

UAV Aerial Photogrammetry Survey  
on the  
Henderson and Maisy May Creek  
Placer Prospecting Leases

Yukon Territory

**Henderson Creek Area:**

- 1 Mile Placer Lease: ID01721 (Candace Mazerolle, 100%)
- 2 Mile Placer Lease: ID01722 (William White, 100%)
- 1 Mile Placer Lease: ID01723 (Paul Stintzi, 100%)

**Maisy May Creek:**

- 2 Mile Placer Lease: ID01713 (Allen Wywrot, 100%)
- 2 Mile Placer Lease: ID01716 (Keaton Markham, 100%)

NTS # 1150/06

Latitude: 63°22.198' N Longitude: 139°8.405'W

Dawson Mining District

WORK PERFORMED: June 3-7, 2019

DATE OF REPORT: June 13, 2019

Author of Report: Isaac Fage

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## Summary

GroundTruth Exploration Inc. was hired by William White, Paul Stintzi, Candace Maezerolle, Allen Wywrot, and Keaton Markham to conduct an aerial drone survey on their Henderson Creek/Maisy May-area placer leases. The leases were imaged by EBee fixed-wing drones, creating high resolution imagery and surface topography that will help establish exploration targets and plan a follow up program.

All work was undertaken by GroundTruth Exploration Inc.

The survey was successful in finding features such as benches, channel merge areas, and valley widths – all useful data for future exploration work by geophysical and drilling methods.

### 1.0 Location and Access

The placer leases are located roughly 70km SSE of Dawson City, within the Yukon river drainage system in west-central Yukon Territory. The rough centre of these leases is located at 63.41800° N, 139.22400° W, and can be found on NTS mapsheet 115O/06 (Figure 1). It is accessible throughout the year by established placer mining road

### 2.0 Property

Placer Prospecting lease tenure:

#### **Henderson Creek:**

ID01721, 1 Mile, Candace Mazerolle, 100%, Expiry Oct 19, 2019

ID01722, 2 Miles, William White, 100%, Expiry Oct 19, 2019

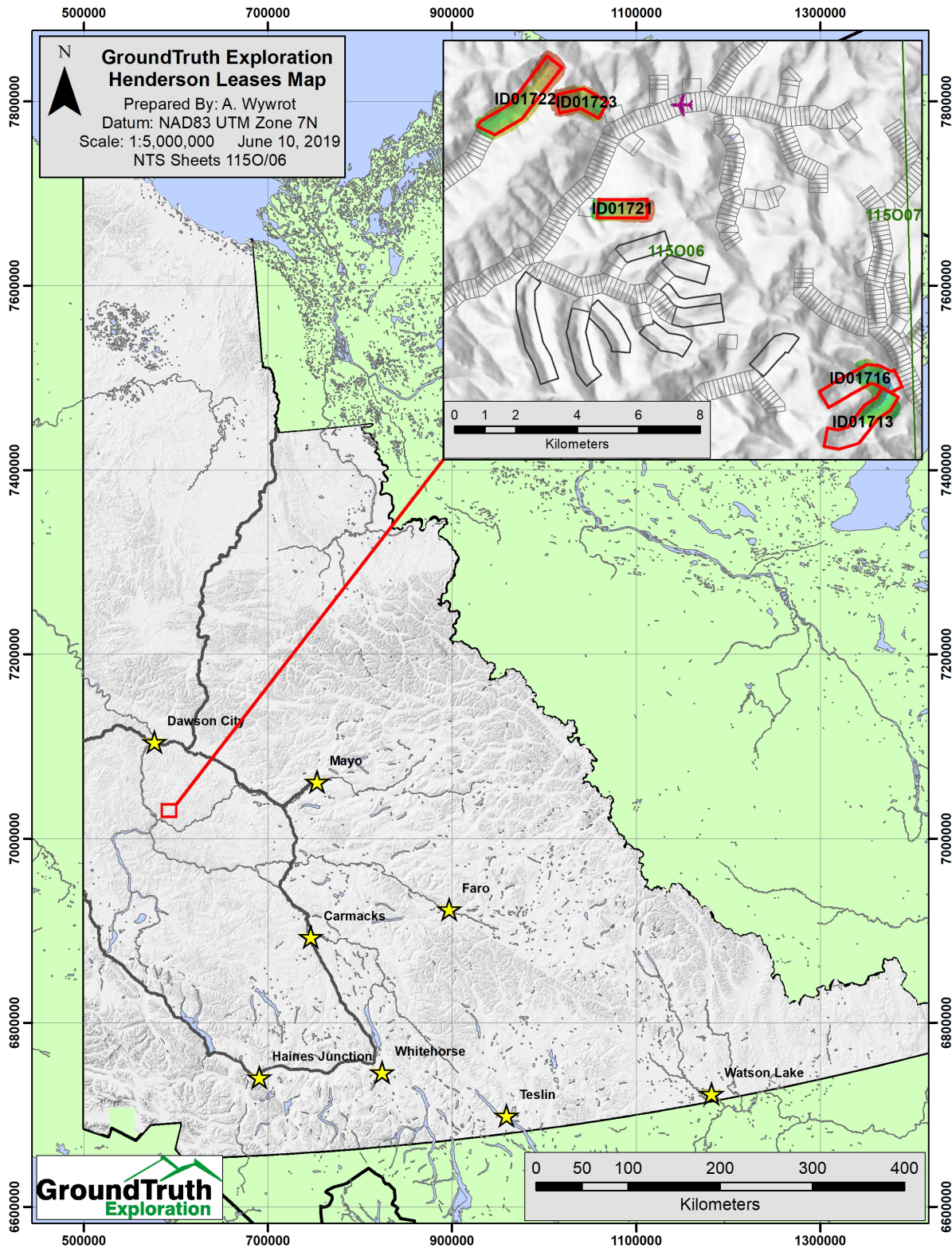
ID01723, 1 Mile, Paul Stintzi, 100%, Expiry Oct 19, 2019

#### **Maisy May Creek:**

ID01713, 2 Miles, Allen Wywrot, 100%, Expiry Oct 18, 2019

ID01716, 2 Miles, Keaton Markham, 100%, Expiry Oct 19, 2019

See Figure 2 for locations of these leases in greater detail.





