Geophysical Survey on a Northeastern Tributary of Moosehorn Creek

Dawson Mining District

NTS Mapsheet: 115O06

Latitude: 63° 23.0' N   Longitude: -139° 8.7' W

Lease: ID01718

Owner:
Brian Hyde - 100%

Work Performed:
Resistivity/IP Survey: 9 June, 2019

Date of Report: July 9, 2019
Author of Report: Allison Feduk

Summary

This report summarizes the geophysical survey completed by GroundTruth Exploration Inc. for Brian Hyde during the 2019 field season on lease ID01718 on a northeastern tributary of Moosehorn Creek. The survey is targeted perpendicularly across the valley to highlight the bedrock/gravel interface for placer gold exploration.

Lease ID01718 is a prospective area situated near historical placer mining in the region including the Maisy May, Gold Watch, Moosehorn and Russian Creeks.

The ground geophysical surveys included one high resolution DC resistivity and induced polarization survey, consisting of 124.5 ground meters which was surveyed on the 9th of June, 2019.

Results from the conducted survey has shown a resistivity contrast at the bedrock contact. The induced polarization shows high chargeability as well as contrasting zones across the valley.

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Y0B 1G0

1.0 Introduction

The Geophysical survey, undertaken by GroundTruth Exploration Inc., of Dawson City, YT, was performed on placer prospecting lease ID01718.

One High-Resolution DC Resistivity and Induced Polarization (RES/IP) profile was conducted totaling 124.5 ground meters, which was performed on the 9th of June 2019. This survey was intended to measure the depth to bedrock and to map underlying lithology thickness to determine if any paleochannels favorable to gold deposition could be detected.

2.0 Previous Investigations

There has been no previous work reported on this lease. Although, there has been extensive placer gold mining in the past on Henderson and North Henderson Creeks. In the vicinity there is a high-grade gold mine, which has produced 20,000 ounces, located on Maisy May Creek. Gold Watch Creek, Moosehorn Creek and Russian Creek have all be mined in the past for placer gold. Gold has also been discovered on Tenderfoot Creek.

3.0 Location and Access

The prospecting leases are located approximately 75 km South of Dawson City within the Yukon River drainage system in west-central Yukon Territory. The target is centered at 63^{o} 23.0' N and -139^{o} 8.7' W and located on NTS map sheet 1150O6 (Figure 1). The lease is accessible by helicopter year-round and has nearby road access.

4.0 Property

Placer Prospecting Lease Tenure:

ID01718, 1 mile, Brian Hyde - 100%, expiry October 19, 2019

(Figure 1)

