ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: ASSESSMENT REPORT ON SURPRISE CREEK PROPERTY

TOTAL COST: $150,000

AUTHOR(S): A. Walus, P.Geo
SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):
STATEMENT OF WORK EVENT NUMBER(S)/DATE (S): Event No: 5684992, February 08 2018

YEAR OF WORK:2017

PROPERTY NAME: Surprise Creek Property

CLAIM NAME(S) (on which work was done): 540452, 540453, 540454, 540455, 540456

COMMODITIES SOUGHT: copper, lead, zinc, silver

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 104A-188, 104A-189, 104A-191, 104A-192

MINING DIVISION: Skeena
NTS: 104-A/4
LATITUDE: 56° 12'
LONGITUDE: 129° 40' " (at centre of work)
UTM Zone:9 EASTING:460000 NORTHING: 6226000

OWNER(S): Mountain Boy Minerals

MAILING ADDRESS: 426 King Street,
PO Box 859
Stewart, BC

OPERATOR(S) [who paid for the work]: Mountain Boy Minerals
MAILING ADDRESS: Same

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**): Kuroko VMS mineralization, copper-lead-zinc silver mineralization, barite.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 27981, 29446, 32800A

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for …)			
Soil			
Silt			
Rock	115	540453, 540454	30,000
Other			
DRILLING (total metres, number of holes, size, storage location)		540453	
Core 345 m			120000
RELATED TECHNICAL			
Sampling / Assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale/area)			
PREPATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km)/trail			
Trench (number/metres)			
Other			
		TOTAL COST	$150,000

ASSESSMENT REPORT ON
SURPRISE CREEK PROPERTY

Located 32 km Northeast of
Stewart, British Columbia
in Skeena Mining Division

56 degrees 12 minutes latitude
129 degrees 40 minutes longitude
N.T.S. 104A/4

Event Number: 5684992

Project Period:
July 01 to November 01, 2017

On Behalf of
Mountain Boy Minerals

Report by
A. Walus, P.Geo.
e-mail: alexwalus@hotmail.com

Date: March 20, 2018

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SUMMARY

The Surprise Creek property is situated approximately 32 kilometers northeast of Stewart, British Columbia. At the present time access to the property is by helicopter from Stewart or Meziadin camp located some 20 km to the east. Highway 37A running between Stewart and Meziadin Junction comes just 2.0 kilometres from the southern boundary of the property.

The property consists of 19 claims (claims 519010 to 540456) totaling 7,472.10 hectares located between Todd and Surprise creeks. Ownership of all 19 claims is presently registered with Mountain Boy Minerals.

During the 2017 rock sampling program on Surprise Creek property a total of 115 samples were collected. Of those, 24 samples were taken by a team of climbers from the top part of prominent sericite-quartz-pyrite zone situated at the base of Ataman Zone. The primary goal of using climbers was to find the source of several large boulders carrying VMS mineralization found in 2016 at the bottom of Ataman zone. The climbers failed to find the source of VMS boulders. Instead, they encountered several barite-carbonate-quartz veins and replacements with up to 10% galena and sphalerite. Eight samples contained more than 1% of combined lead and zinc assaying up to 198 g/t Ag, 10.8% Pb and 2.65% Zn.

The remaining 91 samples were collected by a 3-person team in other parts of the property. Several grab samples collected from quartz veins at the toe of Grunwald glacier returned significant precious and base metal values of up to 25.3 g/t Au, 210 g/t Ag, 1.79% Cu, 6.94% Pb and 3.35% Zn. A grab sample collected from 0.3-0.5 m wide layer of mudstone/limestone with minor sphalerite and galena yielded 10.6 g/t Ag, 0.14% Pb and 0.89% Zn.

In the Long Glacier valley several float samples of quartz vein with pyrrhotite/pyrite +/- galena +/- sphalerite assayed up to 3.0 g/t Au, >100 g/t Ag, 5.82% Pb and 0.52% Zn. At the toe of Long Glacier several quartz - pyrite/pyrrhotite veins up to 30 cm wide were found. They yielded up to 1.54 g/t Au, 62.2 g/t Ag and 0.31% Zn.

The 2017 drilling program on Surprise Creek property consisted of two diamond drill holes totaling 345 metres of NQ core. The best results came from core interval from 48.95 to 75.0 m of hole SC17-03 which averaged 22.34 g/t Ag, 0.36% Cu, 0.03% Pb, 1.03% Zn and 41.0% $BaSO_4$ over 26.05 m. The interval represents VMS horizon composed of barite and chert with lesser sphalerite, galena and chalcopyrite. Barite is a valuable commodity used mostly as a drilling mud in the oil and gas industry. The initial metallurgical work on the core rejects done by SGS Laboratory located in Richmond, BC indicate that barite concentrate from Surprise Creek far exceeds API (American Petroleum Institute) standards.

The entire Surprise Creek - BA area has an excellent potential to host Kuroko type VMS deposits. To date, three major zones of Kuroko style VMS mineralization has been identified. Of those, Barbara zone attracted the most attention with over 178 holes drilled. Another zone called Ataman Zone was the focus of exploration in 2016 and 2017. The zone is at least 200 by 600 metres in horizontal and 650 metres in vertical dimension. It features numerous VMS type mineral occurrences carrying sphalerite, galena and barite.

In the Surprise Creek area there is a conspicuous lack of VMS related copper mineralization which was encountered only in holes recently drilled on Ataman zone. That fact indicates that glacial erosion in the Surprise Creek area did not reach the central parts of VMS system. Large areas of the Surprise Creek property are weakly explored due to extensive ice coverage. However, the rapidly receding ice enables better access to these areas which may host more mineralized zones similar to Barbara and Ataman zones.

Based in large part on petrographic study, the upper part of drillholes are dominated by trachyte and lower parts by trachyte pyroclastics which include tuff, lapilli tuff and lapilli-tuff-breccia. Petrographic study also indicates that a prominent sericite-quartz-pyrite alteration zone situated on the bottom of Ataman zone represents a subvolcanic trachyte intrusion. The barite-chert-suphide zone is located below the sulphide bearing crackle breccia which most likely represents silicified outer part of trachyte intrusion. This fact points to trachyte intrusion as the source of mineralization. This would represent an unusual situation where VMS mineralization is related to trachyte. Trachytic rocks encountered during drilling are strongly to completely replaced by alteration assemblage dominated by sericite/muscovite with lesser carbonate, quartz, pyrite, +/-magnetite, +/-fuchsite (or mariposite).

For the next exploration season a total of 2,000 metres of drilling is recommended. The holes should further test the newly discovered VMS mineralization on Ataman zone. The cost of the planned drilling program is estimated at 568,000 dollars.

INTRODUCTION

This report is based on the results of the 2017 exploration program which included geochemical rock sampling and drilling on the Surprise Creek property. The program was conducted under author's supervision on behalf of Mountain Boy Minerals in the period from July 01 to October 10, 2017. The pertinent statement on exploration work performed in this period was filed on February 07, 2018 (event # 5684992). Data from previous assessment reports and MINFILE were also used. The complete list of sources used in this report is provided in references.
To provide better reference (similarly as in the 2005 and 2007 assessment reports), four glaciers located on the property were given informal names of Long, Grunwald, Jagiello and Ataman (see figure 4).

Location and Access

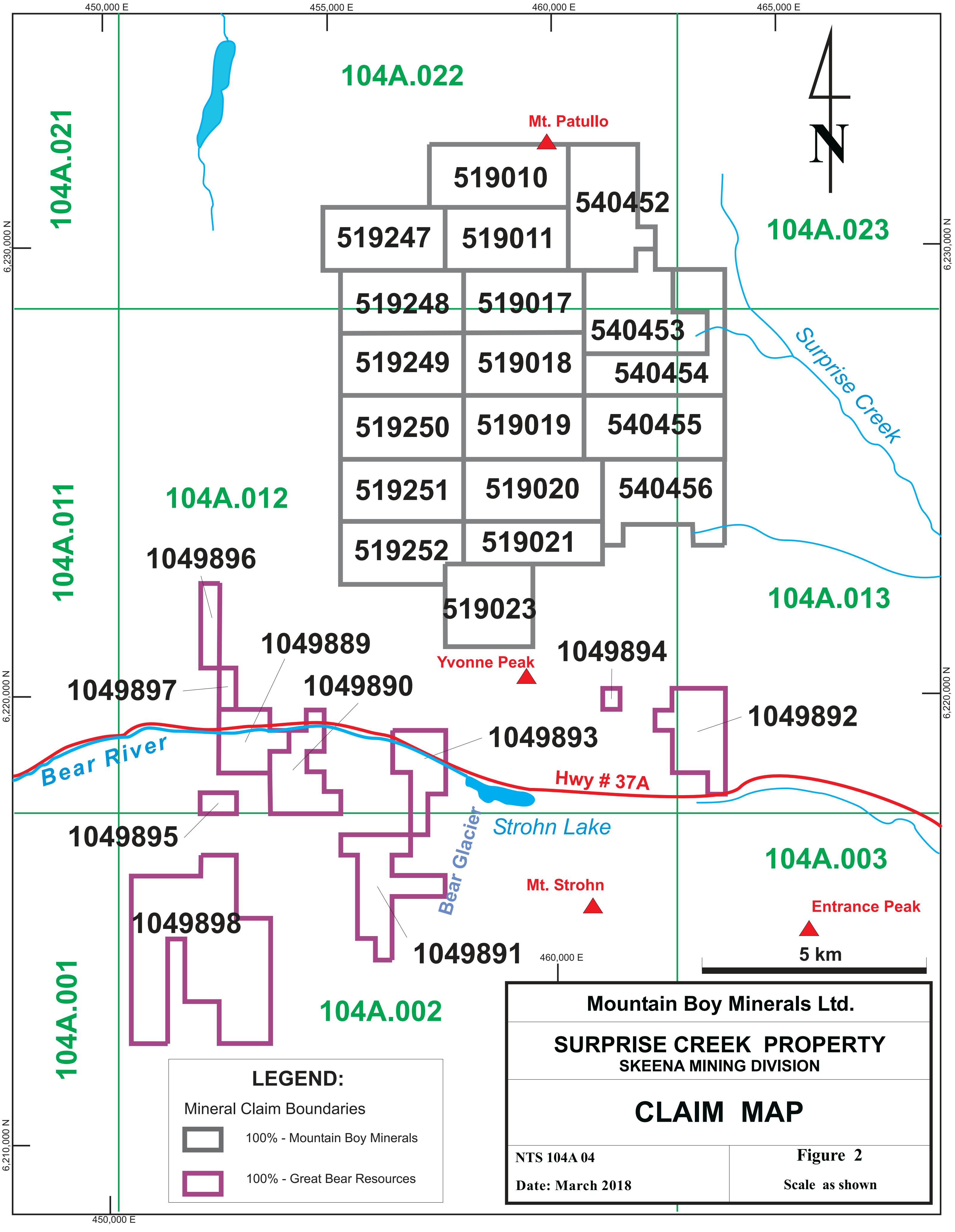
The property is situated approximately 32 kilometers northeast of Stewart, British Columbia. The claim area is centered approximately on 56 degrees 12 minutes latitude and 129 degrees 40 minutes longitude on NTS sheet 104A/4. Location of the property is shown on figures 1 and 2.

At the present time access to the property is by helicopter from Stewart or Meziadin camp located some 20 km to the east, on the junction of Highways 37 and 37A. Highway 37A running between Stewart and Meziadin Junction comes just 2.0 kilometres from the southern boundary of the property. An old mining road (non-maintained) runs from the Highway 37 A to the former gold-silver Nordore Mine, located approximately one kilometer from the southeast corner of the property.

Physiography and Topography

The area of Surprise Creek property encompasses steep mountain slopes typical of the Coast Range region of British Columbia. The property includes the southern part of Mount Patullo and the headwaters of Surprise and Todd creeks. Topography is rugged with numerous glaciers transecting the area. Slopes range from moderate to precipitous. Elevations vary from about 600 m in the eastern portion of the property to about 2733 m (Mount Patullo). Most of the western part of the property is covered by ice and snow fields. Eastern part of the property is to large degree covered by glacial material. Overall, outcrops comprise approximately 30-35% of the property. Lower slopes of the mountain valleys are occupied by spruce and hemlock trees. Higher elevations are covered by alpine grass and heather.
Due to the large snowfall, the surface exploration is restricted to summer and early fall with the maximum rock exposure occurring in late August and September.


SURPRISE CREEK
PROPERTY
WHITEHORSE
YUKON
N. W. T.
Hay River
ALASKA
ALBERTA
BRITISH
COLUMBIA
PACIFIC
OCEAN
U. S. A.
60ºN
130ºW
125ºW
120ºW
115ºW
Fairview
High Prairie
Mackenzie
Smithers
Prince Rupert
Kitimat
Prince
George
Whitecourt
Grande Cache
EDMONTON
Hinton
Jasper
Olds
Banff
Port Hardy
Revelstoke
Kamloops
Vernon
Merritt
Kelowna
Comox
Gibsons
Kimberley
Vancouver
Hope
Princeton
Nelson
White Rock
Osoyoos
Trail
Creston
VICTORIA
0 75 150 300
kilometres
Mountain Boy Minerals Ltd.
SURPRISE CREEK PROPERTY
Claim Location Map
Date Dec 20, 2016
Scale 1:8,000,000
Figure
Projection UTM Zone 9 - NAD83
State/Province BC
BCGS
NTS 104 A/04
1
Author MJD
File SurpLoc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104A.001
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104A.003
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519021
519023
Surprise Creek
1049896
1049889
1049897
1049890
1049894
1049892
1049893
1049895
1049898
1049891
Yvonne Peak
Bear River
Hwy # 37A
Strohn Lake
Bear Glacier
Mt. Strohn
Entrance Peak
5 km
LEGEND:
Mineral Claim Boundaries
100% - Mountain Boy Minerals
100% - Great Bear Resources
Mountain Boy Minerals Ltd.
SURPRISE CREEK PROPERTY
SKEENA MINING DIVISION
CLAIM MAP
NTS 104A 04
Date: March 2018
Figure 2
Scale as shown

Property Ownership

The Surprise Creek property consists of 19 claims (claims 519010 to 540456) totaling 7,472.10 hectares located between Todd and Surprise creeks. Ownership of all 19 claims is presently registered with Mountain Boy Minerals. Between July 01 and November 01, 2017 Mountain Boy Minerals spent $150,000 on geochemical rock sampling and drilling of this property. On February 07, 2018 this work was registered (event # 5684992) with the Ministry of Mines. Part of the work was applied to extend expiry dates of eight Surprise Creek claims (claims Ataman 3 to 10) and ten claims which belong to Great Bear Resources (claims No. 1049889 to 1049898). The reminder of the work was credited to the Mountain Boy's Portable Account Credit (PAC). The relevant claim information is summarized in the table below. Claims location copied from MTO database is presented on figure 2.

Title Number	Claim Name	Owner	Issue Date	Good to Date	Area (ha)
519010	ATAMAN3	202088 (100%)	2005/AUG/13	2019/SEP/28	431.67
519011	ATAMAN4	202088 (100%)	2005/AUG/13	2019/SEP/28	377.84
519017	ATAMAN5	202088 (100%)	2005/AUG/13	2019/SEP/28	377.95
519018	ATAMAN6	202088 (100%)	2005/AUG/13	2019/SEP/28	378.07
519019	ATAMAN7	202088 (100%)	2005/AUG/13	2019/SEP/28	378.19
519020	ATAMAN8	202088 (100%)	2005/AUG/13	2019/SEP/28	432.35
519021	ATAMAN9	202088 (100%)	2005/AUG/13	2019/SEP/28	288.31
519023	ATAMAN10	202088 (100%)	2005/AUG/13	2019/SEP/28	360.51
519247		202088 (100%)	2005/AUG/22	2018/SEP/28	377.85
519248		202088 (100%)	2005/AUG/23	2018/SEP/28	377.97
519249		202088 (100%)	2005/AUG/23	2018/SEP/28	378.10
519250		202088 (100%)	2005/AUG/23	2018/SEP/28	378.22
519251		202088 (100%)	2005/AUG/23	2018/SEP/28	378.33
519252		202088 (100%)	2005/AUG/23	2018/SEP/28	360.43
540452		202088 (100%)	2006/SEP/05	2018/SEP/05	449.73
540453		202088 (100%)	2006/SEP/05	2018/SEP/05	449.97
540454		202088 (100%)	2006/SEP/05	2018/SEP/05	432.05
540455		202088 (100%)	2006/SEP/05	2018/SEP/05	432.21
540456		202088 (100%)	2006/SEP/05	2018/SEP/05	432.35
1049889		277053 (100%)	2017/FEB/08	2019/FEB/08	180.38
1049890		277053 (100%)	2017/FEB/08	2019/FEB/08	216.50
1049891		277053 (100%)	2017/FEB/08	2019/FEB/08	288.83
1049892		277053 (100%)	2017/FEB/08	2019/FEB/08	252.51
1049893		277053 (100%)	2017/FEB/08	2019/FEB/08	180.42
1049894		277053 (100%)	2017/FEB/08	2019/FEB/08	18.03
1049895		277053 (100%)	2017/FEB/08	2019/FEB/08	36.09
1049896		277053 (100%)	2017/FEB/08	2019/FEB/08	72.11
1049897		277053 (100%)	2017/FEB/08	2019/FEB/08	36.07
1049898	WINTERFELL	277053 (100%)	2017/FEB/08	2019/FEB/08	956.98

WORK HISTORY

1970s - 1990s

In the 1970s and 1980s, the area presently covered by Surprise Creek claims was prospected and trenched but there are no records of this work. In 1989, the Surp claims were acquired by Teuton Resources Corp. The following year, Teuton Resources conducted soil, silt and rock sampling. In 1994 and 1996, Teuton Resources conducted an exploration program consisting of reconnaissance geochemical rock and silt sampling as well as geological mapping. The work concentrated on area presently covered by claims No. 540453, 540454 and 540455. The program was focused on finding gold bearing mineralization.

2003

In 2003 Pinnacle Mines collected a total of 78 rock samples from outcrop and float as well as 23 silt samples during an exploration program. Assay results yielded highly anomalous values for gold, silver, lead, zinc, arsenic and copper. The highs for these metals were as follow: 13.02 ppm for gold, 3,076.8 ppm for silver, >9999 ppm for lead, 56,866 ppm for zinc, >9999 ppm for arsenic and 28,026 ppm for copper.

2004

That year Pinnacle continued reconnaissance geochemical rock and silt sampling of the property. A total of 220 rock samples both from outcrop and float as well as 19 silt samples were collected during the exploration program. Assay results of the samples indicate highly anomalous values for gold, silver, lead, zinc, arsenic and copper. The highest assay for gold was 3.9 ppm, for silver 1305 ppm, for lead 9.1%, for zinc > 10,000 ppm, for arsenic >10,000 ppm and for copper 8.67%.

2005

In 2005 Pinnacle continued exploration on Surprise Creek property. That year a total of 279 rock and 8 silt samples were collected. These samples represented abundant and diverse mineralization found on the property. The most important mineralization consisted of extremely fine-grained syngenetic pyrite, sphalerite and galena with high silver, mercury, and manganium hosted in black chert, limestone and mudstone. Contents of zinc, lead, silver and mercury varied in a broad range from slightly elevated values to the highs of 7.61% for zinc, 1.1% for lead, 106 g/t for silver, and 33,800 ppb for mercury.

2006

Pinnacle work in 2006 was focused on the west part of the property. This area features very intense zone of pervasive K-feldspar alteration which stretches out for at least 10 kilometres in the north-south and 4-5 kilometres in the east-west direction. The extent of this alteration was

determined by K-feldspar staining (using sodium cobaltinitrite) of a few dozen samples collected from the area. The intensity of K-feldspar alteration was determined in percentages by visual estimate of stained samples.
A total of 58 rock samples were collected during 2006 exploration program. The highest assays came from the southeast corner of the property. Sample S06-1, a float of mudstone/siltstone with hydrozincite stain and a few % of sphalerite, yielded 10.3g/t Ag, 0.2% Pb, 1.94% Zn and 6000 ppb Hg. Another sample (S06-2) from the same area (a float of silicified breccia composed of jasper fragments with 2-3% galena, 1-2% pyrite and trace malachite) returned 100.8g/t Ag, 3.62% Pb, 0.15% Zn and 3000ppb Hg.

2007

In 2007, an exploration program by Pinnacle Mines consisted of four diamond-drill holes totaling 1995 metres of NQ core. These holes did not test any specific target but were drilled within a broad area suspected of hosting a Kuroko type VMS mineralization at depth. The holes did not encounter any economic grade VMS mineralization. However, hole SP07-04 intersected (just below a major fault) a weakly mineralized felsic crackle breccia believed to represent a footwall of the VMS system. A combined interval of 5 core samples (15.25 metres) of this breccia returned anomalous values in silver (14.18 g/t), lead (0.07%) and zinc (0.16%) – (Walus A, 2007). Litologically and geochemically this rock closely resembles a footwall of a VMS mineralization encountered in many holes drilled on BA property. No sediment hosted VMS mineralization was intersected in this hole which most likely was displaced by a fault.

2010

The 2010 exploration program on Surprise Creek property conducted by Great Bear Resources consisted of a helicopter-borne geophysical survey as well as geological mapping and sampling. Geophysical survey consisted of a versatile time domain electromagnetic (VTEM) survey and a cesium magnetometer survey. A total of 3327 line-kilometres were flown over BA and Surprise Creek claims. From September 6 to September 23, Coast Mountain Geological was contracted to perform a program of geological mapping, prospecting and rock sampling over the Surprise Creek claims (see Theny L.M. 2011). During the program a total of 61 rock samples were collected of which one-third was collected from Ataman Zone (called Rumble Zone in 2010 assessment report).

2016

During the 2016 exploration program a total of 218 rock samples were collected. The program was focused on Ataman zone (called Rumble zone in 2010 AR) located on the south side of Jagiello Glacier valley. At the bottom of the zone, Mountain Boy crew found several angular boulders up to 1.0 metres in size composed of limestone/ mudstone with 1 to 15% sphalerite. Three samples collected from these boulders assayed 3.04, 3.13 and 11.64 % zinc plus anomalous lead, silver, gold, arsenic and tungsten; gold assays averaged 90 ppb. A follow-up prospecting carried out on Ataman Zone led to the discovery of several new mineralized occurrences.

The same year, Mountain Boy drilled 2 holes targeting the lower part of Ataman zone. Hole SC16-2 returned 0.12 g/t Au, 28.0 g/t Ag, 1.21% Zn, 0.03% Pb, 0.31% Cu and 46.73% $BaSO_4$ over 18.94 metres (Mt. Boy Minerals press release, Feb. 02, 2017).

GEOLOGY

Regional Geology

The Surprise Creek property lies in the Stewart area, east of the Coast Crystalline Complex and within the western boundary of the Bowser Basin. Rocks in the area belong to the Mesozoic Stuhini Group, Hazelton Group and Bowser Lake Group that have been intruded by plutons of both Cenozoic and Mesozoic age.

According to C.F. Greig, in G.S.C. Open File 2931, portions of the general Stewart area are underlain by Triassic age Stuhini Group. The Stuhini Group rocks either underlie or are in fault contact with the rocks of Hazelton Group. These Triassic age rocks consist of dark gray, laminated to thickly bedded silty mudstone, and fine to coarse-grained sandstone. Local hetherolitic pebble to cobble conglomerate, massive tuffaceous mudstone and thick-bedded sedimentary breccia and conglomerate also form part of the Stuhini Group.

The large exposure of Hazelton Group rocks on the west side of Bowser Basin has been named the Stewart Complex. It forms a north-northwesterly trending belt extending from Alice Arm to the Iskut River. At the base of the Hazelton Group is the lower Lower Jurassic volcaniclastic Unuk River Formation. This is overlain at steep discordant angles by a second, lithologically similar, middle Lower Jurassic volcanic package (Betty Creek Formation), which in turn is overlain by an upper Lower Jurassic thin felsic tuff horizon (Mt. Dilworth Formation). Middle Jurassic non-marine sediments with minor volcanics of the Salmon River Formation unconformably overlie the above volcaniclastic sequence.

The Unuk River Formation is at least 4500 metres thick, monotonous package of green andesitic rocks which include ash and crystal tuff, lapilli-tuff, pyroclastic breccia and lava flows.

The Betty Creek Formation represents another cycle of trough filling with a sequence of distinctively coloured red to green epiclastic rocks with interbedded tuffs and flows which range in composition from andesitic to dacitic.

The upper Lower Jurassic Mt. Dilworth Formation consists of a 20 to 120m thick sequence composed chiefly of variably welded dacite tuffs. Hard, resistant, often pyritic rocks of this formation often form gossanous cliffs. Rocks of Mt. Dilworth Formation are important stratigraphic marker in the Stewart area.

The Middle Jurassic Salmon River Formation is a thick package of complexly folded sedimentary rocks which include banded, predominantly dark colored siltstone, greywacke, and sandstone with intercalated calcarenite rocks, minor limestone, argillite, conglomerate, littoral deposits, volcanic sediments and minor flows.

Overlying the above sequences are the Upper Jurassic Bowser Lake Group rocks. These rocks are exposed along the western edge of the Bowser Basin, they also occur as remnants on mountaintops in the Stewart area. These rocks consist of dark grey to black clastic rocks dominated by silty mudstone and thick beds of massive, dark green to dark grey, fine to medium grained arkosic sandstone.

A variety of intrusive rocks formed in the area during Early Jurassic and Tertiary periods. The granodiorites of the Coast Plutonic Complex largely engulf the Mesozoic volcanic terrain to the west. To the east, there are numerous smaller intrusions which range in composition from monzonite to granite. Some of them probably represent apophysis of the Coast plutonism, others are synvolcanic. Double plunging, northwesterly trending folds of the Salmon River and underlying Betty Creek Formations dominate the structural setting of the area.

Property Geology

The following description of the property's geology is based on the GSC open file map by C. Greig (1994) as well as observations made by the author during the 2005-2007 and 2016-1017 exploration programs.

