# **GEOLOGICAL AND GEOCHEMICAL REPORT**

in support of

## Funding under the Yukon Mineral Exploration Program

KELLI CLAIM GROUP Whitehorse Mining Division

NTS: 115G/12 61°33' N Lat., 139°37' W Long.

Report by: G. Gutrath, Geologist, P.Eng. Date: February 27, 2015

#### INTRODUCTION AND ACKNOWLEDGEMENTS

This report is written on behalf of the claim owners listed in Appendix H.

The time spent on the property and the cost of the program is outlined in Appendix G. This program has been filed as assessment work on the claims.

The writer carried out geological mapping and sampling programs on the property in 2011 and 2013. This work continued in 2014 and was expanded to include geochemical soil and silt sampling. This report summarizes the general property information that is given in much greater detail in the 2012 Geological Report, dated January 16, 2012. The focus of this report is on the results of the 2014 field work.

The writer was ably assisted in the field by Mr. Fred Erlers, one of the claim owners. Mr. Lorne Smith of Haines Junction, Mr. Denis Dixon of Burwash Landing and Mrs. Louis Bouvier of Destruction Bay provided transportation and logistical support for the field program.

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### LOCATION

The Kelli Claim Group is located on the northwest facing slope of the Kluane Range and is within the Kluane Game Sanctuary. The centre of the Kelli Claim Group is approximately UTM Coordinate 682400 N 573000 E, Zone 7, NAD 83 located on NTS Map 115/12.

#### PHYSIOGRAPHY

The Kelli Claim Group is centred on a north-northwesterly flowing tributary of Reed Creek (Kelli-Reed Creek) that joins the westerly flowing Reed Creek proper on the south side of Shakwak Trench. The south boundary of the Kelli Claim Group is at an elevation of 4,500 feet (1,372 m) and the north boundary is at an elevation of 2,600 feet (792 m).

The primary focus of historic mineral exploration and placer gold mining has been within the steep 'V' walled canyon referred to as the Lower, Middle and Upper Canyon that extend over a distance of 1000 m and over an elevation interval of 150 m.

Vegetation is predominantly stunted black spruce in areas of muskeg (permafrost). Tall, large diameter spruce border the thawed outwash channel. The Canyon area of Kelli-Reed Creek is bordered by thick alder as well as the adjoining slopes to an elevation of 4,000 feet (1,220 m). At an elevation above 5,000 feet (1,524 m) open grassland and willow predominate representing an alpine environment.

#### CLIMATE

The Kelli Claim Group is located on the east flank of the St. Elias Mountains and in theory is protected from direct coastal weather. However, weather is funneled from the coast along the low valleys that follow the Denali Fault/Shakwak Trench. As a result, there is considerable yearly variation in summer rainfall. Both the summer of 2011 and starting in July, 2013 the rainfall was abnormally high. In 2014, during the August exploration program weather conditions were ideal. There were only a few rain showers and the creek levels were low.

The range of annual temperature in the Kluane Lake area is -20°C in December, the coldest month to +13°C in July, the warmest month of the year.

The average annual rainfall is 20 cm and snowfall is 18 cm. The Kelli-Reed Creek area is at a higher elevation and will have colder winter weather and greater accumulated snowfall and rain.

#### ACCESS

The turnoff from the Alaska Highway to the winter heavy equipment trail/summer ATV trail is at UTM coordinate 580651 E 6830392 N, 340 km west of Whitehorse or 170 km from Haines Junction. The trail crosses 10 km of the Shakwak Trench through continuous swamp, skirting small lakes and crossing three streams reaching the Kelli-Reed Creek gravel fan at approximately 3 km from the campsite.



Helicopter service is available from Haines Junction with a suitable staging area on the Alaska Highway at Mile 1118. There is a good helicopter pad at the campsite.

In 2014 access from the Alaska Highway was provided by an 8 wheel Argo off-road vehicle rented from Mr. Denis Dixon of Burwash Landing. Mr. Lloyd Smith operated the Argo, carrying approximately 300 kilos of supplies and navigating the Shakwak Swamp and the washed out road to the Kelli Camp with no problems. The road from the Reed-Kelli Creek fan to the camp was built in the 1990s and was in good condition in 2011. However, in 2013 the road was 90% destroyed by a flash flood making it very slow and difficult to gain access to the Kelli Camp. On site transportation was provided by two ATVs that followed the Argo into the property.

The access trail from Highway 1 to the Kelli Camp is shown on Map 3.

#### HISTORY

The Kelli-Reed Creek has had a long history of placer gold mining starting in the early 1900s and again in the period 1935 to 1939. The more recent mining was carried out by Dublin Gulch Placers under the onsite direction of Darrel Duensing between 1983 and 1988. Overall production from the creek gravels is very uncertain but is probably in the range of 3,000 to 5,000 oz. of gold.

Larry Tremblay, project manager and claim owner, carried out an extensive trenching program in the Lower and Middle Canyons. In 2004 Mr. Tremblay and associates drilled five BQ holes in the Lower Canyon.

Some additional historical information was provided by Mr. Lorne Smith of Haines Junction, a long time resident of the area. Mr. Smith has placer and quartz claims on Swede Johnson Creek 4 km to the southwest of Kelli-Reed Creek. In 2003 – 2004 Mr. Smith carried out some bulk placer tests between the Lower Canyon and campsite and found areas of good placer gold values. In 2004 his equipment was used to move the drill. He was very helpful in confirming the location of the 2004 drill holes. In addition, he stated that when Larry Tremblay first located the property there were numerous old placer workings and possibly underground workings. Mr. Smith referred to the location of a ladder at WP66 573393 E 6824638 N on the east side of the creek that went up the edge of the large outcrop and led to underground mine workings 7 m to 10 m above the level of the creek gravels.

The History section pages 3, 4 and 5 in the writer's 2012 Report gives a more detailed description of the early work done on the Kelli-Reed Claim Group area.

#### **REGIONAL GEOLOGY**

The Kluane Range forms the northeast margin of the St. Elias Mountains that are predominantly underlain by a thick sequence of mainly layered Paleozoic strata that have been highly altered and deformed. The property is bordered to the north by the Denali Fault that occupies the Shakwak Trench. To the southwest of the Shakwak Trench in the Quill Creek – Dondjak River area the strata has been intruded by granitic to ultramafic bodies. The Quill Creek ultramafic hosts a nickel-copper deposit with PGE values.

In the Kelli Claim Group area of the Kluane Range the predominant rocks are Permian Pennsylvanian andesites covered by shales and thin bedded limestone. These units are repeated by a complex series of faults. Oligocene dikes in the area have been sheared indicating that the faulting is Tertiary or younger (T. Bremner, 1990).

The Denali Fault has formed the northeast facing slope of the front range of the St. Elias Mountains in the Kelli Claim Group area and has influenced the emplacement of the sub-parallel intrusive bodies in the Lower to Upper Canyon of Kelli-Reed Creek. These intrusive bodies are related to a 'structural kink' in the stream drainage both to the west and east of Kelli-Reed Creek over a distance of 8 km and sub-parallels the trend of the Denali Fault. This "kink" is an important reference point for the start of placer gold deposits in these creeks.

#### **2014 EXPLORATION PROGRAM**

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The 2014 exploration program on the Kelli Claim Group is made up of three overlapping programs. Geological Mapping on a scale of 1:000, Geochemical Soil and Silt Sampling plotted on a 1:3000 base map, and also on the 1:000 scale map. The 1:3000 scale base contour map with 2014 UTM waypoints was prepared by Underfill Geomatics, Whitehorse, YT. The first phase of the 2014 program was an evaluation of the placer gold potential with data plotted on a scale of 1:2000. The placer gold evaluation is the subject of a separate report.

#### Geological Mapping, Geochemical Soil and Silt Sampling

The geological mapping program was carried out between August 20 and August 28, 2014. Survey control for mapping the outcrop geology and surficial features was by Garmin 78S attached to a Garmin antennae mounted in a pocket on the back of a field survey vest. The GPS is strapped to the forearm and is in continuous operation to minimize the time to get maximum satellite reception. The outline of rock outcrops, physical features and geology are plotted directly in the field on prepared mylar grid sheets in an aluminum folder. Waypoints are recorded to establish the location of data describing geological observations, sample locations, etc. and are recorded in a field notebook.

The geochemical soil and silt sampling program was carried out in part with the geological mapping. Soil and silt sample locations were surveyed using the Garmin 78S. Sample locations were marked and flagged.

In 2014 the geological mapping on a scale of 1:1000 was primarily in the Lower Canyon by Reed-Kelli Creek. A total of 15 samples were collected for analysis by Acme Labs.

A total of 55 soil samples and 43 silt samples were collected for analysis by Acme Labs. The sample locations are plotted on the 1:1000 scale Map 1 and the 1:3000 scale Map 2.

Weather conditions were very good with only a few rain showers. Water levels in the creeks were low allowing stream crossings.

## **PROPERTY GEOLOGY**

## General

The primary objective of the 2014 program was to continue the geological mapping on a scale of 1:1000 through the Lower Canyon and sample prospective mineralized zones. The division of the geology into Statigraphy and Intrusive units was outlined in the 2012 and 2013 reports and supported by the work done by Dr. Gettsinger and Mr. Bremner.

## Statigraphy

The layered rocks exposed from the camp area upstream to the Middle Canyon (Geology Map 1 1:1000, 2013) are divided into four units designated **pc** (phyllitic carbonate), **gs** (greenstone/meta volcanic), **gs** (**fp**) (subvolcanic greenstone and/or an intrusive feldspar porphyry), and **bgpl** (black graphitic phyllite with interbedded limestone). These units have been interpreted as being Pennsylvanian to Permian in age and part of the Skolai Group. The writer divided the **gs** unit into **gs** and **gs(fp)** to differentiate the marked contrast between the two units:

- gs dark brown adesite often foliated to a chloritic schist, highly fractured with pyrite content from 1% to 10%, pyrrhotite trace to 1% and magnetite 1%. Widely spaced, flat pyritic quartz veins of variable width cut across the unit.
- gs(fp) grey, possibly subvolcanic fine-grained to porphyritic andesite or instrusive with blocky, course fracturing with pyrite, less than 1%.

The bgpl unit is the principal unit downstream from the Lower Canyon to the campsite.

#### **Intrusive Rocks**

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The layered rocks are intruded by dikes and sills of Oligocene to Miocene age (date of 23 Ma, ref. Bremner, 1991). Both Getsinger and Bremner agree that this intrusive is a feldspar hornblende porphyry. The writer mapped the intrusives as two separate rock types.

- dd light orange weathering dacite dike, fine grained to aphanitic with an absence of porphyritic texture. In the fresh, fine grained dacite crystalline hornblende "blades" make up 1% to 2% of the ground mass
- **fp** light grey subhedral medium grained feldspar phenocrysts in an aphanitic to fine grained feldspar rich ground mass

## 2014 MAPPING OF OUTCROP GEOLOGY IN LOWER CANYON REED-KELLI CREEK AND GEOLOGY NOTED WHILE CARRYING OUT THE GEOCHEMICAL SAMPLING, SAMPLE LOCATION AND ANALYSIS, HAND SPECIMEN LOCATION AND DESCRIPTION, STRUCTURE, METAMORPHISM AND MINERALIZATION

Detailed outcrop geology mapped on a scale of 1:1000 was limited to the Lower Canyon of Reed-Kelli Creek. At the downstream (north) start of the Lower Canyon massive cliffs rise on both sides of the creek. The first resistant unit is an andesite/chlorite schist interlayered to the north with platy (bedded) light grey-brown siltstone, fissile biotite-mica schist and beds of graphitic argillaceous schist. The schitosity is predominantly 295° dipping 80° to 85° to the north. Fine grained pyrite, 1% to 3%, is disseminated in these units or associated with thin irregular quartz veining.

The andesite/chlorite schist unit is in contact to the south with a dacite dike swarm interlayered with fissile graphitic limey argillite from 1 m to 1.5 m thick. The overall thickness of the dike swarm is in the order of 20 m and strikes 290° and dips steeply. It is part of Structure 1 outlined on Map 1 and is part of a regional structure that forms a "kink" in the drainages both to the northwest and southeast. In all these drainages such as Reed-Allen Creek (Map 2) and Swede Johnson Creek the "kink" is associated with placer gold deposits.

