AD08904

GroundTruth Exploration

2020

# UAV Aerial Photogrammetry Survey

**on a**

# Left Limit Tributary of Henderson Creek

## Dawson Mining District

NTS #: 115O/06

Latitude: 63.41081° N  Longitude: -139.05868° W

Claim List:

| | |
|---|---|
| Coul Jay 1, 3 | P 43337, P43339 |
| Coul Jay 2 | P 521295 |
| Coul Jay 4 – 5 | P 521296 – 521297 |
| Coul Jay 6 – 10 | P 44125 – P 44129 |

Owner: Jayce Murtagh - 100%


Work Performed: August 1, 2019
Date of Report: April 29, 2020
Author of Report: Allison Feduk



Box 70, DAWSON, YT
Y0B 1G0

## Summary

During the field season of 2019, GroundTruth Exploration Inc. was hired by Jayce Murtagh to complete an aerial drone survey on placer claims Coul Jay 1 to 10, on a left limit tributary of Henderson Creek. The claims were imaged using an EBee fixed-wing drone which created high resolution imagery and surface topography.

The aerial drone survey was successful in finding pingos, erosional benches, channel merge areas and valley widths, this data is useful for future geophysical and drilling exploration.

Several gold-in-soil anomalies have been discovered within the vicinity of Henderson Creek, indicating placer gold deposition in this valley.

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Box 70, DAWSON, YT
Y0B 1G0

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## 1.0 Introduction

The aerial drone survey, undertaken by GroundTruth Exploration Inc., of Dawson City, YT, was conducted on placer claims Coul Jay 1 to 10, located in the Dawson Mining District. The survey was carried out using an EBee fixed-wing drone resulting in high resolution imagery. The survey is intended to locate features such as pingos, erosional benches, channel merge areas and valley widths, all which is useful data for future exploration work. The survey was completed on the 1st of August 2019.

## 2.0 Previous Investigations

Previous work reported on the Coul Jay claim block includes magnetic surveys performed in 1998 for Coulee Resources Ltd. The magnetic surveys showed a high magnetic response in the area.

## 3.0 Location and Access

The placer claim block is located approximately 75 km south of Dawson City located within the Yukon River North watershed in west-central Yukon Territory. The target is centered at latitude 63.41081° N and longitude -139.05868° W and located on NTS map sheet 115O/06 (Figure 1). The claim block is accessible by helicopter year-round and can be accessed during the field season by the road network from Dawson City. The first 75 km from Dawson City is on roads maintained by the Yukon Government, the remaining 55 kms are on placer roads maintained by local placer miners, which are closed during the winter and reopened in the spring.

## 4.0 Property

Placer Claims Tenure, Jayce Murtagh – 100%:

Coul Jay 2, 4, 5 – P 521295, P 521296, P521297, expiry May 31, 2020
Coul Jay 6 – 10 – P 44125 – P 44129, expiry May 27, 2021
Coul Jay 1, 3 – P 43337, P 43339, expiry May 30, 2021

See Figure 2 for location of these claims.