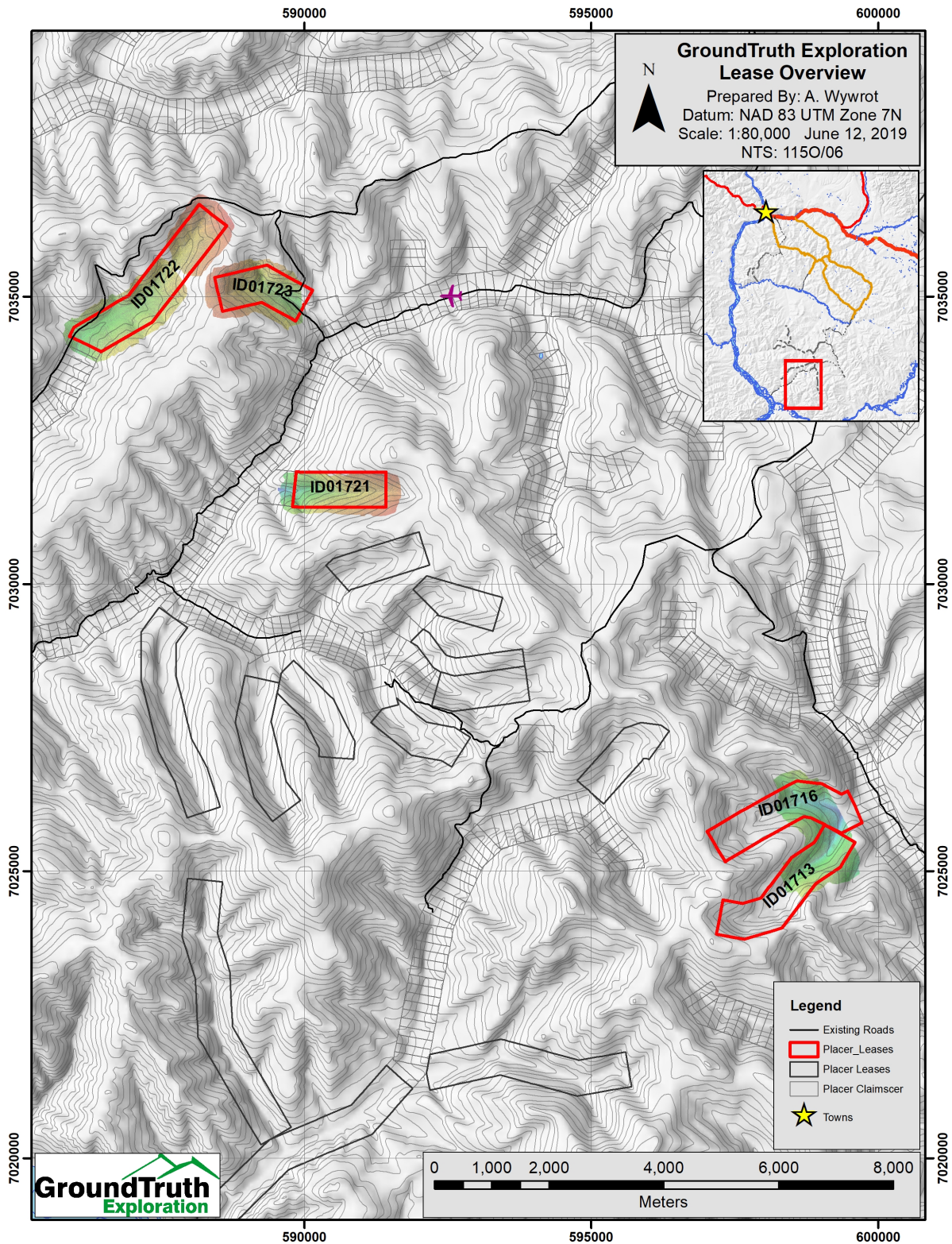


Figure 2: Further detail of leases and UAV Survey.

### 3.0 Physiology

The lease is located in an unglaciated zone in the Klondike Plateau region of Canada's Boreal Cordillera ecozone. Due to its location in Canada's discontinuous permafrost zone, permafrost is distributed unevenly throughout the properties. Moderately-sloped hills range from 365 – 1525m in height. The valley bottoms and northern slopes have thick moss mats, black spruce, and alder thickets over icy permafrost, while southern slopes are generally more sparsely vegetated with ground leaf cover and white spruce, aspen and birch forests.

Typically, the interior intermontane plateau receives about 400 mm of annual precipitation. Snowfall accounts for 35 to 60% of all precipitation. Winters are long and cold, with January mean temperatures between -15°C and -27°C. Summers are warm but short, with July mean temperatures between 12°C and 15°C.

### 4.0 Geology

Henderson, Moosehorn, Tenderfoot and Maisy May Creeks and their tributaries, located in the Yukon-Tanana Terrane, are underlain by Carbiniferous metamorphic rocks of the Simpson Range (MgSR), Carbiniferous metamorphic rocks of the Finalyson Assemblage (DMF1), Devonian metamorphic rocks of the Snowcap Assemblage (PDS1, PDS2) and Paleozoic metamorphic rocks of the Sulphur Creek Suite (PgS). 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; minor greenstone and amphibolite, and quartz-mica-schist, whereas PDS2 consists mainly of marble. Pgs is composed of granodiorite and quartz monzonite. There is a north-south trending unknown fault type fault separating the MgSR from PDS2, DMF1 and PDS2 (Ryan, et al, 2016).

This region is located in an unglaciated area, thus placer gold should be located close to the hard rock sources. With the recent discovery of the high-grade gold veins nearby at White Gold's Vertigo target, these properties could be particularly gold-rich.

See Figure 3 for a view of these leases' bedrock geologies.