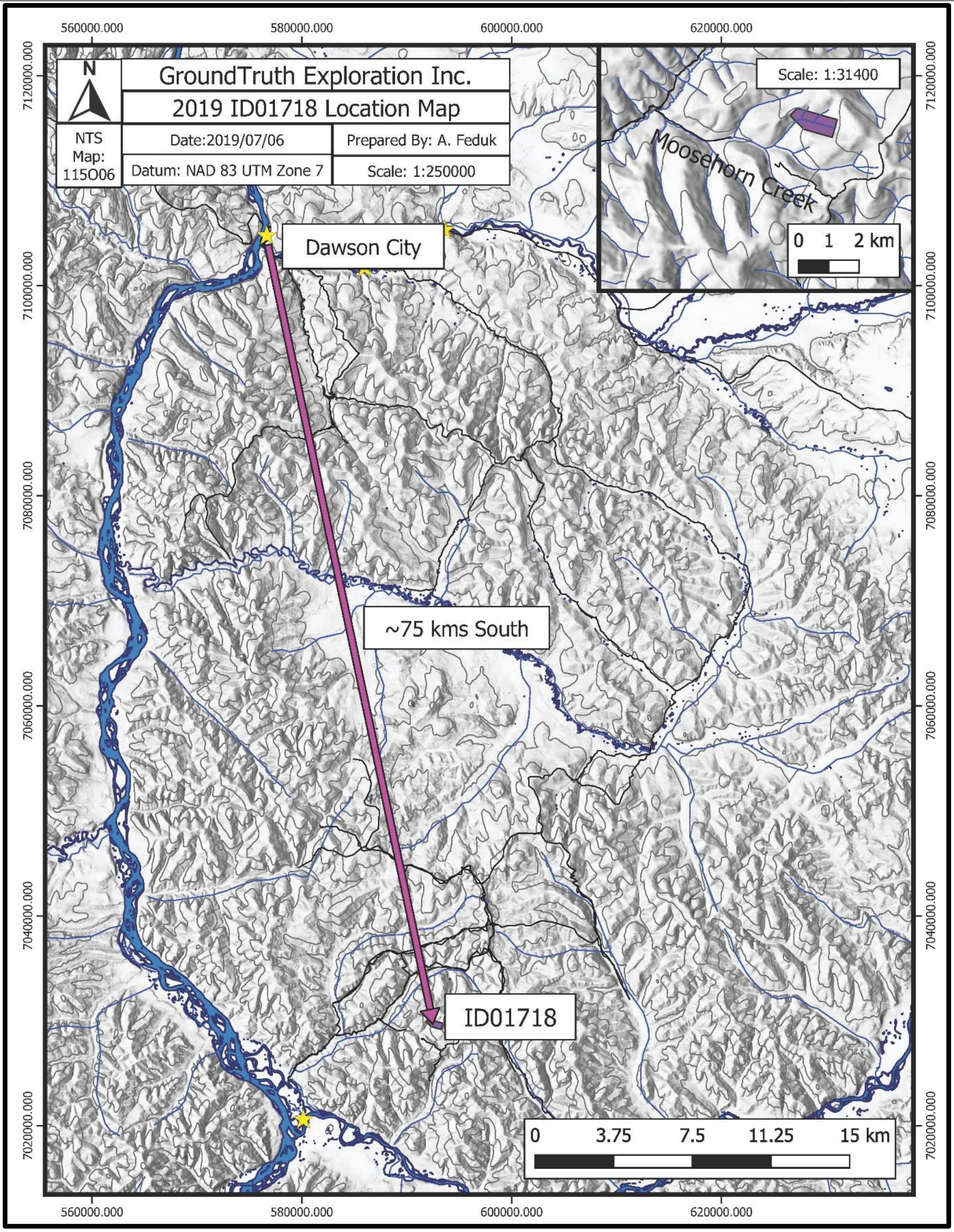

Figure 1: Property Location

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5.0 Physiography and Climate

The landscape is composed broad valleys bordered by moderately sloped, tree-covered hills ranging in elevations from 731 to 975 m. The area experiences typical climatic conditions for central Yukon Territory with short, warm and dry summers and cold winters. Temperatures range from 0˚C to -50˚C in the winter and 0˚C to +30˚C in the summer. The property lies within Canada's discontinuous permafrost zone. Most of the valley bottoms in this area are filled with permafrost.

6.0 Geology

6.1 Regional Geology

Moosehorn Creek is situated in the Yukon-Tanana Terrane (YTT). The YTT is a late Devonian to middle Mississippian continental magmatic arc extending from northern British Columbia into west-central Yukon and eastern Alaska and is bounded to the northeast by the Tintina fault and to the south-west by the Denali fault (Colpron et al., 2006).

The YTT is composed of four main assemblages including the Snowcap, Finlayson, Klondike and Klinkit (Colpron et al. 2006) intruded by the Dawson Range batholith (phase of the Whitehorse Suite), Prospector Mountain plutonic suite and Casino plutonic suite (Mortensen et al., 2010).

“The Snowcap assemblage (PDS1) forms the base of the YTT consisting of quartzite, psammite, pelite and marble with minor greenstone and amphibolite. The Finlayson assemblage (DMF1) is composed of amphibolite, garnet amphibolite and schist. The Klondike assemblage (PK1, PK2) consists of muscovite-chlorite quartz phyllite, quartz-muscovite-chlorite schist, micaceous quartzite, psammite, phyllonite and schist. The Whitehorse Suite (mKqW, mKgW), a phase of the Dawson Range Batholith, consists of biotite quartz monzonite, biotite granite, leucogranite, monzogranite, granodiorite, diorite, granite and tonalite.” (Ryan et al., 2013). The Klinkit (CK1) is composed of mafic to intermediate metavolcaniclastic and metavolcanics rocks, with minor limestone and conglomerate (Colpron et al., 2006; Roots et al, 2004).