The Surprise Creek claim group is underlain by a sequence of Jurassic clastic and volcanic rocks which trend north-south to northwest-southeast. The area is dominated by a major anticline, which displays eastern vergence. An area located close to the anticline's axial plane is occupied by reddish to maroon andesitic volcaniclastic and volcanic rocks of Betty Creek Formation. To the west and east of the anticline's axis there are felsic rocks of Mount Dilworth (?) Formation which form 70 to 200 metres wide horizon composed of apple green, light gray or white coloured felsic volcanic rocks which include flows (with flow banded texture), intrusions and pyroclastic rocks. East of the felsic rocks of Mount Dilworth Formation (?), a monotonous sequence of thinly bedded mudstone, siltstone, tuffaceous chert, chert and cherty argillite belonging to Salmon River Formation is present. The pyrite-bearing black mudstones and argillites of this formation tend to weather to a rusty color. Area to the west of Mount Dilworth Formation (?) is underlined by a thick sequence of undivided mostly intermediate volcanic, pyroclastic and epiclastic rocks with subordinate amounts of intercalated sedimentary rocks which include: gray to black limestone, chert and mudstone. Volcanic rocks in this area are dominated by feldspar, feldspar-hornblende and feldspar-augite porphyritic andesites. All these rocks most likely belong to the Betty Creek Formation.

The structural pattern of the Surprise Creek property is only partly understood due to incomplete exposure from beneath an ice sheet and widespread K-feldspar alteration obliterating earlier structures. The orientation of bedding planes is variable across the property with the majority of planes oriented NW-SE with NE dip (Mazur S, 2006). The bedding is reoriented on limbs of the folds with hinges trending NW-SE to NNW-SSE. The folds axes are plunging gently to the NNW (340/35) or locally to the SE (140/20). In nearly all lithologies except for the massive andesites, there is a well-developed axial cleavage of folds. The cleavages planes dip steeply to the NNE or NE. The attitude of cleavage together with the geometry of outcrop-scale folds indicate the SW-ward vergency of map-scale fold structures. The majority of exposures represent normal NE-dipping limbs of these folds. Locally, in particular directly east of the main ridge, a very steep overturned limb is exposed. The K-feldspar altered rocks bear fairly consistent foliation inclined to the W or SSE at a moderate angle. The orientation of the foliation seems to be unrelated to the position of bedding and axial cleavage of folds. The outcrops of K-feldspars altered rocks are at least partly bounded by faults (255/65 NW; 146/78 SW). A number of meso- to map-scale faults occur in the area. They strike mostly NW-SE and NE-SW
and form two conjugate sets developed under a N-S compression regime. In one case, a thrust was observed having the SW-ward polarity (150/40 NE oriented plane) and the amplitude exceeding a few dozen metres.

Mineralization

To date, the following types of mineralization were found on the Surprise Creek Property:

1. Extremely fine grained syngenetic pyrite, sphalerite and galena with high silver, mercury, and manganium hosted in black chert, limestone and mudstone.
2. Exhalite
3. Barite-carbonate veins and shear zones with galena and sphalerite.
4. Strongly silicified trachyte with pyrite, sphalerite, galena, and chalcopyrite.
5. Precious metals bearing quartz with pyrrhotite and/or pyrite +/- sphalerite +/- galena +/- arsenopyrite +/- chalcopyrite +/- tetrahedrite.
6. Laminated to massive barite-chert with sphalerite-galena-chalcopyrite +/-arsenopyrite.

The first type of mineralization is by far the most abundant in the Surprise Creek area. It can be found in every glacial valley from Mt. Patullo to Nelson Glacier, a distance of over 22 kilometres. It is found mostly as numerous boulders and to lesser extent in place. The mineralization is hosted in laminated chert, limestone and mudstone which often display strong soft sediment deformation, frequently forming synsedimentary breccia. Sulphides form thin laminae and disseminations, often concentrating in matrix of synsedimentary breccia. Content of zinc, lead and silver vary in a broad range from slightly elevated values to the highs of 7.61% for zinc, 1.1% for lead and 106 g/t for silver.

Mineralization described as exhalite (type 2) is found mostly as float and less frequently in situ. It is composed of finely laminated bright red chert +/-hematite+/-magnetite. Some of the exhalite composed of thin intercalated laminae of chert, magnetite and hematite closely resemble rocks of iron formation. This type of mineralization carries only minor zinc, lead and silver values.

The bulk of mineralization listed as type 3 is located on Ataman zone comprising veins and shear zones up to 20 metres wide. Assay values up to 297 g/t silver and up to several per cent of combined lead and zinc were reported from this mineralization type.

The fourth type of mineralization was found exclusively as a few dozen boulders occurring at the toes of Jagiello, Grunwald and Short glaciers. On the surface, boulders comprised of this type of mineralization are off-white colour with patches of manganese stain. They are semirounded to rounded, reaching 2.0 metres across in size. Samples from these boulders collected between 2003 and 2005 yielded up to 5% of combined Zn and Pb, up to 2.8% Cu and up to 213 g/t Ag. The boulders also feature highly anomalous mercury of up 147,000 ppb i.e. 1000 times above the background level. Based on the 2005 Petrographic Study (Walus A. 2005) the primary rocks comprising these boulders were classified as trachyte.

The fifth type of mineralization occurs mainly as float in many parts of the property. The boulders represent fragments of quartz veins (pods) and stockwork zones with coarse grained sulphides. They assayed up to 45.2 g/t Au, 371 g/t Ag, 0.88% Cu, 5.82% Pb, 0.43% Zn and >1% As. This type of mineralization was also found in place as quartz-sulphide veins up to 30 cm wide. They returned up to 25.3 g/t Au, 210 g/t Ag, 1.79% Cu, 6.94% Pb and 3.35% Zn.

Laminated to massive barite-chert with sulphides (mineralization type 6) was found only in holes drilled in 2016 and 2017 on Ataman zone. This mineralization type has laminated to massive texture, laminae are often strongly disturbed locally forming slump breccia. Chert dominate the upper and barite the lower part of the interval. Sulphides listed in order of abundance include pyrite, sphalerite, chalcopyrite, galena and arsenopyrite. A core interval from the 2017 drilling which represents this mineralization type assayed 22.34 g/t Ag, 0.36% Cu, 0.03% Pb, 1,03% Zn and 41.0% barite over 26.05 m.

Alteration

<u>K-feldspar alteration</u>

The Surprise Creek area features a large zone of very intense, pervasive K-feldspar alteration occupying the western part of the property. It stretches out for at least 10 kilometres in the north-south and 4-5 kilometres in the east-west direction. The extent and intensity of this alteration was determined by K-feldspar staining using sodium cobaltinitrite of a few dozen samples collected from the area.

Sericite-quartz-pyrite alteration

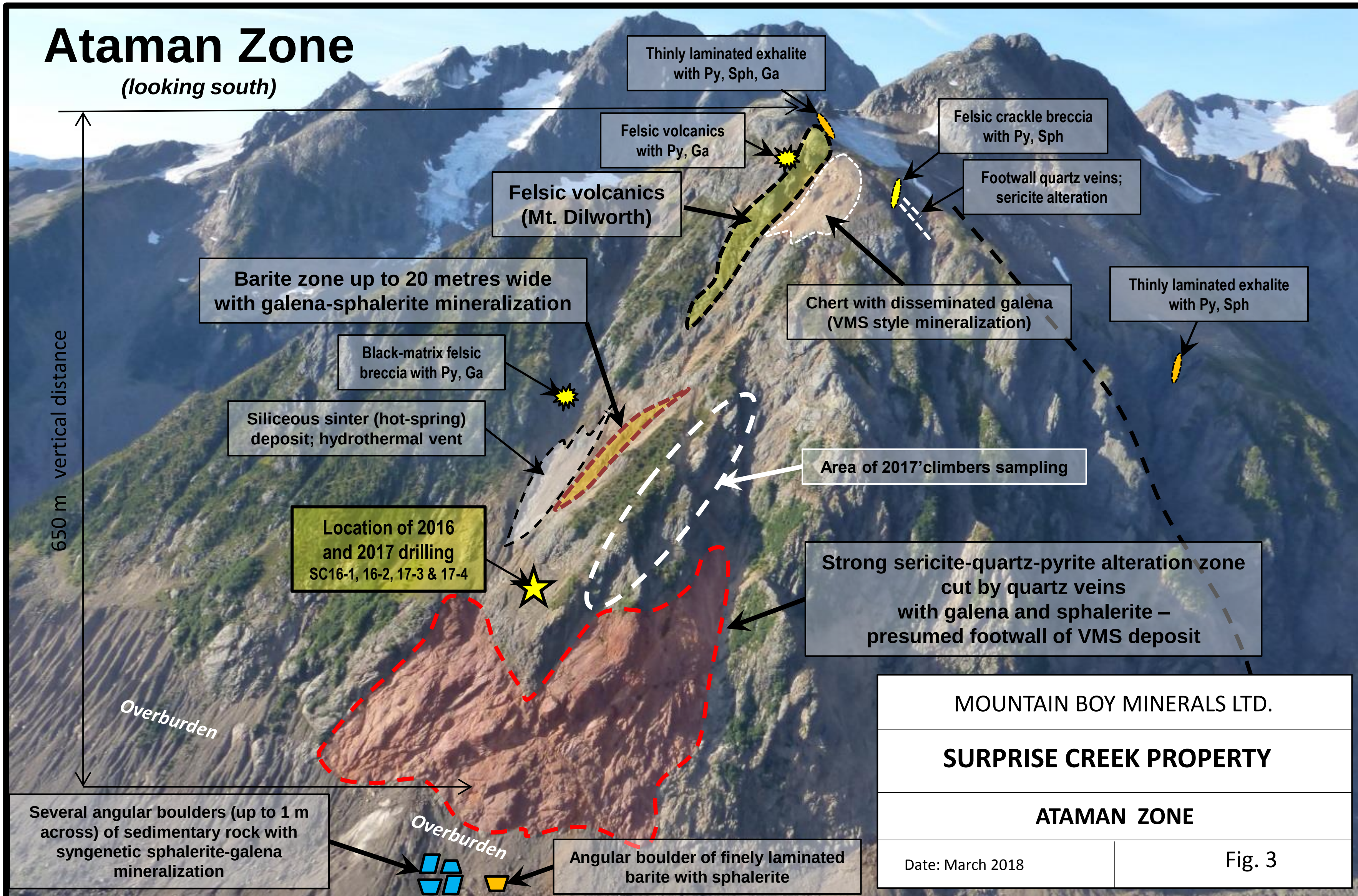
The most prominent zone of this alteration type can be observed at the base of the Ataman zone (see figure 3 for location). Smaller alteration zones of this type exist on the property but were not explored due to difficult access.

Major Mineralized Zones

Ataman Zone

Ataman Zone (called Rumble Zone in the 2010 AR) is located on the south side of Jagiello Glacier valley (see figures 4 and 4B). The full size of the zone is not known as the zone was not fully explored. It is at least 200 by 600 metres in horizontal and 650 metres in vertical dimension. At the bottom of Ataman Zone there is a zone of intense sericite-quartz-pyrite alteration with locally developed quartz stockwork, veins and replacements which carry from trace to 3% galena and sphalerite. Pyrite is very abundant, up to 30% in some areas, occurring as disseminations, clots, stringers and veins up to 5 cm in width. The sericite dominated zone is approximately 120 metres high and 200-220 metres long. Microscopic examination of several thin sections derived from the zone indicate it represents a subvolcanic trachyte plug (see Petrographic Report in Appendix IV). In 2010, Great Bear Resources crew collected 9 chip and 3 grab samples from parts of sericite-quartz-pyrite zone. The samples returned an average of 29.3 ppm Ag, 1819 ppm Pb and 3054 ppm Zn. Also in 2010, numerous boulders composed of barite and carbonates containing up to 15% galena and 5% sphalerite were found just above the sericite dominated zone. At the bottom of Ataman zone, a float composed of finely laminated barite and sphalerite was found which assayed 2.28% Zn. Also at the bottom of Ataman zone, during the 2016 exploration program, Mountain Boy crew found several angular boulders up to 1.0 metres in size composed of limestone/ mudstone with 1 to 15% sphalerite. Three samples collected from these boulders (AW-5, 6 and 10) assayed 3.04, 3.13 and 11.64 % zinc plus anomalous lead, silver, gold, arsenic and tungsten; gold assays averaged 90 ppb. Subsequent prospecting carried out on the Ataman Zone led to the discovery of several new mineralized occurrences.

The same year Mountain Boy drilled two holes targeting the lower part of Ataman zone. Hole SC16-2 returned 18.94 m interval averaging 0.12 g/t Au, 28.0 g/t Ag, 0.31% Cu, 0.03% Pb, 1.21% Zn and 46.73% $BaSO_4$.


Ataman Zone
(looking south)
650 m vertical distance
Thinly laminated exhalite with Py, Sph, Ga
Felsic volcanics with Py, Ga
Felsic volcanics (Mt. Dilworth)
Felsic crackle breccia with Py, Sph
Footwall quartz veins; sericite alteration
Barite zone up to 20 metres wide with galena-sphalerite mineralization
Chert with disseminated galena (VMS style mineralization)
Thinly laminated exhalite with Py, Sph
Black-matrix felsic breccia with Py, Ga
Siliceous sinter (hot-spring) deposit; hydrothermal vent
Area of 2017'climbers sampling
Location of 2016 and 2017 drilling
SC16-1, 16-2, 17-3 & 17-4
Strong sericite-quartz-pyrite alteration zone cut by quartz veins with galena and sphalerite – presumed footwall of VMS deposit
Overburden
Overburden
Several angular boulders (up to 1 m across) of sedimentary rock with syngenetic sphalerite-galena mineralization
Angular boulder of finely laminated barite with sphalerite
MOUNTAIN BOY MINERALS LTD.
SURPRISE CREEK PROPERTY
ATAMAN ZONE
Date: March 2018
Fig. 3

Jagiello Zone

This zone located in the headwaters of Jagiello Glacier (see figure 4) attracted little attention due mainly to difficult access. This area however is highly promising as it is the source of numerous boulders carrying VMS lead-zinc-silver mineralization. A float sample (A05-234) collected in 2005 below the presumed location of the zone returned 1.1% Pb, 7.61% Zn and 60.5 g/t Ag.

2017 ROCK SAMPLING

Introduction

During the 2017 rock sampling program on Surprise Creek property a total of 115 samples were collected. Of those, 24 samples were taken by a team of climbers from the top part of a prominent sericite-quartz-pyrite zone situated at the base of Ataman Zone (see figure 3 for location). The remaining 91 samples were collected from other areas of the property (see figure 4). Descriptions of samples along with their coordinates in NAD 83 are shown in Appendix I. Samples locations along with their Au, Ag, Cu, Pb and Zn results are presented on figures 4A, 4B and 4C. Full geochemical results are presented in Appendix III.

All samples were analyzed by Actlabs - an ISO certified Laboratory in Kamloops, BC. All samples were analyzed for the 30 elements ICP. Samples which exceeded a threshold of 5,000 ppb for gold, 100 g/t for silver, 10,000 ppm for copper, 5,000 ppm for lead and 10,000 ppm for zinc by ICP method were assayed for these elements using multi acid digestion, peroxide fusion and AA finish.

Rock Sampling Results

Samples collected by climbers

The primary goal of using climbers was to find the source of several large boulders carrying VMS type mineralization found in 2016 at the bottom of Ataman zone. A total of 23 grab and 1 chip sample numbered LJ-023 to 029 and LJ-061 to 077 were collected. The climbers failed to find the source of VMS boulders. Instead, they encountered several barite-carbonate-quartz veins and replacements with up to 10% galena and sphalerite. Eight samples contained more than 1% of combined lead and zinc assaying up to 198 g/t Ag, 10.8% Pb and 2.65% Zn.

Other rock samples

Several grab samples collected at the toe of Grunwald Glacier returned significant precious and base metal values (see figure 4B for location). Sample DM126 taken from discontinuous gash filled with minor quartz and pockets of very fine-grained pyrite and lesser chalcopyrite assayed 12.4 g/t Au, 47g/t Ag and 1.34% Cu. Sample DM127 collected from 15 cm wide quartz vein with small amounts of pyrite and chalcopyrite returned 25.3 g/t Au, 210 g/t Ag, 1.79% Cu, 6.94% Pb and 1.71% Zn. Sample DM132 taken from quartz vein with discontinuous bands of pyrite, chalcopyrite, galena and sphalerite retuned 1.65 g/t Au, 171 g/t Ag, 0.31 % Pb and 3.35 % Zn. Sample A17-132 collected from 0.3-0.5 m wide layer of weathering brown mudstone/limestone with minor sphalerite and galena yielded 10.6 g/t Ag, 0.14% Pb and 0.89% Zn.

In the area of Long Glacier (see figure 4A) sample A17-9, an angular float of quartz vein with 7-10% pyrrhotite assayed 3.0 g/t Au and 98.8 g/t Ag. Sample A17-10, a fist size float of quartz vein fragment with 25-30% coarse grained pyrite and some galena returned 1.67 g/t Au, >100 g/t Ag, 5.82% Pb and 0.52% Zn. Sample A17-13, a grab from 7-8 cm wide quartz vein with pockets of coarse pyrite yielded 1.04 g/t Au. Sample A17-15, a grab from 20-30 cm wide irregular quartz vein with up to 20% pyrite returned 1.54 g/t Au, 62.2 g/t Ag and 0.31% Zn.

A few float samples of finely laminated chert/limestone with extremely fine-grained pyrite and trace to minor sphalerite and galena collected in the area of Ataman Glacier (see figure 4C) assayed up to 0.22% Pb and 0.72% Zn.

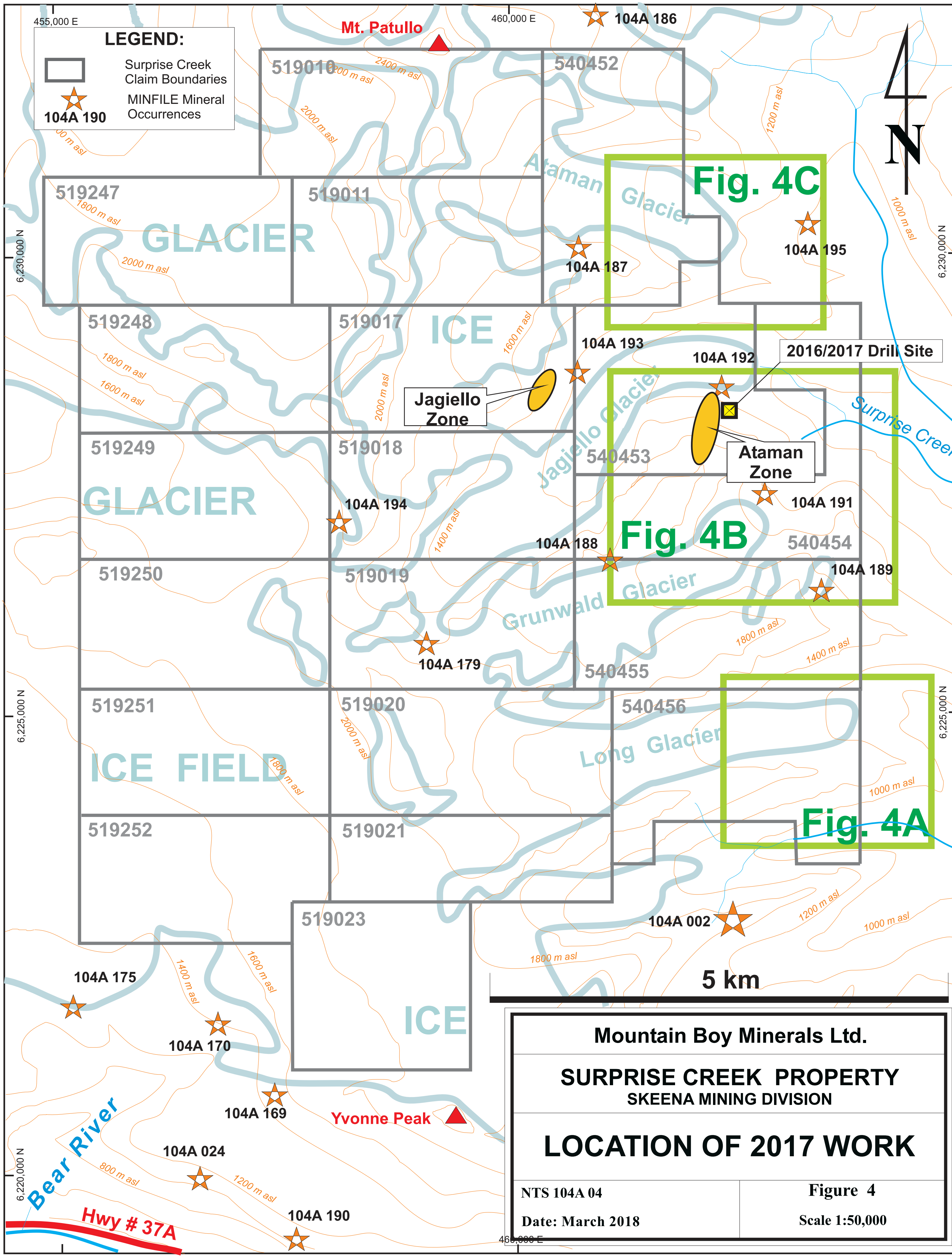
2017 DRILLING

Introduction

The 2017 drilling program on the Surprise Creek property consisted of two diamond drill holes totaling 345 metres of NQ core. Information about each hole azimuth, dip and GPS coordinates is includes in drill logs (see Appendix II). The holes were drilled from the same pad used for the 2016 drilling which location is shown on figures 3 and 4. Cross section of the 2017 holes is presented on figure 5. Drilling was done by More Core Drilling Services of Stewart, BC using a modified underground drill. No camp was constructed on the property. Drillers stayed in Stewart and were transported every day to the job site by helicopter. Helicopter support was done mostly by AS350-B2 helicopter provided by Mustang Helicopters from its field base in Stewart. The entire core from the drilling was transported to Stewart where it was logged, sampled and later securely stored in a yard of an office building owned by Mountain Boy Minerals.

Drilling Results

In 2016 the Ataman zone was tested by two holes drilled from the same pad located just above a large prominent zone of sericite-quartz-pyrite alteration (see figure 3). The holes intersected a sequence of volcanic rocks dominated by trachyte in the upper and trachyte pyroclastics in the lower parts of the holes. Hole SC16-1 did not return any significant results. The best core interval of hole SC16-2 which represents a barite-chert-sulphide zone averaged 0.12 g/t Au, 28.0 g/t Ag, 0.31% Cu, 0.03% Pb, 1.21% Zn and 46.73% $BaSO_4$ over 18.94 metres (Mt. Boy press release, Feb. 02, 2017). Due to bad weather the hole was terminated in mineralization at 78.69m.



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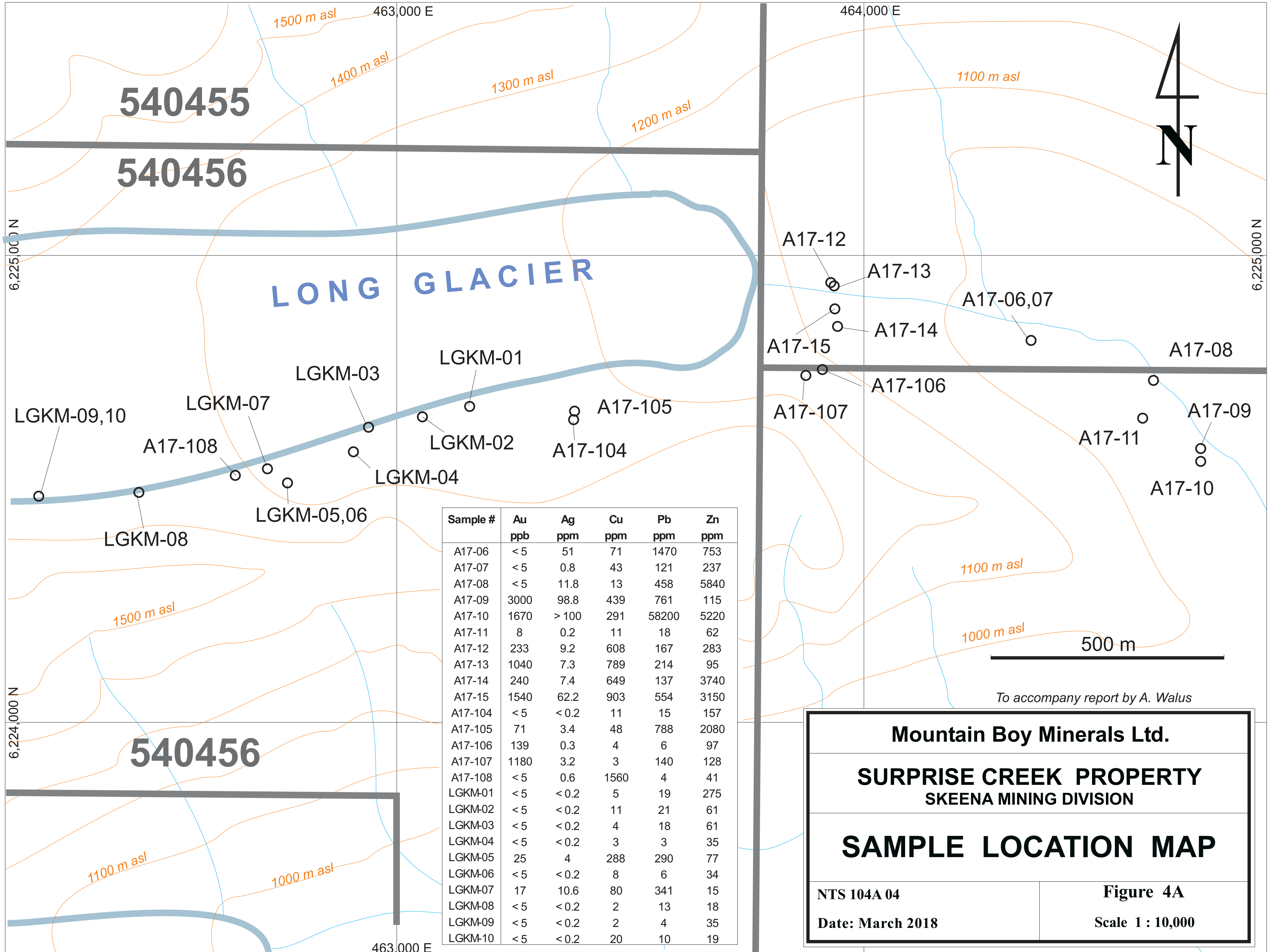
SURPRISE CREEK PROPERTY
SKEENA MINING DIVISION

LOCATION OF 2017 WORK

NTS 104A 04	Figure 4
Date: March 2018	Scale 1:50,000



Sample #	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
A17-06	< 5	51	71	1470	753
A17-07	< 5	0.8	43	121	237
A17-08	< 5	11.8	13	458	5840
A17-09	3000	98.8	439	761	115
A17-10	1670	> 100	291	58200	5220
A17-11	8	0.2	11	18	62
A17-12	233	9.2	608	167	283
A17-13	1040	7.3	789	214	95
A17-14	240	7.4	649	137	3740
A17-15	1540	62.2	903	554	3150
A17-104	< 5	< 0.2	11	15	157
A17-105	71	3.4	48	788	2080
A17-106	139	0.3	4	6	97
A17-107	1180	3.2	3	140	128
A17-108	< 5	0.6	1560	4	41
LGKM-01	< 5	< 0.2	5	19	275
LGKM-02	< 5	< 0.2	11	21	61
LGKM-03	< 5	< 0.2	4	18	61
LGKM-04	< 5	< 0.2	3	3	35
LGKM-05	25	4	288	290	77
LGKM-06	< 5	< 0.2	8	6	34
LGKM-07	17	10.6	80	341	15
LGKM-08	< 5	< 0.2	2	13	18
LGKM-09	< 5	< 0.2	2	4	35
LGKM-10	< 5	< 0.2	20	10	19

To accompany report by A. Walus

Mountain Boy Minerals Ltd.