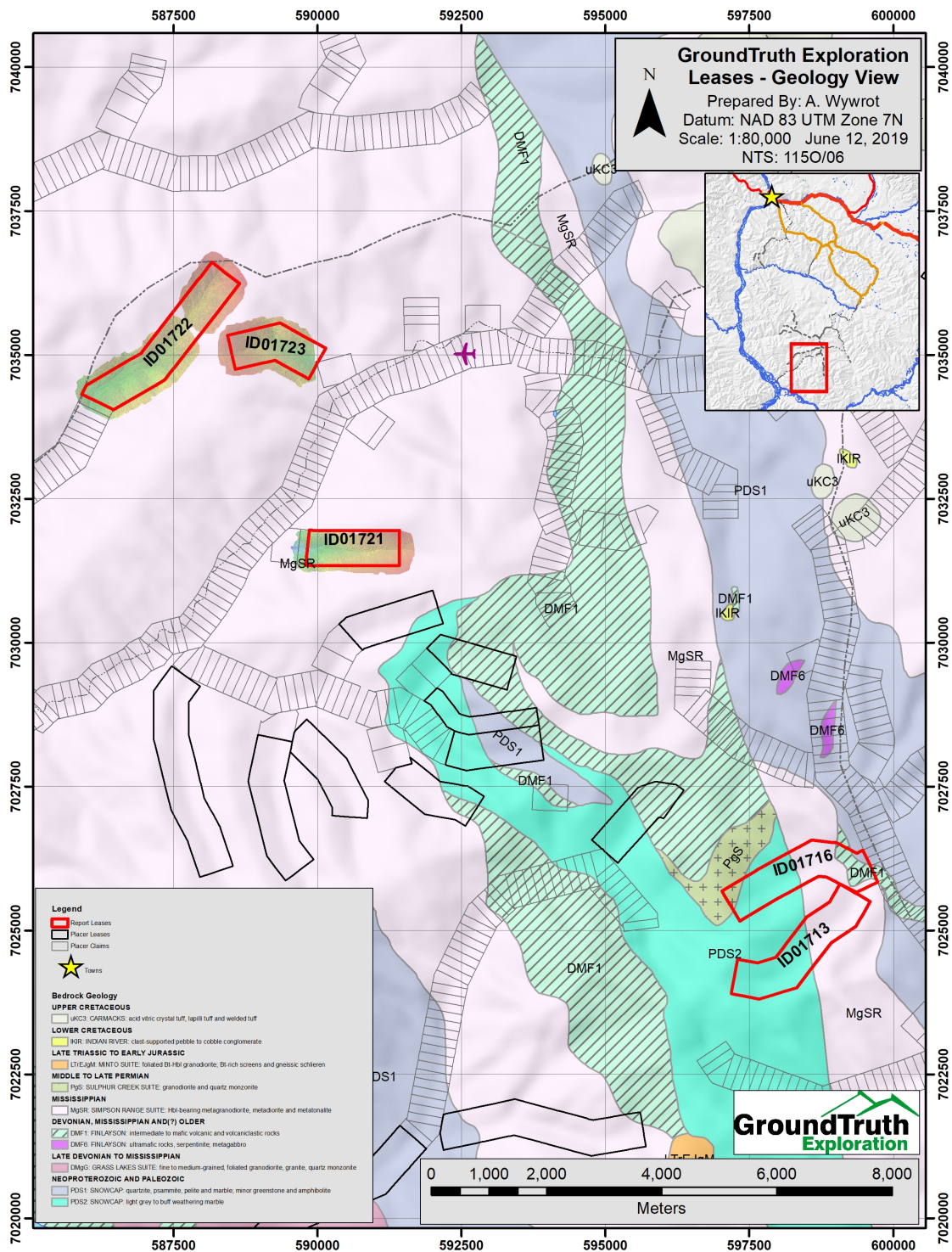


Figure 3: Bedrock Geology of the Henderson – Maisey May area leases. The northern ones are totally underlain by Dawson Range metamorphic felsic-intermediate rocks, while the Maisey leases have Snowcap assemblage metamorphic sedimentary rocks in their upper reaches, Dawson Range metamorphic middle region, and end in Finlayson mafic volcanics.

## 5.0 Airborne UAV Survey

Groundtruth exploration was contracted to complete these surveys, and they were flown on June 3<sup>rd</sup>, 2019. Three pilots and a spotter were deployed with three drones to complete the survey on these leases.

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

UAV Drone:	Ebee UAV ‘Drone’ with internal GPS and radio link
Camera:	Canon 16 megapixel camera
Base Station:	Panasonic Toughbook laptop with radio link
Power Generation:	1000watt Honda generator (for battery charging)
Radios:	VHF radio with aircraft frequencies
Processing:	Laptop computer with adequate RAM
Software:	EMotion software for flight planning/monitoring Postflight Pix4D for image Orthorectification

### UAV Survey Operating Procedures:

- A crew of 2 (Pilot and UAV Spotter) or more arrive at the survey area
- Area of operations is evaluated for hazards and a suitable staging site is selected
- A staging point is set up with laptops, base-to-drone communication gear, battery recharge point, and a UAV landing area.
- UAV is assembled, checked for damage, and readied to fly with plan uploaded through EMotion software.
- UAV is launched by pilot, and dispatched to mission
- Spotter maintains visual contact with drone, while pilot ensures base station is updating and occasionally relieving spotter during automated flight.
- UAV completes mission, returns to staging point, and lands.
- UAV battery is removed, and data is imported to base station computer via SD Card.

### Data Processing:

The collected data is sent to a processing PC with Pix4D software, which combines all the collected images using automated georeferencing and Structure-in-Motion techniques. The end result is two images, one an orthomosaic of the images, the other a Digital Surface Model (DSM) that shows height of features present in the orthomosaic.

## 5.0 Survey Results – Henderson-Maisy May UAV Survey

Images of the Henderson leases were reasonably complete, although the lack of landing points near the middle of ID01722 resulted in the UAV not having sufficient endurance to complete the survey. The Maisy May leases suffered from technical difficulties, and only a partial survey was completed over those leases.