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6.2 Property Geology

“Moosehorn Creek and its tributaries are underlain entirely by metamorphic rocks of the Carboniferous Simpson Range (MgSR), the Devonian Snowcap Assemblage (PDS1, PDS2), and the Devonian to Carboniferous Finlayson Assemblage (DMF1). MgSR is composed of hornblende bearing metagranodiorite, metadiorite, metatonalite and tonalite. DMF1 is mostly composed of amphibolite. PDS1 consists of quartzite, psammite, pelite and marble with minor greenstone and amphibolite, and quartz-mica-schist. PDS2 consists of light grey to buff weathering marble. There is a north-south trending unknown fault type located approximately 3.6 kilometers from the headwaters of Moosehorn Creek” Ryan, et al, 2016.

Our area of study is completely underlain by DMF1 and PDS2. The lease is located in an unglaciated area, thus placer gold should be located close to the hard rock sources. The properties bedrock geology is shown in Figure 2.

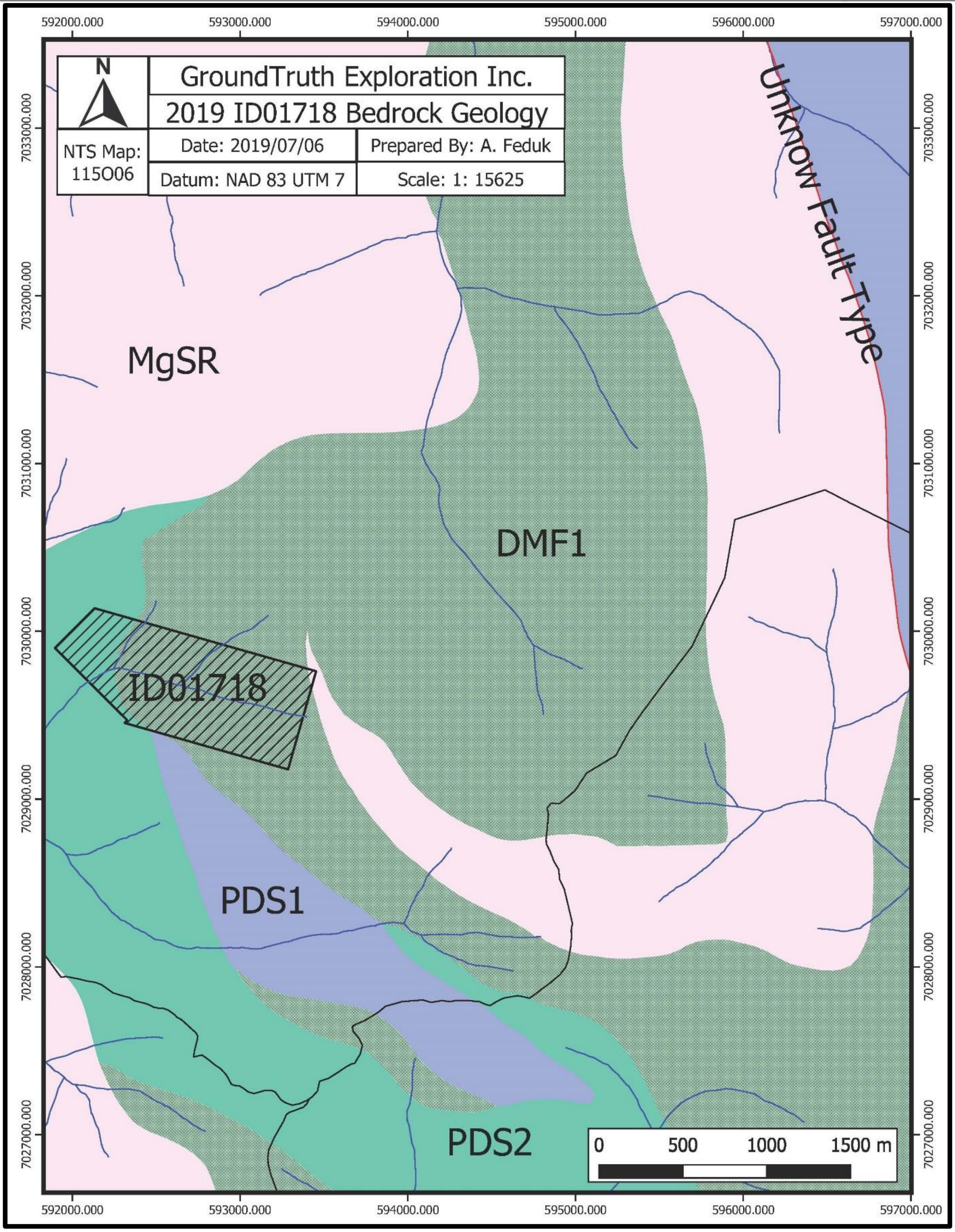

Figure 2: Property Geology

7.0 Resistivity and Induced Polarization Survey

7.1 Work Performed

DC Resistivity and Induced Polarization (RES/IP) surveys were conducted on the 9th of June 2019, on lease ID01718 (Figure 3). The goal of this traverse is to define the fluvial deposits such as muck, sand, and gravel, and define important contacts such as the permafrost table and bedrock surface.

Survey traverse JPPIP19-08 is composed of 84 electrodes spaced at 1.5 m. This electrode spacing results in a total line length of 124.5 ground meters and a horizontal resolution of 1 m (Figure 4).

The RES/IP surveys are done using Advanced Geoscience's SuperSting high-resolution resistivity meter and passive cables. A modified Schlumberger Inverse array was used on all survey lines. This array is a sounding array optimized to delineate horizontal structures such as bedrock contacts and lithological units, has the best overall signal-to-noise ratio and the most lateral coverage. It is an ideal array for finding depths to stratigraphic layers such as muck, sand, gravel, and bedrock.

The traverse location was surveyed with a differential GPS unit capable of sub-meter accuracy. This data was used to both map the traverses and to create the terrain file that models elevation within the resistivity processing.

The crews camped on site and walked out to the survey lines from camp. A helicopter was used to mobilize and support the camp with supplies.