SURPRISE CREEK PROPERTY
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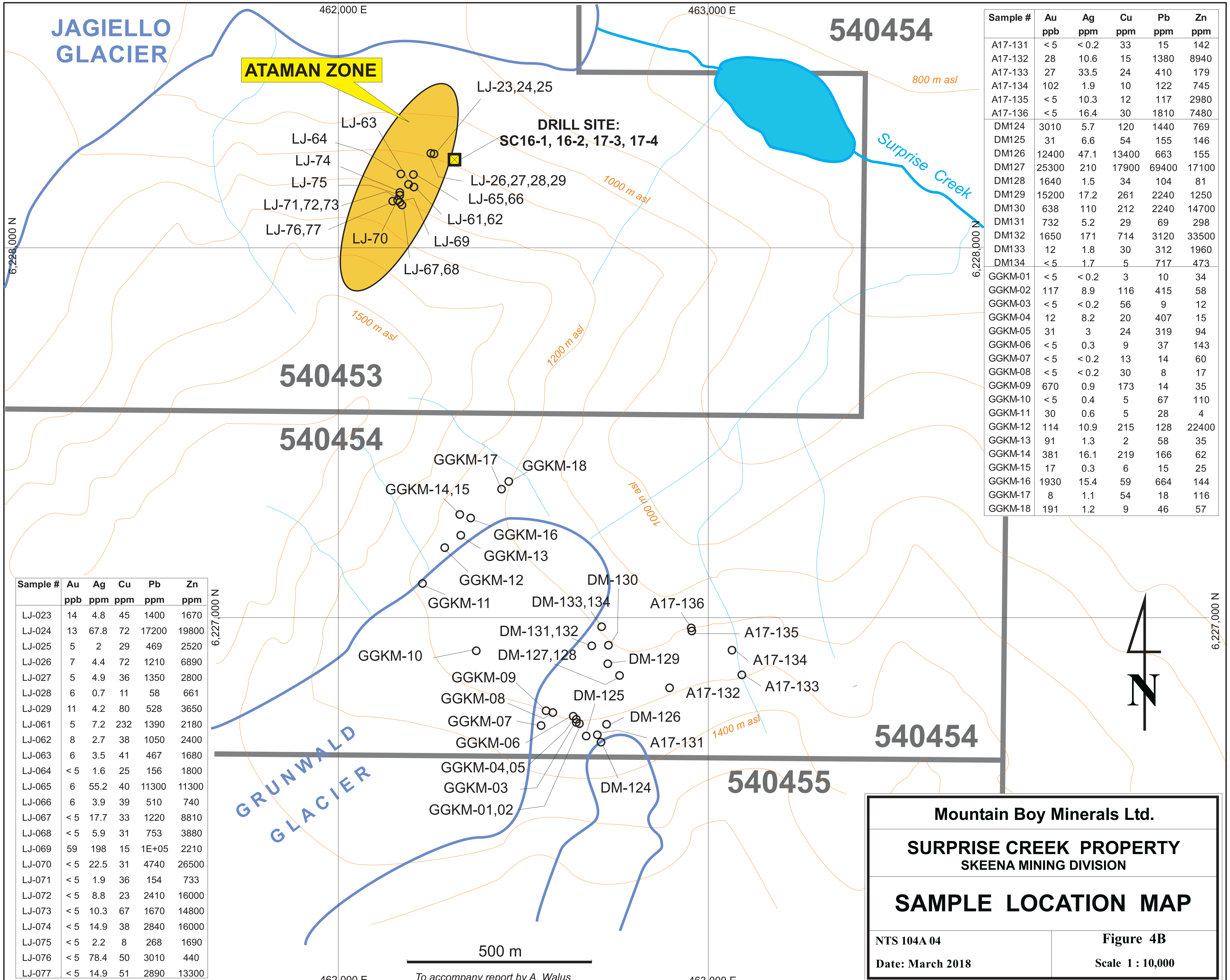
SAMPLE LOCATION MAP

NTS 104A 04

Date: March 2018

Figure 4A

Scale 1 : 10,000



Sample #	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
A17-131	< 5	< 0.2	33	15	142
A17-132	28	10.6	15	1380	8940
A17-133	27	33.5	24	410	179
A17-134	102	1.9	10	122	745
A17-135	< 5	10.3	12	117	2980
A17-136	< 5	16.4	30	1810	7480
DM124	3010	5.7	120	1440	769
DM125	31	6.6	54	155	146
DM126	12400	47.1	13400	663	155
DM127	25300	210	17900	69400	17100
DM128	1640	1.5	34	104	81
DM129	15200	17.2	261	2240	1250
DM130	638	110	212	2240	14700
DM131	732	5.2	29	69	298
DM132	1650	171	714	3120	33500
DM133	12	1.8	30	312	1960
DM134	< 5	1.7	5	717	473
GGKM-01	< 5	< 0.2	3	10	34
GGKM-02	117	8.9	116	415	58
GGKM-03	< 5	< 0.2	56	9	12
GGKM-04	12	8.2	20	407	15
GGKM-05	31	3	24	319	94
GGKM-06	< 5	0.3	9	37	143
GGKM-07	< 5	< 0.2	13	14	60
GGKM-08	< 5	< 0.2	30	8	17
GGKM-09	670	0.9	173	14	35
GGKM-10	< 5	0.4	5	67	110
GGKM-11	30	0.6	5	28	4
GGKM-12	114	10.9	215	128	22400
GGKM-13	91	1.3	2	58	35
GGKM-14	381	16.1	219	166	62
GGKM-15	17	0.3	6	15	25
GGKM-16	1930	15.4	59	664	144
GGKM-17	8	1.1	54	18	116
GGKM-18	191	1.2	9	46	57

Sample #	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
LJ-023	14	4.8	45	1400	1670
LJ-024	13	67.8	72	17200	19800
LJ-025	5	2	29	469	2520
LJ-026	7	4.4	72	1210	6890
LJ-027	5	4.9	36	1350	2800
LJ-028	6	0.7	11	58	661
LJ-029	11	4.2	80	528	3650
LJ-061	5	7.2	232	1390	2180
LJ-062	8	2.7	38	1050	2400
LJ-063	6	3.5	41	467	1680
LJ-064	< 5	1.6	25	156	1800
LJ-065	6	55.2	40	11300	11300
LJ-066	6	3.9	39	510	740
LJ-067	< 5	17.7	33	1220	8810
LJ-068	< 5	5.9	31	753	3880
LJ-069	59	198	15	1E+05	2210
LJ-070	< 5	22.5	31	4740	26500
LJ-071	< 5	1.9	36	154	733
LJ-072	< 5	8.8	23	2410	16000
LJ-073	< 5	10.3	67	1670	14800
LJ-074	< 5	14.9	38	2840	16000
LJ-075	< 5	2.2	8	268	1690
LJ-076	< 5	78.4	50	3010	440
LJ-077	< 5	14.9	51	2890	13300

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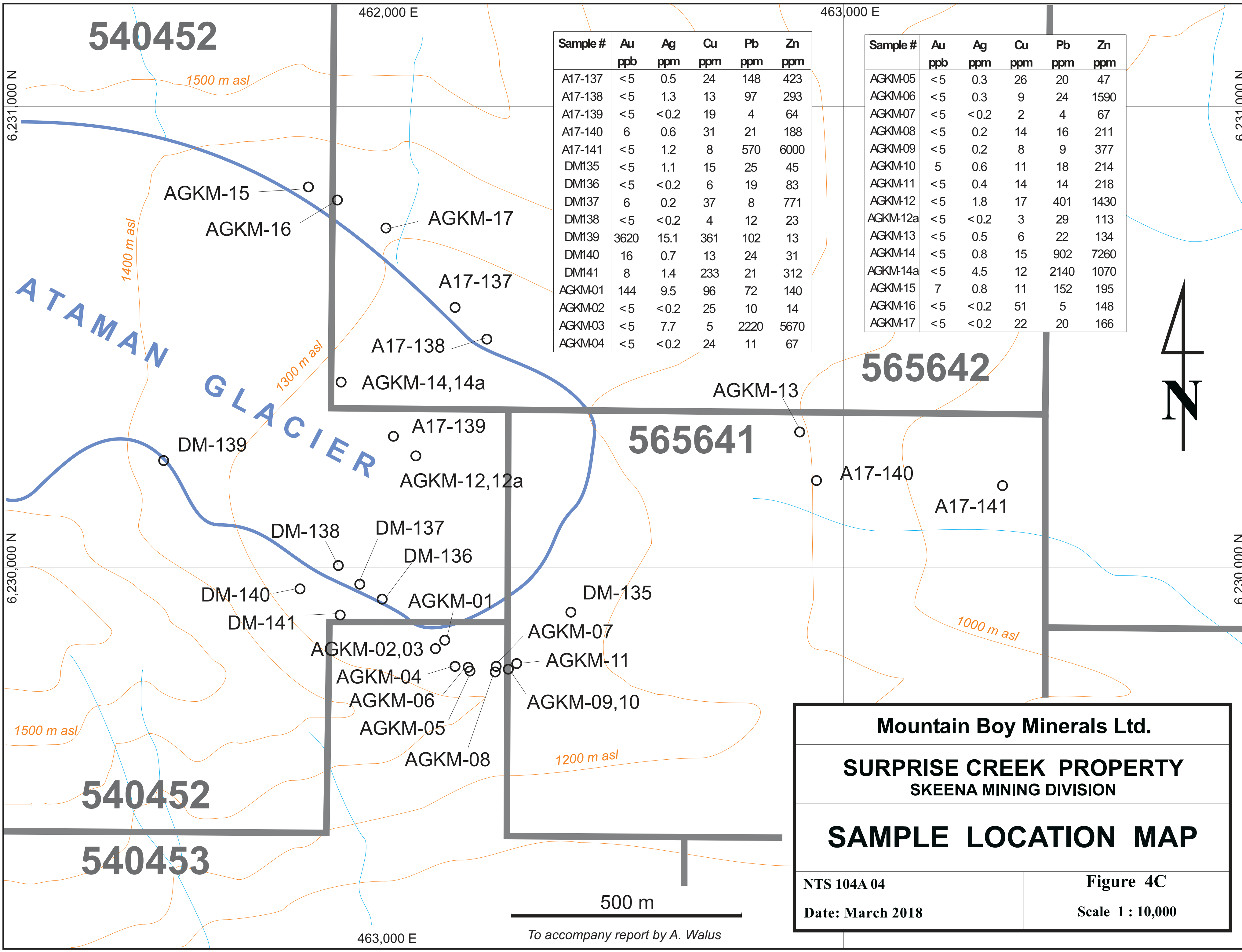
SAMPLE LOCATION MAP

NTS 104A 04 | **Figure 4B**

Date: March 2018 | **Scale 1 : 10,000**



Sample #	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
A17-137	< 5	0.5	24	148	423
A17-138	< 5	1.3	13	97	293
A17-139	< 5	< 0.2	19	4	64
A17-140	6	0.6	31	21	188
A17-141	< 5	1.2	8	570	6000
DM135	< 5	1.1	15	25	45
DM136	< 5	< 0.2	6	19	83
DM137	6	0.2	37	8	771
DM138	< 5	< 0.2	4	12	23
DM139	3620	15.1	361	102	13
DM140	16	0.7	13	24	31
DM141	8	1.4	233	21	312
AGKM-01	144	9.5	96	72	140
AGKM-02	< 5	< 0.2	25	10	14
AGKM-03	< 5	7.7	5	2220	5670
AGKM-04	< 5	< 0.2	24	11	67

Sample #	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
AGKM-05	< 5	0.3	26	20	47
AGKM-06	< 5	0.3	9	24	1590
AGKM-07	< 5	< 0.2	2	4	67
AGKM-08	< 5	0.2	14	16	211
AGKM-09	< 5	0.2	8	9	377
AGKM-10	5	0.6	11	18	214
AGKM-11	< 5	0.4	14	14	218
AGKM-12	< 5	1.8	17	401	1430
AGKM-12a	< 5	< 0.2	3	29	113
AGKM-13	< 5	0.5	6	22	134
AGKM-14	< 5	0.8	15	902	7260
AGKM-14a	< 5	4.5	12	2140	1070
AGKM-15	7	0.8	11	152	195
AGKM-16	< 5	< 0.2	51	5	148
AGKM-17	< 5	< 0.2	22	20	166

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SURPRISE CREEK PROPERTY
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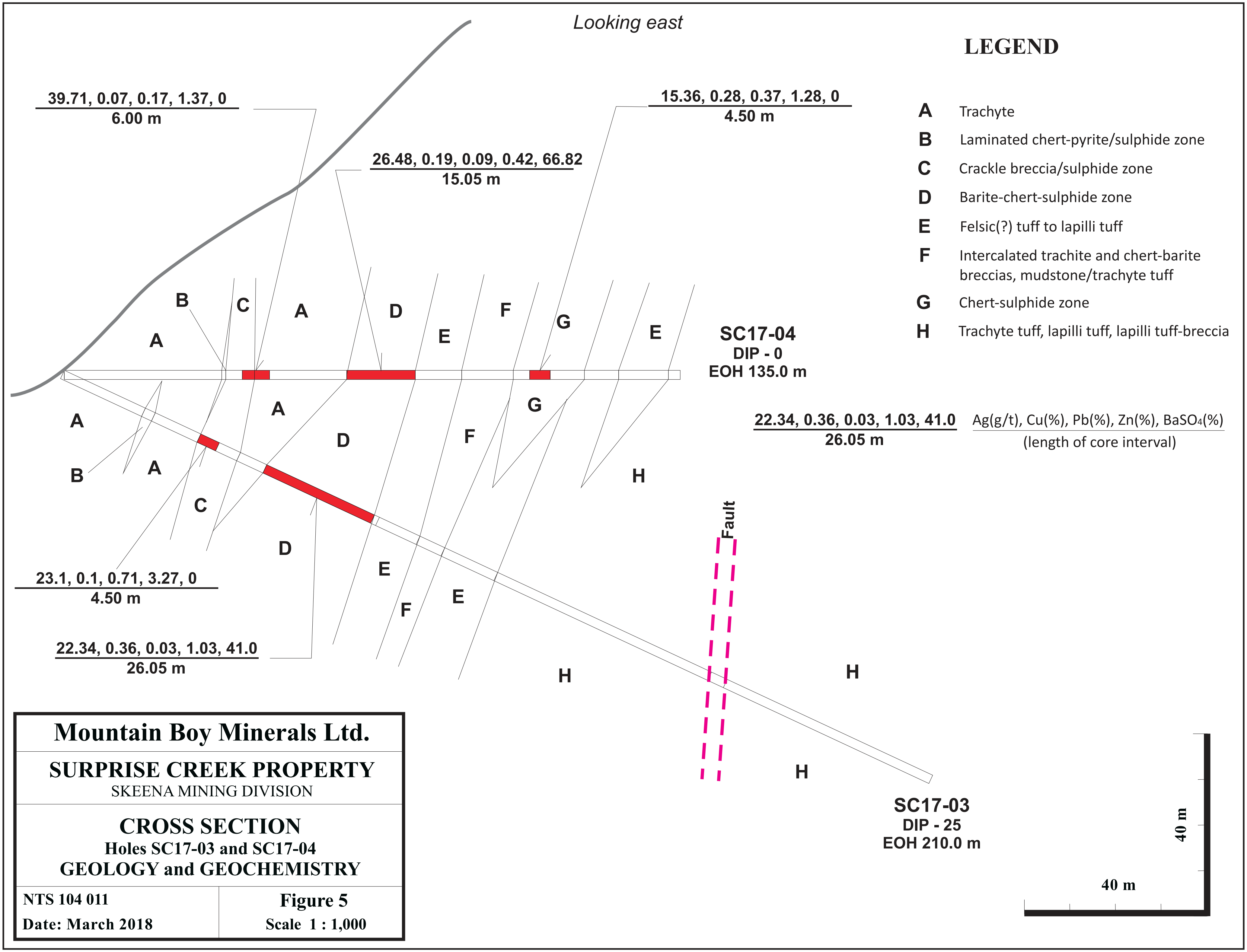
SAMPLE LOCATION MAP

NTS 104A 04 | Figure 4C

Date: March 2018 | Scale 1 : 10,000


Looking east
LEGEND
A Trachyte
B Laminated chert-pyrite/sulphide zone
C Crackle breccia/sulphide zone
D Barite-chert-sulphide zone
E Felsic(?) tuff to lapilli tuff
F Intercalated trachite and chert-barite breccias, mudstone/trachyte tuff
G Chert-sulphide zone
H Trachyte tuff, lapilli tuff, lapilli tuff-breccia
39.71, 0.07, 0.17, 1.37, 0
6.00 m
26.48, 0.19, 0.09, 0.42, 66.82
15.05 m
15.36, 0.28, 0.37, 1.28, 0
4.50 m
SC17-04
DIP - 0
EOH 135.0 m
22.34, 0.36, 0.03, 1.03, 41.0
26.05 m
Ag(g/t), Cu(%), Pb(%), Zn(%), BaSO4(%)
(length of core interval)
23.1, 0.1, 0.71, 3.27, 0
4.50 m
22.34, 0.36, 0.03, 1.03, 41.0
26.05 m
Fault
SC17-03
DIP - 25
EOH 210.0 m
40 m
40 m
Mountain Boy Minerals Ltd.
SURPRISE CREEK PROPERTY
SKEENA MINING DIVISION
CROSS SECTION
Holes SC17-03 and SC17-04
GEOLOGY and GEOCHEMISTRY
NTS 104 011
Date: March 2018
Figure 5
Scale 1 : 1,000

In 2017, two more holes were drilled from the same pad (see cross section shown on figure 5). Originally, it was planned to re-enter the 2016 hole SC16-2. Eventually, it was decided to drill a new parallel hole (SC17-03) collared just 0.6 m beside the old collar. A core interval from 33.0 to 37.5 m returned an average of 23.1 g/t Ag, 0.1% Cu. 0.71% Pb and 3.27% Zn over 4.5 m. The interval is hosted within crackle breccia/sulphide zone comprised of weakly brecciated silicified trachyte with fractures filled with chalcedony, carbonates, pyrite, sphalerite and galena. Interval from 48.95 to 75.0 m averaged 22.34 g/t Ag, 0.36% Cu, 0.03% Pb, 1.03% Zn and 41.0% $BaSO_4$ over 26.05 m. This interval represents the same barite-chert-sulphide zone encountered in the 2016 hole SC16-02. The zone has laminated to massive texture, laminae are often strongly disturbed locally forming slump breccia. Sulphides include up to 10% pyrite, trace to 3% sphalerite, <1% galena and trace to 1% chalcopyrite. Chert dominate in the upper and barite in the lower part of the interval.

Hole SC17-04 was drilled from the same pad as hole SC17-03. From 39.0 to 45.0 m the hole intersected an interval averaging 39.71g/t Ag, 0.07% Cu, 0.17% Pb and 1.37% Zn over 6.0 m. The interval is hosted partly in crackle breccia/sulphide zone (similar as in hole SC17-03) and partly in trachyte. Core interval from 61.9 to 76.95 m returned 26.48 g/t Ag, 0.19% Cu, 0.09% Pb, 0.42% Zn and 66.82% $BaSO_4$ over 15.05 m. It is hosted in the same barite-chert-sulphide zone encountered in holes SC17-03 (see figure 5) and SC16-02. Core interval from 102.0 to 106.5 m returned 15.36 g/t Ag, 0.28% Cu, 0.37% Pb and 1.28% Zn over 4.5 m. The interval represents portion of a chert-sulphide zone consisting mostly of chert lesser barite clasts cemented by chert. It contains up to 15% pyrite, up to 3% sphalerite, trace to 1% galena and chalcopyrite.

CONCLUSIONS AND DISCUSSION

The entire Surprise Creek - BA area has an excellent potential to host Kuroko type VMS deposits. Lead-zinc-copper-silver +/-gold VMS mineralization can be found along a north - south belt stretching from Mt. Patullo to Nelson Glacier over a distance of 22 kilometres. VMS mineralization seems to be spatially associated with volcanic eruption centers within felsic volcanic rocks of Mt. Dilworth (?) Formation. In the area, felsic volcanic rocks of this formation form a relatively thin horizon 70 to 200 metres wide within prevailing volcanic rocks of intermediate to mafic composition. To date, three major zones of Kuroko style VMS mineralization has been identified. Of those, Barbara zone attracted the most attention with over 178 holes drilled. Jagiello zone located several km west of Ataman Zone attracted little attention due mainly to difficult access. This area however is highly promising as it is the source of numerous boulders carrying VMS lead-zinc-silver mineralization. A float sample collected in 2005 below the presumed location of the zone returned 1.1% Pb, 7.61% Zn and 60.5 g/t Ag (Walus A, 2005). The third zone of VMS mineralization called Ataman Zone was the focus of exploration in 2016 and 2017. The zone is at least 200 by 600 metres in horizontal and 650 metres in vertical dimension. It features numerous VMS type mineral occurrences carrying sphalerite, galena and barite (see figure 3 for their location).

In the Surprise Creek area there is a conspicuous lack of VMS related copper mineralization which was encountered only in holes recently drilled on Ataman zone. That fact indicates that glacial erosion in the Surprise Creek area did not reach the central parts of VMS system. Large areas of the Surprise Creek property are weakly explored due to extensive ice coverage. However, the rapidly receding ice enables better access to these areas which may host more mineralized zones similar to Barbara and Ataman zones.

The 2016 and 2017 drilling on Ataman zone intersected significant copper, zinc, lead, silver +/- gold mineralization. The biggest mineralized zone contains from 41 to 66 % barite which is a valuable commodity used mostly as a drilling mud in the oil and gas industry. The initial metallurgical work on the core rejects done by SGS Laboratory located in Richmond, BC indicate that barite concentrate from Surprise Creek far exceeds API (American Petroleum Institute) standards (see Mt. Boy press release from July 18, 2017).

In general, the rocks encountered in holes drilled on Ataman zone are difficult to identify due to strong alteration and the presence of abundant K-feldspar which is not readily recognizable in the field. To identify the rocks, seven thin sections derived from the 2017 core were examined using polarizing microscope (see Petrographic Report in Appendix IV). In addition, the samples were stained with sodium cobaltinitrite for easy K-feldspar identification. Based in large part on this study, the upper parts of drillholes are dominated by trachyte and lower parts by trachyte pyroclastics which include tuff, lapilli tuff and lapilli-tuff-breccia. Felsic (?) tuff to lapilli tuff marked as lithological unit E on Figure 5 could also be a very strongly altered trachytic rock. Petrographic study also indicates that a prominent sericite-quartz-pyrite alteration zone situated on the bottom of Ataman zone (see figure 3) represents a subvolcanic trachyte intrusion. Heat from that intrusion most likely caused formation of a weak biotite hornfels detected in the nearby trachyte pyroclastics (see Petrographic Report). Trachytic rocks encountered during the drilling are strongly to completely replaced by alteration assemblage dominated by sericite/ muscovite with lesser carbonate, quartz, pyrite, +/- magnetite, +/-fuchsite (or mariposite). The barite-chert-suphide zone (lithological unit D on figure 5) is located below the sulphides bearing crackle breccia which most likely represents silicified outer part of trachyte intrusion. This fact points to trachyte intrusion as the source of mineralization. This would represent an unusual situation where VMS mineralization is related to trachyte.

RECOMMENDATIONS

For the next exploration season a total of 2,000 metres of drilling is recommended. The holes should further test the newly discovered VMS mineralization on Ataman zone. It is recommended to use similar type of drill as last year, capable of drilling holes with dips ranging from +25 to - 90 degrees. It is strongly advised to start drilling program in June when there is a possibility to use a runoff water from the snow patch instead of pumping water up a few hundred metres from the main creek.

It is recommended to drill the following holes:

1) Three more holes from the same pad and at the same azimuth (270 degrees) as 2017 holes.

2) Ten holes from two pads located 150-200 metres up the hill from the 2017 pad.

The cost of the planned drilling is estimated at 568,000 dollars.

Estimated Cost of the Program

A total of 2,000 metres of drilling @ $140/a metre (all inclusive)………………..280,000
Geologist, 20 days @650/a day……………………………………………………13,000
Field assistant, 20 days @ $350/a day………………………………………………7,000
Drilling pads……………………………………………………………….……..15,000
Mob/demob……………………………………………………………...…......10,000
Helicopter support……………………………………………………… ......…150,000
Expediting………………………………………………………………… 10,000
Core cutting……………………………………………………………..….......5,000
Vehicle rental……………………………………………………………..........2,000
Assaying………………………………………………………………………..…5,000
Accommodation and food (in Stewart)………………………………………..........15,000
Report…………...………………………………………………………............ ..5,000

Subtotal………………………………………………………………………..517,000
Contingency (10%)……………….…………………………………………….. .51,000

Total…………...$568,000

REFERENCES

Cremonese, D. (1995); “Assessment Report on Geochemical Work on the Surprise Creek Claims”, British Columbia Ministry of Energy and Mines Assessment Report # 23,935

Greig, C. J., Anderson, R. G., Daubeny, P. H., Bull, K. F. (1994); “Geology of the Cambria Icefield: Stewart (103P/13), Bear River (104A/4), and Parts of Meziadin Lake (104/3)”, Geological Survey of Canada, Open File 2931.