The overall width of Structure 1 in the Lower Canyon, including the dacite dike swarm just described, is in the order of 60 m. It is bordered on the south by a competant feldspar porphyry dike and andesite/chlorite schist. The central "core" of Structure 1 borders the dacite dike swarm to the south and is in the order of 30 m thick. It is very well exposed on the steep outcrop face on the west side of the Lower Canyon. It is a major zone of deformation with massive large scale cataclastic brecciation of the more competant altered dacite dikes and beds of limey graphitic sediments that have been 'folded' and dislocated. Both south and north contacts of this deformational "core" are bordered by steep, +30° to 40° gullies. The north contact with the massive dacite dike is very distinct on the east side of the creek and is in the order of 5 m wide. On the lower part of the outcrop the contact zone is largely obscured by talus but at a higher elevation the talus thins and the contact zone can be seen and is composed of narrow, broken lentincular dacite dikes, largely altered to a quartz sericite carbonate, a cream coloured rock interbedded with black limey argillaceous schist. Thin quartz veinlets are common with 1% to 2% fine grained pyrite associated with quartz and disseminated in the ground mass.

The Lower Canyon on the east side of the creek has been the focus of a great deal of exploration. Larry Tremblay reported that there were old workings in this part of the Lower Canyon that could be seen prior to the mechanized placer mining in the 1980s. One of the more notable workings was a drift accessible from the canyon floor by a ladder located in the area of the Pautler Trench shown on Map 1. The trench was sampled over 8.25 m to test the general area of the drift (Pautler, 2001). The writer cleaned out the trench and resampled it as well as the talus slope section between the trench and the massive dacite dike to the north. Pautler took 8 samples from the trench and the gold values ranged from 5 ppb Au to 30 ppb Au. The 30 ppb Au was associated with 110 ppm As and we taken over a width of 0.8 m.

The 2014 sampling of the Pautler Trench consisted of 5 channel samples with a low value of 0.5 ppb Au and a high value of 56.5 ppb Au associated with 161 ppm As.



Sample Width	Sample Number	Analysis		
1.22 m	H1	3.4 ppb Au		
1.82 m	H2	0.5 ppb Au		
1.06 m	H3	11.7 ppb Au		
1.21 m	H4	56.5 ppb Au	160.6 ppm As	
1.21 m	H5	1.2 ppb Au		

H6 was a large representative series of grab samples across the talus slope-contact zone over a width of 6 m. The grade of H6 was 2.5 ppb Au.

There is one silt sample KS12 taken from the stream gully 2 m to 3 m south of the Pautler Trench. This sample gave 638.1 ppb Au, the highest Au value of all the samples collected. One soil sample KSO2 was taken 2 m upslope from the Pautler Trench and gave 137 ppm Cu, 54 ppm As, 44 ppb Au.

A diamond drilling program was carried out in the Lower Canyon in 2004. The collar of one hole, DH3, has been located and the 2014 UTM coordinates match the 2004 UTM coordinates. The hole was drilled at 210° at a dip of -50°. The hole would have intersected the west extension of the Pautler Trench geology. From 14 m to 47 m the hole intersected black graphitic schist/quartz sericite schist, fault gouge shearing and brecciation. The gold anlaysis ranged from 11 ppb Au to 148 ppb Au with an average of 45 ppb Au.

On the west side of the Lower Canyon 2 rock samples, H12 and H13, were collected from the talus slopecontact zone located between the massive dacite dike on the north and the major structural-deformation zone to the south. This zone is the equivalent of the Pautler zone sampled on the east side of the Lower Canyon. Both samples are very low grade, 0.6 ppb Au and 0.7 ppb Au.

Two samples, H10 and H14, were taken from the structural deformation zone 10 m from the north contact zone sampled by H12 and H13. H14 is a sample taken over 1 m of sooty grey-black weathering graphitic argillite with 3% to 5% fine grained pyrite. The sample had a low value of 2.4 ppb Au. H10 is from graphitic limey schist and altered dacite dike, pyrite is associated with quartz veinlets. Low grade, 8.2 ppb Au.

On the south side of the structural deformation zone there is a wide (10 m) contact zone largely obscured by talus. On the south side of the contact zone-talus slope is a grey feldspar porphyry dike with 10% to 15% medium grained hornblende laths (Specimen 12). A number of samples were collected from this contact zone as well as specimens and soil samples.

Rock Sample H7 chlorite schist cut by irregular discontinuous quartz veinlets with ±5% fine grained pyrite, very low grade, 2.7 ppb Au

West Wall of Lower Canyon showing trace of Structure 1

Structural Deformation, Brecciation and Folding blocks of dacite mixed with folded-faulted bands of graphitic limey argillite, lenticular segments of dacite dike altered to quartz sericite carbonate, irregular quartz veinlets, fine pyrite 2% to 5%

STRUCTURE 1

Reed-Kelli Creek

dacite dike swarm

andesite/chlorite schist

Deformation zone within Structure 1 on West side of Lower Canyon. Approximately 12m along edge of road and upslope at +40 for 15m.

- H8 20 m up 35° slope from H7. North side of contact zone, limonitic-oxidized, thin quartz veinlets interlayered and cutting chlorite schist. Pyrite %5. 174.6 ppm Cu, 5ppb Au
- H9 From south contact zone of talus slope +30°. Chlorite schist, quartz veinlets oxidized fine grained pyrite. Very low grade, 3.3 ppb Au
- H11 From north contact of talus slope. Green, moderately foliated massive chlorite schist cut by irregular crosscutting hairlike quartz veinlets. Pyrite is fine to medium grained, discrete clots. Low grade, 6.7 ppb Au
- Silt Sample 3 From the dry talus slope and is a mix of silt, soil and fine rock fragments. This sample has higher values than the rock samples; 30.1 As, 31 ppb Au

The feldspar porphyry dike bordering the contact zone continues upstream to the southwest to WP187 (573303 E, 6824616 N) over a width of 10 m. The dike is in contact to the southwest with intensely sheared (275°/ steep to 75° north) chlorite schist derived from andesite. At WP188 (573296 E, 6824609 N) there is a steep +35° narrow gully representing a fault zone (290°/80° south). From WP188 to WP191 (573284 E, 24578 N) the chlorite schist is cut by a feldspar porphyry dike 12 m wide and subparalleling the schistosity at 275°/70° N. From WP192 (573283 E, 6824571 N) to WP194 (573271 E, 682453 N) the fissile chlorite schist is cut by numerous irregular discontinuous quartz veinlets associated with fine disseminated pyrite both in the veins and in the chlorite schist (2% to 5% pyrite). WP194 marks the contact with a feldspar porphyry dike to the south and a major fault-contact zone represented by a steep (+35°) gully trending 185° from the road and at 60 m upslope curves to 300° to the top of the outcrop-cliff. The feldspar porphyry dike is 15 m wide and strikes 185° and dips 80° north.

Two silt samples KSI 4 and KSI 5 taken from the gully at 10 m and 20 m up the gully from the road. These samples are a mix of silt, soil and fine rock fragments. KSI4 has a value of <u>66 ppb Au</u> and KSI 5 has a value of <u>69.8 Au</u>.

The feldspar porphyry dike marks the end of the detailed 2014 geological mapping of the Lower Canyon. The outcrop geology going upstream to the southwest has been integrated with mapping from 2011 and 2013. This provides a larger scale base map for plotting soil and silt sample locations.

## **Geology Observed on Geochemical Soil and Silt Sampling Traverses**

Structure 2, plotted on Map 1, 1:000 occupies the trace of stream valleys on both sides of Reed-Kelli Creek. A short traverse was made up the creek on the west side of the valley. There is extensive outcrop in the creek at WP61 (572897 E, 6824679 N) of light coloured grey-green limestone altered to phyllitic carbonate in part and strongly folded. Going up the tributary creek to the west at WP196 (572371 E, 6823868 N) there is good outcrop in the creek of grey limestone strongly sheared at 325° dipping 75° to the south. The creek channel is in a fold axis striking 325° and plunging 10° east.

At WP199 (572855 E, 6823874 N) there is good outcrop and a change in geology from limestone to a blocky (SP 15) dark black-green coloured moderately foliated andesite-crystal tuff or a diorite with a fine grained crystalline

texture. There is less than 1% disseminated fine grained pyrite and no magnetite. Just upstream from this outcrop silt sample KSI40 gave a value of <u>319 ppb Au</u>, the second highest gold value collected during the silt sampling program.

At WP201 (572818 E, 6823905 N) there is massive outcrop on the south side of the creek of dark green chlorite schist (andesite) with 1% to 2% fine grained disseminated pyrite. Specimen 16 is a light grey-green quartz (60%) chlorite foliated schist with 1% to 2% fine grained pyrrhotite (slightly magnetic) and is associated with thin discontinuous hairlike quartz veinlets and as discrete disseminations.

The small outcrop in the creek is a cream coloured weathering bedded limestone (Specimen 17) striking 315° and dipping 30° south (effervescent in dilute hydrochloric acid).

A soil sampling traverse continued from the creek at WP201 to WP 207 (572790 E, 6823810 N) that is located at the top of a 2013 or 2014 'tree-muskeg slide' that continues down into the Reed-Kelli Creek valley. The slide exposed continuous glacial cobble till over the total extent of the slide area.

## Plotted on Map 2, 1:3000

The geochemical soil and silt sampling traverse starting on the west side of Map 1 follows the ridge from WP64 (572562 E, 6824208 N) subparalleling Structure 2 until it reaches WP65 (572502 E, 6824389 N) located on sloping bench cut by a small dry stream. Specimen 3 is from an angular float boulder at WP65 and is a light grey-green on a fresh surface, feldspathic aphanitic groundmass cut by 1% fine hairlike white carbonate veinlets. Less than 1% fine grained pyrite disseminated in the groundmass and up to 5% pyrite on fracture planes that weather to a dark limonite orange. The traverse contours to the west and at WP 67 (572422 E, 6824389 N) there is a small outcrop area (2 m by 6 m) of dark green foliated tuffaceous andesite. Chloritic shear planes, fine grained pyrite, less than 1% and no magnetite. It is cut by numerous hair-like irregular/crosscutting carbonate fracture fillings that are highly effervescent in dilute HCl (Specimen 4).

At WP71 (572355 E, 6824524 N) there is outcrop 10 m by 5 m represented by Specimen 6. Dark green chlorite schist, irregular foliation cut by numerous thin siderite veinlets, 1% disseminated fine grained pyrite with no magnetite.

In the creek canyon at WP75 (572154 E, 682549 N) there is extensive outcrop of a light grey fissile schist, possibly a silty limestone with bedding striking 285° and dipping 30° to 40° south. WP76 (572098 E, 6824606 N) is on the canyon wall going into the next creek. Massive outcrop light and dark banded, graphitic limey argillite. Quartz veining subparalleling the bedding with some highly oxidized layers up to 1 m thick with 10% to 15% pyrite. WP77 (572052 E, 6824622 N) is on the footwall of a 5 m thick fine to medium grained dark weathering sill striking 250° and dipping 30° south. Specimen 7 is from this sill and is a dark grey-green, fine grained diorite, slightly foliated, less than 1% fine pyrite, no magnetite and cut by numerous fine carbonate veinlets.

WP78 (571997 E, 6824630 N) is in the creek canyon on a long talus filled stream channel with a slope of -35°. There are numerous outcrops in the stream channel and canyon walls primarily of grey, finally bedded and foliated limestone. At WP83 (572087 E, 6824770 N) there is a waterfall flowing over limestone and at the base of the falls there is a black basic sill, possibly a gabbro, 5m to 7 m thick. On the west side of the creek at WP84 (572097 E, 6824796 N) the sill/dike is exposed over 20 m, probably not true width. It appears to be cut off by a fault as it does not continue on the higher canyon wall to the northwest. At WP85 (572101 E, 24812 N) the limey sediments are highly contorted with irregular quartz veining. There is another waterfall at WP86 (572126 E, 6824893 N) composed of limey sediments cut at the base of the falls by a sill/dike of an interbedded andesitic crystal tuff with a strike of 330° and dipping 40° south. It is dark green-black fine grained groundmass, minor quartz veinlets with 1% fine grained pyrite, 1% magnetite and slightly foliated. At WP87 (572144 E, 4926 N) there is a small outcrop in the creek surrounded by talus. It is fine to medium grained diorite with irregular jointing similar to the grey feldspar porphyry in Reed-Kelli Creek. On the west bank of the canyon is an outcrop 3 m by 4 m of graphitic schist, strong folication striking 350° and dipping 60° south. At WP90 (572163 E, 6824970 N) there is an outcrop area on the west side of the creek, 15 m x 8 m of blocky, massive crystalline limestone with numerous irregular discontinuous fractures partially filled with secondary carbonate. Hand Specimen 9, from the outcrop area, is a probably sill and is a dark greenishgrey, fine grained diorite, minor magnetite and less than 1% fine grained pyrite. Very similar groundmass to Specimen 7. The specimen is cut by hair-like white carbonite veinlets (5%) and carbonate filled fractures up to 5 mm thick. The groundmass does not effervesce in dilute HCl. Downstream there is no more outcrop but a large outwash talus fan extends down slope for hundreds of metres.