### Survey Results:

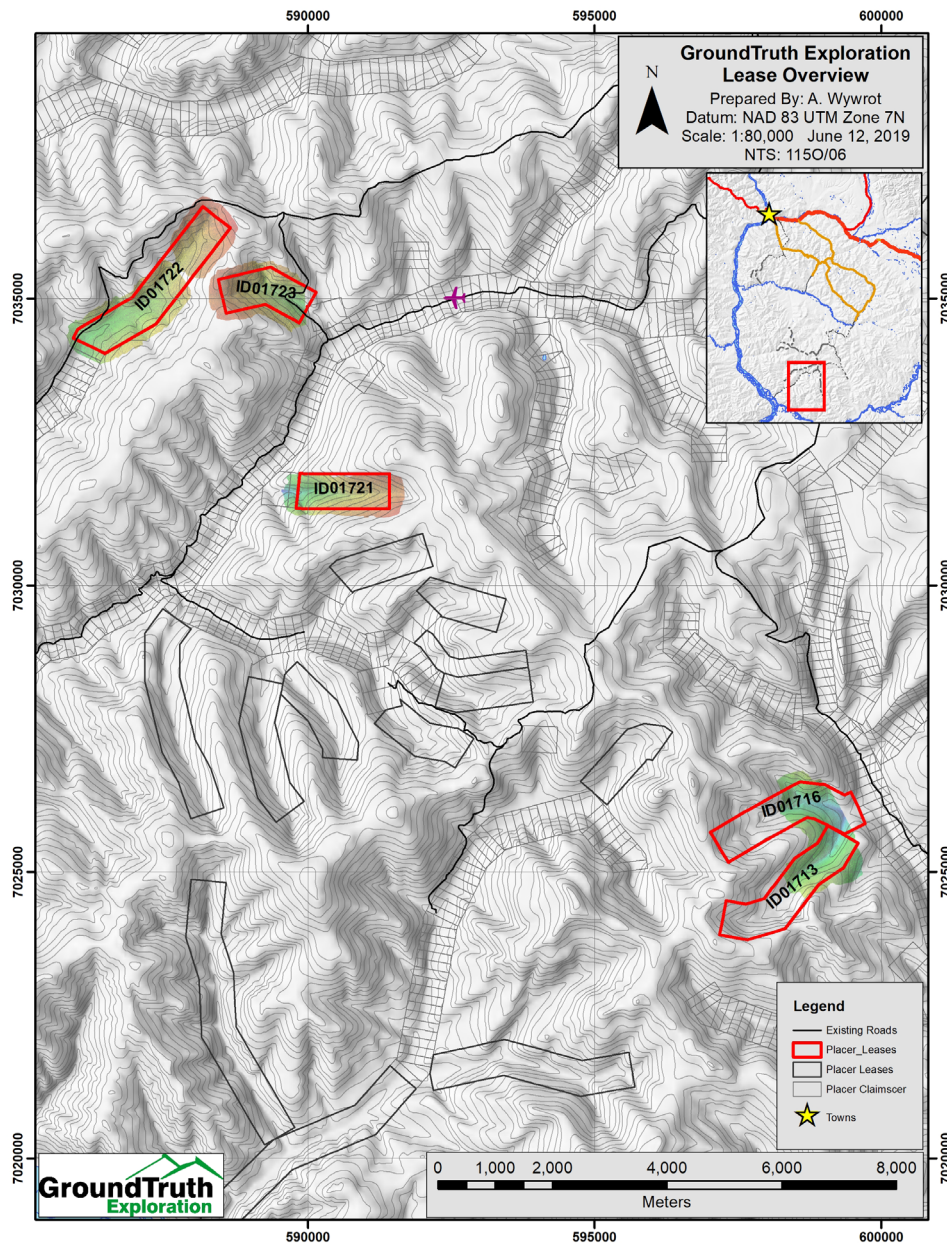


Figure 4: The UAV survey was completed, but the Maisy May flights suffered from some technical difficulties.



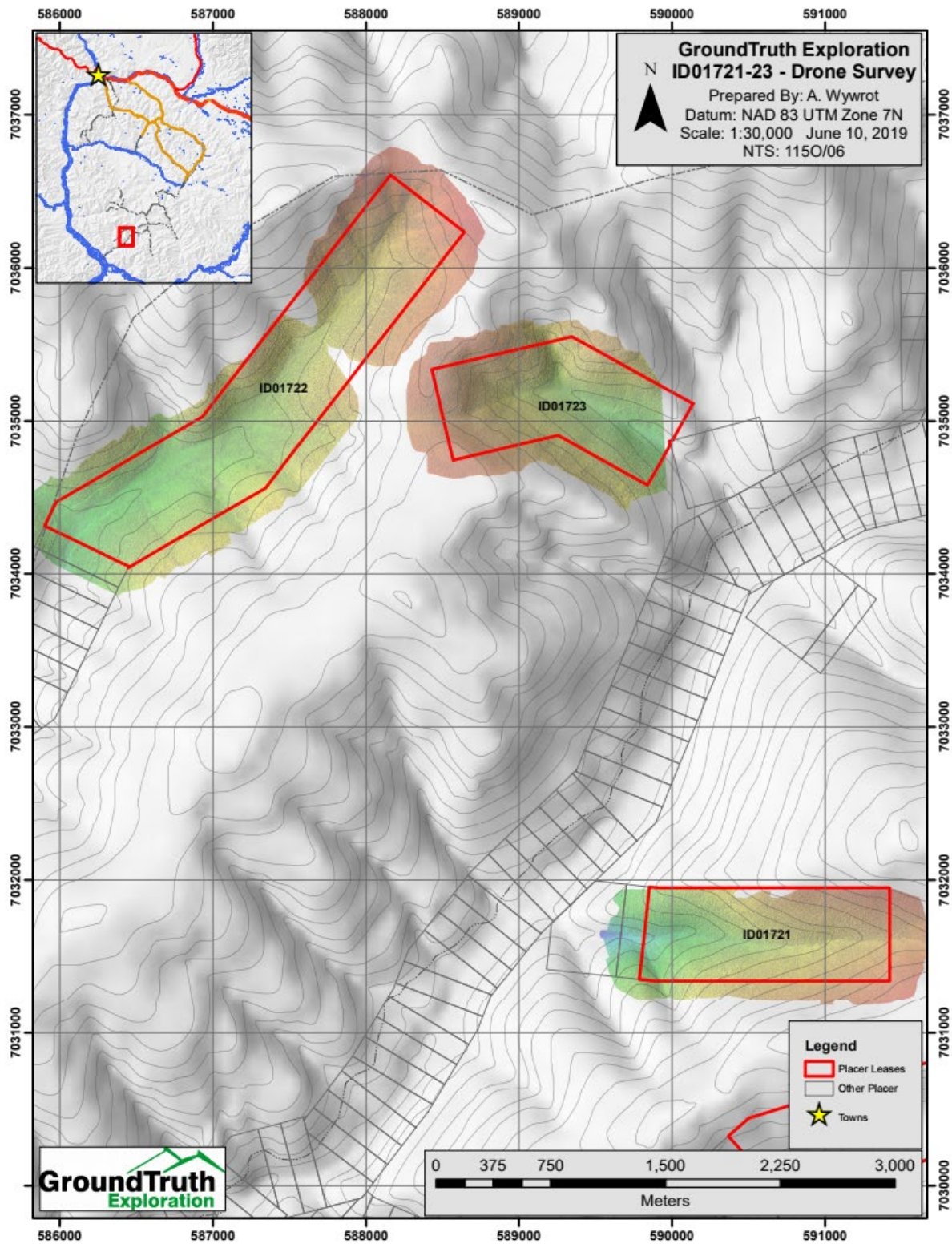


Figure 5: The three Henderson leases, ID01721 - 23, with their UAV coverage areas represented as colour-shaded DSMs.