Kruchkowski, E.R. (2003); “43-101 Report on Surprise Creek Property”,

Kruchkowski, E.R, (1997); “Assessment Report on Geochemical Work on the Surprise Creek Property”, British Columbia Ministry of Energy and Mines Assessment Report # 24,996.

Kruchkowski, E.R, (2003); “Assessment Report on Geological and Geochemical Work on the Surprise Creek Property”, British Columbia Ministry of Energy and Mines Assessment Report # 27,290.

Kruchkowski, E.R, (2004); “Assessment Report on Geological and Geochemical Work on the Surprise Creek Property”, British Columbia Ministry of Energy and Mines Assessment Report # 27,577.

Mazur S. (2006). Structural Geology of the Surprise Creek Area. Internal Pinnacle Mines Report.

Mountain Boy press releases, February 02 and July 18, 2017

Theny L.M. (2011), “Assessment Report on Geological and Geochemical Work on the Surprise Creek Property”, British Columbia Ministry of Energy and Mines Assessment Report # 32800A.

Vanwermeskerken M., (2011), Summary Report on 2010 Surprise Creek Claims Field Program for Great Bear Resources.

Walus, A. (2005); “Assessment Report on Geological and Geochemical Work on the Surprise Creek Property”, BC Assessment Report # 27,981.

Walus, A. (2007); “Assessment Report on Technical Work on the Surprise Creek Property”, BC Assessment Report # 29,446.

Walus A. (2016); Assessment Report on Surprise Creek Property. Assessment Report # 36,401

CERTIFICATE OF AUTHORS' QUALIFICATIONS

I, Alojzy Walus, residing at 8577 165 Street in Surrey, BC, hereby certify that:

1. I received a Master of Science degree in Geology from the University of Wroclaw, Poland in 1985.

2. I have been practicing my profession continuously since graduation.

3. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia.

4. I am a consulting geologist working on behalf of Mountain Boy Minerals Ltd.

5. This report is based on my 2017 field work as well as historical reports from this area.

6. I am familiar with this type of deposit having conducted exploration programs on similar mineral occurrences in the Stewart region.

Date: March 20, 2018

"Alojzy Walus"
Alojzy Walus, P. Geo.

STATEMENT OF EXPENDITURES FOR 2017 PROGRAM

ITEM	Quantity	Units	Rate	Subtotal	Totals
Field Personnel					**20,950**
Alex Walus - geologist	14	days @	$650.00	9,100	
Dates worked: July 25, Aug. 01					
Sept. 08, 14, 15, 27, 29, 30					
October 01, 02, 07, 08, 09, 10					
Krzysztof Mastalerz - geologist	5	days @	$650.00	3,250	
Dates worked: July 25, Aug. 01					
Sept. 08, 14, 15					
Dirk Meckert- geologist	3	days @	$650.00	1,950	
Dates worked: Sept. 08,14,15					
Laurent Janssen – climber/geologist	3	days @	$700.00	2,100	
Dates worked: Sept. 8, 14, 15					
Dave Gauley- climber	3	days @	$700.00	2,100	
Dates worked: Sept. 8, 14, 15					
Thomas Bernard-core cutter					
Dates worked: October 8-14	7	days @	$350	2,450	
Helicopter	31.1	hours @	$1,738	54,051	**54,051**
Mustang Helicopters - base in Stewart					
Used on Jul. 25, Aug. 1, Sept. 8,14, 15					
27, 29, 30; Oct. 1, 2, 7, 8, 9, 10					
Drilling	345	metres @	140	48,300	**48,300**
More Core Drilling Services					
September 27 – October 10					
Field Expenses					**13,705**
4x4 Vehicle rental	20	days @	$95.00	1,900	
Gas				400	
Accommodation	99	man/days @	$15	1,485	
Food	99	man/days @	$67.23	6,655	
Shipment of samples				953	
Field equipment and supplies				2,312	
Assay Costs					**8,905**
Rock samples	115	samples @	$32.15	3,697	
Core samples	162	samples @	$32.15	5,208	
Report					**4,089**
Thin sections preparation	7	sections @	$27	189	
Thin section descriptions – Alex Walus	7	sections @	$100	700	
Drafting				1200	
Report writing – Alex Walus	5	days @	400	2,000	
				Grand Total	**$150,000**

APPENDIX I

ROCK SAMPLES DESCRIPTIONS

Sample	UTM Coordinates		Sample	Description
Label	Easting	Northing	Type	
GGKM-01	462,651	6,226,713	Grab	Quartz pod 1 x 1.5 m across in greenish-grey andesite(?) lapilli tuff to tuff breccia; quartz white, massive, coarse-crystalline; strongly gossaneous; hematite and goethite 1-3%
GGKM-02	462,651	6,226,713	Grab	Small scale ore shoots (0.5-2 cm wide) of semi-massive pyrite in siliceous andesite tuff; layering at 75 degrees, strikes N-S
GGKM-03	462,644	6,226,717	Float	Banded rhyolite-to-chert (strongly siliceous), whitish; diss. Py 1-1.5%
GGKM-04	462,648	6,226,725	Grab	Concordant (sub-parallel to layering/bedding) thin ore shoots of diss. Py 5-7%, banded, in silicified marron-to brownish Betty Creek lapilli tuff
GGKM-05	462,643	6,226,725	Grab	Quartz vein (10-25 cm) in Betty Creek lapilli tuff/tuff; diss. Py usually 1%, locally Py reaches up to 15%
GGKM-06	462,636	6,226,733	Grab	Orange-yellowish quartz-carbonate pods/irregular veins in greenish andesite tuff/lapilli tuff; cubed Py 2-5%, tr. Cpy, Mn-Fe hydroxides
GGKM-07	462,551	6,226,709	Float	Quartz vein material with dark greenish andesite tuff wallrock, epiclastic (?) material); Py 2-4%
GGKM-08	462,580	6,226,744	Grab	Irregular quartz veins (about 20 cm thick) along the boundary between andesite tuff and andesite lapilli tuff/tuff breccia; specularite hematite + goethite 1%
GGKM-09	462,565	6,226,746	Grab	Irregular quartz-carbonate veins in a shear zone cutting through greenish andesite tuff; diss. + cubed Py 1-3%
GGKM-10	462,375	6,226,909	Float	Intense reddish, thinly banded jasperoid, slightly brecciated with thin chalcedony veinlets; diss. Specularite hematite + magnetite
GGKM-11	462,226	6,227,093	Float	Medium grey, cloudy, very strongly silicified rhyolite or chert, massive; with stringers/lenses containing diss. Py 1-2%
GGKM-12	462,289	6,227,189	Float	Quartz vein material, whitish to yellowish-rusty; Py 1%, Sph 5%, tr. Ga
GGKM-13	462,332	6,227,223	Float	Moderately silicified dacite volcanic, incipient brecciation; Py tr.-0.5%, tr. Sph?
GGKM-14	462,330	6,227,278	Grab	Strongly silicified andesite/dacite(?) volcanic with irregular pyrite flooding zones; Py diss.+blebs 7-10%
GGKM-15	462,330	6,227,278	Grab	Strongly silicified andesite/dacite(?) volcanic, distinct strong brecciation and associated incipient quartz veining; diss.+blebs Py less than 1%
GGKM-16	462,355	6,227,269	Float	Strongly silicified and brecciated/quartz veining andesite/dacite (?) volcanic; locally Py stockwork 3-10%
GGKM-17	462,442	6,227,347	Float	Strongly silicified dacite tuff; cubed + diss Py 1-3%
GGKM-18	462,461	6,227,368	Float	Quartz vein, 3-5 cm wide, drusy,medium crystalline in wallrock of light greenish-yellow andesite-dacite volcanic rock; cubed Py 3-4%
AGKM-01	462,134	6,229,842	Float	Big boulder of weakly silicified banded jasperoid/tuff with fractures perpendicular to banding filled with drusy quartz; cubed Py 3-9%
AGKM-02	462,116	6,229,825	Float	Banded jasperoid, cherty, locally strongly brecciated with quartz veinlets and/or silica flooding; Py 1%

Sample Label	UTM Coordinates		Sample Type	Description
	Easting	Northing		
AGKM-03	462,116	6,229,825	Float	Quartz vein material, coarse crystalline, white to slightly yellowish-rusty with wallrock of andesite volcanic rock; Ga 1.5%, Py tr.-1%
AGKM-04	462,158	6,229,787	Grab	Black, organic-rich silty shale/mudstone with silica-pyrite concretionary forms of small size, leached (Bowser Lake Group?)
AGKM-05	462,189	6,229,778	Subcrop	Dark grey, pyriteferous silty black shale/mudstone, laminated; Py disseminated in laminae and in quartz veinlets 3-5% (Bowser Lake Group?)
AGKM-06	462,185	6,229,782	Grab	Quartz-carbonate vein 20 cm thick in a tectonic zone/fault cutting through black shale/mudstone; no visible sulphides (Bowser Lake Group?)
AGKM-07	462,247	6,229,788	Subcrop	A set of thin quartz veinsalong the tectonic/fault contact of the black mudstone/shale with very thick bedded volcaniclastics (epiclastic material admixed); quartz yellowish-rusty; no visible sulphides
AGKM-08	462,243	6,229,774	Grab	Package of black pyriteferous shale/mudstone covering an uneven surface of the faulted blocks of volcaniclastics; Py most like syngenetic (base of the Bowser Lake Group?)
AGKM-09	462,272	6,229,779	Float	Light gray-yellowish, silicified, dacite(?) coarse-grained tuff to lapilli tuff; Py flood, blebs and disseminations, Py 5-10%
AGKM-10	462,272	6,229,779	Float	Coarse-grained epiclastic tuff, most likely felsic, with blebs of Py 3-5%
AGKM-11	462,289	6,229,791	Float	Large fragment of a quartz vein, quartz white, coarse-crystalline; Py 0.5-1%, tr. enargite(?)
AGKM-12	462,072	6,230,241	Float	Fragments of thin banded jasperoid-chert with quartz veinlets cutting across the banding; very magnetite rich (strongly magnetic); Py diss. 3-5%
AGKM-12a	462,072	6,230,241	Float	Fragment of thin banded, dark grey to brownish chert; diss. Py in selected laminae; tr. Sph?
AGKM-13	462,023	6,230,286	Float	Fragments of dark grey, thin banded mudstone/chert with extr. thin laminae enriched in Py and Sph(?)
AGKM-14	461,910	6,230,404	Float	Fragments of dark grey, thinly banded chert; diss. Py and Sph(?) in selected thin laminae
AGKM-14a	461,910	6,230,404	Float	Small fragments of quartz vein material, white to patchy-yellowish; tr.-1% Ga
AGKM-15	461,841	6,230,827	Grab	Thin to medium thick quartz veins along the tectonic/fault contact cutting across the felsic(?) tuff; no visible sulphides
AGKM-16	461,903	6,230,796	Grab	Black calcareous shale/mudstone, slightly concretionary, locally pyriteferous; Py 1-3%
AGKM-17	462,008	6,230,737	Grab	Quartz-carbonate veins from a zone of a strong tectonic deformation (faulting and folding), locally strongly sheared, patchy gossaneous; cubed + diss. Py 1-3%
LGKM-01	463,156	6,224,676	Float	Small boulder with a white quartz vein in a silicified dacite/andesite of mixed composition (epiclastic?) rock; strong limonite stain, tr Py
LGKM-02	463,056	6,224,655	Float	Yellowish dacite epiclastic (redeposited?) rock with thin Py stringers; Py 0.5-1%
LGKM-03	462,941	6,224,632	Float	Yellowish-grey dacite volcanic rock with cherty bandes with diffuse boundaries, thin quartz veins; tr Py

Sample Label	UTM Coordinates Easting	Northing	Sample Type	Description
LGKM-04	462,907	6,224,580	Float	A boulder of yellowish dacite, fine-crystalline to aphanitic volcanic rock with some quartz-carbonate veins, coarse-crystalline; no visible sulphides
LGKM-05	462,770	6,224,515	Float	Glacial lateral moraine; small fragment of quartz vein/chert with dark maroon stain (jasperoid-type); Py tr.-0.5%, Ga tr.
LGKM-06	462,770	6,224,515	Float	Small fragment of quartz-rhodochrosite(?) vein or pod with strong limonite-goethite stain (5-7%); tr. Py
LGKM-07	462,725	6,224,544	Float	A cobble size boulder of dark grey, strongly silicified/cherty dacite/rhyodacite to rhyodacite breccia; semimassive Py 10-15%
LGKM-08	462,448	6,224,493	Float	A cobble size boulder with quartz-carbonate vein (white to orange) in greenish andesite volcanic rock; tr.-0.5% Sph
LGKM-09	462,236	6,224,485	Float	Lateral moraine with predominant Betty Creek type of material; small-size fragment of quartz-carbonate vein to breccia, coarse crystalline; tr. Sph
LGKM-10	462,236	6,224,485	Float	A small fragment of quartz-epidote vein, white to orange, probably with pinkish rhodochrosite
A17-01	453269	6221330	grab	Dark gray massive bed of chert 10 m wide with 1-2% limonite pseudomorphs after pyrite.
A17-06	464358	6224819	float	Angular boulder 20x20 cm of chert breccia cemented by limestone/mudstone with
				some extremelly fine grained disseminated sulphides, minor galena.
A17-07	464358	6224819	float	Angular boulder 40x30 cm of andesitic rock cut by numerous quartz veinlets with minor
				pyrite, galena and black unindentified sulphide.
A17-08	464621	6224734	float	Subrounded float 10x10 cm of laminated chert/argillite with some extremely fine grained
				disseminated sulphides.
A17-09	464722	6224587	float	Angular float 10x15 cm of quartz vein with 7-10% pyrrhotite.
A17-10	464723	6224561	float	Fist size float of quartz vein fragment with 25-30% coarse pyrite and minor galena.
A17-11	464598	6224652	float	Angular boulder 40x30 cm in size of mudstone cemented breccia composed of chert and
				limestone fragments with some gray sulphides (?) in the matrix. There are few similar
				boulders nearby of up to 1.0 m in size.
A17-12	463931	6224942	grab	5-15 cm wide quartz vein with 15-20% coarse pyrite. Orientation 160/v. Pyrite is
				concentrated in a few spots within the vein. There are several similar veins nearby.
A17-13	463936	6224937	grab	7-8 cm wide quartz vein with 25-30% coarse pyrite. In most part the vein contais no
				sulphides except in a few spots. Orientation 90/30S.
A17-14	463944	6224849	grab	10 cm wide quartz vein with 30-40% coarse pyrite. Mineralization of the vein is sporadic,
				concentrated in a few places. Orientation 140/shallow S.

Sample #	Coordinates (NAD 83)		Sample type	Description
	Easting	Northing		
A17-15	463939	6224886	grab	Irregular quartz vein 20-30 cm wide, sporadically it contains up to 20% pyrite.
				Orientation 190/shallow W.
A17-104	463381	6224649	float	Angular float 20x10 cm of quartz vein fragment with minor pyrite and sphalerite.
A17-105	463383	6224666	float	Big angular float 1.0 x 0.2 m in size of limonitic quartz vein with minor blackish sulphide.
A17-106	463909	6224757	grab	Quartz vein 20 cm wide with minor pyrite and dark gray exteremely find grained sulphide.
A17-107	463876	6224747	float	Small fragment of 3 cm wide quartz vein with 1% pyrite and arsenopyrite (?) as thin
				1 mm wide veinlets. It most likely came from the cliff above.
A17-108	462658	6224529	float	Small slab of maroon volcanicks with 1-2% chalcopyrite as small veinlets and blebs.
A17-131	462702	6226681	float	Angular boulder 20x10 cm of mudstone with felsic fragments.
A17-132	462896	6226810	grab	Layer of weathering brown mudstone/siltstone 0.3-5m wide with trace to minor sphalerite,
				galena and minor hydrozincite stain. Orientation 300/20N. The layer can be traced for
				15-20m.
A17-133	463090	6226848	grab	Sericite-quartz altered zone 4-20 metres wide with 1-3% disseminated pyrite. The zone is
				a part of larger fault which strike 330 degrees with steep N dip.
A17-134	463063	6226912	float	Angular float 40x20 cm of limonitic quartz with trace to minor pyrite, fine grained galena,
				sphalerite and black unidentified sulphide.
A17-135	462956	6226963	float	Angular float 40x20 cm, thick slab of limestone with trace to minor sphalerite.
A17-136	462955	6226970	float	Angular boulder 0.5 m across of laminated chert-limestone, weathering brown with 0.5%
				sphalerite forming streaks parallel to lamination and disseminated grains.
A17-137	462158	6230564	float	Angular boulder 10 cm across of quartz cemented mudstone breccia, abundant limonite.
A17-138	462226	6230495	float	Fist size float of limestone/chert with trace to minor galena and sphalerite (?)
A17-139	462903	6230295	grab	40 cm wide layer of mudstone with some limonite and bluish stain.
A17-140	462941	6230189	float	Boulder 40x30 cm of finelly laminated chert with some extremely fine grained sulphides.
A17-141	463344	6230179	float	Angular float (fist size) of finelly laminated limestone/chert with minor spahalerite and
				galena.

Sample #	Coordinates (NAD 83)		Sample type	Description
	Easting	Northing		
LJ023	462258	6228255	Grab	O/C, heavy, strong black to orange yellow staining on surface, near Qz Barite veining (15 to 1cm wide) with zipper fibrous texture, hard to get fresh sample, some boxwork, tr to 1% diss py, tr galena, 1-2% sphalerite
LJ024	462258	6228255	Grab	O/C, heavy, strong black to orange yellow staining on surface, Barite vein,white and brown on fresh surface, 1% diss+bleb py, 2% diss chalco, tr galena, 5-10% sphalerite
LJ025	462258	6228255	Grab	O/C, Qz,carbonate, barite vein, intense Fe oxy on weathered surface, crystaline chlorite veins and bleb, 1% sphalerite
LJ026	462252	6228255	Grab	Horizontal Qz, carbonate, barite vein, mineralization is very variable, coxcomb texture. Qz and barite left, tr sphalerite, galena, py, chalco in bleb, lot of black oxyde, mangenese staining visible on surface and fractures
LJ027	462252	6228255	Grab	Same horizontal Qz, carbonate, barite vein, mineralization is very variable, coxcomb texture. Mostly Qz and barite left, where not too altered tr sphalerite, galena, py, chalco in blebs, lot of black oxyde, mangenese staining visible on surface and fractures
LJ028	462252	6228255	Grab	Calcite barite vein/bleb, shows dense stockwork of brown stringners (in positive relief), some bleb of dark crystaline chlorite, little Fe oxy.
LJ029	462252	6228255	Grab	Mafic rock, 10-20% very fine grain diss galena, tr diss py, 5-10% shalerite?, 5% white barite, strong Fe ox on weathered surface, very lightly magnetic
LJ061	462203	6228166	Grab	Btw 2 chert bed, dark brown more alt rock, mox of chert and barite, dark brown alt, tr py, 1% chalco, up to 5% sphalerite, tr galena, syngenetic, magnetic (Magnetite), bedded meta sed
LJ062	462203	6228166	Grab	meta sed, barite, very heavy, tr-1% galena diss, up to 5% sphalerite, tr py, some maganese staining, pale white to brown on fresh surface, white to salmon like color on weathered surface
LJ063	462189	6228172	Grab	Meta sed, black to dark grey on weathered surface, dark grey to black and brown an fresh surface, sandstone like texture and grain size, up to 50% galena very fine grain, diss, 10% sphalerite, coarse grain diss, syngenetic bed, very weakly magnetic, hematite, specularite, magnetite?
LJ064	462170	6228200	Grab	mafic volcanic, HB porphyry phenocryst, cut by galena/sphalerite veinlet, light brown sphalerite tr-1% overall, coarse to fine grain galena, tr-1% overall, volcanic host is Fe oxy on weathered surface with tr diss py, weak chlorite alt
LJ065	462203	6228199	Grab	barite veining, white with brown dots (sphalerite?), tr to 1% galena bleb, 1-5% sphalerite?, weak Fe oxy on weathered surface
LJ066	462203	6228199	Grab	dark grey to black on weathered surface, hydrozynchite?, sandstone-siltstone, barite, heave, 5-10% galena fine grain diss, 5-10% sphalerite? Fine grain, some Fe-carbonate veinlet bearing tr chalco cutting through the sample

Sample #	Coordinates (NAD 83)		Sample type	Description
	Easting	Northing		
LJ067	462174	6228117	Grab	Old adit? Hole in the cliff, about 2-3 feet in diameter by 6-7 feet deep. Very heavy grab, barite rich (white) otherwise mostly dark grey, brecciated texture, no visible mineralization.
LJ068	462174	6228117	Grab	Very alt, cant get fresh sample, black to dark brown, heavy, must by barite rich
LJ069	462170	6228123	Grab	sub-crop, barite vein?, up to 15% galena in bleb, fine grain, white-brown-beige on weathered surface, very powdery feeling, white on fresh surface
LJ070	462161	6228123	Grab	Very localized hydrothermal vein, or small finelly bedded lens or raft of barite sphalerite galena, some hydrozinchite, 5-10% sphalerite diss+veinlets, 60% barite, 5-10% galena, diss+veinlets, wavy layering in veins, generaly oriented discordant to surounding meta sed
LJ071	462159	6228128	Grab	2 m to the looker's right of LJ070. Finely bedded chert?, grey aphanitic, cut by some red-brown stockwork (very fine grain sphalerite?) no obvious mineralization, curiously has the same orientation as LJ070
LJ072	462159	6228128	Grab	Very localized hydrothermal vein, or small finelly bedded lens or raft of barite sphalerite galena, some hydrozinchite, 5-10% sphalerite diss+veinlets, 60% barite, 5-10% galena, diss+veinlets, wavy layering in veins, generaly oriented discordant to surounding meta sed
LJ073	462159	6228128	Grab	Very localized hydrothermal vein, or small finelly bedded lens or raft of barite sphalerite galena, some hydrozinchite, 5-10% sphalerite diss+veinlets, 60% barite, 5-10% galena, diss+veinlets, wavy layering in veins, generaly oriented discordant to surounding meta sed
LJ074	462166	6228148	Grab	Finely bedded chert, with tr galena, dark brown to black alt on weathered surface, white to dark grey on fresh surface, cut by some mm size calcite galena sphalerite(very lustery) veinsome weak hydrozinchite staining, tr-1% galena, tr-1% spahlerite, the bedding is wavy but concordant with the other meta sed
LJ075	462165	6228142	Grab	Finely bedded wavy chert, with barite and tr galena, black alt on weathered surface, dark grey to brown on fresh surface, some weak hydrozinchite staining, tr-3% galena, tr-1% spahlerite, the bedding is wavy but concordant with the other meta sed, 0.75 lower than previous sample
LJ076	462148	6228125	Grab	on the edge of the ridge quite higher up the LJ070, some tight fold visible on weathered surface, black-brown, to white on weathered surface, grey white and brown on fresh surface, calcite, Qz, barite fine grain, 1% galena bleb fine grain, tr-3% sphalerite brownish, fine grain in bleb and stringners
LJ077	462148	6228125	Chip	Chip sample taken over 1,8m from LJ070 to LJ071

Sample #	Coordinates (NAD 83)		Sample type	Description
	Easting	Northing		
DM124	462670	6226680	Float	Light green felsic volcanic with quartz on joints showing trace pyrite and galena.
DM125	462711	6226661	Grab	Gossanous weathering spongy Lapilli Ash Tuff with no visible sulphides.
DM126	462725	6226708	Grab	Discontinuous gash with minor quartz and pockets of very fine grained pyrite and lesser chalcopyrite.
DM127	462760	6226843	Grab	Narrow but prominent shear with 15cm quartz vein on south boundary. Small amounts of chalcopyrite in quartz.
DM128	462760	6226843	Grab	20cm quartz vein on North boundary (1m apart) contains pyrite and sphalerite in large pods. 20z% sulphides.
DM129	462729	6226875	Grab	Gossanous quartz vein from same structure as DM127.
DM130	462731	6226925	Float	Cobble of quartz vein with bands of medium grained pyrite and sphalerite. Angular and presumably from same structure as DM127. 7% sulphides.
DM131	462686	6226925	Chip	Same structure as DM127. Sample across 0.5m quartz vein with fine galena and pyrite to 1%.
DM132	462686	6226925	Grab	Sample at edge of glacier from Northern boundary of shear. 2m away from sample DM131. Pyrite and chalcopyrite in discontinous bands with lesser galena and sphalerite. 15% sulphides.
DM133	462714	6226974	Float	Cobble of dark grey chert with boxwork of thin quartz veinlets containing disseminated pyrite.
DM134	462714	6226974	Float	Brown weathering pale pink on fresh breaks. Banded to laminated chert. Partially brecciated with finely disseminated sulphides. Pyrite and galena and or magnetite.
DM135	462407	6229904	Float	Cobble of light grey andesitic intrusive with thin quartz vein and trace disseminated pyrite.
DM136	461998	6229932	Float	Small boulder of chert and fine gray flsic intrusive. Possibly a Breccia with fine pyrite on fractures.
DM137	461950	6229964	Float	Pale green to reddish Ash Tuff with very fine disseminated sulphides. Coarser cubic pyrite on fractures.
DM138	461904	6230003	Float	Cobble of crudely banded pinkish to red jasperoid (?) trace sulphides and magnetite (?).
DM139	461527	6230231	Grab	Undulating 10cm quartz vein with centre of arsenopyrite and lesser pyrite. 20% sulphides. Near edge of glacier. Structure seems discontinuous.
DM140	461821	6229954	Float	Pinkish red and crudely banded jasperoid with trace galena/ magnetite. Outcrop can be seen in cliff above talus slope. Vertical and up to 3m wide.
DM141	461907	6229896	Float	Brecciated quartz vein with granular masses of arsenopyrite, chalcopyrite and trace galena. Sulphides 5%