On the east side of the Kelli Claim Group the silt samples were taken from a short section of Reed-Allen Creek. Between WP46 (574780 E, 6824387 N), and WP48 (574813 E, 6824318 N) there is a very prominent, landmark outcrop that borders the east side of Reed-Allen Creek. Specimen 2 at WP46 is a feldspar porphyry intrusive, fine to medium grain, subhedral orange feldspar phenocrysts in a light grey aphanitic to subhedral plagioclase groundmass. No pyrite or magnetite. This is the same intrusive found on the west side of Reed-Kelli Creek cutting across the grey feldspar porphyry bordering the road.

Extensive mechanized placer gold mining has been carried out over a distance of 300 m to 400 m. These workings are obscured by windfalls of spruce and thick secondary growth alder. At the present time Bill Allen is hand placer mining in the area of WP46 at the base of the feldspar porphyry outcrop.

WP127 (574812 E, 6823778 N) marks the start of an outcrop-canyon in Reed-Allen Creek. Specimen 10 at WP127 is a weakly foliated fine grained diorite (andesite-crystal tuff?) no magnetite or pyrite. WP131 (574886 E, 6823675 N) is at the base of cliffs on the east side of the creek where it takes a sharp turn forming the structural "kink" related to placer gold deposition. The weathered cliffs have a distinct orange colour as a result of siderite forming as a thin coating on fracture and shear planes. The outcrop (Specimen 11) is a dark grey-green, moderately foliated chlorite schist.

#### **GEOCHEMICAL SOIL AND SILT SAMPLING**

#### General

The 2014 geochemical program was initially conceived to be 1 or 2 soil sample lines subparalleling both the east and west side of Reed-Kelli Creek. The objective was to see if the soil sampling could trace the gold and/or

copper mineralized zones in the Reed-Kelli Creek Canyon. It was recognized from the outset that soil sampling using a 3 inch diameter 4 foot long hand auger may have difficulty in collecting representative samples. A mattock was used to dig through the surface moss, organics and roots that blankets the slopes in the Kelli Claim area. This organic layer is from 0.1 m to as much as 0.5 m thick. Directly below this layer is a white, fine grained granual volcanic ash layer approximately 0.3 m thick. The ash is very dilutive of the elements in a soil sample so it is important to get through this ash layer and minimize its inclusion in a soil sample at depth. Often the auger could not penetrate the ash layer because of permafrost. If the auger could cut through the ash layer the soil sample was often taken on the surface of the frozen soil layer. The sample depth would vary from a few cm below the organic/ash layer to a maximum of 1 m.

The next problem with the soil sampling was determining what was being sampled, soil from decomposed bedrock or glacial till. Glacial outwash gravels and till occur at the south fork of Reed-Kelli Creek at an elevation of approximately 4,100 feet. A surface 'organic slide' exposed a slope of underlying glacial till at WP207 (57290 E, 3810 N), elevation 3,800 feet that extends down slope to the creek. The majority of the soil collected on both sides of Reed-Kelli Creek could easily fall within an underlying layer of glacial till masking bedrock. In addition, pebbles were observed in a large number of the soil samples indicating possible glacial till.

As a result of the problems associated with the soil sampling the sampling became an opportunistic search for thawed sites, such as soil beneath upturned tree stumps and shallow gullies often dry that may have cut through the volcanic ash layer. In addition, the sampling program was extended to silt sample collection from small discontinuous often dry stream channels cutting the surface organic layer and volcanic ash. These samples were often diluted with 5% to 20% volcanic ash. It was hoped that the silt samples would reflect a larger dispersion area from a potential underlying, relatively localized mineralized bedrock.

A total of 55 soil samples and 43 silt samples were collected for analysis by Acme Labs Ltd.

Histograms were drawn for gold analysis for both soil and silt samples. Because of the small number of samples and highly variable nature of the samples the histograms are of little value in determining anomalous values. For the silt samples a value of plus 70 ppb Au, for a total of 6 samples would be anomalous. For soil samples a value of plus 24 ppb Au, for a total of 7 samples would be anomalous. Considering the variable nature of the sampling a great deal of judgment is required to evaluate the potential anomalous value of a sample.

The soil and silt sample results are reviewed in part with the geological mapping.

#### Soil Sampling Map 1, 1:000

Soil samples KSO 23, 24, 25 and 26 are taken from a known arsenic-gold mineralized formation in the Lower Canyon on the east side of the creek in the area of the Pautler Trench (Map 1). These samples are not overly representative of the majority of the soil samples taken since they are from an area of little or no organic material, volcanic ash, permafrost or glacial till. The samples are from a steep, +30° slope bordering the south side of the dacite dike swarm. The samples are a mix of soil, silt and rock chips.

taken from a shallow gully. KSO 21, WP 117 (572901 E, 6824258 N) was taken to the south of the gully and has a value of 119 ppm Cu and 78 ppb Au.

Sample KSO 22, WP 118 (572944 E, 6824155 N) is taken on the north side of a deep gully that is the contact zone between the Middle Canyon and andesite/chlorite schist and a formation of limey sediments (pc) extending to the south. The sample had a value of 6.6 ppm Mo, 140.1 ppm Cu and 8.9 ppb Au. The Mo value is very low but still elevated compared with the rest of the samples and combined with the Cu value could result from the close proximity of the feldspar porphyry dike down slope.

The soil sampling on the east side of Reed-Kelli Creek are plotted on Map 1 and start upstream at WP 150 (573055 E, 6824032 N), KSO 27 and is a poor soil sample mixed with volcanic ash. KSO 28, WP 151 (573064 E, 6824023 N) is 10 m upslope from KSO 27 (Cu 101 ppm) and is a better soil sample taken from under an uprooted spruce tree. The next sample is KSO 29, WP 152 (5731370 E, 6823997 N) at an elevation of 3,800 feet (1,159 m) has a value of 66.7 ppb Au. KSO 31, WP 154 (573244 E, 6824036 N) is from a small, dry shallow gully and has a value of 22 ppb Au. From KSO 32, WP 155 (573304 E, 6824098 N) the next 4 samples had very low values and 5 of the samples hit permafrost directly below the moss-organic layer. KSO 38, WP 167 (573475 E, 6824365 N) gave a value of 23 ppb Au. This is the last of the samples going northeast on the 3,800 foot contour. Starting at KSO 39, WP 168 (573480E, 6824395 N) the traverse goes down the ridge (KSO 41) to the north and then crosses from WP 172 (573506 E, 6824507 N) to WP 173 (573423 E, 6824530 N) to KSO 42 located in the south fault contact zone of Structure 1. KSO 42 has a value of 24 ppb Au. KSO 43 is 15 m southwest of KSO 42 and is taken from a small dry stream gully and has a value of 34 ppb Au. Going down slope to the west there is a prominent small point that drops off very steeply into the Lower Canyon with three early 1900s hand dug pits. Two of the pits were sampled by cutting down the wall with a mattock. The bottom of the pits were in permafrost. KSO 45 and KSO 46 have very low values for Cu and Au. This point is well to the south of Structure 1 and judging from the geology on the west side of the creek would be underlain by chlorite schist/andesite and is poorly mineralized except for minor disseminated pyrite.

The last small area of soil sampling located on Map 1 is in the area where Structure 2 crosses Reed-Kelli Creek. Sample KSO 5, WP 201 (572867 E, 6823871 N) is taken from under the upturned roots of a spruce tree on the north side of the creek. The sample has a value of 92 ppm Cu and 48 ppb Au. KSO 51, WP 203 (572814 E, 6823927 N) is taken from the same area as KSO 50 and has a value of 78 ppm Cu and 28 ppb Au. Going to the south on the south side of the creek KSO 52, WP 206 (572799 E, 6823860 N) has a value of 26 ppb Au, KSO 53 has a value of 77 ppm Cu and 24 ppb Au. KSO 54 is located on contour 10 m north of KSO 55, and is very low grade and is expected to have been a sample of glacial till. KSO 55, WP 207 (572790 E, 6823810 N) is taken from the top of an 'organic slide' exposing a long slope of glacial till. KSO 55 had a value of 22 ppb Au.

#### Soil Sampling Map 2, 1:3000

Soil and silt samples were collected along a traverse starting at WP 65 (572502 E, 6824389 N) at an elevation of approximately 4,400 feet and contouring to the west into a small steep gully and continuing east into a larger gullystream tentatively named Reed-Erler Creek. The only soil samples are KSO 3, 4, 5 and 6 along the contour going into the first gully. KSO 3, WP 66 (572446 E, 6824477 N) gave a value of 135 ppm Cu. KSO 4, WP 69 (572395 E, 6824510 N) gave a value of 92 ppm Cu and 27.6 ppb Au. KSO 5, WP 70 (572367 E, 6824520 N) gave a value of 226 ppm Cu, 71.7 ppm As and 59.9 ppb Au. KSO 6, WP 73 (572192 E, 6824541 N) is the last soil just on the west side of the gully and has a value of 141.6 ppm Cu but very low value for Au.

## Silt Sampling Map 1, 1:1000

KSI 1 WP 2 (573392 E, 6824657 N) is a sample of silt and rock fragments of argillaceous-limey sediments on the east side of Reed-Kelli Creek at the start of the Lower Canyon and from a steep dry gully on the north side of the dacite dike swarm and within Structure 1. The sample value is 31 ppb Au.

KSI 2 is a sample composed of dark grey-black silt, soil and fine rock chips from a dry narrow stream channel, normally with a small flow of water and is located down slope from the south end of the Pautler Trench. This stream channel is the fault-contact between a dacite dike on the south and limey argillaceous graphitic schist on the north. KSI 2 has a value of <u>638.1 ppb Au</u>, the highest gold value of all the soil, silt and rock samples collected. The copper value of 83 ppm is background for the Lower Canyon and arsenic, a pathfinder element is low, 28 ppm.

KSI 3, 4 and 5 are from talus filled contact-fault zones on the west side of the Lower Canyon. These steep, +30° gullies were dry in August and the samples were a mix of silt, soil and rock chips. The sample values are 28 ppb Au, 66 ppb Au and 70 ppb Au. KSI 3 has a value of 34.3 ppm As and the other 2 samples have very low As values.

KSI 8, WP 12 (573018 E, 6824115 N) is from a contact-fault zone between Middle Canyon andesites/chlorite schist and Upper Canyon limestone. The sample is from the base of the contact zone on the road and had low values for base metals, arsenic and gold.

KSI 9, WP 13 (573004 E, 6824052 N) is silt from a small stream (spring) flowing out of the road bank and has very low values similar to KSI 8.

There were 3 silt samples taken from the bulldozer trench on the east side of the creek in the Upper Canyon.

 WP 15, KSI 11
 63.4 ppb Au

 WP 17, KSI 12
 18.3 ppb Au

 WP 18, KSI 13
 **253.6 ppb Au**

Arsenic values are low for all three samples. KSI 13 is the third highest gold value in the sample program.

The silt samples collected from the stream on the west side of Reed-Kelli Creek is the trace of Structure 2. KSI 39, WP 196 (5728715 E, 6823868 N) is the first sample from the creek and has a value of 96 ppb Au and 23 ppm As. KSI 40 and KSI 41 are approximately 15 m upstream. KSI 40 has a value of <u>319 ppb Au</u> and is the second highest value sample collected. The arsenic value is 29 ppm. KSI 41 has a value of 50 ppb Au and 26.6 ppm As. Seventy metres up the stream KSI 42 has a value of 39 ppb Au and 30.8 ppm As.