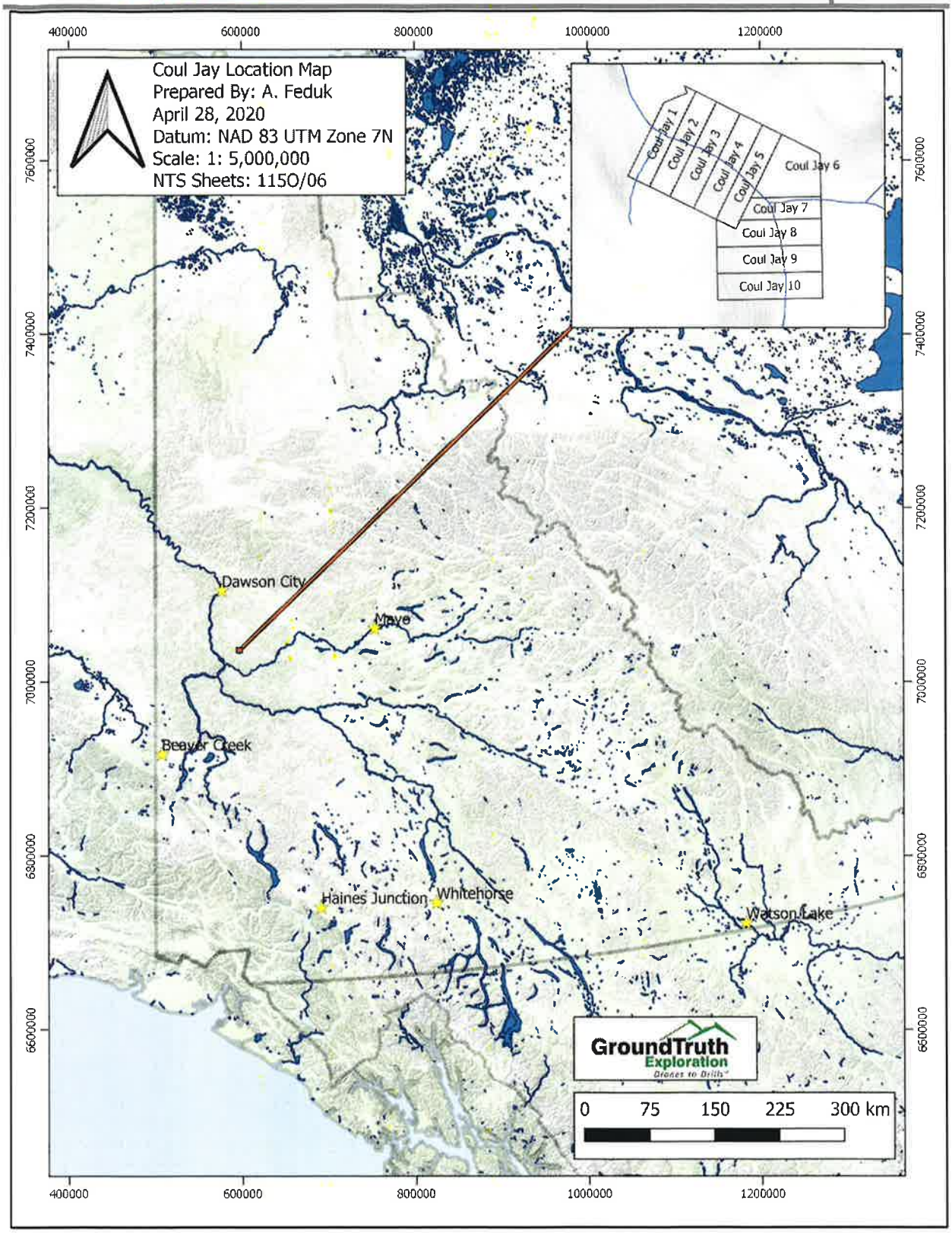


Figure 1: Property Location

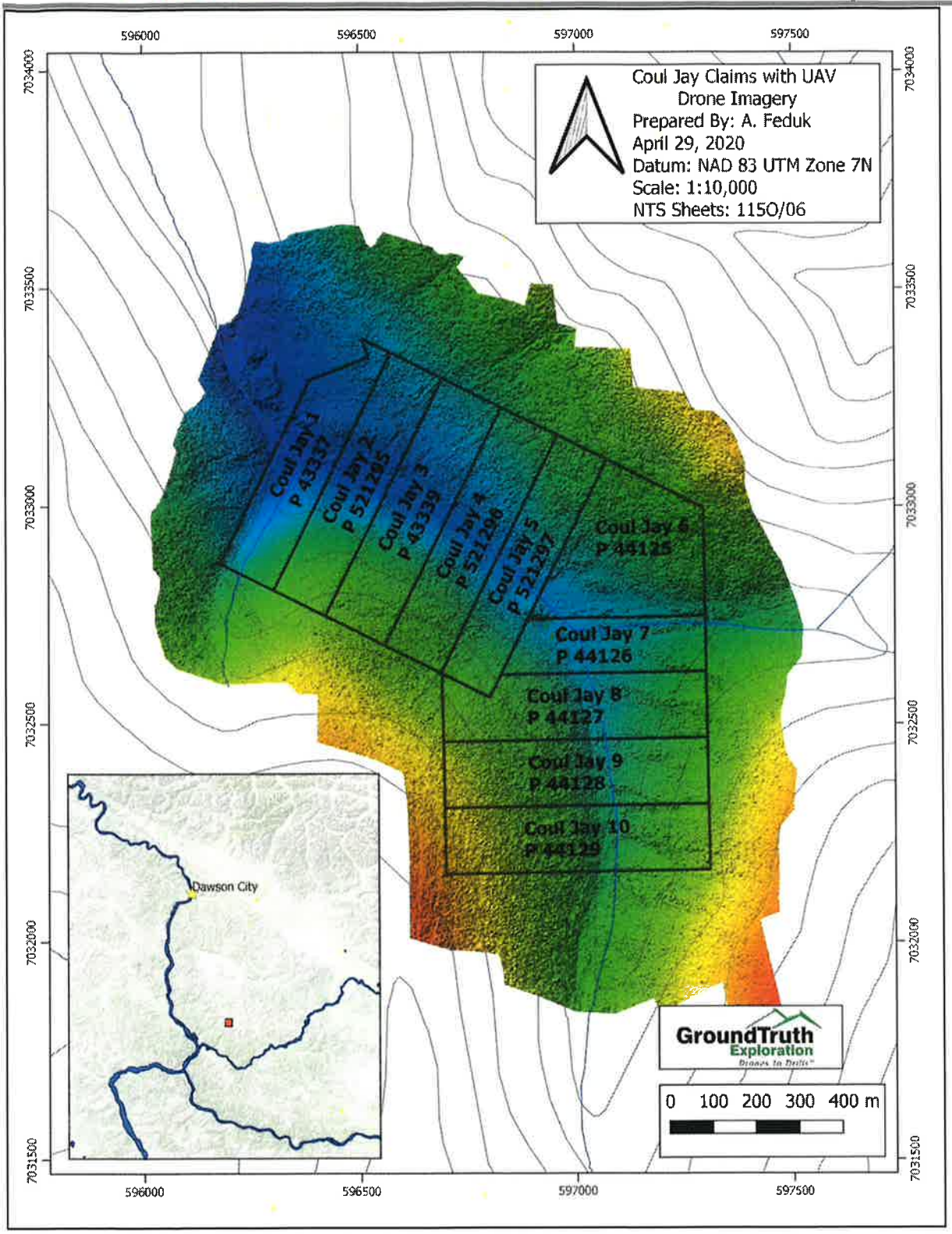


Figure 2: Detail of Claims and UAV Drone Survey, blue corresponds to a topographic low and red to a topographic high

## 5.0 Physiography and Climate

Henderson Creek is a modest sized creek flowing southwest into the Yukon River. The landscape is composed broad valleys bordered by moderately sloped, tree-covered hills ranging in elevations from 365 m to 1188 m. The valley bottoms and northern slopes have thick moss mats, black spruce and alder thickets, while the southern slopes are more sparsely vegetated with ground leaf cover and white spruce, aspen and birch forests. The property lies in an unglaciated zone in the Klondike Plateau region of Canada's discontinuous permafrost zone, permafrost is distributed unevenly throughout the property.

The Yukon territory has a sub-arctic continental climate with a summer mean of 10°C and a winter mean of -23°C with temperatures reaching as high as 35°C in the summer and as low as minus 55°C in the winter. Mean annual precipitation ranges from 250 to 500 mm, varying with elevation.

## 6.0 Geology

### 6.1 Regional Geology

The claim block 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 Suites (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 metavolcanic rocks, with minor limestone and conglomerate (Colpron et al., 2006; Roots et al, 2004).

## 6.2 Property Geology

The majority of the Coul Jay claim block is underlain by Devonian metamorphic rocks of the Snowcap Assemblage (PDS1) consisting of quartzite, psammite, pelite, marble and schist, with minor greenstone and amphibolite. The northwest portion of the claim block (0.32 $km^2$) is underlain by Carboniferous metamorphic rocks of the Simpson Range Suite (MgSR) composed of Hornblende-bearing metagranodiorite, metadiorite, metatonalite and orthogneiss. A north to south trending unknown fault type separates the PDS1 to the east from MgSR to the west (Ryan, et al. 2013, Figure 3).

This claim block is located in an unglaciated area therefore placer gold should be located close to the hard rock sources. There has been a recent discovery of the high-grade gold veins near the claim block, therefore there is potential for the area to be rich in placer gold.