7.2 Operating Procedure:

- A crew of 5 is deployed to run survey.
- The midpoint of a traverse is located and the line is sighted-in using a compass and GPS.
- Minimal brush is cut along line to place pickets and set up equipment.
- Calcium Chloride (CaCl, 25% solution) is added to the base of all electrodes.
- 84 electrodes are inserted into the ground, spaced along the line at 5 m.
- Electrodes are hammered to a depth of up to 50cm (10% of electrode spacing)
- Cables are laid and attached to the electrodes.
- Contact resistance test is conducted.

- Add electrodes and CaCl solution added to each electrode with CR > 2,000 Ohms. Contact resistance test is repeated.
- Continue to add electrodes and CaCl until satisfactory contact resistance values are achieved
- Operator initializes survey and uses DGPS and data collection software to document survey line parameters including electrode locations, topography, and geological/cultural features if present. Pickets are placed along the line every 50 m
- Crew cuts and prepares the next survey line.

7.3 Data Processing

The collected data is downloaded in the field after every array and checked for integrity. This allows any field errors to be identified before moving the equipment. The RES/IP data is processed daily by the lead operator using EarthImager2D software provided by Advanced Geosciences Inc. Resistivity data-misfits are removed, and the cleaned data-set is inverted. The same process is done with the IP data. Terrain corrections collected using a differential GPS are applied to the inversions. The DGPS data is processed using GNSS Solutions software. A .csv is created containing the DGPS traverse points collected. All raw instrument data from the DGPS and SuperSting are archived. An ESRI shapefile is created containing the traverse points collected.

The Resistivity and Induced Polarization data from each traverse are inverted separately to minimize the number of resistivity measurements that are filtered based on chargeability inversion parameters. Once data sets are filtered, measurements associated with the largest model misfit are removed, and the inversion process is repeated until the model L2-norm is calculated as close to 1 as possible. If survey noise was estimated accurately (3 – 5%), when the model L2-norm equates to one, the inversion algorithm has produced a model which has not iterated on measurement noise. This indicates inversion artifacts in the earth model are minimized.