#### Silt Sampling Map 2, 1:3000

Silt and soil samples were collected on a traverse starting with KSI 30, WP 65 (572502 E, 682447 N) and contouring west and then going down Reed-Erler Creek. KSI 3 has a value of 131 ppm Cu, 102 ppm Ni and 174 ppm Cr. It is a sample from a small dry stream gully originating from the steep +35° to 40°, talus slope to the west. This traverse is above the 'timber line' and crosses an open moss-heather alpine environment. The next series of samples KSI 31 to KSI 34 are good silt samples from the largely talus filled Reed-Erler Creek.

KSI 31, WP 31	103 ppm Cu,	98 ppm Ni,	101 ppm Cr
KSI 32, WP 80	49 ppm Cu,	92 ppm Ni,	100 ppm Cr
KSI 33, WP 83	106 ppm Cu,	81 ppm Ni,	85 ppm Cr
KSI 34, WP 85	102 ppm Cu,	82 ppm Ni,	90 ppm cr

The gold values are very low for all four samples.

KSI 35 and KSI 36 were poor silt samples from the outwash fan and there was insufficient fines for analysis. KSI 37 is a poor silt mixed with volcanic ash and has a value of 73 ppm Cu and 19 ppb Au.

The traverse continued east contouring back to Reed-Kelli Creek through stunted black spruce, muskeg and permafrost. A silt sample, KSI 38, from a small stream gave a value of 125 ppb Au.

The next traverse starts at KSI 14, WP 23 (573590 E, 6824489 N) and has a value of 27 ppb Au. KSI 15 25 m to the west has a value of 24.1 Au. Between KSI 15 and KSI 16, WP 26 (573837 E, 6823886 N) the traverse is to the southwest crossing a slope in the order of +25° covered in stunted black spruce and a thick surface layer of moss/organics on permafrost. The small streams crossed were full of volcanic ash and were not sampled. At WP 26 (573837 E, 6823886 N) there is a small stream with good silt and minimal volcanic ash. KSI 16 was collected and gave very low values of 78.3 ppm Cu and 17.3 ppb Au. The traverse goes southeast following the 4,300 foot contour in an alpine environment. KSI 17 samples a small stream and has very low values. KSI 18, WP 29 (574256 E, 6823840 N) is from a small stream channel and has a value of 43 ppb Au. From WP 19 the traverse goes down slope (-20°) through open spruce, scattered alder and thick moss. KSI 20, WP 35 (574424 E, 6824316 N) has a value of 81 ppb Au. The traverse then heads northwest contouring along the lower slope (+5° to +10°) through stunted black spruce and muskeg. KSI 21, 30 m to the west of KSI 20, is a good silt sample from a small stream and gave values of 105.3 ppm Cu, 19 ppm As and 135.4 ppb Au. KSI 22 is from a small creek 15 m west of KSI 21 and has high values in Mn, greater than 10,000 ppm and 574 ppm Ba. This is the only sample with such a high value of manganese and barite. The Cu value is 105 ppm and Au is 58.4 ppb. KSI 23, WP 38 (574242 E, 6824641 N) is a good silt sample from a flowing stream 20 m west of KSI 23 and has a very low gold value and the next two silt samples from small streams have low values. KSI 26, WP 41 (573990 E, 6824893 N) is a good silt sample from a deep stream gully with spruce and alder. KSI 26 has a very low gold value. Sample KSI 27, 15 m to the west gave a value of 55.7 ppb Au.

These following silt samples were collected from Reed-Allen Creek on the east side of the Kelli Claim Group. KSI 28, WP 49 (574812 E, 6824308 N) is a good silt sample from the creek in the area of the Allen placer gold



1 - Lower Canyon, 2 - Middle Canyon, 3 - Old Timers, 4 - Middle Canyon in place, Most other gold recovered from in place. 5 - platinum nuggets workings. The sample has a value of 44 ppb Au and low As, 16.5 ppm. ASI 1, WP 125 (574836 E, 6823976 N) is a good silt sample from the creek and has a value of 70 ppm Cuand 16 ppb Au. ASI 2, WP 131 (574086 E, 6823675 N) is a good silt sample at the start of a major outcrop-canyon going up Reed-Allen Creek and gave values of 103 ppm Cu and 21.9 ppb Au.

#### **REVIEW OF HISTORICAL DATA, REFERENCES AND COMMENTS**

The writer just completed a Placer Gold Exploration Report on the Reed-Kelli Placer Claim Group GW01054, dated February 18, 2015. The report required a review of data compiled by Larry Tremblay who managed the project until he passed away in 2007. This led to Dr. Getsinger's report dated October, 1998 who provides a detailed description of placer gold nuggets shown her by Mr. Tremblay. The combination of actually being able to observe the various nuggets including comments by Mr. Tremblay are very informative (Reference Geological Report, Kelli Claim Group by G. Gutrath dated January 16, 2012).

"Larry Tremblay displayed several representative nuggets from different parts of the canyon, many of them with quartz and/or calcite (± altered feldspar?) still attached to the gold. Examples were also included of copper, nickel, and platinum nuggets, also said to be from this area. Some nuggets were gathered by usual placer methods, and some were washed out of clay alteration and breccias zones in the bedrock (including some with crystalline forms of gold). This is one of the reasons that the area is now being prospected for lode gold.

The gold (and gold  $\pm$  quartz  $\pm$  calcite) nuggets from the canyon exhibited different colors and habits depending on the part of the canyon in which they were collected. The following observations were made looking at samples of a dozen or so gold nuggets shown to us by Larry Tremblay on his kitchen table, assuming that they were from areas in which he said he and/or Darrel Duensing collected them. Gold nuggets from the Lower Canyon area are rounded and gold-colored, and occur with graphite. Samples from the Middle Canyon area, including Darrel Duensing's large nugget (6 cm x 2 cm) of quartz ( $\pm$  carbonate  $\pm$  feldspar  $\pm$  chalcedony) with 3 oz Au in it, show reddish-golden, delicate flakes of crystalline gold sticking out of the white rock; these clearly have not travelled far from the source, and some were reportedly from outcrop high on the east side. One nugget of quartz with platinum was also supposed to be from Middle Canyon. Gold nuggets from the Old Timers/Upper Canyon area show more calcite, and the rounded blebs of gold have silvery-greenish tint. When Larry Tremblay and Darrel Duensing first started placer mining (1985) in Reed-Kelli Canyon, gold was hosted by white clay deposits that were frozen against the valley walls in shadowy parts of Lower Canyon; frozen there since the Ice Age, according to Larry Tremblay. Such clay deposits are no longer seen in the canyon"

When Dr. Getsinger examined the property the Old Timers' Workings in the Lower and Middle Canyons had been destroyed by the placer mining. Larry Tremblay stated to Dr. Getsinger the following description of "Old Timers' Workings".

" the old timers went after graphitic and clay altered zones in the Lower Canyon; they followed copper mineralization along quartz veins in the Middle Canyon; and they dug underground in unconsolidated sediments following an alteration trend near the Upper Canyon in all cases they took out most of the green mariposite rock. Larry Tremblay also pointed out a number of old trenches



high on the eastern slope of the valley between the Lower and Middle Canyon, and said that he and Darrel Duensing had found quartz-chalcopyrite rock."

With the Tremblay reports was a poor copy of a photograph (page 16/17) that shows the various nuggets recovered from the 1980s placer mining operation. These were the nuggets that Dr. Getsinger would have examined with Mr. Tremblay.

The writer believes that the "old timers" were mining fairly thick colluvial deposits that formed on the sides of the canyons prior to the last glacial period. The gold released by the erosional process would have accumulated in the slide material and would appear to have been frozen in place during the glacial period. The "old timers" also recognized the favourable host rock for gold and focused their "underground" efforts on those areas of the talus/colluvial slope. The lack of minimal, if any, typical alluvial-stream process resulted in the nuggets having a high proportion of various host rocks, such as sericite schist, graphitic schist and quartz attached to them.

Jean Pautler, P.Geo. notes in her 2001 report on the Kelli Property that she observed a specimen of sericite schist with visible gold in the vicinity of Trench 01-6. This is also the area where Mr. Tremblay had reported very high gold assays of 205.7, 171.4 and 450.8 g/t gold.

The "nugget affect" on gold assays ranges from the extreme of Mr. Tremblay's high assay results to the relatively low values in so many of the sampling programs. The apparent discrete distribution of coarse gold within a formation requires much larger samples, such as panel samples to better evaluate gold values.

An ideal location for additional exploration is the area of Jean Pautler's Trench 01-6 which returned 0.34 g/t Au over 21.5 m. In 2000 Teck obtained 0.4 g/t Au over 18 m from the same trench. This sampled section is part of the road cut just to the north of the Lower Canyon and is now covered by down slope talus creep and thick alders. The 01-6 trench can be easily re-opened and connected to a section sampled by the writer in 2011. Eight samples were collected, Samples RS 4 to RS 11.

"Of these samples RS 6 was gold anomalous, 0.82 g/t or 820 ppb. This was a sample of a quartz vein 16 cm wide in sericite quartz schist 5 m from a graphitic schist contact. The outcrop is exposed in a bulldozed cut-bank on the west side of the gravel outwash fan at the north end of the Lower Canyon. Samples RS 4, 5 and 7 are from the same graphitic schist formation as RS 6 and have lesser gold values of 400 ppb, 340 ppb and 40 ppb, respectively. DH 4 should have intersected this same **bgpl** unit as sampled on surface by RS 4, 5, 6 and 7. DH 4 had 24 m of 108 ppb gold and within that interval 9 m of 164 ppb gold."

In January, 2015 the writer met with Jean Pautler to review her 2001 report on the Kelli Property. This discussion led to a second area outside the canyon area of Reed-Kelli Creek that warrants further exploration. In her report of 2001she recommended grid soil sampling in the vicinity of Structure 2 located on Map 1 and 2 (2015). This recommendation was based on gold anomalous soil samples with values up to 1600 ppb Au. In addition, a sample of a small outcrop on the edge of Reed-Kelli Creek 500 m upstream from Structure 2 gave an assay over 1 m of 1.59 g/t Au. Directly upslope 300 m to the east a soil sample taken by Placer Dome (date unknown) had a value of 785 ppb gold. This sample was taken on a soil line starting to the south of the Forks on the east side and

subparalleling Reed-Kelli Creek well above the alder covered slopes. The samples were taken at 100 m intervals and had very low gold values except for the 785 ppb Au sample. It is probable that the samples were taken directly below the vegetation mat and were mixed with volcanic ash.

The writer's limited soil and silt sample in the area of Structure 2 also returned anomalous gold values.

#### CONCLUSION

The initial concept of the soil sampling program was to see if the sampling could trace the gold mineralization associated with lesser copper and arsenic elements known to occur in at least three different geological settings in the Reed-Kelli Creek Lower to Upper Canyons.

The gold values in the Lower Canyon are in a highly metamorphosed, complex assemblage of dikes, sediments and volcanic rocks that are caught up in a major regional fault structure subparalleling the Denali Fault (Shakwak Trench) located immediately to the north. This structure (Structure 1) is well documented and has been traced in creek drainages for many kilometers both to the northwest and southeast of the Kelli Claim Group. These drainages have gold placer deposits associated with the fault structure.

This soil sampling was initially planned for two subparallel lines on each side of the Reed-Kelli Creek drainage in the canyon area that had been extensively placer gold mined. Sampling was to be at approximately 50 m spacing with samples taken by hand auger. This plan was soon abandoned as the auger could often not penetrate beneath the surface moss-organic mat because of permafrost in order to collect representative soil samples. The soil sampling became an opportunistic search for sample sites that were thawed enough to allow the auger to obtain soil samples below the volcanic ash. The soil sampling was supplemented by silt samples from small stream channels, often dry and often contaminated with variable amounts of volcanic ash. The other problem is the suspected extent of glacial till of unknown thickness masking underlying weathered bedrock.

Because so much is known of the trend of the mineralized formations, such as Structure 1 the Lower Canyon area soil sample values along the Structure can be extrapolated to fit the geology. As a result, gold values of 16 ppb Au to 27 ppb Au can be considered elevated gold values tracing Structure 1. However, the quality of the soil samples are very erratic so sample KSO 48 and KSO 49 further to the east of the Lower Canyon and taken along the trace of Structure 1 gave very low values of 5 ppb Au and 4 ppb Au. These two samples do not mean the gold mineralization in Structure 1 ends but only indicates a better sampling method and greater density of samples is required. However, it can be concluded that the reconnaissance soil sampling was of value as an orientation/learning tool and it also indicated gold anomalous values in areas that had been considered low priority.