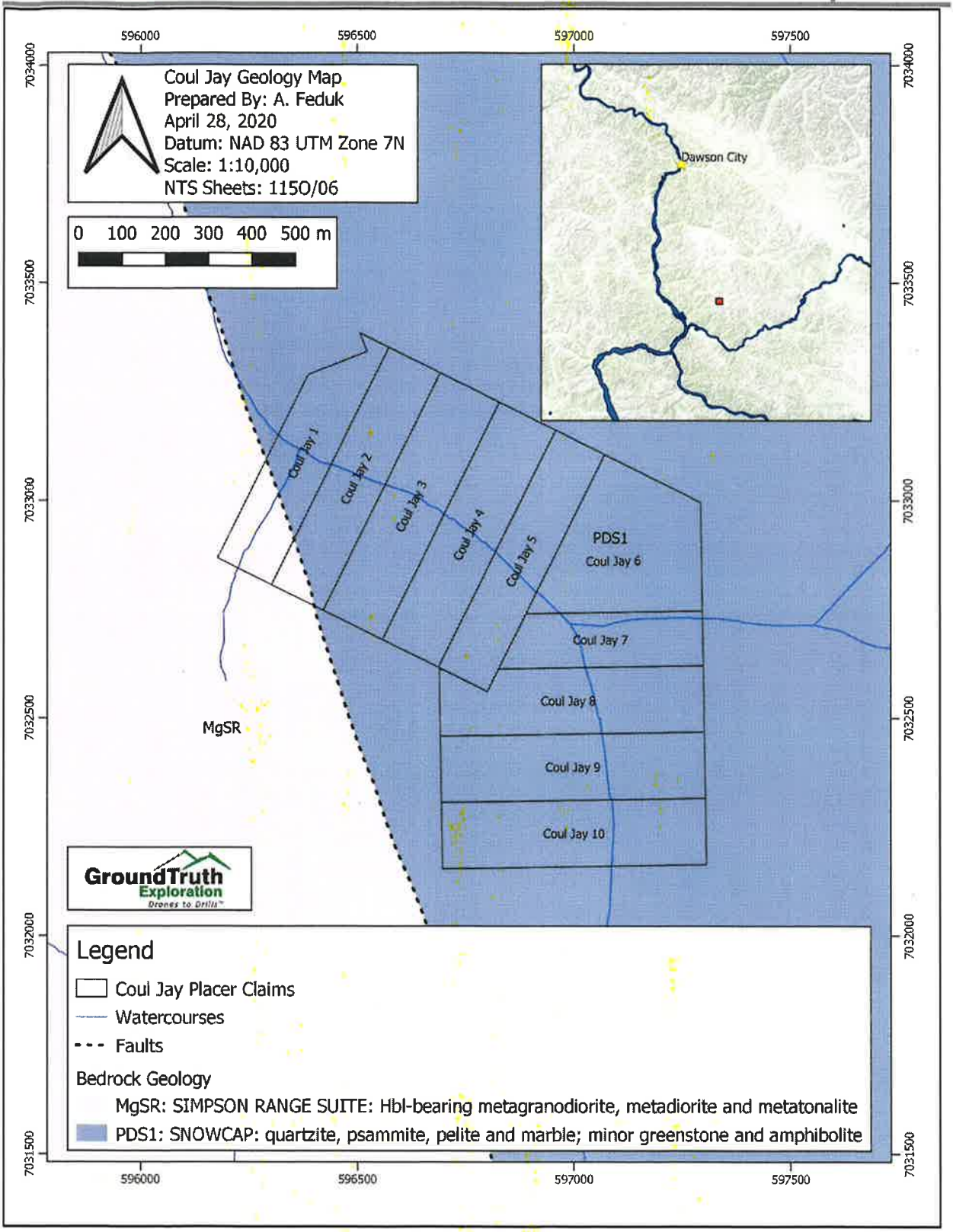


Figure 3: Property Geology

# 7.0 UAV Aerial Photogrammetry

## 7.1 Work Performed

The UAV survey consisted of a 1-day survey performed on August 1, 2019. A lead UAV operator and assistant UAV operator (spotter) were employed to run the survey. A total of five flights were run to cover the claim block.