APPENDIX II

DRILL LOGS

DDH:	SC17-3			Total depth: 210.00 m Core size: NQ	Logged by: A. Walus								
Azimuth: 275				Start: October 01, 2017	Easting: 462313				Northing: 6228243				
Inclination: 25				Completion: October 07, 2017	Elevation:								
Interval (meters)			Rock type	Rock description	Sample interval (metres)				Ag	Cu	Pb	Zn	Au
From	To	Width			Sample #	From	To	Width	ppm	%	%	%	ppm
0.00	19.60	19.60	**Trachyte**	Gray, completely sericite-chlorite altered rock, massive texture.	132001	0.00	3.00	3.00	1.3	0.023	0.023	0.118	<0.005
				The rock is magnetic from 1-2% fine disseminated magnetite.	132002	3.00	6.00	3.00	5.7	0.007	0.136	0.258	<0.005
				The interval contains several veins 0.2 to to 20 cm wide composed of	132003	6.00	9.00	3.00	2.9	0.004	0.074	0.198	<0.005
				carbonates with lesser quartz, barite, up to 5% pyrite and up 3%	132004	9.00	12.00	3.00	4.2	0.005	0.032	0.397	<0.005
				galena and sphalerite. Veins atitudes vary from 20 to 90 degrees to	132005	12.00	15.00	3.00	4.3	0.006	0.055	0.230	<0.005
				c/a.	132006	15.00	18.00	3.00	11	0.006	0.235	0.339	<0.005
					132007	18.00	19.60	1.60	13.3	0.015	0.187	0.572	<0.005
19.60	22.00	2.40	**Laminated chert -pyrite**	The interval is composed of 1 to 10 mm thick laminae of gray to black	132008	19.60	22.00	2.40	56.4	0.017	0.998	0.359	0.012
			sulphide zone	chert and pyrite. Their attitude ranges from 20 to 70 deg. to c/a,									
				often they are strongly deformed to brecciated. Locally trace to minor									
				galena and sphalerite.									
20.50	20.85	0.35		Quartz vein with minor galena.									
22.00	33.00	11.00	**Trachyte**	Massive texture. The rock is strongly sericitizied, chloritizied and	132009	22.00	24.00	2.00	20.8	0.007	0.167	0.027	0.006
				locally silicified which destroyed the primary texture of the rock.	132010	24.00	27.00	3.00	14.6	0.007	0.013	0.014	<0.005
					132011	27.00	30.00	3.00	14	0.018	0.015	0.361	0.006
					132012	30.00	33.00	3.00	9.6	0.004	0.007	0.011	0.006
33.00	42.60	9.60	**Crackle breccia/**	The same rock as interval above. In many places the rock is silicified	132013	33.00	34.50	1.50	**17**	**0.014**	**0.056**	**2.650**	<0.005
			sulphide zone	and weakly brecciated with fractures filled with chalcedony,	132014	34.50	36.00	1.50	**25.8**	**0.202**	**1.940**	**2.530**	0.005
				carbonates, pyrite and sporadically minor galena and sphalerite.	132015	standard			**83.2**	**0.027**	**0.640**	**2.310**	0.066
					132016	36.00	37.50	1.50	**26.5**	**0.071**	**0.143**	**4.620**	0.015
35.35	36.00	0.65		10-15% of extremaly fine grained pyrite, mostly as replacements.	132017	37.50	39.00	1.50	27	0.001	0.001	0.010	0.012
					132018	blank			< 0.2	0.030	0.049	1.380	<0.005
37.60	38.00	0.40		Carbonate replacements with 10-15% sphalerite and minor galena.	132019	39.00	40.50	1.50	52.5	0.012	0.069	0.650	0.018
					132020	40.50	42.60	2.10	23	0.012	0.069	0.650	0.012
42.60	48.95	6.35	**Trachyte**	Same as interval 22.0 to 33.0 m.	132021	42.60	45.00	2.40	16.7	0.011	0.014	0.028	0.006
					132022	45.00	47.00	2.00	10.4	0.004	0.009	0.021	<0.005
					132023	47.00	48.95	1.95	24	0.186	0.017	0.048	<0.005

DDH: SC17-3			Rock type	Rock description	Sample interval (metres)				Ag	Cu	Pb	Zn	Au
From	To	Width			Sample #	From	To	Width	ppm	%	%	%	ppm
48.95	76.20	27.25	**Barite-chert-**	The interval consists of barite and chert with small amount of	132024	48.95	50.00	1.05	**17.6**	**0.093**	**0.015**	**0.714**	0.006
			sulphide zone	mudstone, carbonate, sulphides and possibly gypsum. They mostly	132025	50.00	51.00	1.00	**20.7**	**0.099**	**0.014**	**0.634**	0.012
				form highly deformed laminae and slump breccia. Lamination attitude	132026	51.00	52.50	1.50	**20.8**	**0.038**	**0.028**	**1.030**	0.008
				ranges from 15 to 80 degree to c/a. Chert dominate in the upper and	132027	52.50	54.00	1.50	**75.1**	**0.257**	**0.066**	**2.290**	<0.005
				barite in the lower part of the interval. Sulphides include up to 10%	132028	54.00	55.50	1.50	**27**	**0.620**	**0.038**	**1.370**	0.005
				pyrite, trace to 3% sphalerite and trace to 1 % chalcopyrite. They	132029	standard			**71.6**	**0.215**	**1.320**	**1.560**	0.031
				occur as laminae, disseminated grains and patches.	132030	55.50	57.00	1.50	**19.4**	**0.600**	**0.024**	**1.220**	<0.005
					132031	57.00	58.50	1.50	**10.8**	**0.363**	**0.019**	**0.661**	<0.005
					132032	58.5	60.00	1.50	**12.6**	**0.240**	**0.055**	**1.140**	<0.005
					132033	duplicate			**12.2**	**0.241**	**0.058**	**1.270**	<0.005
					132034	60.0	61.50	1.50	**32.9**	**0.754**	**0.051**	**0.691**	0.014
					132035	61.50	63.00	1.50	**18.6**	**0.269**	**0.037**	**1.790**	0.012
					132036	63.00	64.50	1.50	**14.3**	**0.255**	**0.015**	**1.020**	0.011
					132037	64.50	66.00	1.50	**13.8**	**0.247**	**0.010**	**0.400**	0.011
					132038	66.00	67.50	1.50	**11.6**	**0.150**	**0.016**	**0.682**	0.026
					132039	67.50	69.00	1.50	**10.8**	**0.302**	**0.008**	**0.889**	0.021
					132040	69.00	70.50	1.50	**13.8**	**0.210**	**0.028**	**1.530**	0.035
					132041	70.50	72.00	1.50	**22.1**	**0.562**	**0.020**	**0.598**	0.013
					132042	duplicate			**18.3**	**0.464**	**0.020**	**0.462**	0.011
					132043	72.00	73.50	1.50	**21.5**	**0.682**	**0.018**	**0.148**	0.018
					132044	73.50	75.00	1.50	**36.7**	**0.544**	**0.035**	**1.530**	0.012
					132045	blank			**< 0.2**	**0.001**	**0.000**	**0.006**	<0.005
					132046	75.00	76.20	1.20	**17.7**	**0.282**	**0.010**	**0.079**	0.006
76.20	77.20	1.00	**Pyrite replacement**	The interval is composed of chert with lesser carbonate. In most part	132047	76.20	77.20	1.00	5.2	0.005	0.012	0.122	0.043
				it is replaced by coarse grained pyrite which constitute 50-60% of									
				the interval.									
77.20	86.00	8.80	**Felsic (?) tuff**	Mostly massive texture, occasionally bedding @ 60 to 70 deg. to c/a	132048	77.20	79.00	1.80	5.2	0.080	0.002	0.040	0.018
				can be seen. In several places places small clasts of chert were noted	132049	79.00	81.00	2.00	1	0.155	0.022	0.039	0.016
				Possible presence of barite in the upper part of the interval. The rock	132050	81.00	84.00	3.00	5.9	0.086	0.005	0.028	0.015
				is strongly sericitizied and locally silicified. Small quartz veins and	132051	84.00	86.00	2.00	3.9	0.042	0.002	0.014	0.012
				replacements are present throughout the interval. Trace to 3% pyrite.					1.3				
86.00	92.00	6.00	**Mudstone/trachyte tuff**	Massive texture, sporadically lithic clasts up to 3.0 cm in size, minor	132052	86.00	88.00	2.00	4.3	0.059	0.008	0.016	0.010
				pyrite.	132053	88.00	90.00	2.00	7.9	0.148	0.122	0.021	<0.005
89.90	90.50	0.60		Strongly silicified interval cut by quartz veinlets mostly @ 20-30 deg.	132054	90.00	92.00	2.00	4.6	0.068	0.029	0.027	0.007
				to c/a, 1-2% sphalerite ?									
					132055	92.00	93.00	1.00	7.3	0.103	0.039	0.101	0.042
92.00	104.80	12.80	**Felsic (?) lapilli-tuff**	The interval contains numerous chert clasts up to 5 cm across,	132056	93.00	96.00	3.00	8.5	0.070	0.087	0.024	0.075
				moderate sericitization.	132057	96.00	99.00	3.00	1.7	0.033	0.003	0.009	0.019
					132058	99.00	102.00	3.00	0.5	0.014	0.007	0.032	0.014
					132059	102.00	104.80	2.80	0.3	0.014	0.000	0.014	0.044

DDH: SC17-3			Rock type	Rock description	Sample interval (metres)				Ag	Cu	Pb	Zn	Au
From	**To**	**Width**			**Sample**	**From**	**To**	**Width**	**ppm**	**%**	**%**	**%**	**ppm**
104.80	121.00	16.20	**Trachyte lapilli-tuff**	Very dark, almost black rock with 20-30% of small pale yellow	132060	104.80	108.00	3.20	< 0.2	0.004	0.001	0.018	0.016
				patches (concentrations of sericite and carbonates) which gives the	132061	108.00	111.00	3.00	0.2	0.001	0.000	0.011	0.032
				rock mottled appereance. In places the rock contains small clasts	132062	111.00	114.00	3.00	< 0.2	0.000	0.000	0.010	<0.005
				of chert. Minor disseminated pyrite.	132063	114.00	117.00	3.00	< 0.2	0.000	0.001	0.011	0.022
114.00	120.50	6.50		strong sericitization.	132064	117.00	121.00	4.00	< 0.2	0.001	0.001	0.014	0.029
121.00	156.50	35.50	**Trachyte lapilli-tuff-**	Except trachyte fragments the rock also contains fragments of	132065	121.00	123.00	2.00	0.3	0.020	0.001	0.022	<0.005
			breccia	rhyolite and chert. Clasts are up to 37 cm across. Locally the rock is	132066	123.00	126.00	3.00	0.3	0.020	0.001	0.026	0.007
				moderately sericitizied and chloritizied. Minor extremely fine grained	132067	126.00	129.00	3.00	1	0.022	0.007	0.046	0.012
				disseminated pyrite.	132068	129.00	132.00	3.00	1.4	0.003	0.215	0.023	0.043
					132069	132.00	135.00	3.00	< 0.2	0.000	0.001	0.011	<0.005
					132070	135.00	138.00	3.00	< 0.2	0.001	0.000	0.010	<0.005
					132071	138.00	141.00	3.00	< 0.2	0.001	0.000	0.010	<0.005
					132072	141.00	144.00	3.00	0.2	0.006	0.000	0.010	<0.005
156.50	160.30	3.80	**Fault Zone**	Some sections of the fault consists of strongly limonitic, badly broken	132073	144.00	147.00	3.00	0.3	0.011	0.000	0.017	0.006
				core to rock chips. They are intercalated with sections replaced by	132074	147.00	150.00	3.00	< 0.2	0.001	0.000	0.013	<0.005
				quartz.	132075	150.00	153.00	3.00	0.3	0.002	0.001	0.024	<0.005
					132076	153.00	156.50	3.50	< 0.2	0.001	0.000	0.019	<0.005
					132077	156.50	160.30	3.80	0.9	0.005	0.001	0.031	<0.005
160.30	210.00	49.70	**Trachyte lapilli-tuff**	Dark, almost black colour. Except trachyte fragments the rock also	132078	160.30	162.00	1.70	< 0.2	0.003	0.000	0.034	<0.005
				contains 5-15% rhyolite and small amount of chert clasts.	132079	162.00	165.00	3.00	0.3	0.002	0.000	0.031	0.005
165.00	165.15	0.15	Fault	Small quartz fragments and fault gouge.	132080	165.00	168.00	3.00	< 0.2	0.002	0.000	0.038	0.005
					132081	168.00	171.00	3.00	0.3	0.002	0.001	0.014	0.006
184.80	185.00	0.20	Fault	Clay gouge	132082	171.00	174.00	3.00	0.4	0.002	0.000	0.023	<0.005
					132083	174.00	177.00	3.00	0.3	0.002	0.001	0.024	<0.005
186.00	197.50	11.50		Interval has a light gray colour due to sericite alteration.	132084	177.00	180.00	3.00	0.2	0.002	0.000	0.038	<0.005
189.00	192.00	3.00		Remnant bedding @70 degrees to c/a.	132085	180.00	183.00	3.00	< 0.2	0.002	0.000	0.038	<0.005
					132086	183.00	186.00	3.00	< 0.2	0.002	0.000	0.031	0.018
192.10	195.10	3.00	Fault	Badly broken core to strongly limonitic rock chips, locally clay gouge.	132087	186.00	189.00	3.00	0.5	0.003	0.001	0.023	<0.005
					132088	189.00	192.00	3.00	0.3	0.005	0.001	0.039	<0.005
					132089	192.00	195.00	3.00	1.8	0.002	0.001	0.018	<0.005
					132090	195.00	198.00	3.00	0.3	0.008	0.002	0.029	<0.005
				EOH 210.00 metres	132091	198.00	201.00	3.00	< 0.2	0.006	0.001	0.029	<0.005
					132092	201.00	204.00	3.00	< 0.2	0.001	0.000	0.024	0.019
					132093	204.00	207.00	3.00	< 0.2	0.001	0.000	0.014	<0.005
					132094	207.00	210.00	3.00	< 0.2	0.001	0.000	0.015	0.005

DDH:	**SC17-4**			**Total depth: 135.00 m Core size: NQ**	**Logged by: A. Walus**								
Azimuth: 275				**Start: October 07 , 2017**	**Easting: 462313**				**Northing: 6228243**				
Inclination: 0				**Completion: October 09, 2017**	**Elevation:**								
Interval (meters)			**Rock type**	**Rock description**	**Sample interval (metres)**				**Ag**	**Cu**	**Pb**	**Zn**	**Au**
From	**To**	**Width**			**Sample #**	**From**	**To**	**Width**	**ppm**	**%**	**%**	**%**	**ppm**
0.00	2.00	2.00	**Air**										
2.00	34.50	32.50	**Trachyte**	Gray, completely sericite-chlorite altered rock, massive texture.	132095	2.00	3.00	1.00	6.3	0.004	0.175	0.399	<0.005
				The rock is magnetic from 1-2% fine disseminated magnetite.	132096	3.00	6.00	3.00	0.7	0.003	0.018	0.084	<0.005
				The interval contains several veins 0.2 to to 20 cm wide composed of	132097	6.00	8.73	2.73	3	0.005	0.034	0.262	<0.005
				carbonates with lesser quartz, barite, up to 5% pyrite and up 3%	132098	8.73	10.10	1.37	3	0.003	0.129	0.213	<0.005
				galena and sphalerite. Veins atitudes vary from 20 to 90 degrees to	132099	10.10	12.00	1.90	2.3	0.004	0.043	0.113	<0.005
				c/a.	132100	12.00	15.00	3.00	4.7	0.005	0.059	0.367	<0.005
					132101	15.00	18.00	3.00	3.7	0.005	0.056	0.599	<0.005
8.73	10.10	1.37		Quartz-carbonate vein with minor sphalerite and galena.	132102	18.00	21.00	3.00	5.5	0.005	0.054	0.318	<0.005
					132103	21.00	24.00	3.00	6.8	0.008	0.058	0.489	<0.005
27.70	27.93	0.23		Pyrite vein with minor sphalerite and galena.	132104	24.00	27.00	3.00	4.4	0.005	0.027	0.155	<0.005
					132105	27.00	30.00	3.00	16.8	0.011	0.204	1.13	<0.005
					132106	30.00	33.00	3.00	7.1	0.005	0.055	0.304	0.01
					132107	33.00	34.50	1.50	17.4	0.01	0.115	1.54	<0.005
34.50	35.40	0.90	**Laminated chert-pyrite**	The interval is composed of 1 to 10 mm thick laminae of gray to black	132108	34.50	35.40	0.90	**38.7**	**0.011**	**0.234**	**0.639**	0.01
			sulphide zone	chert and pyrite. Their attitude ranges from 0 to 30 deg. to c/a,									
				Locally trace to minor sphalerite.									
35.40	41.70	6.30	**Crackle breccia/**	Strongly silicified and weakly to moderately brecciated felsic rock.	132109	35.40	36.85	1.45	**24.7**	**0.008**	**0.322**	**0.863**	<0.005
			sulphide zone	Fractures are filled with pyrite and minor sphalerite.	132110	36.85	39.00	2.15	**18.4**	**0.006**	**0.192**	**0.282**	<0.005
					132111	39.00	40.50	1.50	**13.7**	**0.014**	**0.089**	**1.15**	<0.005
					132112	40.50	41.70	1.20	**39.5**	**0.035**	**0.297**	**2.28**	0.01
41.70	61.90	20.20	**Trachyte**	Light to medium gray trachitic rock to various degree sericitizied and	132113	41.70	45.00	3.30	**51.6**	**0.102**	**0.158**	**1.13**	0.01
				to lesser extent chloritizied. It is cut by numerous quartz-carbonate-	132114	45.00	48.00	3.00	34.3	0.038	0.112	0.934	0.01
				barite (?) -pyrite veins 0.3-1.0 cm wide which locally form stockwork,	132115	48.00	51.00	3.00	16	0.019	0.148	0.821	<0.005
				sporadically trace to minor sphalerite.	132116	51.00	54.00	3.00	18.3	0.031	0.117	0.789	<0.005
					132117	54.00	57.00	3.00	14.2	0.037	0.151	0.426	0.03
51.15	51.25	0.10	Fault	Small rock chips and grounded rock.	132118	57.00	60.00	3.00	9.8	0.125	0.069	1.45	0.06
					132119	60.00	61.90	1.90	12.3	0.105	0.07	0.288	0.01
61.90	76.95	15.1	**Barite-chert**	The interval in composed of barite and chert with much less	132120	61.90	63.00	1.10	**16.1**	**0.037**	**0.026**	**0.069**	<0.005
			sulphide zone	mudstone, carbonates, sulphides and possibly gypsum. Chert and	132121	63.00	64.50	1.50	**26.5**	**0.143**	**0.047**	**0.239**	<0.005
				mudstone dominate in the top 2.0 metres of the interval and barite in	132122	64.50	66.00	1.50	**31**	**0.368**	**0.459**	**0.931**	<0.005
				the remaining part. The zone is mostly laminated with lamination	132123	standard			**84.9**	**0.223**	**2**	**2.41**	0.06
				attitude ranging from 45 to 60 deg. to c/a. Lamination in many parts	132124	66.00	67.50	1.50	**19.6**	**0.151**	**0.181**	**0.414**	<0.005
				of the zone is strongly disturbed locally forming slump breccia.	132125	67.50	69.00	1.50	**17.7**	**0.153**	**0.043**	**0.293**	0.01
				Sulphides include up to 3% pyrite, up to 1% sphalerite and trace to	132126	duplicate			19.9	0.221	0.027	0.385	<0.005

DDH: SC17-4			Rock type	Rock description	Sample interval (metres)				Ag	Cu	Pb	Zn	Au
From	To	Width			Sample #	From	To	Width	ppm	%	%	%	ppm
				minor galena, sphalerite and chalcopyrite.	132127	69.00	70.50	1.50	**32.6**	**0.086**	**0.046**	**1.35**	<0.005
					132128	blank			**< 0.2**	**0.016**	**0**	**0.005**	<0.005
					132129	70.50	72.00	1.50	**15.3**	**0.173**	**0.016**	**0.436**	0.01
					132130	72.00	73.50	1.50	**15.2**	**0.214**	**0.01**	**0.032**	0.01
					132131	73.50	75.00	1.50	**13.4**	**0.268**	**0.046**	**0.098**	0.01
					132132	75.00	76.95	1.95	**12.5**	**0.254**	**0.034**	**0.291**	0.01
76.95	87.10	10.15	**Felsic (?) tuff**	Variable sericite-chlorite alteration. The upper half of the interval is	132133	76.95	78.00	1.05	12.6	0.01	0.104	1.38	0.01
				brecciated and partly replaced by chalcedony.	132134	78.00	81.00	3.00	16	0.007	0.137	0.597	0.01
					132135	81.00	84.00	3.00	8.4	0.006	0.063	0.309	0.03
					132136	84.00	87.10	3.10	14	0.02	0.061	0.214	0.01
87.10	98.40	11.30	**Interacalated trachyte**	Trachyte (?) breccia intercalated with intervals composed of chert	132137	87.10	90.00	2.90	39.3	0.021	0.109	0.842	0.01
			and chert-barite breccia	lesser barite clasts cemented by chert. Trachyte (?) breccia is often	132138	90.00	93.00	3.00	19.4	0.011	0.046	0.657	<0.005
				strongly chloritizied.	132139	93.00	96.00	3.00	13.8	0.009	0.016	0.494	<0.005
					132140	96.00	98.40	2.40	13.7	0.01	0.047	0.213	<0.005
					132141	standard			63.8	0.201	1.36	1.48	0.05
98.40	114.00	15.60	**Chert-sulphide zone**	The zone consists mostly of chert lesser barite clasts cemented by	132142	98.40	100.50	2.10	21.3	0.027	0.026	0.115	<0.005
				chert, locally the interval displays lamination with attitude ranging from	132143	100.50	102.00	1.50	13.5	0.041	0.032	0.289	<0.005
				30 to 60 degrees to c/a. Laminae are often strongly disturbed locally	132144	duplicate			13.3	0.064	0.032	0.526	<0.005
				forming slump breccia. The interval contains up to 15% pyrite, up to	132145	102.00	103.50	**1.50**	**8**	**0.184**	**0.023**	**1.35**	0.01
				3% sphalerite and trace to minor galena and chalcopyrite.	132146	103.50	105.00	**1.50**	**26.7**	**0.393**	**0.939**	**2.04**	0.02
				Most pyrite is concentrated in the lower part of the interval.	132147	blank			< 0.2	0.017	0.001	0.006	<0.005
					132148	105.00	106.50	**1.50**	**11.4**	**0.268**	**0.159**	**0.458**	0.03
111.40	112.00	0.60		Vein composed of vuggy quartz and coarse pyrite, limonitic,	132149	106.50	108.00	1.50	11.6	0.008	0.01	0.04	0.11
				shearing @ 20 deg. to c/a.	132150	duplicate			9.8	0.007	0.009	0.05	0.1
					132151	108.00	109.50	1.50	7.5	0.006	0.006	0.202	0.1
112.50	113.30	0.80		Partial replacement by quartz, strong limonite.	132152	109.50	111.00	1.50	11.1	0.008	0.008	0.026	0.19
					132153	111.00	112.50	1.50	9.1	0.203	0.008	0.048	0.08
113.30	113.40	0.10	Fault	Small limonitic rock chips	132154	112.50	114.00	1.50	10.9	0.064	0.007	0.081	0.28
					132155	114.00	117.00	3.00	23.9	0.089	0.008	0.094	0.05
114.00	121.50	7.50	**Trachyte tuff**	Massive texture, upper part of the interval is strongly silicified.	132156	117.00	120.00	3.00	16.6	0.1	0.041	0.35	0.04
					132157	120.00	121.50	1.50	6.3	0.02	0.038	0.248	0.13
116.20	119.90	3.70		Section to large degree replaced by late quartz.									
121.50	121.60	0.10	Fault	Fault gouge and rock chips.									
121.50	132.40	10.90	**Fine felsic (?) tuff**	From 121.5 to 123.5 m there is a distinct lamination @ 30 deg. to	132158	121.50	123.00	1.50	16.1	0.345	0.048	0.067	0.04
				c/a., the reminder of the inteval has a massive texture. From 125.9 to	132159	123.00	126.00	3.00	11.8	0.133	0.033	0.086	0.03
				132.4 m the rock is brecciated and partly replaced by chalcedony.	132160	126.00	129.00	3.00	3.6	0.048	0.003	0.012	0.03

DDH: SC17-4			Rock type	Rock description	Sample interval (metres)				Ag	Cu	Pb	Zn	Au
From	To	Width			Sample	From	To	Width	ppm	%	%	%	ppm
					132161	129.00	132.40	3.40	2.6	0.032	0.001	0.004	0.03
132.40	135.00	2.60	**Trachyte crystal-lithic**	Very dark, almost black colour, massive texture, partial replacement	132162	132.40	135.00	2.60	0.3	0.017	0	0.014	0.01
			tuff	by late quartz.									
				135.0 metre EOH									