Structure 2 crosses Reed-Kelli Creek at the south end of the Upper Canyon. Initially this was considered to be a low priority exploration area as the predominant formation (PC) is a poorly mineralized, folded limestone. However, the soil and silt samples did locate anomalous silt values in the area of the bulldozer trench on the west side of Reed-Kelli Creek. KSI 13 has a value of 254 ppb gold, KSI 11 a value of 63 ppb gold. The tributary stream on the west side of Reed-Kelli Creek that is the trace of Structure 2 has 5 gold anomalous silt values as high as 319 ppb. A short soil sample line to the south of the creek has gold values from 22 ppb to 26 ppb. It is concluded that this area warrants additional exploration.

Soil and silt sampling to the west of Reed-Kelli Creek (Map 2) from the traverse crossing the ridge and going down Reed-Kelli Creek gave low amplitude but elevated values for copper, nickel and chrome. These values are

East wall of the Middle Canyon composed of dark weathering andesite/chlorite schist cut by numerous, large gently dipping quartz veins up to 0.5 m thick. Often folded and faulted. Many irregular narrow and crosscutting quartz veins. Variable amounts of pyrite and chalcopyrite associated with gold values

probably related to low copper and nickel mineralization associated with basic dikes that have been mapped in the area. Only one sample, KSO 5, was gold anomalous with 226 ppm copper, 72 ppm arsenic and 60 ppb gold.

The traverse west to Reed-Allen Creek did locate extensive mechanized placer gold mining in the creek and a large outcrop-ridge of feldspar porphyry, the same intrusive as found in Reed-Kelli Creek. It is also important to note the three gold anomalous silt samples: KSI 20, 81 ppb gold; KSI 21, 135 ppb gold; and KSI 22, 58 ppb gold are located down slope from the projection of Structure 1 to Reed-Allen Creek. There are also two more silt samples further to the west from the same traverse, KSI 23, 46 ppm gold and KSI 27, 56 ppb gold that are considered elevated gold values. This is very limited number of silt samples but it does give some confidence that Structure 1, between Reed-Kelli Creek and Reed-Allan Creek is gold anomalous along strike and the gold mineralization is not dependent on the north-south structurally controlled stream valleys. The potential gold mineralized Structure 1 between the two creeks is 1.6 km, a significant exploration target. Additional silt sampling from streams crossing the strike length of Structure 1 is warranted as well as soil sampling where samples can be collected below the volcanic ash layer.

The rock sampling was focused on Structure 1 crossing the Lower Canyon in Reed-Kelli Creek. Fifteen rock samples were collected for analysis with five of them, H1 to H5, being a continuous channel sample from the Pautler Trench. One of the samples, H4, gave a value of 160 ppm arsenic and 56.5 ppb gold. The pathfinder mineral arsenic is anomalous and so is the gold value but not an economic value. The remaining ten samples were from various locations within Structure 1 and were selected to test different rock types and related structures for gold. These samples were very low grade in arsenic and gold. Two samples had elevated values for copper of 175 ppm and 141 ppm, but gold values of only 5 ppb and 9 ppb. It is concluded that Structure 1 has elevated gold values where it crosses Reed-Kelli Creek and considering the high grade placer/colluvial concentrations of gold in the Lower Canyon related to Structure 1 additional trenching across the structure is warranted. Sampling of the trenches should take into account the nugget effect with samples taken over a larger areal extent than previously done.

An important target area for trenching and sampling is located on the west side of the road cut immediately to the north of the Lower Canyon. Sampling by Jean Pautler and Teck Corp. gave anomalous gold values over significant widths. The writer's sampling in 2011 further to the north along the same structure also had anomalous gold values. Panel sampling of the trench should be considered to account for the nugget effect.

The Middle Canyon is underlain by highly altered dark green chlorite schist of andesite origin and cut by numerous quartz veins with widths up to 2 m that are highly fractured and folded and erratically mineralized with chalcopyrite and pyrite. A grab sample taken in 2011 from this area had a gold value of 2.28 g/t. This is a prospective unit for gold mineralization and has not been adequately mapped and sampled.

It is concluded that the Kelli Claim Group is in a very early stage of exploration and that ongoing work to evaluate its gold potential is warranted.

## RECOMMENDATIONS

- Continue the geological mapping on a scale of 1:1000 from where it ended in the Lower Canyon, up through the Middle Canyon and Upper Canyon to Structure 2. The mapping will include extensive sampling of prospective sulfide-mineralized structures in the Middle Canyon.
- 2) Map on a scale of 1:2000 from Structure 2 where it crosses Reed-Kelli Creek upstream to the Forks a distance of 1 kilometre. Collect soil samples along the banks of the creek where there is thawed soil. Silt sample springs coming out of the bank.
- 3) Silt sample streams flowing northerly across the trace of Structure 1 to the east from Reed-Kelli Creek to Reed-Allan Creek. Collect soil samples where it is possible to get a representative sample.
- 4) Trench and sample the Pautler Trench 01-6 referred to under Conclusion and continue the trenching and sampling to the north to connect with the section sampled in 2011.

Respectfully submitted,

That is K

Gordon C. Gutrath, geologist Peng.



Looking south up Reed-Kelli Creek midway between Structure 2 and the Forks. A 50 m high bank of glacial outwash-till gravels can be seen upstream on the right hand side of the creek at the Forks.

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## **APPENDIX** A

## STATEMENT OF QUALIFICATIONS

## **ENGINEER'S CERTIFICATE**

I, GORDON GUTRATH, of 702 – 181 Athlete's Way in the city of Vancouver in the Province of British Columbia, DO HEREBY CERTIFY:-

- That I am a geologist with a business address of 702 181 Athlete's Way, Vancouver BC V5Y 0E5
- 2. That I am a graduate of the University of British Columbia where I obtained by B.Sc., in geological science in 1960.
- 3. That I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers in the Province of British Columbia
- 4. That I have practiced my profession as a geologist for the past fifty-five years.

DATED at the city of Vancouver, Province of British Columbia, this 27th day of February, 2015.

Gordon G. Gutrath, B.Sc., P.Eng.

## **APPENDIX B**

SILT SAMPLING WITH ELEVATED/ANOMALOUS VALUES

	SILT SAMPLE							
Sample #	Waypoint	UTM Coordinate		UTM Coordinates		Description		
KSI	#	East	North					
		22		Plotted on Map 1 and 2				
1	2	3392	4657	Mix of rock chips, soil and silt (talus)				
2	2	3392	4657	Upstream from 1 in steep narrow talus filled gully, damp silt <b>638 ppb Au</b>				
3	3	3298	4638	Dry, minor silt, rock chips and soil <u>28 ppb Au</u>				
4	4	3265	4536	Damp silt fines, rock chips, +25 to 30° gully – contact Zn 66 ppb Au				
5	5	3251	4573	Damp silt – rock chips +30° gully, upslope from KSI 1 70 ppb Au				
6	6	3273	4386	Damp silt at mouth of narrow stream, gully +15° slope, 20% volcanic ash 153 ppm Cu, 69 ppb Au				
7	7	3279	4378	Wet silt, 10 m upstream gully from KSI 6, 20% volcanic ash 120 ppm Cu, 46 ppb Au				
8	12	3018	4115	Damp silt at outlet of steep gully, +25° slope				
9	13	3004	4052	Damp silt, small spring, thick alder				
10	14	2889	3822	Damp, sandy-silt, flowing stream, large boulders				
11	15	3003	4014	Damp sandy-silt, small stream flowing out of trees <u>43 ppb Au</u>				
12	17	3010	3990	Damp silt, trickle of spring into bulldozer trench 63 ppb Au				
13	19	3019	3994	Damp silt, flowing spring running into bulldozer trench 254 ppb Au				
14	23	3590	4489	Damp silt, +50% volcanic ash, small stream incised 2 to 3 m into muskeg 27 ppb Au				

( )

SILT SAMPLE							
Waypoint	U' Coor	TM dinates	Description				
#	East	North					
24	3608	4416	Damp sandy-silt, rock fines/chips, 10% volcanic ash, alder/muskeg slope +20°				
			Plotted on Map 2				
26	3837	3886	Network of small streams at base of steep slope +30°, heather, damp sandy silt				
28	3977	3776	Damp sandy-silt, dry stream bed in large angular talus boulders, slope +25°, at top of gully trending 20°				
29	4165	3671	Damp sandy-silt, steep talus filled gully <u>43 ppb Au</u>				
31	4334	3975	Damp-wet sandy-silt, small stream, alder 53 ppb Au				
35	4424	4316	Damp silt, running stream in broad gully 81 ppb Au				
36	3547	4681	Damp silt, small stream, +20° slope <u>135 ppb Au</u>				
37	4362	4428	Wet silt in running stream, cobble gravels <u>105 ppm Cu, 10,000 Mn, 574 ppm barite, 58 ppb Au</u>				
38	4242	4641	Brown, sandy-silt, wet, flowing stream <u>46 ppb Au</u>				
39	4195	4678	Sandy-silt, pebble gravels, small stream flowing				
40	4114	4746	Damp silt, small stream				
41	3990	4893	Silt from running stream channel, deep gully				
	Waypoint         24         26         28         29         31         35         36         37         38         39         40         41	WaypointU Coord $3000$ East243608243608263837283977294165314334354424363547374362384242394195404114413990	UTM Coortinates $\#$ EastNorth243608441626383738862839773776294165367131433439753544244316363547468137436244283842424641394195467840411447464139904893				

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	SILT SAMPLE							
Sample #	Waypoint	UTM Coordinates		Description				
KSI	#	East	North					
27	42	3956	4908	Silt from deep incised stream channel <u>56 ppb Au</u>				
28	49	4812	4308	Damp silt from Reed-Allen Creek <u>44 ppb Au</u>				
30	65	2502	4389	Damp grey silt from dry small creek bed, pebbles, slope on edge of small bench +15° <u>131 ppm Cu, 102 ppm Ni, 174 ppm Cr</u>				
31	78	1997	4630	Damp grey silt, running stream, talus +25° grey limestone (pc) outcrop in creek <u>103 ppm Cu, 98 ppm Ni, 101 ppm Cr</u>				
32	80	2037	4686	Poor silt sample, flaky grey granular, stream under talus canyon 8 to 10 m wide, +25° 99 ppm Cu, 92 ppm Ni, 100 ppm Cr				
33	83	2087	4770	Good silt, grey, 15 m downstream from foot of waterfall, 'basic' sill 5 – 7 m cuts waterfall underlain by limestone (pc) <u>106 ppm Cu, 81 ppm Ni, 85 ppm Cr</u>				
34	85	2126	4893	Good silt, damp, flowing stream, +30° 102 ppm Cu, 82 ppm Ni, 90 ppm Cr, 23 ppb Au				
35	91	2168	4991	Grey, poor silt, creek flows under large outwash, talus fern (insufficient sample for analysis)				
36	93	2353	5040	Damp sandy-silt from small dry creek (insufficient sample for analysis (?)				
37	93	2353	5040	Damp sandy-silt from small shallow stream channel, some volcanic ash				
38	94	3394	5080	Sandy-silt sample, damp, small flow of water from shallow, narrow stream <u>125 ppb Au</u>				

	SILT SAMPLE							
Sample #	mple # Waypoint	UTM Coordinates		Description				
KSI	#	East	North					
39	196	2871	3868	Good silt sample at base of waterfall stream flowing ±5 gal/m 96 ppb Au				
40	199	2855	3874	Good silt sample from stream channel 319 ppb Au				
41	200	2867	3871	Good silt sample from wide stream channel running under angular boulders 50 ppb Au				
42	203	2814	3927	Good silt sample in creek channel, highly oxidized cobbles of pyritic argillite <u>39 ppb Au</u>				
Sample # ASI								
1	125	4836	3976	Good silt sample from Reed-Allen Creek 70 ppm Cu, 15.8 ppb Au				
2	131	4886	3675	Good silt sample from Reed-Allen Creek at the start of a deep canyon/outcrop <u>103 ppm Cu, 21.9 ppb Au</u>				