7.4 Results

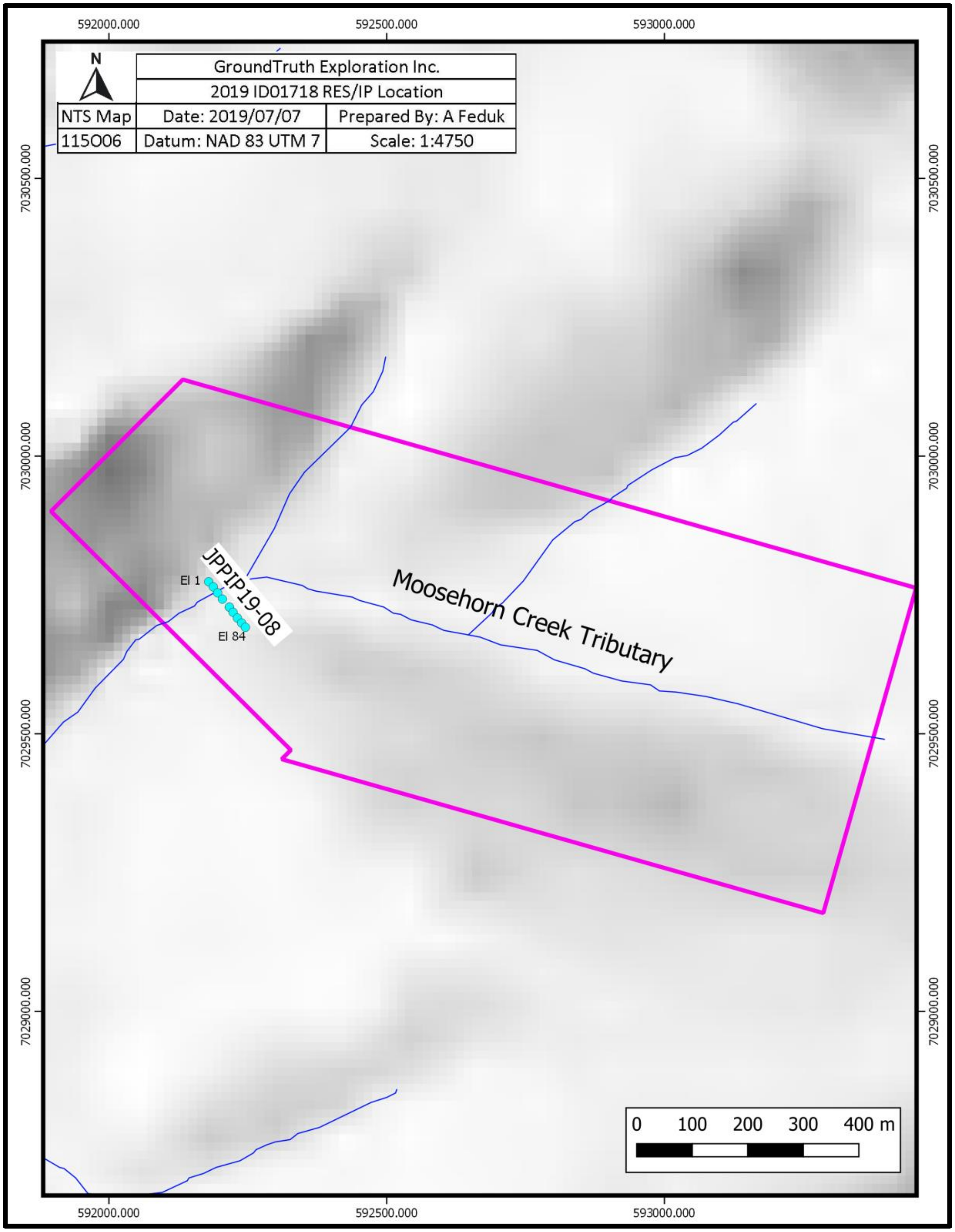

Figure 3: Location of Resistivity and Chargeability Profile

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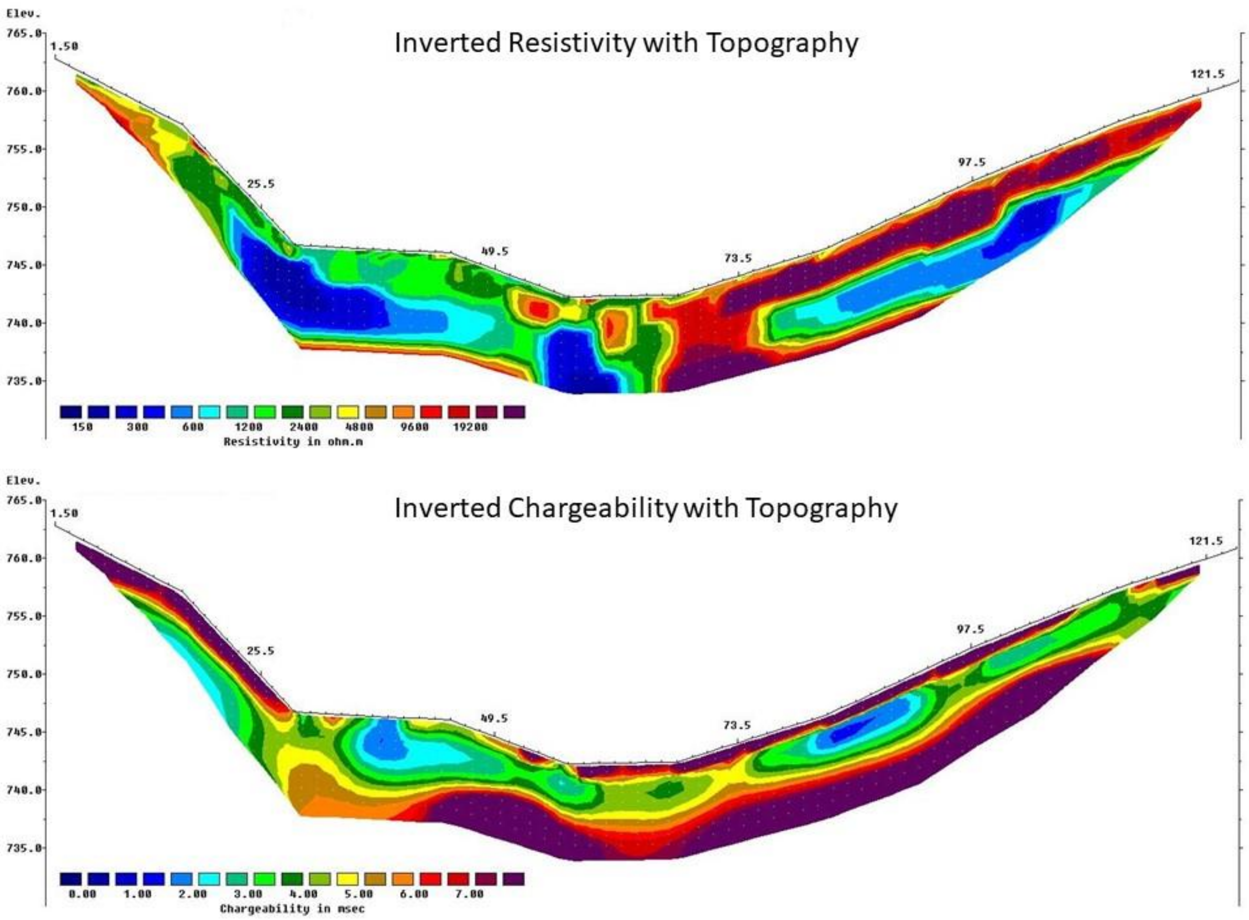

Figure 4: Resistivity and Chargeability Profiles of JPPIP19-08

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9.0 Discussion and Interpretation

The resistivity inversion profile shows a distinct resistivity contrast at the interpreted bedrock boundary, with a low resistivity, consistent with the geology of the area (Figure 5). The depth to the interpreted bedrock interface is between 1.25 to 5 m. A moderate resistivity is interpreted as coarse grained fluvial deposits, a target for placer gold at the bedrock interface. The high resistivity seen on the south-southeast side of the profile is interpreted as frozen ground above the bedrock contact.

The chargeability profile shows various changes in magnitude, a range of 1 to 8 msec. The profile has an IP effect at the interpreted bedrock boundary which may be associated with sulphides contained in the bedrock. There is also a high IP effect near the surface potentially indicated highly saturated zones or an active layer of permafrost.