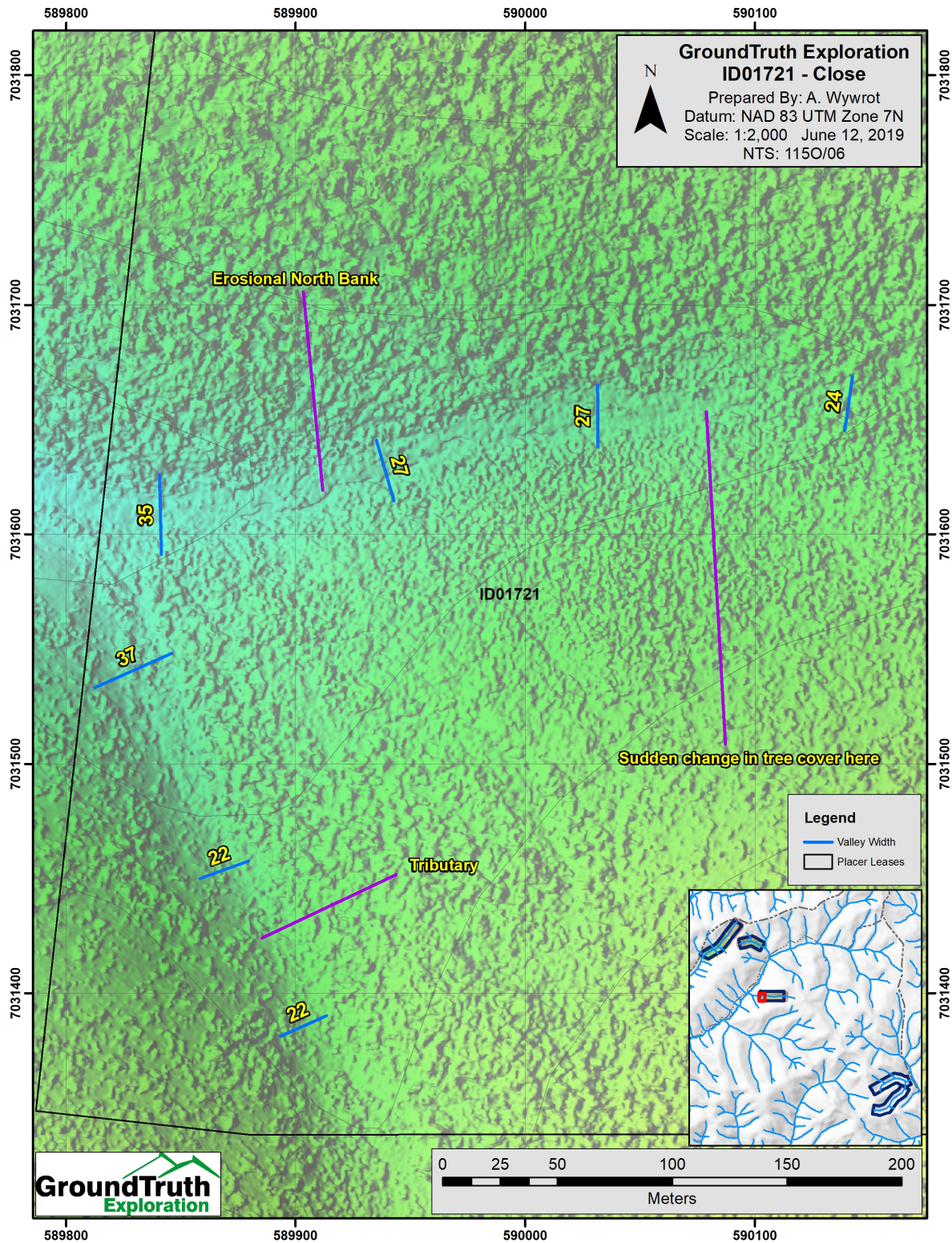


Figure 6: Visible here at the lower end of the ID01721 lease, the northern stream exhibits an erosional north edge, and a sudden change in the status of tree cover at the noted point.



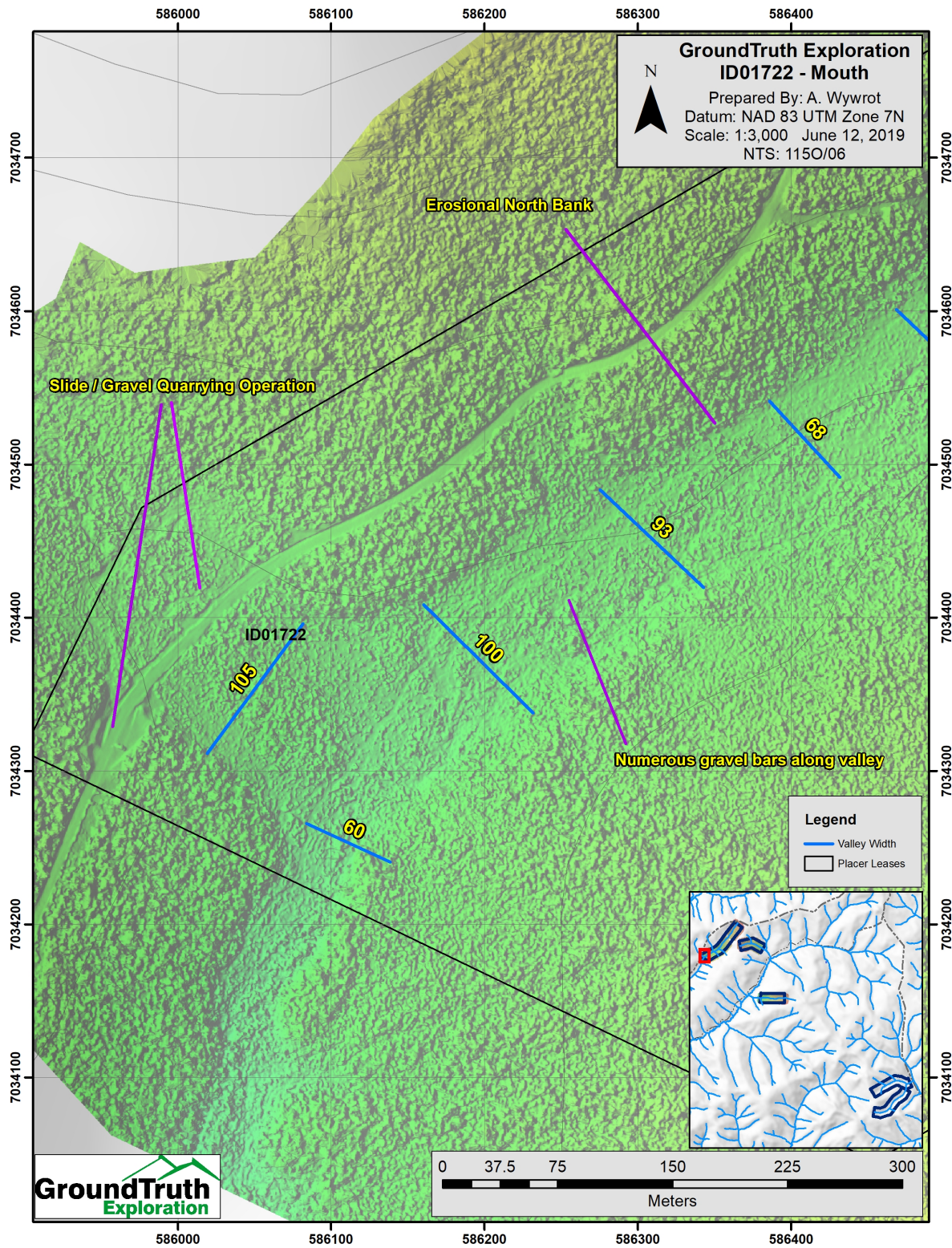


Figure 7: The mouth of the ID01722 lease, where a broad valley shows the presence of numerous gravel bars. Some form of slide occurred on the northwest side, and is now quarried for gravel roads.