APPENDIX III

GEOCHEMICAL RESULTS

Final Report
Activation Laboratories

Report: A17-10633
Report Date: 1/12/2017

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
A17-104	< 5	< 0.2	1.5	11	124	2	1	15	157	0.58	2	< 10	101	< 0.5	< 2	0.1	2
A17-105	71	3.4	10.8	48	192	14	< 1	788	2080	1.03	7	< 10	186	< 0.5	< 2	0.17	3
A17-106	139	0.3	0.5	4	1820	2	3	6	97	0.19	2720	< 10	30	< 0.5	< 2	0.09	2
A17-107	1180	3.2	< 0.5	3	7720	< 1	2	140	128	0.26	> 10000	< 10	50	< 0.5	< 2	3.76	5
A17-108	< 5	0.6	< 0.5	1560	1300	< 1	2	4	41	2.19	16	23	708	1.1	< 2	1.81	5
A17-131	< 5	< 0.2	< 0.5	33	743	1	5	15	142	1.49	32	13	236	1.2	< 2	0.39	13
A17-132	28	10.6	129	15	7980	340	< 1	1380	8940	0.03	145	< 10	29	< 0.5	< 2	8.95	5
A17-133	27	33.5	0.7	24	123	44	4	410	179	0.88	734	13	34	< 0.5	< 2	0.24	14
A17-134	102	1.9	8.1	10	738	8	2	122	745	0.89	1510	< 10	49	< 0.5	< 2	0.34	10
A17-135	< 5	10.3	30.4	12	10900	36	< 1	117	2980	0.07	39	< 10	52	< 0.5	< 2	> 10.0	6
A17-136	< 5	16.4	97.9	30	11100	99	2	1810	7480	0.07	228	< 10	38	< 0.5	< 2	> 10.0	12
A17-137	< 5	0.5	2.9	24	1600	2	28	148	423	0.47	19	< 10	96	< 0.5	< 2	6.14	7
A17-138	< 5	1.3	3.6	13	7010	15	24	97	293	0.67	12	< 10	100	< 0.5	< 2	> 10.0	6
A17-139	< 5	< 0.2	< 0.5	19	1370	1	5	4	64	0.61	13	< 10	114	< 0.5	< 2	1.48	3
A17-140	6	0.6	1.9	31	711	3	7	21	188	0.72	11	< 10	70	< 0.5	< 2	1.03	5
A17-141	< 5	1.2	42.1	8	4010	11	6	570	6000	0.39	296	< 10	26	< 0.5	< 2	9.51	11
DM-124	3010	5.7	10.5	120	691	5	< 1	1440	769	0.76	31	< 10	121	0.5	< 2	1.3	6
DM-125	31	6.6	< 0.5	54	151	47	2	155	146	0.82	188	< 10	38	< 0.5	< 2	0.05	10
DM-126	> 5000	47.1	< 0.5	> 10000	320	395	11	663	155	0.45	738	< 10	< 10	< 0.5	< 2	0.05	40
DM-127	> 5000	> 100	318	> 10000	125	20	3	> 5000	> 10000	0.21	3980	< 10	15	< 0.5	98	0.03	2
DM-128	1640	1.5	0.9	34	5620	3	4	104	81	0.09	550	< 10	13	< 0.5	< 2	0.09	12
DM-129	> 5000	17.2	28.7	261	1180	3	2	2240	1250	0.36	5000	< 10	154	< 0.5	7	0.1	2
DM-130	638	> 100	246	212	469	2	2	2240	> 10000	0.05	6310	< 10	< 10	< 0.5	247	0.02	14
DM-131	732	5.2	3.4	29	2550	5	2	69	298	0.04	312	< 10	32	< 0.5	25	0.01	10
DM-132	1650	> 100	542	714	1060	1	3	3120	> 10000	0.08	791	< 10	< 10	< 0.5	290	0.05	9
DM-133	12	1.8	18.1	30	6460	6	3	312	1960	0.07	88	< 10	59	< 0.5	< 2	9.76	3
DM-134	< 5	1.7	4.6	5	4140	16	4	717	473	0.06	36	< 10	95	< 0.5	< 2	4.24	< 1
DM-135	< 5	1.1	< 0.5	15	900	2	< 1	25	45	0.58	5	< 10	179	< 0.5	4	2.03	3
DM-136	< 5	< 0.2	0.6	6	244	3	< 1	19	83	0.32	2	< 10	202	< 0.5	< 2	0.31	< 1
DM-137	6	0.2	13.3	37	2970	1	1	8	771	0.95	19	< 10	91	< 0.5	< 2	8.67	10
DM-138	< 5	< 0.2	0.6	4	2610	3	< 1	12	23	0.04	24	< 10	537	< 0.5	< 2	4.73	2

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Report: A17-10633
Report Date: 1/12/2017

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
DM-139	3620	15.1	2.1	361	79	< 1	6	102	13	0.27	> 10000	< 10	< 10	< 0.5	101	0.07	29
DM-140	16	0.7	< 0.5	13	365	7	3	24	31	0.06	509	< 10	44	< 0.5	< 2	0.45	8
DM-141	8	1.4	4.9	233	1740	2	1	21	312	0.07	14	< 10	50	< 0.5	6	2.97	3
AGKM-01	144	9.5	3.1	96	4620	2	2	72	140	0.03	247	< 10	19	< 0.5	38	6.39	9
AGKM-02	< 5	< 0.2	2.3	25	3160	2	< 1	10	14	0.03	15	< 10	581	< 0.5	< 2	> 10.0	< 1
AGKM-03	< 5	7.7	12.7	5	762	2	< 1	2220	5670	0.36	10	< 10	293	< 0.5	6	0.42	3
AGKM-04	< 5	< 0.2	< 0.5	24	1450	< 1	9	11	67	1.97	5	< 10	305	< 0.5	< 2	5.14	10
AGKM-05	< 5	0.3	< 0.5	26	75	14	9	20	47	1.57	3	< 10	80	0.6	< 2	0.34	11
AGKM-06	< 5	0.3	20.6	9	1710	4	< 1	24	1590	0.34	353	< 10	106	< 0.5	< 2	6	3
AGKM-07	< 5	< 0.2	< 0.5	2	899	2	< 1	4	67	0.18	377	< 10	55	< 0.5	< 2	2.4	1
AGKM-08	< 5	0.2	0.6	14	377	6	11	16	211	1.39	53	< 10	37	< 0.5	< 2	0.36	8
AGKM-09	< 5	0.2	7	8	1400	1	6	9	377	1.3	10	< 10	50	< 0.5	< 2	4.17	16
AGKM-10	5	0.6	0.8	11	704	4	1	18	214	0.85	13	< 10	32	< 0.5	< 2	3.49	9
AGKM-11	< 5	0.4	4.6	14	767	2	< 1	14	218	0.12	81	< 10	55	< 0.5	< 2	1.79	< 1
AGKM-12	< 5	1.8	14.4	17	2940	45	5	401	1430	1.18	298	< 10	39	0.6	< 2	5.81	16
AGKM-13	< 5	0.5	1.3	6	3730	24	4	22	134	1.32	347	< 10	37	< 0.5	< 2	7.64	8
AGKM-14	< 5	0.8	32.4	15	5100	8	4	902	7260	1.11	374	< 10	43	< 0.5	< 2	> 10.0	16
AGKM-15	7	0.8	0.7	11	883	4	3	152	195	0.54	97	< 10	80	< 0.5	< 2	0.33	4
AGKM-16	< 5	< 0.2	1.2	51	1880	6	24	5	148	1.36	8	< 10	114	< 0.5	< 2	> 10.0	6
AGKM-17	< 5	< 0.2	1.4	22	1530	4	7	20	166	0.99	23	< 10	61	< 0.5	< 2	8.32	6
AGKM-12a	< 5	< 0.2	0.9	3	4950	8	2	29	113	0.71	244	< 10	29	< 0.5	< 2	> 10.0	6
AGKM-14a	< 5	4.5	8.5	12	316	22	1	2140	1070	0.19	31	< 10	113	< 0.5	< 2	0.39	9
GGKM-01	< 5	< 0.2	< 0.5	3	859	2	< 1	10	34	0.19	4	< 10	139	< 0.5	< 2	1.43	1
GGKM-02	117	8.9	< 0.5	116	367	27	10	415	58	0.81	389	< 10	< 10	< 0.5	< 2	0.34	63
GGKM-03	< 5	< 0.2	< 0.5	56	86	4	2	9	12	0.24	15	< 10	259	< 0.5	< 2	0.1	1
GGKM-04	12	8.2	< 0.5	20	39	28	2	407	15	0.57	1520	< 10	24	< 0.5	< 2	0.01	4
GGKM-05	31	3	< 0.5	24	1360	20	4	319	94	0.29	382	< 10	34	< 0.5	< 2	0.25	23
GGKM-06	< 5	0.3	< 0.5	9	6000	< 1	< 1	37	143	0.39	9	< 10	110	< 0.5	< 2	> 10.0	8
GGKM-07	< 5	< 0.2	< 0.5	13	2510	1	3	14	60	0.44	242	< 10	102	< 0.5	< 2	3.36	15
GGKM-08	< 5	< 0.2	< 0.5	30	4150	2	< 1	8	17	0.3	< 2	10	937	< 0.5	< 2	8.27	3
GGKM-09	670	0.9	< 0.5	173	3760	2	1	14	35	0.74	124	< 10	73	< 0.5	< 2	8.29	7

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Report: A17-10633

Report Date: 1/12/2017

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GGKM-10	< 5	0.4	< 0.5	5	2260	5	3	67	110	0.3	28	< 10	1220	0.9	< 2	3.96	3
GGKM-11	30	0.6	< 0.5	5	60	12	< 1	28	4	0.24	71	< 10	134	< 0.5	< 2	0.03	1
GGKM-12	114	10.9	383	215	1610	2	2	128	> 10000	0.39	125	< 10	33	< 0.5	21	0.57	15
GGKM-13	91	1.3	< 0.5	2	26	8	< 1	58	35	0.35	48	< 10	350	< 0.5	< 2	< 0.01	< 1
GGKM-14	381	16.1	0.8	219	73	62	7	166	62	0.44	244	< 10	< 10	< 0.5	< 2	< 0.01	43
GGKM-15	17	0.3	< 0.5	6	67	12	1	15	25	0.28	33	< 10	200	< 0.5	< 2	< 0.01	2
GGKM-16	1930	15.4	1.1	59	466	31	8	664	144	0.36	645	< 10	< 10	< 0.5	25	0.02	106
GGKM-17	8	1.1	1	54	2020	2	2	18	116	0.67	12	< 10	190	< 0.5	< 2	1.54	7
GGKM-18	191	1.2	0.6	9	713	2	2	46	57	0.09	114	< 10	46	< 0.5	3	0.02	8

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Analyte Symbol	Cr	Fe	Ga	Hg	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl
Unit Symbol	ppm	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Detection Limit	1	0.01	10	1	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
A17-104	17	1.11	< 10	< 1	0.21	< 10	0.14	0.128	0.024	0.01	< 2	< 1	14	0.02	< 20	< 1	< 2
A17-105	11	2.14	< 10	2	0.41	57	0.26	0.093	0.078	0.04	2	2	66	0.03	< 20	2	< 2
A17-106	20	2.39	< 10	< 1	0.1	< 10	0.04	0.021	0.007	0.27	3	< 1	11	< 0.01	< 20	< 1	< 2
A17-107	7	8.7	< 10	< 1	0.18	< 10	0.38	0.02	0.013	1.76	12	2	238	< 0.01	< 20	< 1	< 2
A17-108	10	3.68	< 10	< 1	1.55	13	0.33	0.025	0.115	0.11	10	10	49	0.06	< 20	< 1	< 2
A17-131	7	4.14	< 10	< 1	0.93	20	0.3	0.052	0.081	0.06	6	6	19	< 0.01	< 20	4	< 2
A17-132	7	1.32	< 10	2	0.02	< 10	0.05	0.016	0.006	0.87	15	6	338	< 0.01	< 20	< 1	< 2
A17-133	3	4	< 10	5	0.73	12	0.03	0.023	0.202	1.99	84	3	15	< 0.01	< 20	< 1	7
A17-134	6	2.71	< 10	7	0.55	14	0.14	0.054	0.091	1.55	31	2	20	< 0.01	< 20	< 1	3
A17-135	2	0.96	< 10	4	0.06	< 10	0.06	0.018	0.012	0.57	7	1	665	< 0.01	< 20	< 1	3
A17-136	2	1.33	< 10	12	0.05	< 10	0.05	0.018	0.011	0.94	32	< 1	481	< 0.01	< 20	< 1	< 2
A17-137	13	4.18	< 10	< 1	0.24	< 10	1.42	0.043	0.07	0.14	< 2	3	315	< 0.01	< 20	< 1	< 2
A17-138	16	3.92	< 10	< 1	0.3	< 10	0.4	0.037	0.04	0.26	5	3	256	< 0.01	< 20	< 1	< 2
A17-139	12	2.55	< 10	< 1	0.13	< 10	0.48	0.077	0.029	0.14	< 2	2	81	< 0.01	< 20	< 1	< 2
A17-140	24	2.47	< 10	< 1	0.11	11	0.38	0.121	0.052	0.72	< 2	5	52	0.02	< 20	< 1	< 2
A17-141	10	3.35	< 10	3	0.02	< 10	0.1	0.015	0.012	1.1	5	1	440	< 0.01	< 20	< 1	5
DM-124	6	0.99	< 10	< 1	0.54	27	0.06	0.026	0.006	0.32	7	< 1	61	< 0.01	< 20	2	< 2
DM-125	4	3.78	< 10	< 1	0.68	12	0.05	0.019	0.029	1.36	11	1	13	< 0.01	< 20	< 1	2
DM-126	2	17.8	< 10	< 1	0.36	11	0.03	0.017	0.051	14	47	1	5	< 0.01	< 20	< 1	7
DM-127	21	1.34	< 10	4	0.09	< 10	0.01	0.016	0.011	2.69	> 10000	< 1	23	< 0.01	< 20	3	< 2
DM-128	9	15.7	< 10	< 1	0.05	< 10	0.16	0.014	0.003	3.04	47	2	3	< 0.01	< 20	5	< 2
DM-129	24	2.16	< 10	< 1	0.2	< 10	0.01	0.021	0.017	0.22	436	2	16	< 0.01	< 20	< 1	< 2
DM-130	18	5.86	< 10	< 1	0.03	< 10	< 0.01	0.016	0.001	4.7	44	< 1	1	< 0.01	< 20	6	< 2
DM-131	27	4.5	< 10	< 1	0.02	< 10	< 0.01	0.015	< 0.001	1.45	21	< 1	8	< 0.01	< 20	< 1	< 2
DM-132	19	6.85	< 10	< 1	0.04	< 10	0.03	0.015	0.002	5.01	206	< 1	2	< 0.01	< 20	5	< 2
DM-133	4	8.92	< 10	< 1	0.05	< 10	0.19	0.014	0.013	0.26	27	< 1	743	< 0.01	< 20	< 1	< 2
DM-134	9	15.9	< 10	< 1	0.04	< 10	0.25	0.014	0.017	0.5	11	< 1	287	< 0.01	< 20	3	< 2
DM-135	6	1.61	< 10	< 1	0.45	19	0.07	0.068	0.052	0.24	< 2	1	78	0.05	< 20	< 1	< 2
DM-136	22	0.79	< 10	< 1	0.24	24	0.02	0.095	0.005	< 0.01	3	< 1	15	< 0.01	< 20	< 1	< 2
DM-137	18	3.62	< 10	< 1	0.45	< 10	0.49	0.04	0.062	0.87	< 2	10	294	< 0.01	< 20	< 1	< 2
DM-138	21	1.01	< 10	< 1	0.02	< 10	0.01	0.022	0.006	0.1	5	< 1	360	< 0.01	< 20	2	< 2

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Analyte Symbol	Cr	Fe	Ga	Hg	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl
Unit Symbol	ppm	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Detection Limit	1	0.01	10	1	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
DM-139	4	20.1	< 10	< 1	0.18	< 10	< 0.01	0.017	0.024	13.8	107	< 1	6	< 0.01	< 20	< 1	< 2
DM-140	53	2.98	< 10	< 1	0.03	< 10	0.02	0.02	0.01	0.92	11	< 1	112	< 0.01	< 20	2	< 2
DM-141	16	5.16	< 10	< 1	0.04	< 10	0.03	0.022	0.003	1.21	6	< 1	145	< 0.01	< 20	4	< 2
AGKM-01	7	5.52	< 10	< 1	0.02	< 10	0.02	0.015	0.01	2.13	11	< 1	247	< 0.01	< 20	< 1	< 2
AGKM-02	7	0.9	< 10	< 1	0.02	< 10	0.03	0.02	0.013	0.09	6	< 1	317	< 0.01	< 20	< 1	< 2
AGKM-03	15	1.54	< 10	3	0.13	< 10	0.06	0.08	0.03	0.1	4	< 1	21	< 0.01	< 20	< 1	< 2
AGKM-04	9	3.42	< 10	< 1	0.46	13	0.68	0.036	0.129	0.12	< 2	3	285	< 0.01	< 20	< 1	< 2
AGKM-05	4	2.67	< 10	< 1	0.72	24	0.19	0.044	0.192	0.78	< 2	3	28	< 0.01	< 20	1	< 2
AGKM-06	12	2.42	< 10	< 1	0.15	12	0.08	0.025	0.043	0.1	3	3	610	< 0.01	< 20	< 1	< 2
AGKM-07	18	2.38	< 10	< 1	0.08	< 10	0.03	0.039	0.019	< 0.01	< 2	2	24	< 0.01	< 20	< 1	< 2
AGKM-08	4	3.36	< 10	< 1	0.57	13	0.32	0.037	0.055	1.24	5	3	17	< 0.01	< 20	2	< 2
AGKM-09	3	5.87	< 10	< 1	0.22	< 10	0.83	0.07	0.115	1.31	4	7	154	< 0.01	< 20	< 1	< 2
AGKM-10	3	3.13	< 10	< 1	0.48	10	0.18	0.053	0.07	1.87	4	2	124	< 0.01	< 20	< 1	< 2
AGKM-11	18	0.92	< 10	< 1	0.05	< 10	0.01	0.029	0.014	0.05	3	< 1	150	< 0.01	< 20	< 1	< 2
AGKM-12	10	11.5	< 10	< 1	< 0.01	< 10	0.53	0.015	0.02	1.7	6	4	320	0.02	< 20	< 1	< 2
AGKM-13	2	6.4	< 10	< 1	0.26	< 10	0.63	0.017	0.057	1.8	5	2	605	< 0.01	< 20	< 1	3
AGKM-14	13	4.97	< 10	4	0.01	< 10	0.43	0.018	0.024	1.2	4	3	352	< 0.01	< 20	< 1	7
AGKM-15	11	4.11	< 10	< 1	0.27	11	0.07	0.036	0.085	0.8	16	2	37	< 0.01	< 20	< 1	< 2
AGKM-16	3	5.72	< 10	< 1	0.21	< 10	2.27	0.03	0.187	0.78	< 2	5	602	< 0.01	< 20	< 1	< 2
AGKM-17	2	4.16	< 10	< 1	0.24	< 10	0.51	0.032	0.049	0.84	3	3	462	< 0.01	< 20	< 1	< 2
AGKM-12a	3	4.15	< 10	< 1	0.06	< 10	0.43	0.021	0.033	1.35	3	1	648	< 0.01	< 20	< 1	< 2
AGKM-14a	14	1.64	< 10	3	0.1	< 10	0.01	0.068	0.067	0.28	3	1	567	< 0.01	< 20	< 1	2
GGKM-01	11	0.64	< 10	< 1	0.11	< 10	0.01	0.023	0.024	0.01	< 2	1	35	< 0.01	< 20	< 1	< 2
GGKM-02	4	11.5	< 10	< 1	0.62	< 10	0.06	0.02	0.056	10.9	14	2	17	< 0.01	< 20	< 1	5
GGKM-03	26	0.54	< 10	< 1	0.33	21	< 0.01	0.024	0.003	0.09	2	< 1	14	< 0.01	< 20	< 1	< 2
GGKM-04	8	2.55	< 10	< 1	0.51	11	0.03	0.019	0.048	2.02	28	1	9	< 0.01	< 20	< 1	28
GGKM-05	20	3.41	< 10	< 1	0.22	< 10	0.01	0.019	0.051	1.23	8	2	12	< 0.01	< 20	< 1	8
GGKM-06	2	5.46	< 10	< 1	0.31	< 10	1.89	0.02	0.03	0.65	< 2	4	482	< 0.01	< 20	< 1	< 2
GGKM-07	7	3.69	< 10	< 1	0.42	< 10	0.58	0.025	0.061	0.49	2	6	100	< 0.01	< 20	1	< 2
GGKM-08	13	1.39	< 10	< 1	0.16	< 10	0.09	0.028	0.05	0.02	< 2	5	463	< 0.01	< 20	2	< 2
GGKM-09	4	3.22	< 10	< 1	0.52	< 10	0.21	0.018	0.07	0.84	7	6	386	< 0.01	< 20	1	< 2

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Analyte Symbol	Cr	Fe	Ga	Hg	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl
Unit Symbol	ppm	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Detection Limit	1	0.01	10	1	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GGKM-10	10	12.4	< 10	< 1	0.08	< 10	0.16	0.027	0.011	0.03	19	1	160	< 0.01	< 20	3	< 2
GGKM-11	13	1.2	< 10	< 1	0.33	12	< 0.01	0.025	0.002	0.71	< 2	< 1	7	< 0.01	< 20	< 1	< 2
GGKM-12	12	4.16	< 10	< 1	0.27	< 10	0.06	0.031	0.031	1.76	3	1	11	< 0.01	< 20	< 1	< 2
GGKM-13	7	0.69	< 10	< 1	0.39	44	< 0.01	0.024	0.008	0.08	< 2	< 1	7	< 0.01	< 20	3	< 2
GGKM-14	7	8.71	< 10	< 1	0.4	15	0.02	0.019	0.003	9.37	9	< 1	2	< 0.01	< 20	6	3
GGKM-15	15	0.66	< 10	< 1	0.33	23	< 0.01	0.025	0.004	0.11	2	< 1	4	< 0.01	< 20	< 1	< 2
GGKM-16	6	10.5	< 10	< 1	0.33	13	< 0.01	0.021	0.006	10.9	14	< 1	3	< 0.01	< 20	2	< 2
GGKM-17	13	2.26	< 10	< 1	0.44	14	0.19	0.026	0.055	0.07	12	3	32	< 0.01	< 20	< 1	< 2
GGKM-18	17	3.05	< 10	< 1	0.06	< 10	< 0.01	0.022	0.007	1.33	3	< 1	5	< 0.01	< 20	< 1	< 2

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Analyte Symbol	U	V	W	Y	Zr	Au	Ag	Cu	Pb	Zn
Unit Symbol	ppm	ppm	ppm	ppm	ppm	g/tonne	g/tonne	%	%	%
Detection Limit	10	1	10	1	1	0.03	3	0.001	0.003	0.001
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	FA-GRA	FA-GRA	ICP-OES	ICP-OES	ICP-OES
A17-104	< 10	9	< 10	2	11					
A17-105	< 10	18	< 10	6	4					
A17-106	< 10	1	< 10	1	2					
A17-107	< 10	5	< 10	10	10					
A17-108	< 10	94	< 10	8	4					
A17-131	< 10	33	< 10	8	4					
A17-132	< 10	2	< 10	5	< 1					
A17-133	< 10	42	< 10	5	4					
A17-134	< 10	18	< 10	4	7					
A17-135	< 10	6	< 10	4	< 1					
A17-136	< 10	4	< 10	5	1					
A17-137	< 10	18	< 10	12	2					
A17-138	< 10	19	< 10	7	2					
A17-139	< 10	8	< 10	4	1					
A17-140	< 10	40	< 10	5	2					
A17-141	< 10	10	< 10	4	2					
DM-124	< 10	1	< 10	7	28					
DM-125	< 10	12	< 10	5	30					
DM-126	< 10	9	< 10	5	15	12.4		1.34		
DM-127	< 10	2	< 10	< 1	1	25.3	210	1.79	6.94	1.71
DM-128	< 10	6	< 10	4	5					
DM-129	< 10	7	< 10	2	2	15.2				
DM-130	< 10	1	< 10	< 1	2		110			1.47
DM-131	< 10	1	< 10	< 1	1					
DM-132	< 10	2	< 10	< 1	2		171			3.35
DM-133	< 10	5	< 10	7	3					
DM-134	< 10	10	< 10	2	5					
DM-135	< 10	7	< 10	7	10					
DM-136	< 10	2	< 10	5	29					
DM-137	< 10	40	< 10	8	2					
DM-138	< 10	17	< 10	2	< 1					

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Analyte Symbol	U	V	W	Y	Zr	Au	Ag	Cu	Pb	Zn
Unit Symbol	ppm	ppm	ppm	ppm	ppm	g/tonne	g/tonne	%	%	%
Detection Limit	10	1	10	1	1	0.03	3	0.001	0.003	0.001
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	FA-GRA	FA-GRA	ICP-OES	ICP-OES	ICP-OES
DM-139	< 10	7	1550	1	7					
DM-140	< 10	11	< 10	< 1	1					
DM-141	< 10	1	< 10	2	1					
AGKM-01	< 10	12	< 10	2	2					
AGKM-02	< 10	9	< 10	3	< 1					
AGKM-03	< 10	6	< 10	2	3					
AGKM-04	< 10	18	< 10	7	2					
AGKM-05	< 10	15	< 10	5	2					
AGKM-06	< 10	8	< 10	8	2					
AGKM-07	< 10	6	< 10	5	2					
AGKM-08	< 10	19	< 10	5	5					
AGKM-09	< 10	97	< 10	10	3					
AGKM-10	< 10	17	< 10	7	7					
AGKM-11	< 10	5	< 10	6	< 1					
AGKM-12	< 10	73	< 10	5	4					
AGKM-13	< 10	21	< 10	7	6					
AGKM-14	< 10	38	11	6	2					
AGKM-15	< 10	11	< 10	5	5					
AGKM-16	< 10	63	< 10	14	3					
AGKM-17	< 10	24	< 10	8	3					
AGKM-12a	< 10	12	< 10	7	4					
AGKM-14a	< 10	6	< 10	2	3					
GGKM-01	< 10	2	< 10	4	3					
GGKM-02	< 10	23	< 10	4	19					
GGKM-03	< 10	< 1	< 10	3	23					
GGKM-04	< 10	14	< 10	2	10					
GGKM-05	< 10	6	< 10	6	12					
GGKM-06	< 10	32	< 10	12	3					
GGKM-07	< 10	21	< 10	5	5					
GGKM-08	< 10	8	< 10	21	1					
GGKM-09	< 10	21	< 10	16	2					

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Analyte Symbol	U	V	W	Y	Zr	Au	Ag	Cu	Pb	Zn
Unit Symbol	ppm	ppm	ppm	ppm	ppm	g/tonne	g/tonne	%	%	%
Detection Limit	10	1	10	1	1	0.03	3	0.001	0.003	0.001
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	FA-GRA	FA-GRA	ICP-OES	ICP-OES	ICP-OES
GGKM-10	< 10	53	< 10	5	4					
GGKM-11	< 10	< 1	< 10	1	17					
GGKM-12	< 10	10	13	3	8					2.24
GGKM-13	< 10	1	< 10	3	52					
GGKM-14	< 10	2	< 10	3	31					
GGKM-15	< 10	< 1	< 10	3	23					
GGKM-16	< 10	2	< 10	4	49					
GGKM-17	< 10	19	< 10	5	4					
GGKM-18	< 10	2	91	1	2					