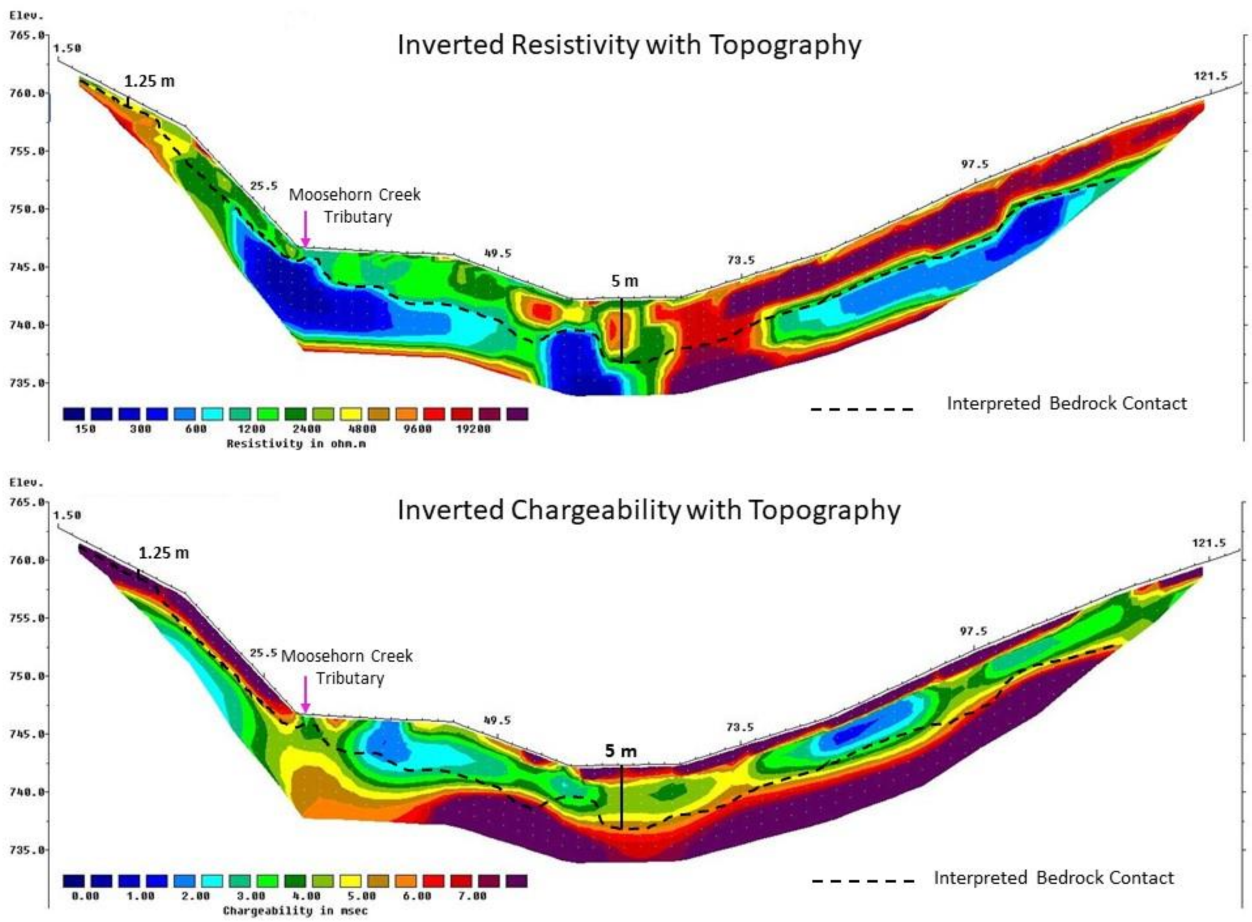

Figure 5: Interpretation of Resistivity and Chargeability of JPPIP19-08

10.0 Recommendations

It is recommended to complete a drill line on the resistivity and chargeability profile. Drilling will confirm the interpretation set forth and aid in the interpretation of the stratigraphy and depth to bedrock throughout the valley.