The Drone survey lines and spatial resolution are approved by client prior to survey, and are designed in accordance with June 1, 2019 Transport Canada RPAS regulations. Typical flight time is approximately 30 minutes per flight, less if the operations area is experiencing high winds

## 7.2 Personnel and Equipment

The Drone survey is typically conducted by one trained operator and one spotter. The lead operator is responsible for coordinating efficient operation of survey and ensuring optimal data quality, the spotter is responsible for maintaining visual contact with the drone, monitoring the radio, and looking for flight path conflicts with other aircraft in the area.

The following equipment is used for the completion of the survey:

| | |
|---|---|
| UAV Drone: | Ebee UAV 'Drone' with internal GPS and radio link |
| Camera: | S.O.D.A. 24MP custom EBee camera |
| Base Station: | Panasonic Toughbook laptop with radio link |
| Power Generation: | 1000watt Honda generator |
| Radios: | VHF radio with aircraft frequencies |
| Processing: | Laptop computer with adequate RAM and GPU |
| Software: | Emotion software for flight planning/monitoring<br>Postflight Pix4D for image Orthorectification<br>Globalmapper for manual correction/cropping |

## 7.3 UAV Survey Operating Procedures

The survey is completed in the field according to the following procedure:

- Survey is planned using Emotion software prior to departing for field.
- Spatial resolution, footprint, number of planned flights and launch location is determined.
- Operator arrives onsite and sets up base station, UAV unit and ensures adequate launch and landing path is available.

- Prior to launch and at regular intervals during the survey, operator calls out on Aircraft frequencies to notify Drone survey in progress.
- Operator Hand launches aircraft and flies survey as planned with number of required flights and maintains visual contact with the UAV
- Data is downloaded from drone after each flight and inspected for quality.
- After survey, all imagery and drone data files are Orthorectified using Postflight Pix4D software package.

## 7.4 Data Processing

The collected data is downloaded in the field after every flight and checked for integrity. This allows any low-quality imagery to be identified and resurveyed while onsite. The drone imagery data is processed every evening by the lead operator in the field using Postflight Pix4D software. The initial orthorectified image product is generated by an automated process. This image is then cropped in Globalmapper or other GIS software to remove bad edges and areas that lack sufficient image coverage to be useful to the client. The final cleaned image and DEM product is the result of this manual QC process. The final Image and DEM are georeferenced to NAD83 UTM projection. A final QC report is generated automatically with the final cleaned product.

**Standard data output:**
Imagery: Georeferenced Orthoimage (geotiff format)
Digital Elevation Model: Gridded Elevation model (geotiff format)
Automated Quality Report: Report with survey statistics (.pdf format)