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Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
LGKM-01	< 5	< 0.2	1	5	811	4	2	19	275	0.61	42	< 10	75	0.7	< 2	0.31	8
LGKM-02	< 5	< 0.2	< 0.5	11	1740	2	4	21	61	0.76	35	< 10	79	0.7	< 2	2.98	9
LGKM-03	< 5	< 0.2	< 0.5	4	2020	1	< 1	18	61	0.3	7	< 10	30	< 0.5	< 2	> 10.0	2
LGKM-04	< 5	< 0.2	< 0.5	3	840	< 1	3	3	35	0.32	6	< 10	98	< 0.5	< 2	0.74	1
LGKM-05	25	4	8.5	288	4030	2	2	290	77	0.34	6	< 10	506	0.5	< 2	8.73	5
LGKM-06	< 5	< 0.2	< 0.5	8	2280	4	2	6	34	0.55	66	< 10	163	< 0.5	< 2	1.3	15
LGKM-07	17	10.6	< 0.5	80	60	6	3	341	15	0.26	4440	< 10	< 10	< 0.5	4	0.07	4
LGKM-08	< 5	< 0.2	1	2	4190	2	1	13	18	0.11	12	< 10	1090	< 0.5	4	> 10.0	3
LGKM-09	< 5	< 0.2	< 0.5	2	3560	< 1	3	4	35	0.46	7	< 10	580	< 0.5	< 2	3.88	4
LGKM-10	< 5	< 0.2	< 0.5	20	1060	7	2	10	19	0.53	< 2	< 10	1680	< 0.5	< 2	1.3	3

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Analyte Symbol	Cr	Fe	Ga	Hg	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl
Unit Symbol	ppm	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Detection Limit	1	0.01	10	1	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
LGKM-01	20	0.87	< 10	< 1	0.39	15	0.02	0.025	0.047	0.01	< 2	2	13	< 0.01	< 20	< 1	< 2
LGKM-02	5	1.59	< 10	< 1	0.51	25	0.03	0.021	0.038	0.12	5	3	73	< 0.01	< 20	< 1	< 2
LGKM-03	3	0.88	< 10	< 1	0.22	< 10	0.14	0.016	0.016	0.04	4	1	467	< 0.01	< 20	< 1	< 2
LGKM-04	15	2.26	< 10	< 1	0.22	< 10	0.19	0.034	0.029	0.01	4	1	39	< 0.01	< 20	< 1	< 2
LGKM-05	14	1.76	< 10	< 1	0.27	18	0.19	0.034	0.021	0.05	18	2	271	0.01	< 20	4	< 2
LGKM-06	10	2.12	< 10	< 1	0.49	48	0.07	0.032	0.064	< 0.01	3	4	23	< 0.01	< 20	2	< 2
LGKM-07	4	12.2	< 10	< 1	0.19	< 10	0.01	0.068	0.037	14.9	111	2	6	< 0.01	< 20	< 1	43
LGKM-08	14	0.85	< 10	2	0.08	< 10	0.28	0.034	0.006	0.05	5	< 1	687	< 0.01	< 20	5	< 2
LGKM-09	13	2.34	< 10	< 1	0.36	10	0.09	0.03	0.039	0.02	4	6	46	< 0.01	< 20	< 1	< 2
LGKM-10	12	1.32	< 10	< 1	0.51	20	0.05	0.05	0.138	0.04	4	7	65	< 0.01	< 20	< 1	< 2

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Analyte Symbol	U	V	W	Y	Zr
Unit Symbol	ppm	ppm	ppm	ppm	ppm
Detection Limit	10	1	10	1	1
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
LGKM-01	< 10	8	< 10	5	< 1
LGKM-02	< 10	12	< 10	8	1
LGKM-03	< 10	5	< 10	2	4
LGKM-04	< 10	6	< 10	3	2
LGKM-05	< 10	16	< 10	10	3
LGKM-06	< 10	5	< 10	8	< 1
LGKM-07	< 10	8	< 10	3	11
LGKM-08	< 10	1	< 10	6	< 1
LGKM-09	< 10	11	< 10	10	2
LGKM-10	< 10	17	< 10	8	< 1

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Report: A17-08616
Report Date: 5/9/2017

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
A17-6	< 5	51	8.4	71	8200	5	2	1470	753	0.25	381	25	67	3.8	< 2	> 10.0	4
A17-7	< 5	0.8	1.9	43	219	9	2	121	237	1.34	13	13	314	< 0.5	3	0.36	4
A17-8	< 5	11.8	6.4	13	1130	165	1	458	5840	0.03	904	< 10	< 10	< 0.5	< 2	2.95	13
A17-9	3000	98.8	1.2	439	790	3	2	761	115	0.05	1420	< 10	< 10	< 0.5	1360	0.07	7
A17-10	1670	> 100	77.6	291	946	2	14	> 5000	5220	0.32	7120	< 10	< 10	< 0.5	272	0.29	11
A17-11	8	0.2	< 0.5	11	13100	3	13	18	62	0.92	25	< 10	79	< 0.5	< 2	> 10.0	7
A17-12	233	9.2	3.2	608	98	3	4	167	283	0.26	142	< 10	< 10	< 0.5	8	0.46	9
A17-13	1040	7.3	< 0.5	789	3050	3	5	214	95	0.13	5780	< 10	< 10	< 0.5	4	0.24	17
A17-14	240	7.4	27.5	649	120	18	3	137	3740	0.7	1220	< 10	< 10	< 0.5	7	0.46	26
A17-15	1540	62.2	29.9	903	995	3	1	554	3150	0.24	1320	< 10	< 10	< 0.5	179	0.1	14

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Analyte Symbol	Cr	Fe	Ga	Hg	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl
Unit Symbol	ppm	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Detection Limit	1	0.01	10	1	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
A17-6	4	10.1	< 10	3	0.01	< 10	0.27	0.017	0.036	2.01	13	< 1	274	< 0.01	< 20	8	< 2
A17-7	13	1.78	< 10	< 1	0.64	19	0.32	0.106	0.063	0.22	3	2	22	0.01	< 20	< 1	< 2
A17-8	11	4.12	< 10	12	0.01	< 10	< 0.01	0.024	0.001	4.06	35	< 1	55	< 0.01	< 20	< 1	196
A17-9	33	10.8	< 10	< 1	0.03	< 10	0.03	0.018	< 0.001	5.57	19	< 1	3	< 0.01	< 20	> 500	< 2
A17-10	8	14.1	< 10	1	0.22	< 10	0.04	0.016	0.019	13.9	272	1	15	< 0.01	< 20	3	< 2
A17-11	7	2.46	< 10	2	0.11	15	0.4	0.058	0.317	0.36	4	4	293	0.07	< 20	2	< 2
A17-12	10	12.3	< 10	< 1	0.15	< 10	0.02	0.016	0.017	11.3	24	< 1	8	< 0.01	< 20	4	< 2
A17-13	6	23	< 10	< 1	0.08	< 10	0.1	0.016	0.01	14.3	20	< 1	4	< 0.01	< 20	4	< 2
A17-14	4	22.6	< 10	< 1	0.11	< 10	0.12	0.018	0.004	15.3	65	< 1	16	< 0.01	< 20	10	< 2
A17-15	18	19	< 10	< 1	0.15	< 10	0.06	0.018	0.009	13	17	< 1	2	< 0.01	< 20	115	< 2

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Analyte Symbol	U	V	W	Y	Zr
Unit Symbol	ppm	ppm	ppm	ppm	ppm
Detection Limit	10	1	10	1	1
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
A17-6	< 10	42	< 10	3	6
A17-7	< 10	19	< 10	5	8
A17-8	< 10	2	< 10	< 1	1
A17-9	< 10	5	120	< 1	2
A17-10	< 10	5	< 10	2	7
A17-11	< 10	24	< 10	14	2
A17-12	< 10	5	< 10	< 1	5
A17-13	< 10	6	< 10	1	4
A17-14	< 10	11	< 10	< 1	5
A17-15	< 10	7	12	1	5

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Analyte Symbol	Pb	Zn
Unit Symbol	%	%
Detection Limit	0.003	0.001
Analysis Method	ICP-OES	ICP-OES
A17-10	5.82	
~~A17-27~~	~~0.887~~	
~~BAZK-1~~		~~1.25~~
~~BAZK-4~~	~~1.91~~	~~16.3~~
~~BAZK-5~~		~~1.79~~
~~BAKM-8~~	~~1.67~~	~~2.2~~

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Report Date: 10/11/2017

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
LJ-023	14	4.8	18.8	45	1290	2	4	1400	1670	1.28	22	< 10	46	< 0.5	6	1.26	13
LJ-024	13	67.8	195	72	949	< 1	2	> 5000	> 10000	0.33	43	< 10	13	< 0.5	< 2	1.42	9
LJ-025	5	2	21.1	29	3970	1	4	469	2520	0.67	17	< 10	345	< 0.5	3	8.79	10
LJ-026	7	4.4	54.1	72	1910	4	6	1210	6890	0.15	15	< 10	173	< 0.5	< 2	2.26	11
LJ-027	5	4.9	23.6	36	2500	2	6	1350	2800	0.53	14	< 10	304	< 0.5	< 2	2.83	14
LJ-028	6	0.7	8.7	11	4840	1	3	58	661	0.66	11	< 10	290	< 0.5	4	> 10.0	4
LJ-029	11	4.2	40.5	80	2330	< 1	6	528	3650	2.3	43	< 10	63	< 0.5	< 2	2.03	18
LJ-061	5	7.2	24	232	2620	3	2	1390	2180	0.35	78	< 10	33	< 0.5	< 2	1.85	2
LJ-062	8	2.7	25.8	38	1060	5	3	1050	2400	0.32	30	< 10	45	< 0.5	< 2	0.94	4
LJ-063	6	3.5	15.4	41	2920	< 1	3	467	1680	1.12	16	< 10	400	0.6	< 2	3.98	10
LJ-064	< 5	1.6	28.9	25	3370	< 1	3	156	1800	1.69	23	< 10	509	1	< 2	2.63	8
LJ-065	6	55.2	115	40	1050	< 1	3	> 5000	> 10000	0.27	42	< 10	12	< 0.5	< 2	2.48	10
LJ-066	6	3.9	3.1	39	3310	< 1	4	510	740	1.05	17	< 10	62	0.7	5	4.35	13
LJ-067	< 5	17.7	65.1	33	1340	27	6	1220	8810	0.36	147	10	54	< 0.5	< 2	0.7	13
LJ-068	< 5	5.9	46.2	31	3910	15	6	753	3880	0.59	256	14	209	< 0.5	< 2	0.43	8
LJ-069	59	> 100	22.3	15	563	15	1	> 5000	2210	0.27	59	< 10	11	< 0.5	< 2	0.47	2
LJ-070	< 5	22.5	195	31	5800	20	3	4740	> 10000	0.25	76	< 10	29	< 0.5	3	5.71	7
LJ-071	< 5	1.9	5.7	36	2790	5	5	154	733	0.7	164	14	52	< 0.5	< 2	3.02	7
LJ-072	< 5	8.8	122	23	7020	9	7	2410	> 10000	0.07	46	< 10	82	< 0.5	< 2	8.61	8
LJ-073	< 5	10.3	118	67	8160	26	7	1670	> 10000	0.07	173	< 10	84	< 0.5	2	8.94	5
LJ-074	< 5	14.9	137	38	8990	16	3	2840	> 10000	0.13	122	< 10	396	< 0.5	< 2	7.06	7
LJ-075	< 5	2.2	13.9	8	1940	55	3	268	1690	0.91	430	15	660	< 0.5	< 2	0.79	5
LJ-076	< 5	78.4	4.3	50	13000	2	< 1	3010	440	0.16	8	< 10	68	< 0.5	2	> 10.0	3
LJ-077	< 5	14.9	111	51	7290	41	5	2890	> 10000	0.31	183	< 10	53	< 0.5	3	7.83	13

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Report: A17-10634

Report Date: 10/11/2017

Analyte Symbol	Cr	Fe	Ga	Hg	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl
Unit Symbol	ppm	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Detection Limit	1	0.01	10	1	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
LJ-023	6	2.65	< 10	< 1	0.81	11	0.14	0.031	0.15	0.78	5	5	58	0.01	< 20	< 1	< 2
LJ-024	3	2.48	< 10	22	0.17	< 10	0.1	0.022	0.027	2.75	29	3	260	0.08	< 20	< 1	< 2
LJ-025	13	2.15	< 10	1	0.17	< 10	0.34	0.052	0.047	0.12	3	3	485	0.04	< 20	< 1	< 2
LJ-026	41	0.84	< 10	5	0.04	< 10	0.06	0.042	0.008	0.28	7	< 1	138	0.01	< 20	3	< 2
LJ-027	29	2.81	< 10	2	0.21	< 10	0.19	0.033	0.025	0.21	6	2	148	0.05	< 20	< 1	< 2
LJ-028	11	2.18	< 10	< 1	0.16	< 10	0.35	0.031	0.013	0.18	5	4	788	0.01	< 20	< 1	< 2
LJ-029	13	5.47	< 10	2	1.52	12	1.11	0.031	0.11	0.65	7	7	78	0.2	< 20	1	< 2
LJ-061	27	1.83	< 10	2	0.28	16	0.06	0.021	0.021	1.08	26	2	218	< 0.01	< 20	< 1	< 2
LJ-062	27	1.07	< 10	2	0.27	18	0.03	0.023	0.02	0.63	8	2	186	< 0.01	< 20	< 1	< 2
LJ-063	10	3.15	< 10	1	0.72	16	0.1	0.049	0.122	0.07	6	7	301	0.02	< 20	2	2
LJ-064	7	3.52	< 10	< 1	0.98	16	0.62	0.041	0.131	0.13	4	8	84	0.04	< 20	< 1	< 2
LJ-065	3	1.65	< 10	12	0.19	< 10	0.03	0.021	0.032	2	18	2	259	0.01	< 20	2	< 2
LJ-066	6	2.73	< 10	< 1	0.7	12	0.11	0.045	0.131	0.47	5	8	225	< 0.01	< 20	< 1	< 2
LJ-067	24	1.71	< 10	6	0.21	< 10	0.01	0.02	0.018	0.53	21	1	53	< 0.01	< 20	< 1	< 2
LJ-068	13	1.1	< 10	< 1	0.34	16	0.02	0.025	0.015	0.23	9	3	21	< 0.01	< 20	3	< 2
LJ-069	20	1.32	< 10	2	0.24	13	0.01	0.021	0.012	2.26	199	2	56	< 0.01	< 20	1	< 2
LJ-070	19	1.8	< 10	9	0.14	< 10	0.15	0.015	0.017	0.89	29	2	283	< 0.01	< 20	< 1	2
LJ-071	16	3.85	< 10	< 1	0.4	< 10	0.15	0.022	0.042	0.57	12	4	91	< 0.01	< 20	3	< 2
LJ-072	14	0.75	< 10	6	0.04	< 10	0.1	0.018	0.009	0.45	24	2	372	< 0.01	< 20	< 1	< 2
LJ-073	7	0.98	< 10	6	0.04	< 10	0.06	0.018	0.014	0.52	30	2	374	< 0.01	< 20	< 1	3
LJ-074	7	1.58	< 10	5	0.07	< 10	0.03	0.021	0.014	0.12	21	1	322	< 0.01	< 20	< 1	< 2
LJ-075	4	4.64	< 10	< 1	0.49	12	0.18	0.033	0.075	0.12	4	2	41	< 0.01	< 20	7	2
LJ-076	1	1.22	< 10	1	0.1	< 10	0.08	0.018	0.012	0.26	30	3	977	< 0.01	< 20	< 1	3
LJ-077	9	2.07	< 10	5	0.18	< 10	0.15	0.018	0.027	0.66	32	2	295	< 0.01	< 20	< 1	5

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Analyte Symbol	U	V	W	Y	Zr	Ag	Pb	Zn	Au
Unit Symbol	ppm	ppm	ppm	ppm	ppm	g/tonne	%	%	g/tonne
Detection Limit	10	1	10	1	1	3	0.003	0.001	0.03
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	FA-GRA	ICP-OES	ICP-OES	FA-GRA
LJ-023	< 10	41	< 10	10	1				
LJ-024	< 10	23	17	4	< 1		1.72	1.98	
LJ-025	< 10	18	< 10	8	< 1				
LJ-026	< 10	5	< 10	3	< 1				
LJ-027	< 10	15	< 10	4	< 1				
LJ-028	< 10	17	< 10	8	< 1				
LJ-029	< 10	72	< 10	13	1				
LJ-061	< 10	7	< 10	8	6				
LJ-062	< 10	8	< 10	3	5				
LJ-063	< 10	60	< 10	15	1				
LJ-064	< 10	52	< 10	13	1				
LJ-065	< 10	15	< 10	4	< 1		1.13	1.13	
LJ-066	< 10	51	< 10	13	< 1				
LJ-067	< 10	6	< 10	3	2				
LJ-068	< 10	9	< 10	8	5				
LJ-069	< 10	7	< 10	2	9	198	10.8		
LJ-070	< 10	9	36	5	1			2.65	
LJ-071	< 10	14	< 10	4	2				
LJ-072	< 10	4	24	6	< 1			1.6	
LJ-073	< 10	4	18	7	< 1			1.48	
LJ-074	< 10	7	26	8	< 1			1.6	
LJ-075	< 10	10	< 10	6	< 1				
LJ-076	< 10	5	< 10	13	< 1				
LJ-077	< 10	11	18	7	1			1.33	

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Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Bi	Ca	Co	Cr	Fe
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%
Detection Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	2	0.01	1	1	0.01
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
132001	1.3	9.3	234	2330	3	6	229	1180	1.25	21	< 10	159	< 2	4.18	15	13	3.31
132002	5.7	22.7	74	2210	2	6	1360	2580	1.02	39	< 10	24	< 2	4.52	18	10	3.08
132003	2.9	16.6	43	2300	1	4	735	1980	0.94	23	< 10	47	< 2	4.53	13	10	3.16
132004	4.2	40.1	51	2480	5	5	319	3970	0.49	46	< 10	15	< 2	3.99	12	8	2.91
132005	4.3	20.1	61	2730	2	4	553	2300	0.95	24	< 10	45	< 2	4.78	14	9	3.19
132006	11	30.9	59	2040	2	7	2350	3390	1.33	27	< 10	24	< 2	3.68	16	11	4.49
132007	13.3	52.7	152	1870	2	5	1870	5720	0.95	52	< 10	12	< 2	3.01	17	9	4.28
132008	56.4	35	165	258	47	9	> 5000	3590	0.13	235	< 10	< 10	< 2	0.24	11	23	5.28
132009	20.8	4.2	68	486	13	3	1670	271	0.42	191	< 10	< 10	< 2	0.79	6	14	5.34
132010	14.6	1	69	614	7	4	130	144	0.56	100	< 10	< 10	< 2	0.97	6	9	3.99
132011	14	27.5	178	686	13	2	152	3610	0.55	85	< 10	< 10	< 2	1.14	7	11	3.49
132012	9.6	< 0.5	41	831	6	1	74	111	0.4	66	< 10	< 10	< 2	1.43	8	6	3.99
132013	17	8	66	696	10	< 1	108	1090	0.38	135	< 10	< 10	< 2	1.34	7	10	4.66
132014	25.8	209	139	1140	12	2	555	> 10000	0.37	402	< 10	12	< 2	2.24	16	3	10.3
132015	83.2	180	2020	1680	6	15	> 5000	> 10000	1.72	90	< 10	21	< 2	2.34	17	26	4.51
132016	26.5	221	273	1150	31	5	> 5000	> 10000	0.48	328	< 10	< 10	3	1.95	26	10	7.67
132017	27	378	706	1160	12	2	1430	> 10000	0.54	246	< 10	< 10	2	2.26	18	13	6.82
132018	< 0.2	< 0.5	5	738	2	5	6	99	2.45	< 2	< 10	338	< 2	1.44	8	20	3.08
132019	52.5	112	299	788	13	3	492	> 10000	0.43	451	< 10	< 10	3	1.18	13	8	10.2
132020	23	52.7	119	515	12	6	693	6500	0.28	213	< 10	< 10	< 2	0.78	8	12	5.57
132021	16.7	2.5	107	915	8	1	144	280	0.37	179	< 10	< 10	< 2	1.25	9	9	5.11
132022	10.4	1.1	41	1060	5	3	88	213	0.67	138	< 10	< 10	< 2	1.13	11	5	5.86
132023	24	4	1860	1090	10	5	169	477	0.64	249	< 10	< 10	< 2	0.71	12	12	6.74
132024	17.6	53.6	929	3610	10	5	154	7140	0.79	212	< 10	11	< 2	0.26	17	3	11.9
132025	20.7	54.7	988	2070	13	4	139	6340	0.47	229	< 10	< 10	2	0.97	19	2	11.4
132026	20.8	77.6	378	698	15	5	283	> 10000	0.2	314	< 10	< 10	< 2	0.51	7	19	6.39
132027	75.1	177	2570	1930	25	7	661	> 10000	0.42	639	< 10	11	4	0.96	14	10	9.41
132028	27	104	6200	908	20	4	375	> 10000	0.15	175	< 10	< 10	< 2	0.63	9	7	5.15
132029	71.6	129	2150	1520	7	14	> 5000	> 10000	2.27	59	< 10	34	< 2	2.39	18	26	4.72
132030	19.4	93.6	6000	97	6	1	241	> 10000	0.02	143	< 10	10	8	0.06	5	6	1.23
132031	10.8	45	3630	109	4	4	192	6610	0.05	87	< 10	19	8	0.18	4	7	0.97

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Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Bi	Ca	Co	Cr	Fe
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%
Detection Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	2	0.01	1	1	0.01
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
132032	12.6	94.6	2400	242	10	4	553	> 10000	0.14	208	< 10	11	5	0.2	7	11	1.64
132033	12.2	105	2410	296	13	< 1	581	> 10000	0.1	215	< 10	< 10	3	0.28	7	22	1.68
132034	32.9	55.1	7540	1050	33	4	507	6910	0.02	751	< 10	< 10	15	1.71	17	15	5.53
132035	18.6	158	2690	375	11	3	367	> 10000	0.02	272	< 10	< 10	8	0.37	5	31	1.78
132036	14.3	89.2	2550	420	9	3	149	> 10000	0.16	186	< 10	< 10	4	0.41	9	13	2.5
132037	13.8	30.4	2470	297	21	3	97	4000	0.15	156	< 10	< 10	3	0.41	6	20	2.25
132038	11.6	43.1	1500	692	26	4	163	6820	0.03	455	< 10	< 10	4	0.76	6	15	2.7
132039	10.8	51.2	3020	174	16	3	79	8890	0.04	216	< 10	< 10	4	0.24	4	21	1.78
132040	13.8	107	2100	406	26	2	275	> 10000	0.4	379	< 10	< 10	3	0.44	8	7	4.98
132041	22.1	34.9	5620	959	85	4	196	5980	0.41	116	< 10	< 10	10	0.71	11	8	3.03
132042	18.3	28	4640	898	78	3	201	4620	0.34	102	< 10	< 10	7	0.71	11	4	2.57
132043	21.5	17.1	6820	345	76	1	182	1480	0.14	74	< 10	< 10	10	0.28	4	5	2.11
132044	36.7	82.8	5440	326	147	3	352	9680	0.38	119	< 10	< 10	18	0.17	16	2	3.16
132045	< 0.2	< 0.5	11	696	1	1	3	57	1.92	< 2	< 10	763	< 2	1.22	6	16	2.5
132046	17.7	11.4	2820	657	112	2	101	790	0.08	191	< 10	< 10	5	0.84	14	1	2.85
132047	5.2	8.1	50	3100	4	4	115	1220	0.06	171	< 10	< 10	56	2.22	10	3	16.5
132048	1	7.6	801	3090	4	6	19	396	0.82	175	< 10	12	< 2	2.02	15	5	7.19
132049	5.9	6.4	1550	927	3	4	218	393	0.76	34	< 10	23	8	0.56	7	14	5.39
132050	3.9	2.7	862	1150	8	5	46	284	1.1	113	< 10	< 10	< 2	0.88	13	14	7.25
132051	1.3	1	416	1180	6	5	24	138	0.9	78	< 10	11	4	0.87	14	8	7.79
132052	4.3	2.3	594	1080	38	4	79	158	1.26	167	< 10	14	< 2	0.72	18	10	6.35
132053	7.9	1.9	1480	749	143	5	1220	208	0.95	44	< 10	29	< 2	0.65	14	16	4.65
132054	4.6	1.8	681	643	2	4	292	271	1.37	19	< 10	27	< 2	0.56	14	14	4.66
132055	7.3	7.8	1030	818	3	5	391	1010	0.48	56	< 10	14	< 2	0.67	19	13	4.86
132056	8.5	2.4	695	536	3	4	872	243	0.62	78	< 10	13	< 2	0.42	21	11	4.68
132057	1.7	< 0.5	325	529	3	< 1	27	94	0.65	28	< 10	34	< 2	0.44	11	6	3.12
132058	0.5	5.9	135	986	4	3	69	324	0.8	28	< 10	41	4	0.18	10	4	4.4
132059	0.3	< 0.5	136	1470	< 1	3	3	135	0.88	3	< 10	150	< 2	0.2	8	2	5.7
132060	< 0.2	0.8	37	1290	< 1	3	7	178	1.93	36	< 10	193	< 2	0.31	6	5	6.06
132061	0.2	< 0.5	6	1390	1	6	3	105	2.11	4	< 10	309	< 2	0.4	7	6	6.58
132062	< 0.2	< 0.5	4	1460	4	4	2	100	1.61	20	< 10	234	< 2	0.28	7	3	6.7