11.0 Statement of Expenditures

Contractor: GroundTruth Exploration Inc.
Placer Lease Surveyed: ID01718

Overview: Lease ID01718 DC Resistivity/IP Survey

1 profile surveyed — ***Survey Date:*** ***9-Jun-19***

GEOPHYSICAL SURVEYS - IP -DC RESISTIVITY BREAKDOWN	**Charge out**	**Units**	**Costs**		**9-Jun**
Wages					**Mon**
1 Geophysical Operator	$ 550.00	1	$ 550.00		1
1 Assistant Operator/DGPS Surveyor	$ 440.00	1	$ 440.00		1
2 Field Assistant	$ 385.00	2	$ 770.00	$ 1,760.00	2
IP-Res Survey Equipment					
IP/Resistivity Meter: Supersting 8 Channel meter w/cables, 84 electrodes	$ 600.00	1	$ 600.00		1
Precision GPS: Ashtech Promark 100 differential GPS	$ 50.00	1	$ 50.00		1
Field Laptop/Software for download	$ 75.00	1	$ 75.00		1
Sat Phone, Delorme, Radios (per day)	$ 100.00	1	$ 100.00		1
Chainsaw for helipads/camp (per day)	$ 50.00	1	$ 50.00	$ 875.00	1
Consumable Supplies					
Stainless Electrodes: wear & tear- 2 per profile, $6 ea *1 profile/day	$ 12.00	1	$ 12.00		1
Calcium Chloride: 4kg per profile, $2/kg*1 profile/day	$ 8.00	1	$ 8.00		1
Pickets/Spray Paint, 9 per profile, $1/picket*1 profile/day	$ 9.00	1	$ 9.00	$ 29.00	1
Additional Supplies and Support					
Satellite Internet - per day (connected by Staff)	$ 45.00	1	$ 45.00		1
Assessment Report and Data Processing @$75/hr	$ 75.00	5	$ 375.00	$ 420.00	1
			DC IP-Resistivity Survey Expense:	**$ 3,084.00**	

12.0 Statement of Qualification

I, Allison Feduk with a business address in Dawson City, Yukon, and residential address in Carlyle, Saskatchewan, do herby certify that:

1. I graduated from the University of Regina in the fall of 2011 with a Bachelor of Science in Geology.

2. From 2012 to present I have been actively engaged in mining and mineral exploration in Alberta and the Yukon Territory.

3. I have been an employee of GroundTruth Exploration Inc. since July of 2018.

4. I am not aware of any material fact or material change with respect to the subject matter of this report, the omission to disclose which makes this report misleading.

Dated this 9th day of July, 2019.

Respectfully submitted,

Allison Feduk

13.0 References

Mineral Titles: Yukon Mining Recorder, Mining Claims Database – www.yukonminingrecorder.ca

Topographic data: Natural Resources Canada, The Atlas of Canada - Toporama- http://atlas.gc.ca/toporama/en/index.html

Colpron, M., Israel, S., Murphy, D.C., Pigage, L.C., and Moynihan, D., 2016. Yukon Bedrock Geology Map. Yukon Geological Survey, Open File 2016-1.

Colpron, M., Nelson, J. L., and Murphy, D. C., 2006. A techtonostratigraphic framework for the pericratonic terranes of the Norther Cordillera: Canadian and Alaskan Cordillera: Geologic Association of Canada, p. 1 – 23.

Clark, D. A. and Emerson, D. W.,1991. Notes on Rock Magnetization Characteristics in Applied Geophysical Studies. In Exploration Geophysics, p. 547 – 555.

Mortensen, J.K. and Allan, M.M., 2012. Summary of the Tectonic and Magmatic Evolution of Western Yukon and Eastern Alaska. In Yukon Gold Project Final Technical Report, Edited by Allan, M.M., Hart, C.J.R., and Mortensen, J.K. Mineral Deposit Research Unit, University of British Columbia, p. 7 – 10.

Mortensen, J. K., and Hart, C. J. R., 2010. Late and Post-Accretionary Magmatism and Metallogeny in the Norther Cordillera, Yukon and Eastern Alaska. Geological Society of America Annual Meeting, Denver, 31 October to 3 November 2010.

Nelson, J., Colpron, M., and Israel, S., 2013. The Cordillera of British Columbia, Yukon and Alaska: tectonics and metallogeny. In: Colpron, M., Bissig, T., Rusk, B., and Thompson, J.F.H., (Editors), Tectonics, Metallogeny, and Discovery - the North American Cordillera and similar accretionary settings. Society of Economic Geologists, Special Publication 17: 53-109.

Palacky, G. J., 1988. Resistivity Characteristics of Geologic Targets. Electromagnetic Methods in Applied Geophysics. Geological Survey of Canada

Roots, C., Nelson, J., Mihalynuk, M. G., Harms, T. A., De Keijzer, M., and Simard, R. L., 2004. Bedrock Geology of Dorsey Lake, Yukon Territory. Yukon Geological Survey, Geological Survey of Canada, Open File 4630.

Ryan, J. J., Zagorevski, A., Williams, S. P., Roots, C., Ciolkiewicz, W., Hayward, N., and Chapman, J. B., 2013. Geology of Stevenson Ridge (northeastern part), Yukon; Geological Survey of Canada, Canadian Geoscience Map 116 and 117.

Additional review of various published scientific and reporting papers on the geology and mineral deposits of the region for indirect reference.