## **APPENDIX C**

SOIL SAMPLING WITH ELEVATED/ANOMALOUS VALUES

		·		SOIL SAMPLES
Sample #	Waypoint	UTM Coordinates		Description
KŜO	KSO # East Nor		North	-
				Plotted on Map 1 and 2
1	62	2847	3952	+0.30 m organic, 0.45 m layered organic and ash 0.76 m gravelly damp soil on perma frost (PF), open spruce, +20° slope
2	63	2787	4011	0 to .03 m moss-organic, 0.3 m to 0.6 m mixed organic-sand gravel to 0.9 m - frozen (PF) damp, grey-brown sandy soil sample, large spruce trees, muskeg, +20° slope
	L			Plotted on Map 2
3	66	2446	4477	0 to 0.15 m organic/heather, 0.15 m to 0.60 m mix pebble- soil sample, permafrost, +35° slope <u>135 ppm Cu</u>
4	69	2395	4510	0 to 0.15 m to permafrost. Poor soil development, mixed with talus, sample damp, dark brown, some organic and ash content. +45° slope heather <u>92 ppm Cu, 28 ppb Au</u>
5	70	2367	4520	Thawed talus slope, sample depth 0.60 m cumulative rock fines, soil poor, heather, +40° slope <u>226 ppm Cu, 72 ppm As, 60 ppb Au</u>
6	73	2192	4541	Scattered organic mat mixed with talus, sample is a mix of rock fines and dark soil taken at 0.45 m 141 ppm Cu
	1,			Plotted on Map 1 and 2
7	97	3463	4732	0 to 0.45 m, organic/moss, 0.30 m volcanic ash, 0.10 m sandy-gravelly soil. Located 2 m from bank of creek, thawed.
8	98	3422	4767	0 to 0.3 m moss, 0.45 m of volcanic ash, sample from 0.15 r of dark brown mix of ash and soil with small rock fragments permafrost at 0.91 m depth, +10° slope

1/2/	·			SOIL SAMPLES
Sample # KSO	Waypoint #	UTM Coordinates		Description
9 10 11	99	3367	4793	<ul> <li>Large 'blow-down' spruce uplifted root system exposing 0.45 m moss over 0.60 m volcanic ash, then layer of dark brown soil getting more sandy-gravelly to a depth of 1.2 m, +15 to 20° slope.</li> <li>Sample 9: top of ash directly below moss 1.0 ppb Au</li> <li>10: dark grey pebbly soil below volcanic ash 19 ppb Au</li> <li>11: bottom of auger hole wet clay (till?), pebbly on top of permafrost 11 ppb Au</li> </ul>
12	100	3312	4700	Auger hole below uprooted tree 10 m to east of rim of canyon. Sample of thawed pebble-clay material at a depth of 0.76 m (glacial till?), +20° slope <u>20 ppb Au</u>
13	103	3273	4676	0 to 0.20 m moss, 0.30 m of volcanic ash, dark grey-brown sandy soil with moss-clay at bottom of hole at 0.61 m (sample). Open ridge with spruce 10 m to east, +45° slope <u>22 ppb Au</u>
14	105	3216	4675	0 to 0.24 m, 0.15' of ash, pebbly-sandy, gravelly soil, damp grey-brown sample at 0.76 m. WP105 is 2 m east of ridge and outcrop, canyon rim is $\pm 30$ m to east
15	107	3189	4663	0 to 0.15 m organic/moss dry, 0.45 m of volcanic ash, dry light brown, sample from pebbly-sandy soil at depth of 0.9 m, thawed, open spruce, slope -30° to east. <u>107 ppm Cu, 27 ppb Au</u>
16	111	3180	4567	0 to 0.30 moss, 0.30 m of volcanic ash, 0.30 m of organic-ash mix. Sample from 1.07 m, damp pebbly-silty soil. Ridge is 30 m to west, outcrop rim is $\pm 20$ m to east at -30° slope. Open spruce.

	(*****)			SOIL SAMPLES
Sample # KSO	Waypoint #	U' Coor	TM dinates	Description
17	112	3150	4464	0.30 m moss and roots, sample from depth of 0.9 m from pebbly-grey soil with clay and organic layers. No volcanic ash. $-30^{\circ}$ slope, outcrop rim $\pm 30$ m to east. Tall spruce and scattered alder.
18	113	3060	4395	0 to 0.15 m moss, 0.15 m to 0.46 m volcanic ash, 0.46 m to 0.90 m dark blackish-brown damp silty soil. Sample from 0.90 m, location is on ridge with spruce and scattered alder. Outcrop rim is $\pm 40$ m to east at -25° slope.
19	115	2974	4320	0 to 0.30 m moss and surface organics, 0.3 m to 0.60 m volcanic ash, 0.60 m to 0.90 m damp pebbly-clay soil. Sampled at 0.90 m depth. Slope to east at -25°, tall spruce. <u>112 ppm Cu, 65 ppb Au</u>
20	116	2910	4294	0 to 0.15 m moss and roots, 0.15 m to 0.60 m damp pebbly- sandy gravel sampled at 0.60 m. Slope -20° to east. $\pm 50$ m to rim in gully with thick alders.
21	117	2901	4258	Angular rock forming talus slope. Dry sample of sandy soil between rock fragments. No volcanic ash. <u>119 ppm Cu, 78 ppb Au</u>
22	118	2944	4155	0 to 0.30 m moss-organics, 0.30 m to 0.60 m mixed ash, muck and at 0.60 m the sample is from damp sandy-pebbly soil. Open spruce, mixed alder. Slope is -35°. <u>140 ppm Cu, 6.6 ppm Mo</u>
23	122	3387	4621	Slide material/soil on alder slope -30°. Sample taken at 0.30 m directly above bedrock. 25% fine grained graphitic- argillaceous chips mixed with dark grey-black sandy soil. Sample is just up slope from trench (Pautler 01-5) and 2014 rock samples H1 to H5. <u>137 ppm Cu, 54 ppm As, 44 ppb Au</u>

				SOIL SAMPLES
Sample # KSO	Waypoint #	U' Coor	TM dinates	Description
24	(221)	3395	4623	Sample of fine rock (soil) from talus slope between trench and massive dacite dike outcrop. <u>135 ppm Cu, 7.6 ppm Mo, 135 ppm Ni, 170 ppm As,</u> <u>38 ppb Au</u>
25	(221)	3395	4623	Sample taken from same talus slope as KSO24 but of different material across the talus slope (+30°). Black damp soil from talus slope that is made up of small angular fragments of graphitic limey argillaceous schist and altered dacite dike. <u>94 ppm Cu, 9 ppm Mo, 78 ppm As, 23 ppb Au</u>
26	(221)	3395	4623	Sample from black sandy soil material on top of black graphitic limey argillaceous outcrop 1 m south of massive dacite dike. Narrow, discontinuous quartz veinlets are common in the outcrop. Fine pyrite. <u>82 ppm Cu, 6 ppm Mo, 94 ppm As, 15 ppb Au</u>
27	150	3055	4032	0 to 0.30 m organic, 0.30 to 0.60 mix of organic and volcanic ash, 0.60 m – poor soil sample, damp, pebbly clay permafrost.
28	151	3064	4023	Damp pebbly-clay soil, minor ash, sample from depth of 0.45 m under a fallen spruce tree stump. Small spruce and alder, muskeg +25° slope. <u>101 ppm Cu</u>
29	152	3170	3997	0 to 0.30 m moss-organics, 0.30 m to 0.46 m mix of organics-volcanic ash, 0.46 to 0.91 m dark brown silty- pebbly sample, no permafrost. Scattered spruce, alder and buckbrush, +30° slope. <u>66 ppb Au</u>
30	153	3202	4014	In dry shallow gully, 0 to 0.45 m moss-organics, 0.45 m to 0.76 mixed volcanic ash. Sample from damp, dark brown pebbly soil at 0.76 m. Alder, scattered spruce and buckbrush, +25° slope.

	SOIL SAMPLES								
Sample # KSO	ample # Waypoint KSO #		ГМ dinates	Description					
31	154	3244	4036	0 to 0.45 m of muskeg, organics layered with volcanic ash. Sample taken at 0.90 m from dark brown damp soil with pebble layers. Small shallow gully, dry muskeg alder, scattered mid-size spruce on both sides of gully. +35° slope. <u>22 ppb Au</u>					
32	155	3304	4098	0 to 0.15 m shallow moss-organics, sample from 0.30 m of mix of ash, clay pebbles and organic material permafrost at 0.30 m, buckbrush, widely scattered spruce, +20° slope.					
33	156	3357	4173	0 to 0.90 m layered organics and volcanic ash. Sample from gummy clay soil between 0.90 m and 1 m. Permafrost. Buckbrush, widely scattered spruce, -30° slope.					
34	158	3363	4195	0 to 045 m moss-organics. Sample from 0.45 m of damp clay, organics, no volcanic ash (poor sample), buckbrush, +25° slope.					
35	163	3411	4265	0 to 0.45 m organic with volcanic ash, 0.45 m to 0.76 m, sample of wet, sandy-pebbly soil. Shallow gully, no water, scattered spruce, willow and alder.					
36	165	3447	4327	Fallen spruce tree, roots upturned, o to 0.90 m a mix of organics and volcanic ash into poor soil – permafrost at 0.90 m, sample from 0.85 m. On a ridge, buckbrush, +15° slope.					
37	166	3462	4355	0 to 0.30 m moss-organics, 0.30 to 0.45 m volcanic ash, 0.45 m to 0.50 m damp brown soil mixed with volcanic ash (poor sample), permafrost at 0.50 m. Scattered spruce going down slope at -25°, buckbrush.					
38	167	3475	4365	0 to 0.30 m moss-organics, 0.30 to 0.60 m volcanic ash, 0.60 to 0.76 m dark brown, damp, sticky soil. Sample at 0.76 m on permafrost, scattered spruce, alder, buckbrush, slope -25°, 23 ppb Au					

	SOIL SAMPLES								
Sample # KSO	Waypoint #	U' Coor	ГМ dinates	Description					
39	168	3480	4395	0 to 0.30 m moss-organics, 0.30 to 0.60 m volcanic ash and 70% brown damp soil on permafrost, buckbrush, scattered spruce, -30° slope.					
40	169	3488	4417	0 to 0.30 m moss, 0.30 m to 0.60 m volcanic ash, damp brown pebbly soil, sample at 0.60 m on permafrost. Scattered spruce and buckbrush on -30° slope.					
41	170	3494	4465	0 to 0.30 m moss, 0.30 to 0.60 m volcanic ash, gummy dark brown mix of volcanic ash, organics and soil (poor sample). Buckbrush and scattered spruce on -30° slope.					
42	173	3423	4530	0 to 0.45 m sandy, pebble cobble glacial till sampled at 0.45 m, damp35° to -45° slope in a broad gully. Alder, willow, scattered spruce. <u>24 ppb Au</u>					
43	174	3403	4527	0 to 0.30 m moss-organics, 0.30 m to 0.60 m gravelly-pebbly till, damp sample. Fork in gully but no stream. <u>34 ppb Au</u>					
44	175	3364	4535	0 to 0.45 m wet organics, 0.45 m to 0.60 m mix dark brown soil/organics but no volcanic ash. Open muskeg, small spruce, -25° slope.					
45	176	3344	4540	(Early 1900s hand dug pit 1.5 m deep). Grubhoe cut made on south side of pit to a depth of 1.2 m where sample was taken. Dark brown, damp soil, good sample and does not appear to be glacial till. Second cut was made on north side of pit with 0.30 m of volcanic ash at surface, then into organics for 0.40 m, then back into volcanic ash for 0.30 m on permafrost – no soil.					
46	178	3335	4552	(1900s pit 1.52 m deep by 2 m by 3 m) 0 to 0.9 m organics- pit material mixed, 0.9 m to 1.2 m volcanic ash, 1.2 m to 1.5 m at bottom of pit, pebble gravel till? sampled. Only 2 to 4 m from edge of rim and canyon on edge of creek at -45° to - 60° slope. Pits are on a small bench (point), +15° slope.					