## 7.5 Results

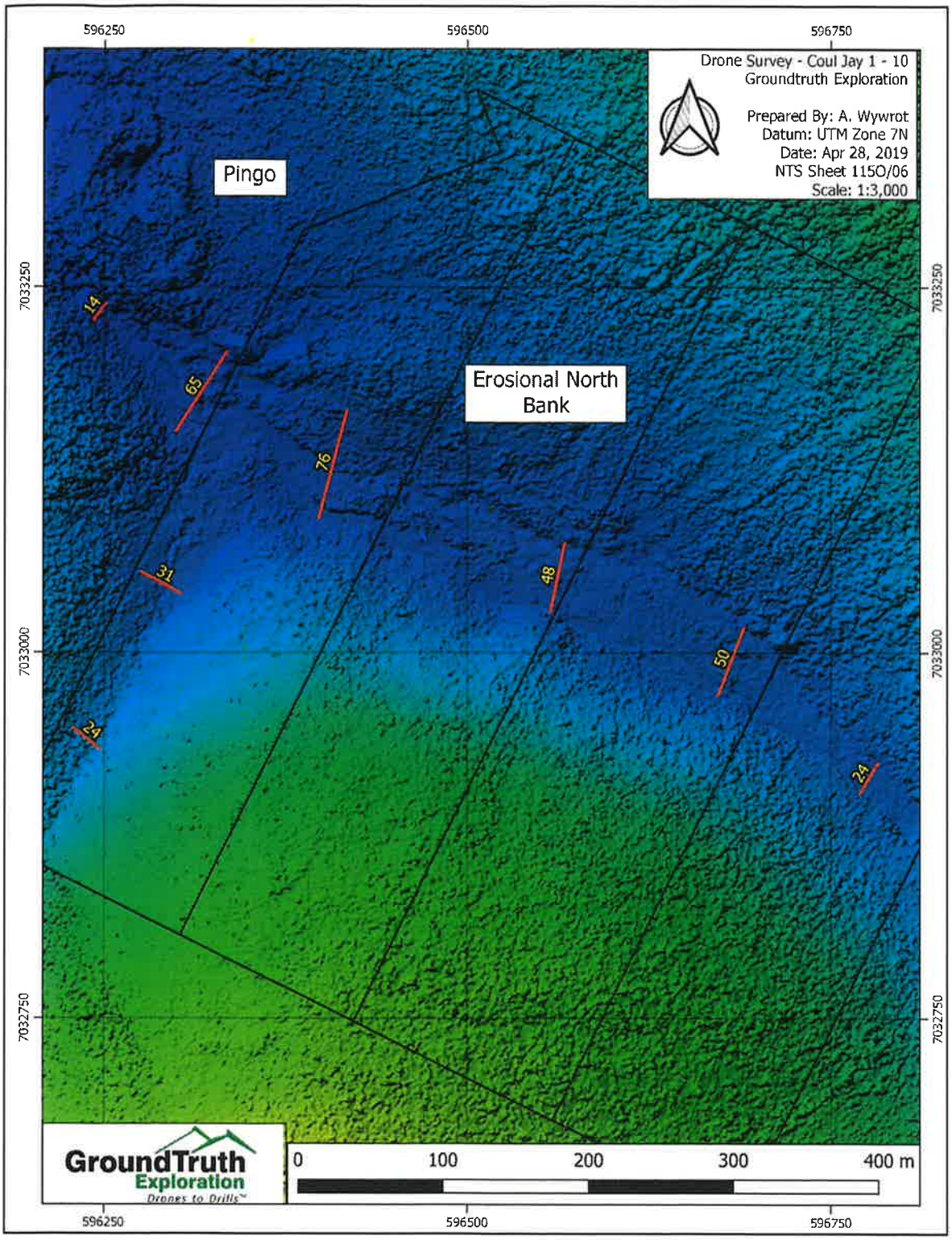


Figure 4: Coul Jay Claims, Valley Width up to 76 m with Erosional North Bank and Pingo Visible