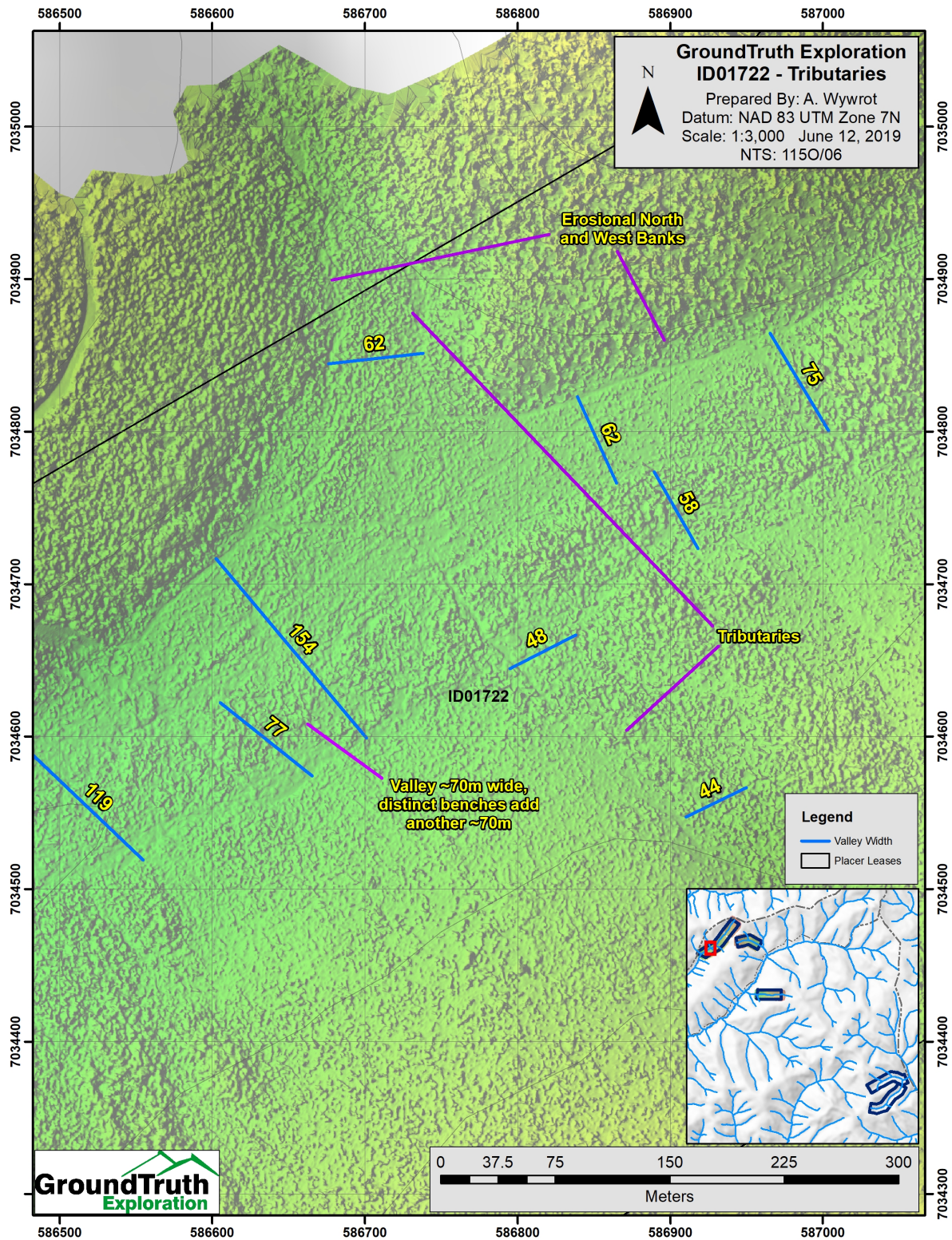


Figure 8: A bit farther up the channel, one can see two tributaries merging in at the same place. A prominent south bench doubles the size of the valley.



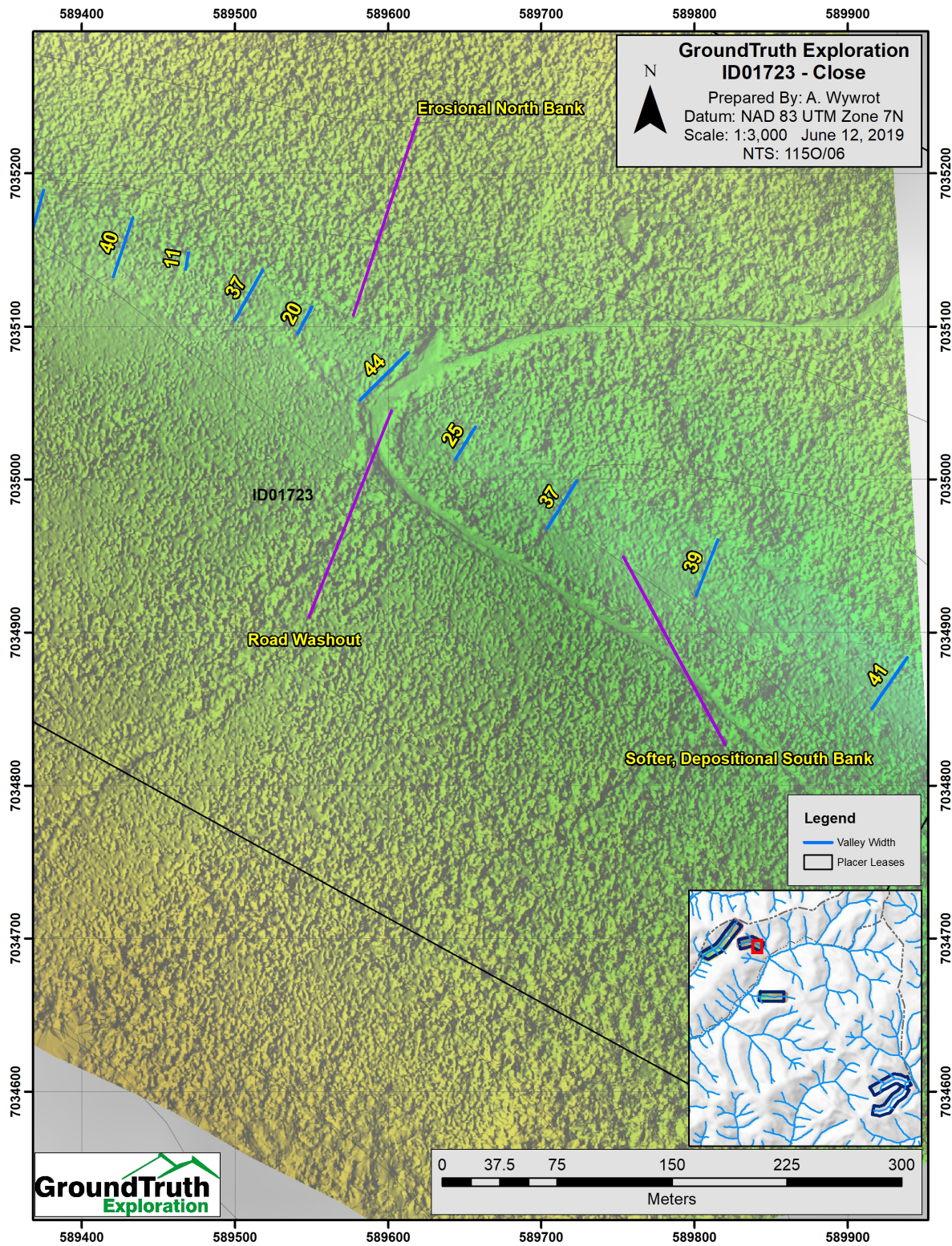


Figure 9: The ID01723 lease has few distinctive features, aside from the road crossing, where a wider valley cuts through the road at a single point washout.