				SOIL SAMPLES	
Sample # KSO	nple # Waypoint UTM SO # Coordinates		ГМ dinates	Description	
47	180	3417	4537	Sample location in a broad gully. Soil-silt at depth of 0.30 m, sample of pebbly-sand-gravel-rock fragments.	
48	181	3489	4603	0 to 0.3 m moss-organics, thin layer of volcanic ash 0.15 m thick. Sampled at 0.45 m of damp pebbly-sandy dark brown soil. Poor sample on permafrost.	
49	182	3522	4625	0 to 0.30 m moss-organics, 0.3 m to 0.6 m irregular volcanic ash layer, poor soil, wet silty-sandy pebbly barely thawed layer on permafrost, slope -35°, scattered spruce.	
50	201	2867	3871	Large spruce fallen across creek. Roots exposed, good soil at 0.45 m depth, pebbles grey-brown, +20° slope, spruce and alder. 92 ppm Cu, 48 ppb Au	
51	203	2814	3927	Went up north bank of creek +25° slope, thin organic layer. Sample of good sandy-pebbly soil at a depth of 0.30 m, spruce and alder. <u>78 ppm Cu, 28 ppb Au</u>	
52	206	2799	3860	0 to 0.35 m mixed muck organics and volcanic ash. Sample at 0.60 m of grey ground pebbly soil. Tall spruce, willow and alder at +30° slope. <u>26 ppb Au</u>	
53	)	3842	3695	Between sample 52 and 54. Same material as KSO 52. <u>77 ppm Cu, 24 ppb Au</u>	

## **APPENDIX D**

**ROCK SAMPLES WITH ELEVATED/ANOMALOUS VALUES** 

	(4 e)			ROCK SAMPLES		30 
Specimen	Waypoint	UTM Coordinates		Description Start of Sampling North end of Pautler Trench		
#	#	East	North		8	
				Interval	Number	Width
H1	219	3388	4625	0.00 to 1.22 m	H1	(1.22 m)
H2				1.22 to 3.04 m	H2	(1.82 m)
H3				3.00 to 4.10 m	H3	(1.06 m)
H4				4.10 to 5.31 m	H4	(1.21 m)
H5	218	3388	4617	5.31 to 6.53 m	H5	(1.21 m)
				Talus slope sample	H6	
Нб	220	3305	4621	U6 (most northarly	comple in cories)	
110	221	3395	4623	WP 220 to 221 (H6) between WP 219 and The sample is made fragments and highly stringers, fine graine 21.4 ppm As, 2.5 pp	is a collection of take d the massive dacite up of graphitic-limey y altered felsic dacite d pyrite 1% - 5%. b Au	us fragments dike to the north. y argillaceous e dike, quartz
H1				Black platy limey ar in width. 1% to 3% 60.8 ppm As, 3.4 pp	gillite with quartz ve pyrite. b Au	inlets 1 cm to 10 cm
H2				50% orange-cream i and 50% black lime 37.0 ppm As, 0.5 pp	rregular felsic highly y argillite, quartz vei b Au	altered dacite dike nlets, pyrite 2%.
H3				Brittle platy black an quartz veins 10%, p 46.9 ppm As, 11.7 p	rgillaceous graphitic yrite 3% to 4%. pb Au	schist, thin irregular
H4				Interlayered mix of schist and altered da <u>18 ppm Pb, 101 pp</u>	brittle black limey ar icite dike, pyrite 2% t <b>m Zn, 161 ppm As</b> ,	gillaceous graphitic to 4%. 56.5 ppb Au
H5				Highly crenulated, p with limonitic-sider discontinuous quart 34.5 ppm As, 1.2 pp	olaty sheared limey an ite coating on shear p z veinlets. bb Au	rgillaceous schist lanes ±3%

	ROCK SAMPLES								
Specimen #	Waypoint #	U' Coore	TM dinates	Description Start of Sampling North end of Pautler Trench					
H7	183	3303	4639	Sample from bottom of a $+30^{\circ}$ talus slope – contact zone between massive feldspar porphyry on the south to intensely sheared chloritic andesite on the north. The schist is cut by quartz veinlets with $\pm 5\%$ fine grained pyrite.					
H8	183	3303	4639	Sample taken up the talus slope 20 m from WP 183. H8 is on north side of contact zone from limonitic-oxidized weathering thin quartz veins in chlorite schist. Pyrite 5%. <u>175 ppm Cu</u>					
Н9	183	3303	4639	H9 is from same area of talus slope as H8 but sample is taken to south contact of talus slope $+30^{\circ}$ . Chlorite schist, quartz veinlets, oxidized fine pyrite.					
H10	185	3337	4645	Sample of highly altered graphitic limey schist and dacite dike on north contact of major structural zone of massive brecciation/folded graphitic limey argillaceous sediments. Irregular quartz veinlets, pyrite 2% to 5% 37.6 As, 8.2 ppb Au					
H11	184	3304	4641	Fine grained green moderately foliated massive chloritic schist cut by irregular cross-cutting hair-like quartz veinlets. Pyrite in fine to medium grained discrete clots and crystals. No magnetite.					
H12	146	3355	4601	Sample is from talus slope contact zone between massive dacite dike on the north and major structural-deformation zone to the south. H12 is taken at base of +30° slope from quartz veined, limey-graphitic argillaceous schist with 5% fine grained pyrite disseminated and associated with irregular thin quartz veinlets.					
H13	146	3355	4601	H13 is taken upslope +30° from south wall of contact zone from 0.20 to 0.50 m of oxidized quartz veining in black/green limey-carbonaceous graphitic schist.					
H14	147	3339	4638	Sooty grey black weathering argillite, 3% to 5% fine cubic pyrite, effervescent white salts on weather surfaces 1 m thick.					

ROCK SAMPLES							
Specimen Waypoint # #		UTM Coordinates		Description Start of Sampling North end of Pautler Trench			
H15	148	3310	4630	Selected sample from base of talus slope of highly altered dacite dike with oxidized quartz veinlets on fracdtures. Pyrite 3%, no magnetite. 141 ppm Cu, 2.4 ppb Au			

## APPENDIX E

## METHOD OF SILT AND SOIL SAMPLE COLLECTION

ACME LABS SAMPLE ANALYSIS FOR SILT, SOIL AND ROCK SAMPLES

#### METHOD OF SILT AND SOIL SAMPLE COLLECTION

Silt samples were collected using a stailess steel trowel from areas away from the running stream. The samples were damp, not wet, and placed in Kraft paper bags.

Soil samples were collected with a stainless steel 3 inch diameter hand auger on a four foot long collapsible shaft. The soil was removed from the auger using a trowel and placed on a sheet of plastic. The sample was then transferred to a Kraft paper bag.

At the end of the field day the samples were sorted and stacked separately under cover.

## **APPENDIX F**

## **ROCK SPECIMENS**

	ROCK SPECIMENS							
Specimen	Specimen Waypoint # #	UTM Coordinates		Description				
- #		East	North					
1(a)	3	3298	4638	Highly foliated dark green chlorite schist (andesite), no pyrite, no magnetite, from contact fault-shear zone (Structure 2)				
1(b)	3	3298	4638	Dark green, foliated massive andesite crystal tuff with chloritic surfaces similar to 1(a), less than 1% fine grained pyrite, no magnetite, 3% thin, 3 to 5 mm quartz veinlets.				
2	46	4780	4387	Light orange weathering massive blocky outcrop of feldspar porphyry intrusive in Reed-Allen Creek. Fine to medium grain, subhedral orange feldspar phenocrysts in a light grey aphanitic to subhedral plagioclase groundmass, no pyrite or magnetite but the specimen is 'peppered' with a very fine grained metallic black miner ( $\pm 1\%$ ) (not magnetic).				
3	65	2502	4389	Light grey feldspathic dike, oxidized dark orange on fractures, less than 1% fine grained pyrite (angular float).				
4	67	2422	4493	Dark green foliated tuffaceous andesite, chloritic partings, fine grained pyrite less than 1%, no magnetite.				
5	68	2406	4508	Dark grey green, crystalline limestone cut by thin irregular carbonate veinlets. Fine pyrite less than 1%, no magnetite (angular float boulder).				
6	71	2355	4524	Good outcrop 10 m by 5 m dark green chloritic schist, thin foliation, numerous orange, thin siderite fracture fillings crossing foliation. Veinlets are highly effervescent in dilute HCl. No magnetite, 1% fine grained pyrite.				
7	77	2052	4627	Dark grey green, fine grained diorite, slight foliation, less than 1% fine grained pyrite and possibly chalcopyrite. No magnetite.				

 $\bigcirc$ 

				ROCK SPECIMENS
Specimen #	Waypoint #	U Coord	ГМ linates	Description
8	(86)	2126	4893	Dark greenish black, fine grained groundmass, minor quartz veinlets with 1% fine grained pyrite, carbonate veinlet. <u>1%</u> <u>magnetite</u> , slightly foliated. Possibly a crystal tuff, fine grained plagioclase in a dark groundmass.
9	90	2163	4970	Large outcrop on west side of creek 15 m x 8 m. Dark greenish grey, uniformally fine grained diorite, minor magnetite, less than 1% fine grained pyrite, same as Specimen 7.
10	127	4812	3776	Dark green weakly foliated fine grained diorite (andesite?). Distinct crystalline texture with black fine grained laths of hornblende or biotite on edge (10%), 2% to 4% submounded fine to medium grained clots of quartz (feldspar?). No magnetite or pyrite.
11	131	4886	3675	Dark green-grey, chlorite schist, moderately foliated, a few fine magnetite grains as well as fine grained pyrite – less than 0.5% (andesite?). Possibly related to Specimen 10. Fracture surfaces are coated with thin layer of highly effervescent siderite, bright orange giving the outcrop an orange colouring from a distance.
12	183	3303	4639	Light grey-orange, subhederal light orange feldspar phenocrysts (40%) in an aphanitic grey groundmass. 15% medium grained black hornblende laths. No magnetite or pyrite.
13	183-1	3303	4639	Black, brecciated argillaceous limestone highly effervescent in dilute HCl, 20% erratic clots and veinlets of white calcite. No magnetite or pyrite.
13(a)	183-2	3303	4639	Layered, dark black to dark grey green bands, limey- argillaceous highly altered sediment, minor quartz clots and veinlets, 2% to 3% very fine grained pyrite in thin irregular- discontinuous veinlets. 1% to 3% magnetite and possible pyrrhotite (magnetic) veinlets with fine pyrite.

	ROCK SPECIMENS									
Specimen #	Waypoint #	U' Coore	M Description linates							
14	184	3304	4641	Dark grey-green foliated chlorite schist (andesite crystal tuff) scattered fine to medium grained pyrite associated with highly irregular quartz veinlets. Calcite on fracture planes. No magnetite.						
15	199	2855	3874	Dark black-green moderately foliated but with a distinct fine grained crystalline texture. Probably andesite crystal tuff or fine grained diorite. Less than 1% fine grained pyrite, no magnetite.						
16	201	2818	3905	Light grey-green quartz (60%) chlorite schist. Strongly foliated. Fine grained pyrrhotite (slightly magnetite) less than 1% in thin discontinuous veinlets and disseminations.						
17	202	2819	3917	Light grey fine grained crystalline limestone, no pyrite or magnetite, fine grained 'spots' of manganese(?).						