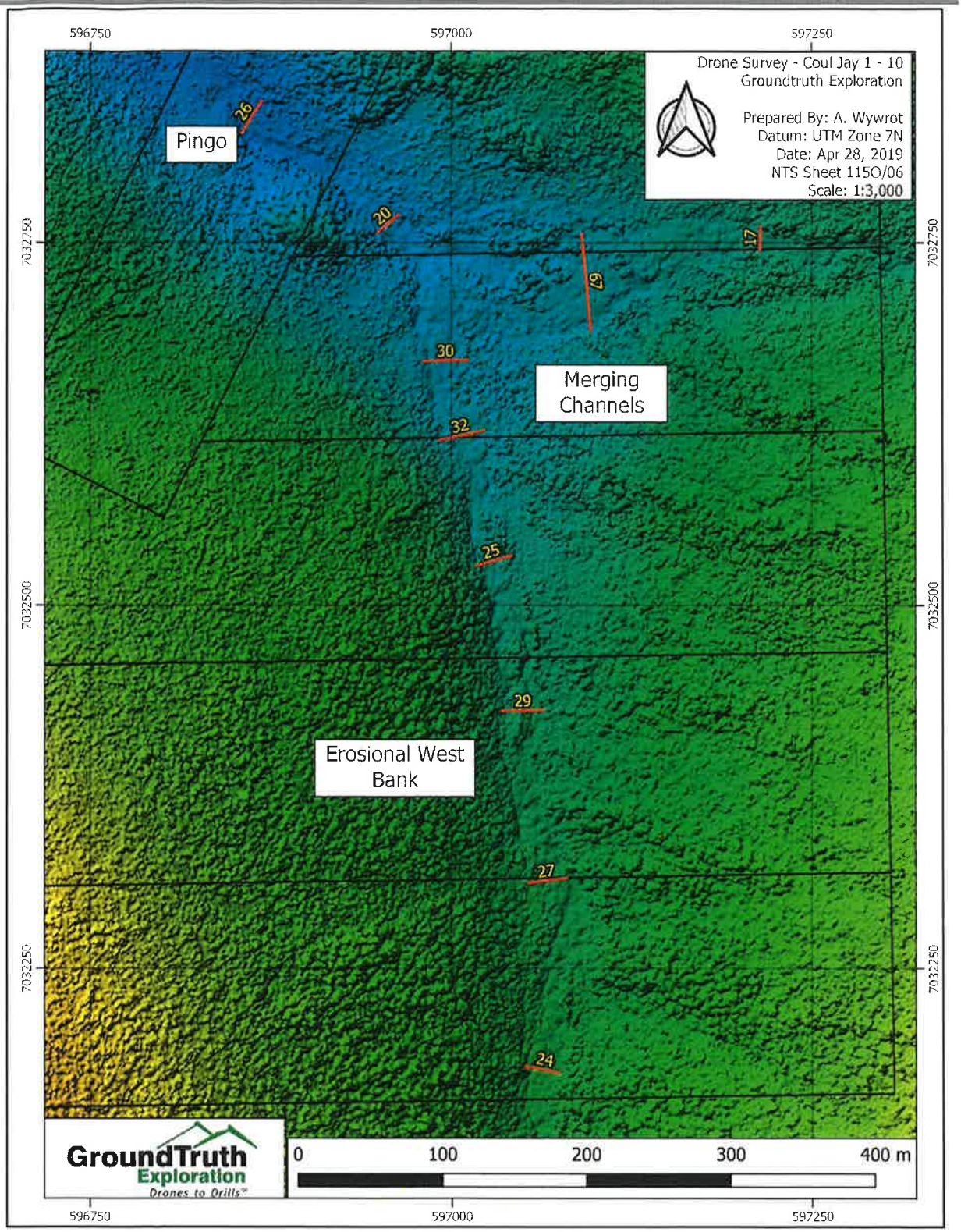


Figure 5: Coul Jay Claims, Valley Width up to 30 m with Erosional West Bank and Pingo Visible

## 8.0 Discussion

The UAV Drone survey was successful in imaging the claim block. This imagery will be useful for planning geophysical surveys since ground conditions can be seen using the imagery. The imagery/topography allows us to get an accurate measurement of true valley floor width and margins from creek drainage. Future access and planning of exploration work locations can be planned from this dataset. The figures shown in the above results section show the imagery and topographic model and the level of detail which the local topography is imaged, along with measurements of the channel size at many points along the channel length. Also visible in the figures are erosional banks and pingos.

## 9.0 Recommendations

Further exploration is required to determine the depth to bedrock and placer gold-grade located in the creek. Resistivity and induced polarization surveys are recommended to determine the depth to bedrock and a follow up drill program would be beneficial to determine the amount placer gold present within the pay gravels.

## 10.0 Statement of Expenditures

**UAV Survey for High Res imagery and topography on Coul Jay 1-10 placer claims**

GroundTruth Exploration

| **Overview:** | | |
|---|---|---|
| UAV Survey for High Res imagery and topography on Coul Jay 1-10 placer claims in Henderson Creek drainage on August 1, 2019. Data delivered via google drive upload link. | | |
| **Survey Cost Breakdown:** | | |
| **Drone Survey Cost Breakdown:** | | **Total** |
| 1 Day UAV Survey with crew of 2 and all UAV Survey Equipment | *-$ 1,900.00* | -$ 1,900.00 |
| **Data Management and Processing Services** | | |
| Imagery Processing - 5 flights @ $100/flight | *$ 500.00* | $ 500.00 |

| ***Total Invoice*** | **-$ 2,400.00** |
|---|---|

## 11.0 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 29th day of April 2020.

Respectfully submitted,

Allison Feduk

## 12.0 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

**Property Geology:** Yukon Mining Recorder, Mining Map Viewer - http://mapservices.gov.yk.ca/Mining/Load.htm

**Regional Geology:** Gordey, S.P. and Makepeace, A.J. (comp.) 1999: Yukon bedrock geology in Yukon digital geology, S.P. Gordey and A.J. Makepeace (comp.); Geological Survey of Canada Open File D3826 and Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1999-1(D)

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.

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.

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.

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