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Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Bi	Ca	Co	Cr	Fe
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%
Detection Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	2	0.01	1	1	0.01
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
132063	< 0.2	< 0.5	3	1280	< 1	5	5	112	1.1	3	< 10	227	< 2	0.27	6	8	5.73
132064	< 0.2	1	9	1020	< 1	3	6	138	1.33	12	< 10	227	< 2	0.51	7	3	5.41
132065	0.3	0.8	198	1600	< 1	4	11	216	3.43	5	< 10	233	< 2	0.55	4	5	8.4
132066	0.3	1	197	1490	< 1	6	5	255	4.21	5	< 10	160	< 2	0.29	6	5	10.8
132067	1	8.3	218	995	3	6	68	462	3.15	27	< 10	198	< 2	0.27	7	5	7.42
132068	1.4	2.2	26	1080	3	4	2150	225	2.37	25	< 10	299	< 2	0.44	5	8	5.17
132069	< 0.2	< 0.5	4	1260	< 1	4	6	105	2.23	11	< 10	340	< 2	0.76	7	6	4.59
132070	< 0.2	< 0.5	6	1180	< 1	4	4	97	2.01	10	< 10	364	< 2	0.91	6	10	4
132071	< 0.2	< 0.5	12	710	< 1	3	3	97	2.06	2	< 10	354	< 2	0.35	6	11	4.76
132072	0.2	0.5	62	761	3	3	4	96	0.98	< 2	< 10	188	< 2	0.74	3	24	2.64
132073	0.3	0.6	108	1130	< 1	5	< 2	171	3.18	< 2	< 10	331	< 2	0.65	8	7	7.06
132074	< 0.2	< 0.5	7	1160	< 1	7	2	130	2.88	< 2	< 10	528	< 2	0.77	8	9	6.54
132075	0.3	1.3	23	1070	< 1	4	5	241	2.2	16	< 10	569	< 2	0.76	6	7	4.73
132076	< 0.2	< 0.5	7	1210	< 1	4	3	192	2.01	< 2	< 10	455	< 2	0.92	7	8	4.41
132077	0.9	1.4	50	303	12	3	10	313	0.87	178	< 10	163	< 2	0.17	3	31	3.59
132078	< 0.2	2.8	29	1170	1	5	3	343	1.98	8	< 10	445	< 2	0.84	8	11	4.17
132079	0.3	2.2	23	1410	< 1	4	3	310	2.55	< 2	< 10	40	< 2	1.14	11	8	6.21
132080	< 0.2	3.5	22	1080	1	4	4	375	2.88	7	< 10	85	< 2	0.45	9	9	6.11
132081	0.3	< 0.5	19	2210	< 1	5	6	139	2.37	< 2	< 10	277	< 2	1.56	8	10	4.67
132082	0.4	0.7	19	1030	1	5	4	230	3.26	3	< 10	278	< 2	0.36	8	8	6.67
132083	0.3	0.7	22	1370	< 1	5	5	236	4.1	3	< 10	57	2	0.47	10	6	9.47
132084	0.2	1.4	20	1310	< 1	3	4	376	3.79	< 2	< 10	235	< 2	0.57	10	6	8.57
132085	< 0.2	1.4	21	1030	1	4	2	307	3.01	3	< 10	873	< 2	0.65	8	6	4.68
132086	< 0.2	0.5	34	1150	1	5	5	233	2.37	6	< 10	468	< 2	0.68	7	8	5.28
132087	0.5	2	54	1690	2	4	13	391	1.71	45	< 10	48	< 2	0.93	8	5	4.48
132088	0.3	0.5	22	1710	2	4	8	176	1.51	6	< 10	278	< 2	1.19	8	8	4.78
132089	1.8	2.8	76	436	4	1	21	285	1.49	98	< 10	98	< 2	0.23	6	4	3.18
132090	0.3	2.6	56	810	3	4	7	286	1.65	65	< 10	138	< 2	0.71	6	7	2.94
132091	< 0.2	1.6	13	1220	1	2	3	235	1.29	12	< 10	261	2	1.46	7	5	3.02
132092	< 0.2	0.7	5	1320	< 1	2	3	141	1.47	4	< 10	287	5	1.97	7	6	3.08
132093	< 0.2	0.6	5	941	< 1	3	< 2	150	1.87	< 2	< 10	414	< 2	1.25	8	4	3.92

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Analyte Symbol	Ga	Hg	K	La	Mg	Na	P	S	Sb	Ti	Te	Tl	U	W	Zr	BaSO4	Au
Unit Symbol	ppm	ppm	%	ppm	%	%	%	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppb
Detection Limit	10	1	0.01	10	0.01	0.001	0.001	0.01	2	0.01	1	2	10	10	1	2	5
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	FUS-ICF	FA-AA
132001	< 10	1	0.82	14	0.43	0.041	0.123	0.27	8	0.12	2	< 2	< 10	< 10	3		< 5
132002	< 10	2	0.64	11	0.3	0.03	0.116	0.8	9	0.1	3	< 2	< 10	< 10	2		< 5
132003	< 10	3	0.64	12	0.24	0.028	0.11	0.47	8	0.09	< 1	< 2	< 10	< 10	3		< 5
132004	< 10	5	0.35	< 10	0.15	0.021	0.098	1.06	9	0.06	< 1	< 2	< 10	< 10	2		< 5
132005	< 10	2	0.69	12	0.26	0.026	0.11	0.61	11	0.08	3	< 2	< 10	< 10	3		< 5
132006	< 10	3	0.88	< 10	0.55	0.029	0.117	1.47	15	0.13	4	< 2	< 10	< 10	3		< 5
132007	< 10	5	0.69	< 10	0.28	0.025	0.108	2.84	18	0.08	3	< 2	< 10	< 10	3		< 5
132008	< 10	7	0.1	< 10	< 0.01	0.017	0.024	6.13	79	< 0.01	< 1	7	< 10	< 10	3		12
132009	< 10	1	0.33	< 10	0.11	0.02	0.064	5.7	25	< 0.01	< 1	4	< 10	< 10	6		6
132010	< 10	< 1	0.45	< 10	0.17	0.022	0.07	3.32	23	0.02	< 1	< 2	< 10	< 10	5		< 5
132011	< 10	5	0.47	< 10	0.11	0.027	0.079	2.91	35	< 0.01	3	< 2	< 10	< 10	6		6
132012	< 10	< 1	0.34	< 10	0.13	0.023	0.082	3.41	14	< 0.01	< 1	< 2	< 10	< 10	6		6
132013	< 10	2	0.33	< 10	0.1	0.019	0.074	4.83	23	< 0.01	< 1	< 2	< 10	< 10	9		< 5
132014	< 10	15	0.28	< 10	0.09	0.017	0.053	12.4	29	< 0.01	4	< 2	< 10	< 10	10		5
132015	< 10	< 1	0.17	< 10	1.36	0.241	0.042	2.4	185	0.13	2	< 2	< 10	11	4		66
132016	< 10	16	0.38	< 10	0.13	0.022	0.08	9.49	27	< 0.01	< 1	< 2	< 10	< 10	8		15
132017	< 10	26	0.42	< 10	0.13	0.023	0.072	9.06	34	< 0.01	< 1	< 2	< 10	< 10	7		12
132018	< 10	< 1	1.17	13	1	0.123	0.093	0.05	2	0.24	< 1	< 2	< 10	< 10	2		< 5
132019	< 10	16	0.34	< 10	0.18	0.022	0.062	12.7	106	< 0.01	< 1	2	< 10	< 10	11		18
132020	< 10	9	0.25	< 10	0.18	0.024	0.063	6.21	44	< 0.01	2	< 2	< 10	< 10	10		12
132021	< 10	1	0.32	< 10	0.28	0.029	0.085	4.42	30	< 0.01	3	3	< 10	< 10	9		6
132022	< 10	1	0.53	< 10	0.39	0.025	0.087	4.2	12	< 0.01	1	3	< 10	< 10	10		< 5
132023	< 10	2	0.46	< 10	0.36	0.019	0.055	5.57	21	0.01	< 1	2	< 10	< 10	15		< 5
132024	< 10	8	0.53	< 10	0.69	0.018	0.077	9.36	17	0.05	4	< 2	< 10	< 10	13	185000	6
132025	< 10	11	0.28	< 10	0.39	0.02	0.032	10.5	34	0.01	< 1	2	< 10	< 10	14	464000	12
132026	< 10	10	0.12	< 10	0.22	0.017	0.013	7.37	33	< 0.01	< 1	3	< 10	< 10	5	222000	8
132027	< 10	37	0.12	< 10	0.31	0.021	0.008	11	223	< 0.01	< 1	< 2	< 10	< 10	6	182000	< 5
132028	< 10	24	0.09	< 10	0.25	0.018	0.008	5.43	31	< 0.01	< 1	< 2	< 10	< 10	4	419000	5
132029	< 10	< 1	0.21	< 10	1.46	0.32	0.052	1.83	171	0.16	2	< 2	< 10	< 10	5		31
132030	< 10	8	< 0.01	< 10	0.01	0.015	0.002	1.82	34	< 0.01	< 1	< 2	< 10	< 10	< 1	551000	< 5
132031	< 10	4	0.02	< 10	0.03	0.014	0.003	1.15	23	< 0.01	< 1	< 2	< 10	< 10	2	587000	< 5

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Analyte Symbol	Ga	Hg	K	La	Mg	Na	P	S	Sb	Ti	Te	Tl	U	W	Zr	BaSO4	Au
Unit Symbol	ppm	ppm	%	ppm	%	%	%	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppb
Detection Limit	10	1	0.01	10	0.01	0.001	0.001	0.01	2	0.01	1	2	10	10	1	2	5
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	FUS-ICF	FA-AA
132032	< 10	8	0.06	< 10	0.07	0.019	0.009	2.06	36	< 0.01	< 1	3	< 10	< 10	4	434000	< 5
132033	< 10	9	0.04	< 10	0.09	0.018	0.007	2.22	32	< 0.01	< 1	< 2	< 10	< 10	3		< 5
132034	< 10	5	< 0.01	< 10	0.38	0.018	0.003	5.69	98	< 0.01	2	5	< 10	< 10	2	177000	14
132035	< 10	11	< 0.01	< 10	0.1	0.014	0.001	2.53	52	< 0.01	< 1	< 2	< 10	< 10	< 1	178000	12
132036	< 10	6	0.05	< 10	0.12	0.019	0.006	2.67	21	< 0.01	< 1	< 2	< 10	< 10	2	313000	11
132037	< 10	5	0.03	< 10	0.15	0.019	0.006	1.93	15	< 0.01	< 1	2	< 10	< 10	2	364000	11
132038	< 10	8	< 0.01	< 10	0.21	0.017	0.006	2.83	65	< 0.01	< 1	7	< 10	< 10	1	180000	26
132039	< 10	6	0.01	< 10	0.04	0.015	0.002	2.03	34	< 0.01	6	3	< 10	< 10	< 1	382000	21
132040	< 10	11	0.1	< 10	0.17	0.022	0.008	5.27	14	< 0.01	< 1	6	< 10	< 10	3	516000	35
132041	< 10	5	0.13	< 10	0.16	0.022	0.005	2.83	32	< 0.01	< 1	< 2	< 10	< 10	2	654000	13
132042	< 10	4	0.1	< 10	0.17	0.018	0.005	2.29	27	< 0.01	< 1	< 2	< 10	< 10	2		11
132043	< 10	2	0.04	< 10	0.06	0.015	0.005	2.02	12	< 0.01	< 1	< 2	< 10	< 10	1	739000	18
132044	< 10	8	0.15	< 10	0.09	0.022	0.011	3.59	27	< 0.01	< 1	2	< 10	< 10	2	782000	12
132045	< 10	< 1	0.89	12	0.72	0.126	0.078	0.04	< 2	0.19	5	< 2	< 10	< 10	2	4880	< 5
132046	< 10	3	0.03	< 10	0.05	0.016	0.011	3.07	20	< 0.01	< 1	< 2	< 10	< 10	1		6
132047	< 10	2	0.04	< 10	0.08	0.011	0.018	18.9	17	< 0.01	13	< 2	< 10	< 10	6		43
132048	< 10	3	0.49	< 10	0.96	0.021	0.064	4.92	8	< 0.01	< 1	< 2	< 10	< 10	13		18
132049	< 10	< 1	0.51	13	0.58	0.02	0.046	2.03	6	< 0.01	4	< 2	< 10	< 10	10		16
132050	< 10	2	0.78	< 10	0.85	0.023	0.039	2.92	9	0.06	2	< 2	< 10	< 10	15		15
132051	< 10	2	0.56	< 10	1.04	0.025	0.045	3.89	5	0.02	1	< 2	< 10	< 10	16		12
132052	< 10	1	0.95	< 10	0.71	0.022	0.053	3.17	5	0.1	< 1	< 2	< 10	< 10	9		10
132053	< 10	< 1	0.75	12	0.62	0.025	0.053	1.49	5	0.08	1	< 2	< 10	< 10	8		< 5
132054	< 10	< 1	0.88	16	0.6	0.022	0.042	1.34	6	0.07	< 1	< 2	< 10	< 10	9		7
132055	< 10	< 1	0.35	12	0.41	0.019	0.05	2.77	11	0.02	< 1	< 2	< 10	< 10	9		42
132056	< 10	< 1	0.5	12	0.3	0.024	0.057	2.92	12	< 0.01	< 1	< 2	< 10	< 10	13		75
132057	< 10	< 1	0.53	16	0.35	0.023	0.046	0.83	5	0.02	< 1	< 2	< 10	< 10	9		19
132058	< 10	< 1	0.62	25	0.47	0.02	0.058	0.51	6	< 0.01	2	< 2	< 10	< 10	3		14
132059	< 10	< 1	0.67	24	0.73	0.023	0.062	0.39	3	0.02	4	< 2	< 10	< 10	4		44
132060	< 10	< 1	1.54	28	0.8	0.028	0.06	0.37	4	0.12	3	< 2	< 10	< 10	5		16
132061	< 10	< 1	1.67	24	0.9	0.029	0.064	0.26	4	0.12	4	< 2	< 10	< 10	5		32
132062	< 10	< 1	1.29	22	0.87	0.025	0.065	0.25	4	0.1	< 1	< 2	< 10	< 10	5		< 5

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Analyte Symbol	Ga	Hg	K	La	Mg	Na	P	S	Sb	Ti	Te	Tl	U	W	Zr	BaSO4	Au
Unit Symbol	ppm	ppm	%	ppm	%	%	%	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppb
Detection Limit	10	1	0.01	10	0.01	0.001	0.001	0.01	2	0.01	1	2	10	10	1	2	5
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	FUS-ICF	FA-AA
132063	< 10	< 1	0.89	24	0.82	0.026	0.058	0.14	3	0.06	5	< 2	< 10	< 10	5		22
132064	< 10	< 1	0.83	29	1.04	0.028	0.074	0.16	3	0.03	< 1	< 2	< 10	< 10	5		29
132065	< 10	2	0.67	19	1.89	0.025	0.052	0.22	7	0.08	< 1	< 2	< 10	< 10	6		< 5
132066	10	< 1	0.46	17	2.15	0.02	0.044	0.25	6	0.07	< 1	< 2	< 10	< 10	7		7
132067	10	2	0.74	19	1.54	0.027	0.045	0.41	7	0.09	4	< 2	< 10	< 10	10		12
132068	< 10	< 1	1.02	23	1.15	0.038	0.046	0.28	4	0.1	4	< 2	< 10	< 10	11		43
132069	< 10	< 1	1.41	21	1.06	0.033	0.062	0.23	2	0.12	3	< 2	< 10	< 10	11		< 5
132070	< 10	< 1	1.3	22	1.04	0.033	0.06	0.08	3	0.11	8	< 2	< 10	< 10	11		< 5
132071	< 10	< 1	1.12	20	0.91	0.03	0.041	0.21	3	0.09	< 1	< 2	< 10	< 10	12		< 5
132072	< 10	< 1	0.57	22	0.53	0.03	0.022	0.38	< 2	0.03	< 1	< 2	< 10	< 10	19		< 5
132073	< 10	1	1.09	15	1.83	0.026	0.063	0.21	3	0.13	2	< 2	< 10	< 10	7		6
132074	< 10	< 1	1.06	21	1.84	0.031	0.058	0.16	3	0.11	6	< 2	< 10	< 10	9		< 5
132075	< 10	< 1	1.21	23	1.01	0.037	0.052	0.15	4	0.09	3	< 2	< 10	< 10	12		< 5
132076	< 10	< 1	1.13	22	1.02	0.032	0.059	0.2	4	0.08	3	< 2	< 10	< 10	12		< 5
132077	< 10	< 1	0.67	12	0.21	0.03	0.055	0.4	14	0.03	4	< 2	< 10	< 10	10		< 5
132078	< 10	< 1	0.95	23	0.92	0.032	0.056	0.15	4	0.07	2	< 2	< 10	< 10	10		< 5
132079	< 10	< 1	1.52	12	1.43	0.026	0.059	0.61	5	0.12	5	< 2	< 10	< 10	9		5
132080	< 10	< 1	1.84	15	1.55	0.03	0.061	0.4	4	0.13	2	< 2	< 10	< 10	8		5
132081	< 10	< 1	1.52	19	1.6	0.033	0.066	0.29	5	0.13	< 1	< 2	< 10	< 10	9		6
132082	< 10	< 1	1.38	16	1.84	0.032	0.057	0.33	3	0.13	6	< 2	< 10	< 10	9		< 5
132083	< 10	< 1	1.28	11	2.58	0.024	0.057	0.51	5	0.14	5	< 2	< 10	< 10	7		< 5
132084	< 10	3	1.07	15	2.36	0.029	0.065	0.31	4	0.13	< 1	< 2	< 10	< 10	7		< 5
132085	< 10	< 1	1.29	23	1.58	0.045	0.071	0.09	4	0.12	3	< 2	< 10	< 10	6		18
132086	< 10	< 1	1.01	21	1.55	0.037	0.069	0.22	4	0.09	2	< 2	< 10	< 10	6		< 5
132087	< 10	< 1	0.84	18	0.91	0.029	0.066	0.73	3	0.01	5	< 2	< 10	< 10	5		< 5
132088	< 10	< 1	0.79	20	1.28	0.037	0.066	0.37	4	0.02	< 1	< 2	< 10	< 10	5		< 5
132089	< 10	< 1	0.81	24	0.28	0.026	0.051	0.53	6	< 0.01	1	< 2	< 10	< 10	4		< 5
132090	< 10	< 1	0.95	24	0.44	0.031	0.067	0.51	6	0.01	< 1	< 2	< 10	< 10	4		< 5
132091	< 10	< 1	0.84	22	0.72	0.041	0.07	0.09	4	0.02	5	< 2	< 10	< 10	4		19
132092	< 10	< 1	0.99	23	0.88	0.038	0.07	0.05	6	0.03	< 1	< 2	< 10	< 10	4		< 5
132093	< 10	< 1	1.29	22	0.91	0.037	0.067	0.11	3	0.09	4	< 2	< 10	< 10	5		5

Final Report
Activation Laboratories

Report : A17-11335

Report Date: 8/12/2017

Analyte Symbol	Pb	Zn
Unit Symbol	%	%
Detection Limit	0.003	0.001
Analysis Method	ICP-OES	ICP-OES
132008	0.998	
132014		2.65
132015	1.94	2.53
132016	0.641	2.31
132017		4.62
132019		1.38
132026		1.03
132027		2.29
132028		1.37
132029	1.32	1.56
132030		1.22
132032		1.14
132033		1.27
132035		1.79
132036		1.02
132040		1.53
132044		

APPENDIX IV

PETROGRAPHIC REPORT

PETROGRAPHIC REPORT ON ATAMAN ZONE

SURPRISE CREEK PROPERTY

Report for:
Mountain Boy Minerals
Stewart, BC

March 03, 2018

Report by:
Alex Walus, P. Geo
Surrey, BC

SUMMARY AND CONCLUSIONS

This report is based on microscopic examination of 7 thin sections derived from Ataman Zone. Six of them were prepared from core obtained from the 2017 drilling and one section (sample #RZ-1) was prepared from a float derived from the bottom part of Ataman Zone. All samples were stained with sodium cobaltinitrite for easy K-feldspar identification.

Microscopic examination of sample RZ-1 (derived from the bottom of Ataman zone) as well as samples derived from the upper parts of holes SC17-3 and SC17-4 (samples SC17-3 (29.5m), SC17-4 (21.0m), and SC17-4 (60.5m)) indicate that a prominent sericite-quartz-pyrite alteration zone located at the bottom of Ataman zone represent a trachyte subvolcanic intrusion. Heat from that intrusion most likely caused formation of weak biotite hornfels detected in samples SC17-3 (108m) and SC17-3 (206m). Samples SC17-3 (108m), SC17-3 (206m), SC17-4 (134m) which derive from the lower parts of 2017 drillholes consists of trachyte pyroclastics which include mostly lithic and crystal tuffs. All samples are strongly to completely replaced by alteration assemblage dominated by sericite/muscovite with lesser carbonate, quartz, pyrite, +/- magnetite, +/-fuchsite (or mariposite).

Respectfully Submitted
Alex Walus

DESCRIPTIONS OF MICROSCOPIC SAMPLES

Sample # RZ-1   Sericite altered trachyte porphyry

Composition:

K-feldspar	45-50%
Sericite	45-50%
Opaque	7-10%

The bulk of K-feldspar occurs as larger grains ranging in size from 0.2 to 2.0 mm across. They represent phenocrysts of original trachyte porphyry which contains approximately 50% K-feldspar phenocrysts. Some K-feldspar form patches composed of much smaller anhedral grains ranging in size from 0.02 to 0.1 mm. They represent remnants of trachyte porphyry groundmass. Both K-feldspar phenocrysts and groundmass of original trachyte porphyry are to large degree replaced by later mineral assemblage composed of sericite and opaque (mostly pyrite). The observed dominance of larger K-feldspar grains in relation to smaller ones which comprise the groundmass was the result of preferential replacement of the latter.

Sample SC17-3 (29.5m)   Strongly sericitizied subvolcanic trachyte

Composition:

K-feldspar groundmass	60-70%	Sericite	20-30%
Feldspar phenocrysts	5-10%	Carbonate	5-10%
Apatite	<0.5%	Opaque minerals	2-3%

The sample contains 5-10% of strongly to completely sericitizied feldspar phenocrysts ranging in size from 0.5 to 1.5 mm. They are set in a groundmass composed of mosaic of K-feldspar crystals ranging in length from 0.1-0.2 mm; locally they display interlocking texture. Apatite forms several strongly resorped grains. The rock is partly replaced by sericite and carbonate with phenocrysts being preferentially altered. The rock contains 2-3% of disseminated opaque minerals which include some magnetite. The rock is cut by several sericite veinlets 0.05-0.1 mm wide.

Sample SC17-3 (108.0m)   Hornfelsed trachyte lapilli-crystal-lithic tuff, strong alteration

Composition:

K-feldspar crystal fragments	15-20%
Trachyte fragments	10-15%
Quartz crystal fragments	<1%
Sericite/muscovite	30-35%
Carbonate	15-20%
Quartz (secondary)	5-10%
Biotite (secondary)	3-5%
Fuchsite (or mariposite)	2-3%
Opaque	1-2%

The primary rock is a trachyte lapilli-crystal-lithic tuff. The original rock is represented by K-feldspar crystal fragments (they range in size from 0.2 to 1.0 mm), trachyte fragments (ranging in size from 0.3 to 0.7 mm) and small number of quartz clasts. Trachyte fragments display different textures and grain size. The primary rock was weakly honfelsed which resulted in the formation of secondary biotite. The original rock is partly replaced by secondary mineral assemblage dominated by sericite/muscovite with lesser carbonates, quartz, fuchsite (or mariposite) and opaque. Fuschsite (or mariposite) form small irregular patches composed of very fine grains.

Sample SC17-3 (206.0 m) Weakly hornfelsed trachyte lithic tuff, strong sericitization

<u>Composition:</u>

Trachyte fragments	20-30%	Sericite	50-60%
K-feldspar fragments	3-5%	Biotite (secondary)	5-10%
Plagioclase fragments	<1%	Muscovite	2-3%
Quartz fragments	<1%	Carbonate	2-3%
		Opaque	<1%

The rock consists of trachyte fragments supplemented by small amount of K-feldspar, plagioclase and quartz fragments. They range in size from 0.2 to 2.5 mm across. Trachyte fragments display different textures and grain size. The original trachyte tuff was honfelsed which resulted in the formation of secondary biotite. The rock was subsequently sericitizied which led to complete replacements of smaller and partial replacement of larger fragments.

Sample SC17-4 (21.0m) Almost completely sericitizied trachyte or latite ?

<u>Composition:</u>

Large feldspar grains	3-5%
Trachyte fragments	1-2%
Apatite	<0.5%
Sericite	80-90%
Carbonate	3-5%
Opaque (mostly magnetite)	3-5%

The sample contains 3-5% remnants of large K-feldspar and plagioclase grains ranging in size from 0.3 to 0.7 mm. It also contains 1-2% trachyte fragments composed of fine grained K-feldspar. Both feldspar grains and trachyte fragments are strongly to almost completely replaced by secondary minerals. It is not possible to determine if the primary rock was trachyte (or latite) subvolcanic intrusion or tuff. The primary rock was almost completely replaced by secondary mineral assemblage dominated by sericite with lesser carbonates and opaque minerals. The rock is cut by a few carbonate veins.

Sample SC17-4 (60.5m) Completely altered feldspar porphyritic trachyte or latite?

Composition:

Sericite/muscovite	75-80%
Carbonate	15-20%
Quartz	3-5%
Opaque	2-3%
Apatite	a few grains

The rock contains 35-40% subhedral to anhedral feldspar pseudomorphs ranging in size from 0.4 to 1.5 mm in size. They most likely represent feldspar phenocrysts of original trachyte or latite. The original rock is completely replaced by secondary mineral assemblage dominated by sericite/muscovite with lesser carbonates, quartz and opaque.

Sample SC17-4 (134.0m) Strongly altered trachyte crystal-lithic tuff

Composition:

K-feldspar crystal fragments	30-35%
Trachyte fragments	20-25%
Sericite/muscovite	30-35%
Quartz (secondary)	1-2%
Magnetite and pyrite	10-15%
Fuchsite (or mariposite?)	2-3%

The rock is comprised of K-feldspar crystal fragments and fragments of trachyte. They range in size from 0.2 to 0.7 mm. They are set in a groundmass composed of secondary minerals which include sericite/muscovite, quartz and opaque minerals. Opaque minerals include magnetite and pyrite. They form anhedral to euhedral grains 0.02-1.0 mm across disseminated throughout the sample. The sample contains 2-3% of chromium mica (fuchsite or mariposite). The bulk of this mineral is concentrated in elongated patches composed of intergrown coarse grained fuchsite (or mariposite) crystals 0.1-0.2 mm in size. These patches contain coarse (0.5 to 1.5 mm in size) subhedral to euhedral magnetite and pyrite crystals. The remainder of fuchsite (mariposite) forms patches comprised of much smaller grains. Fuchsite (mariposite) displays strong emerald colour and very strong pleochroism.