_pct	Sb_ppm	Sc_ppm	Sr_ppm	Ti_pct	V_ppm	Zn_ppm	Au_ppb	Pt_ppb	Pd_ppb
1											
0.282420016	1										
0.202179263	0.363365595	1									
0.309617851	0.375226012	0.227800359	1								
-0.01636013	0.145239521	-0.09783415	0.230661803	1							
0.184549962	0.132364002	0.135424323	0.196392979	0.048373184	1						
-0.06826378	-0.21030754	-0.17832001	-0.25319773	0.045316916	-0.13825588	1					
0.201527062	0.077167876	-0.06029003	0.005561595	0.58053113	-0.01649201	0.59008735	1				
0.349834601	0.794176	0.30401417	0.51809159	0.16492941	0.12158587	-0.21593711	0.05927583	1			
-0.10880951	0.106517805	0.240395167	0.065134623	0.138390898	0.040662152	-0.14329706	-0.05998384	0.055837677	1		
-0.36102813	0.039951364	0.357577636	0.012448678	0.078134383	-0.1240897	-0.06980997	-0.14339852	-0.07591375	0.405011212	1	
-0.42926899	0.020769675	0.159318289	0.036366919	0.13934439	-0.05572075	-0.17817865	-0.19910564	-0.08893793	0.36669205	0.82366965	1



Soil Sampling
Wellgreen Program 2012

UTM Z7 NAD83

0 1 2 Kilometers

Legend

- Wellgreen samples
- Arch grid samples
- Roads

Geology

- Q - Quaternary
- uTrNv - Nikolai flows
- uTrNb - Nikolai breccia
- uTMg - Maple Creek gabbro
- uTg - Kluane Suite gabbro
- uTu -Kluane Suite ultramafic
- PHcg - Hasen Creek conglomerate
- PHc1 - Hasen Creek bioclastic limestone
- PHp Hasen Creek Formation, sediments
- PSv - Station Creek Formation, volcaniclastics