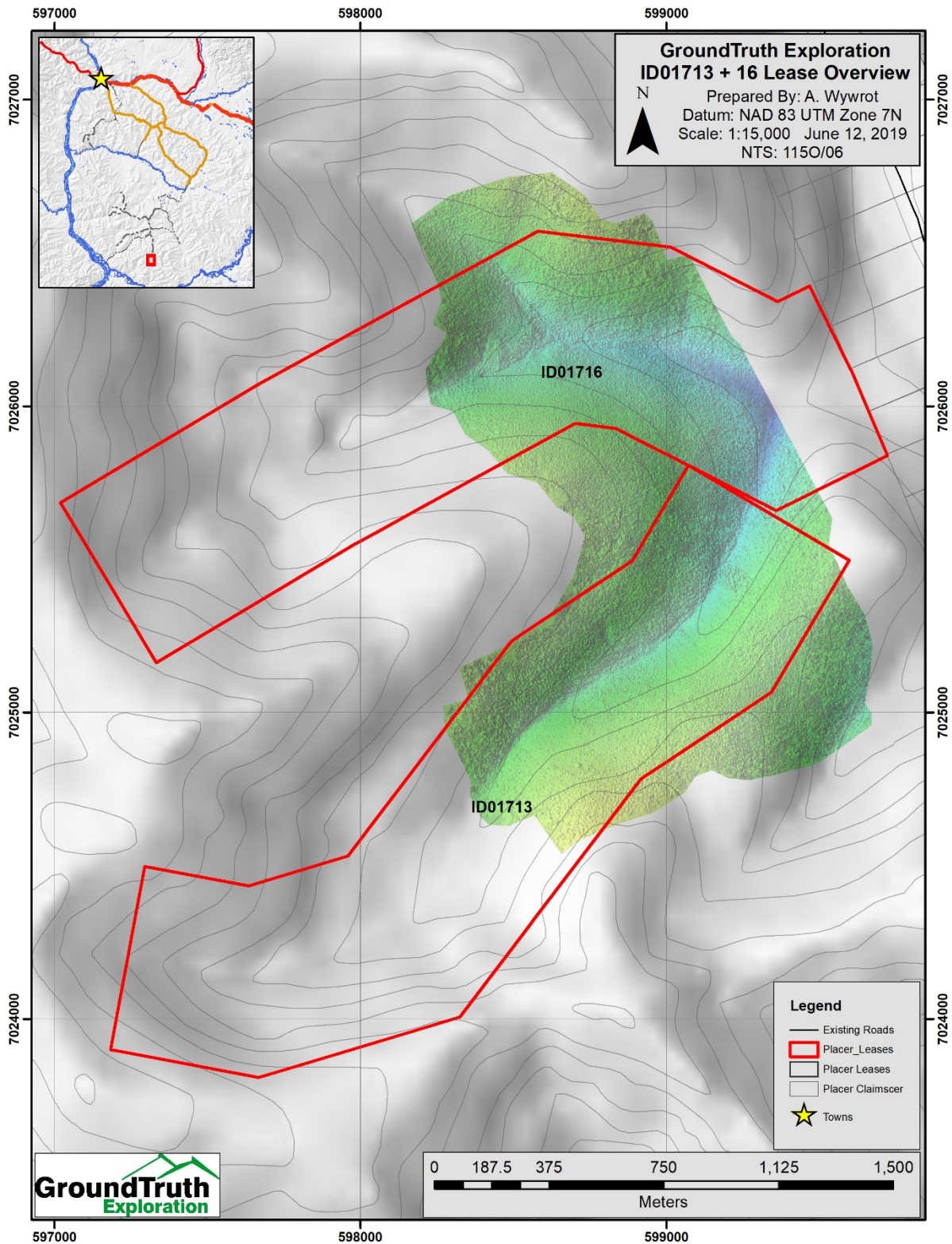
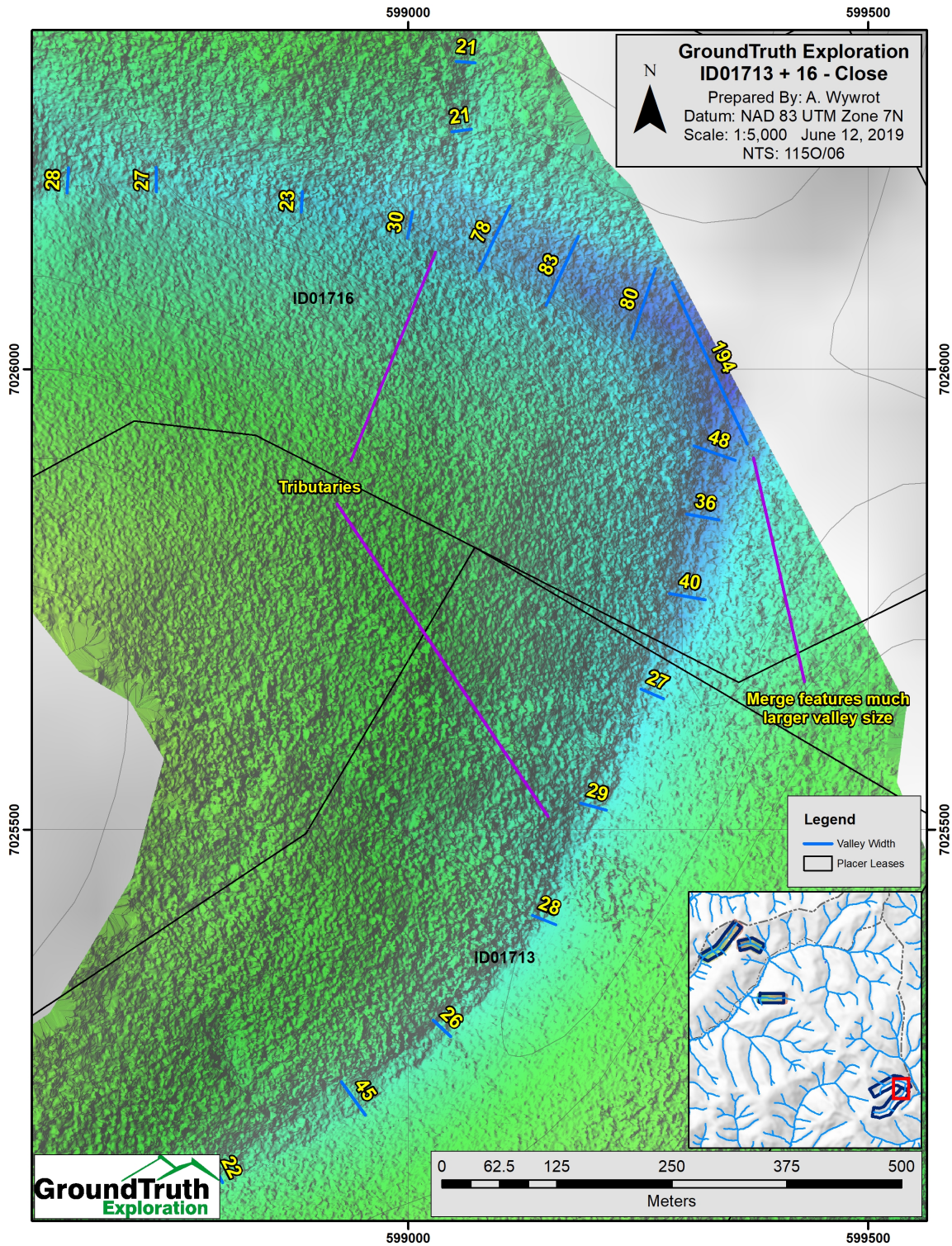