## **APPENDIX G**

**COST OF 2014 EXPLORATION PROGRAM** 

		August - September 2014 Exploration Prog	ram			
		Surficial Geology, Placer Gold Evaluation	1			
		Geological Mapping and Sampling				
		Geotechnical Soil and Silt Sampling Progra	m			
Fie	ld Work					
-	Transpor	tation:				
	M Cr	obilization and Demobilization Whitehorse to Kelli Claim Ceek	iroup, Reed			
		1 Ford 250 4 x 4 and trailer	\$ 750.00			
		1 Jeep 4 x 4 and trailer	500.00			
				\$	1,250.00	
	Tr Cl	ansportation of fuel and fuel supplier from Alaska Highwa aim Group	ay to Kelli			
		1 Argo - 8 wheeler				
		Mobilization August 13 - 14	\$200.00			
		Driver	150.00			
		<b>D</b>			350.00	
		Demobilization August 15 - 16	200.00			
		Driver	150.00	-	350.00	
	M	Mobilization and demobilization from Alaska Highway to Kelli Claim Group and on-site transportation				
		2 ATV's August 13 - 28: 16 days @ \$80 / day			1,280.00	
	Field Ea	uipment:				
	Po	ower saw, 2 sets soil augers, kraft paper geochemical sam	nole bags.			
	го sa	ck sample bags, grubhoes, pans, screens, flagging, Garmir tellite phone	GPS,		an and a state of the state of the	
		August 13 - 28: 16 days @ \$50 / day			800.00	
	Camp Co	osts:				
	Tr	ailer (70' x 14') on site, Mrs. Louis Bouvier, Destruction I	Bay			
		August 13 - 28: 16 days @ \$30 / day			480.00	
	Fo	od				
		August 13 - 28: 16 days @ \$50 / day			800.00	
	Geologic	al Mapping				
	Ő	utcrop and surficial geology; soil and silt sampling: superv	ision G.			
	G	utrath, Geologist, P.Eng.				
		August 13 - 28: 16 days @ \$600 / day			9,600.00	

 $( \square$ 

	Labour/technician re: soil, silt and pan sampling	
	August 13 - 28: 16 days @ \$200 / day	3,200.00
	Sample Analysis (September, 2014) Acme Labs	
	Soil and silt sample analysis 2,262.33	
	Rock analysis 456.02	
		2,718.35
	Map Preparation: UTM Plots (September, 2104)	
	Scale 1:3,000	
	Underhill Geomatics, Whitehorse	569.63
-	Data compilation and report	
	G. Gutrath, Geologist, P.Eng.	
	Map preparation, drafting and printing	3,000.00
	Total Costs	\$ 24,397.98

	<b>Division of Costs Into Two Exploration Pro</b>	grams				
1)	) Evaluation of placer gold potential, surficial geology and pan sampling. Field work August 13 to 19, 2014					
	Seven field days allocated to evaluation of placer gold pote	ntial				
2)	Geological mapping, geochemical soil and silt sampling. Field work to August 28, 2014					
	Total cost field work for period August 13 to August 28 (16 days) \$18,010					
1)	Exploration program on the Kelli Quartz Claim Group of 72 claims (Grouping Certificate No. HW07194)					
	and the					
2)	Placer Claim of 21 claims (Grouping Certificate No. GW01054)					
	Whitehorse Mining Division, Claim Sheet 115G12					
	Total cost of field work for both Quartz and Placer claims evaluation period August 13 to August 28 (16 days) is \$18,010 or \$1,125 per of the second	on for the lay				
1)	Seven day field program					
	Evaluation of placer gold potential, surficial geology and pa costs allocated to placer claim evaluation for period August 2014 is 7 days at \$1,125 / day	n sampling t 13 to 19,	\$	7,875.00		
	G. Gutrath. Geologist. P.Eng.					
	Data compilation and report			1.500.00		
	Total Costs		\$	9,375.00		
2)	Nine day field program:					
	Geological mapping, geochemical soil and silt sampling. Co to field work August 20 to August 28, 2014 is 9 days at \$1,	osts allocated 125 / day	\$	10,125.00		
	Acme I abs sample analysis September 2014					
	Soil and silt sampling	\$2,262,33				
	Rock analysis	456.02		2,718.35		
	Man preparation - GPS/UTM Plats Scale 1:3000					
	September, 2014. Underhill Geomatics, Whitehorse, YT			569.63		
	Data compilation and report			2 000 00		
	Data compliation and report		\$	16.412.98		

## **APPENDIX H**

LIST OF CLAIMS, EXPIRY DATES AND OWNERS



## **Claim Status Report**

09 February 2015

	Claim Name and Nbr.	Grant/No.	Expiry Date	Registered Owner	% Owned	NTS #'s	Grouping	Permit
R	ANN 1 - 4	YB35476 - YB35479	2021/01/28	Fred Erler	50.00	115G12	HW07560	
R	BUY 1 - 12	YA96221 - YA96232	2018/01/28	Kelli J. Tremblay	33.33	115G12	HW07560	
				Sandra Erler Kristy Roberts	33.33 33.34			
R	FRED 3 - 5	YF46654 - YF46656	2016/01/28	Gordon Gutrath	100.00	115G12	HW07560	
R	GRACE 1 - 7	YA97463 - YA97469	2018/01/28	Kluane Martin Louise Bouvier	50.00 50.00	115G12	HW07560	
R	JO 1	YB24070	2018/01/28	Sulo Poystila Kelli J. Tremblay	25.00 37.00	115G12	HW07560	
				Louise Bouvier	19.00			
				Kluane Martin	19.00			
R	JOSIE 1 - 2	YA96350 - YA96351	2018/01/28	Sulo Poystila	25.00	115G12	HW07560	
				Kelli J. Tremblay	37.00			
				Louise Bouvier	19.00			
				Kluane Martin	19.00	116010	111109570	
R	KELLI I	YA93845	2021/01/28	Sulo Poystila	25.00	115612	HW0/200	
				Kelli J. Tremblay	37.00			
				Kluane Martin	19.00			
		11100010 N/100000	2021/01/29	Eulo Boustile	25.00	115G12	HW07560	
R	KELLI 3 - 8	YA9384/ - YA93852	2021/01/28	Kelli I Tremblay	37.00	115012		
				Kluane Martin	19.00			
				Louise Bouvier	19.00			
D	KELLIO-18	VA95337 - VA95346	2022/01/28	Sulo Povstila	25.00	115G12	HW07560	
n	RELLI 7 = 10	11172221 - 11172210		Kelli J. Tremblay	37.00			
				Louise Bouvier	19.00			
				Kluane Martin	19.00			

Left column indicator legend:

P - Indicates the claim is pending.

Right column indicator legend:

L - Indicates the Quartz Lease.

R - Indicates the claim is on one or more pending renewal(s). F - Indicates Full Quartz fraction (25+ acres)

P - Indicates Partial Quartz fraction (<25 acres)

Page 1 of 3

Total claims selected : 75

**D** - Indicates Placer Discovery

C - Indicates Placer Codiscovery

**B** - Indicates Placer Fraction



## **Claim Status Report**

09 February 2015

100	Claim Name and Nbr.	Grant No.	Expiry Date Registered Owner	% Owned	NTS #'s	Grouping	Permit
R	KELLI 19 - 26	YA96352 - YA96359	2018/01/28 Sulo Poystila	25.00	115G12	HW07560	1
			Kelli J. Tremblay	37.00			
			Louise Bouvier	19.00			
			Kluane Martin	19.00			
R	KRISTY 1 - 2	YB26868 - YB26869	2021/01/28 Sulo Poystila	25.00	115G12	HW07560	
		· · · ·	Kelli J. Tremblay	37.00			
			Louise Bouvier	19.00			
			Kluane Martin	19.00			
R	KRISTY 3	YB35800	2021/01/28 Sulo Poystila	25.00	115G12	HW07560	
			Kelli J. Tremblay	37.00			
			Louise Bouvier	19,00			
			Kluane Martin	19.00			
R	KRISTY 5 - 14	YB35801 - YB35810	2021/01/28 Sulo Poystila	25.00	115G12	HW07560	
			Kelli J. Tremblay	37.00			
			Louise Bouvier	19.00			
			Kluane Martin	19.00			
R	RENO 1 - 2	YA97470 - YA97471	2018/01/28 Sulo Poystila	25.00	115G12	HW07560	
			Kelli J. Tremblay	37.00			
			Louise Bouvier	19.00			
			Kluane Martin	19.00			
R	ROSE 1 - 4	YA95976 - YA95979	2018/01/28 Sulo Poystila	25.00	115G12	HW07560	
			Kelli J. Tremblay	37.00			
			Louise Bouvier	19.00			
			Kluane Martin	19.00			
R	ROSE 5	YA95980	2021/01/28 Sulo Poystila	25.00	115G12	HW07560	
			Kelli J. Tremblay	37.00			
			Louise Bouvier	19.00			
			Kluane Martin	19.00			

Left column indicator legend:

P - Indicates the claim is pending.

R - Indicates the claim is on one or more pending renewal(s).

Right column indicator legend:

L - Indicates the Quartz Lease.

F - Indicates Full Quartz fraction (25+ acres)

P - Indicates Partial Quartz fraction (<25 acres)

D - Indicates Placer Discovery

C - Indicates Placer Codiscovery

Total claims selected : 75

**B** - Indicates Placer Fraction

Page 2 of 3



## **Claim Status Report**

09 February 2015

	Claim Name and Nbr.	Grant No.	Expiry Date Registered Owner	% Owned	NTS #'s	Grouping	Permit	
R	ROSE 6	YA95981	2018/01/28 Sulo Poystila	25.00	115G12	HW07560		
			Kelli J. Tremblay	37.00				
			Louise Bouvier	19.00				
			Kluane Martin	19.00				

#### Criteria(s) used for search:

CLAIM DISTRICT: 1000004 CLAIM STATUS: ACTIVE & PENDING DOCUMENT NUMBER: HW07560 REGULATION TYPE; QUARTZ

Left column indicator legend:

R - Indicates the claim is on one or more pending renewal(s).

P - Indicates the claim is pending.

Right column indicator legend:

L - Indicates the Quartz Lease.

F - Indicates Full Quartz fraction (25+ acres)

P - Indicates Partial Quartz fraction (<25 acres)

Page 3 of 3

Total claims selected : 75

D - Indicates Placer Discovery

C - Indicates Placer Codiscovery

**B** - Indicates Placer Fraction



LEGEND Geology Quarternan Qa Glacial deposits \_\_\_\_\_ Tertiary to Miocene Oligocene Light orange weathering dacite dikes, fine grained to aphanitic, plagioclase and lesser dd quartz \_\_\_\_\_ Light grey weathering with a blocky joint pattern. White, fine to medium grained euhedral fp plagioclase in a fine grained plagioclase groundmass with 2% to 5% fine grained bladed hornblende. The northern section of the Middle Canyon has a large outcrop area fp and dd L\_\_\_\_\_] intruding or overlying green schist meta-volcanics of Mesozoic age. Mesozoic Pennsylvanian - Permian Skolai Group: Station Creek Formation Black graphitic phyllite, often limey with interbedded limestone and quartz sericite schist. Lesser foliated greenstone. In Lower Canyon bgpl is intruded by numerous dacite dikes and subsequent intense shearing, faulting and folding has broken the dikes into irregular segments within bgpl. Disseminated fine pyrite 1% to 2% (Lower Canyon area) bgpl Light cream to tan coloured sericite quartz schist sqs Dark to pale green foliated greenstone (chlorite schist). In the downstream section of the Middle Canyon the creek runs through gs below the road and above the road is intruded by fp that trend generally east-west across the canyon and irregular dikes of dd that trend qs(fp) north-south sub paralleling the creek canyon. (gs(fp) and gs are primarily in the Middle Canyon area) Dark green to brown weathering, moderately to strong foliated greenstone (meta-volcanics primarily of andesite composition). Highly fractured, oxidized to dark brown and cut by flat lying widely spaced, highly fractured and folded – crumpled quartz veins from a few cm to 0.4 m in thickness and with 1% to 5% fine to course grained pyrite. The meta-volcanics have from 1% to 15% fine grained disseminated pyrite. gs Light grey-green weathering phyllitic carbonate. Banded/bedded, strongly lineated, tight pe folding, less than 1% fine gravel disseminated pyrite. (Upper Canyon area) Symbols / Abbreviations and andesite chl sch chlorite schist ser sch sericite schist arg argillite ox oxidized / pyritic carb carbonate q v quartz veinlets Imst pyrite mag magnetite + low% to +++high% ca calcium (limy) + low% to +++high% outline of rock outcrop ··?·· inferred outline of outcrop geological contact inferred geological contact fault / intense shearing bedding attitude schisttosity / foliation attitude attitude of fold axis and plunge joint attitude +20° slope 4 hand specimen a sample for analysis old workings ± 1930s-40s placer claim posts quartz claim posts road edge of creek gravels buildozer stripped overburden bid tr buildozer trench Msk muskeg (permafrost) sbsp stunted black spruce Sp tall spruce (thawed?) W willow Al alder Geochemical Soil and Silt Sampling O 25 x128 Soil sample number and waypoint location • 15 x65 Silt sample number and waypoint location 125 ppb Au Analytical values 27 ppb Au elevated or anomalous values PF Could not obtain sample because of permafrost

21º6'E



metres

------t.

100

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# KELLI CLAIM GROUP

WHITEHORSE MINING DIVISION Donjek River – Reed Creek Area Mapsheet 115 G 12 UTM Zone 7 NAD 83

Geology and Geochemical Map By; Gordon Gutrath, geologist, P.Eng

Date: February 10, 2015