Figure 10: The Maisy leases suffered from some technical issues, but a solid amount of imagery was still gathered during the survey.





## 6.0 Conclusion/ Recommendations

The UAV Surveying on these Henderson and Maisy May leases produced high resolution digital surface models and orthophotos. These products will be very useful in identifying benches, stream channels, areas of flow regime change, and other valley features. Knowing the location of these features will aid the planning of future geophysical surveys, drilling locations, and eventually placer mining operations.

## 7.0 Statement of Expenditures

<b>Lease: ID01721</b>		<b>Owner: Candace Mazerolle, 100%</b>
<b>1 Mile Lease</b>		Date: June 3rd, 2019
<b>AERIAL DRONE SURVEYS</b>		
<b>Drone Survey</b>	<b>Amount</b>	<b>Description</b>
Wages -Drone Operator	\$ 550.00	
Wages -Assistant Operator	\$ 385.00	
Equipment and Electronics	\$ 500.00	1 UAV Drone with Base Station, computer, GPS, Radio
Imagery Processing and Final Deliverables	\$ 300.00	3 flights @ \$100/flight
Report	\$ 100.00	\$500 divided by 5 leases
<b>Aerial Drone Surveys</b>	<b>\$ 1,835.00</b>	
<b>Lease: ID01722</b>		<b>Owner: William White, 100%</b>
<b>2 Mile Lease</b>		Date: June 4th, 2019
<b>AERIAL DRONE SURVEYS</b>		
<b>Drone Survey</b>	<b>Amount</b>	<b>Description</b>
Wages -Drone Operator	\$ 550.00	
Wages -Assistant Operator	\$ 385.00	
Equipment and Electronics	\$ 500.00	1 UAV Drone with Base Station, computer, GPS, Radio
Imagery Processing and Final Deliverables	\$ 900.00	9 flights @ \$100/flight
Report	\$ 100.00	\$500 divided by 5 leases
<b>Aerial Drone Surveys</b>	<b>\$ 2,435.00</b>	
<b>Lease: ID01723</b>		<b>Owner: Paul Stintzi, 100%</b>
<b>1 Mile Lease</b>		Date: June 5th, 2019
<b>AERIAL DRONE SURVEYS</b>		
<b>Drone Survey</b>	<b>Amount</b>	<b>Description</b>
Wages -Drone Operator	\$ 550.00	
Wages -Assistant Operator	\$ 385.00	
Equipment and Electronics	\$ 500.00	1 UAV Drone with Base Station, computer, GPS, Radio
Imagery Processing and Final Deliverables	\$ 300.00	3 flights @ \$100/flight
Report	\$ 100.00	\$500 divided by 5 leases
<b>Aerial Drone Surveys</b>	<b>\$ 1,835.00</b>	
<b>Lease: ID01713</b>		<b>Owner: Allen Wywrot, 100%</b>
<b>2 Mile Lease</b>		Date: June 6th, 2019
<b>AERIAL DRONE SURVEYS</b>		
<b>Drone Survey</b>	<b>Amount</b>	<b>Description</b>
Wages -Drone Operator	\$ 550.00	
Wages -Assistant Operator	\$ 385.00	
Equipment and Electronics	\$ 500.00	1 UAV Drone with Base Station, computer, GPS, Radio
Imagery Processing and Final Deliverables	\$ 800.00	8 flights @ \$100/flight
Report	\$ 100.00	\$500 divided by 5 leases
<b>Aerial Drone Surveys</b>	<b>\$ 2,335.00</b>	
<b>Lease: ID01716</b>		<b>Owner: Keaton Markham, 100%</b>
<b>2 Mile Lease</b>		Date: June 7th, 2019
<b>AERIAL DRONE SURVEYS</b>		
<b>Drone Survey</b>	<b>Amount</b>	<b>Description</b>
Wages -Drone Operator	\$ 550.00	
Wages -Assistant Operator	\$ 385.00	
Equipment and Electronics	\$ 500.00	1 UAV Drone with Base Station, computer, GPS, Radio
Imagery Processing and Final Deliverables	\$ 800.00	8 flights @ \$100/flight
Report	\$ 100.00	\$500 divided by 5 leases
<b>Aerial Drone Surveys</b>	<b>\$ 2,335.00</b>	



## 8.0 References

**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)

**Local Geology:** 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.

**Mineral Titles:** Yukon Mining Recorder, Mining Claims Database – [www.yukonminingrecorder.ca](http://www.yukonminingrecorder.ca)

**Topographic data:** NR Canada, CanVec Topographic Database- [www.geogratis.ca](http://www.geogratis.ca)

## 9.0 Statement of Qualifications

I, Isaac Fage of Dawson, Yukon Territory certify that I hold an Advanced Diploma in GIS/Remote Sensing from the Centre of Geographic Sciences (COGS). I am Operations Manager and President of GroundTruth Exploration Inc. I have been working in the mineral exploration industry continuously since 2004.

Isaac Fage  
June 13, 2019

