

# **GEOPHYSICAL REPORT**

on the

## **Twenty Mile Creek Project**

### **CLAIMS:**

<b>Phoenix 1-49</b>	<b>P 46296-P46344</b>
<b>Joe 1-50</b>	<b>P46345-P46394</b>
<b>Dale 1-20</b>	<b>P46415-P46435</b>
<b>Dave 1-50</b>	<b>P46435-P46484</b>
<b>Dave 1-50</b>	<b>P46516-P46565</b>

**DAWSON MINING DISTRICT  
Yukon**

**NTS Mapsheet: 115 N/08**

**Latitude: 63° 28' 8" N      Longitude: 140° 7' 53" W**

**WORK PERFORMED: February 14 – March 2, 2012  
For: Joel Spurlock**

**AUTHOR OF REPORT: ISAAC FAGE  
DATE OF REPORT: November 9, 2012**

## Summary

A total magnetic field survey was conducted on the Twenty Mile Creek placer property to identify the location of potential auriferous pay channels. This is the third survey done on the Twenty Mile Creek, which when combined covers an area from the mouth of the creek to 20 km up the creek, and a total of 260 line-kms (figure 1).

The property is located 65km Southwest of Dawson City on the Twenty Mile Creek which is a tributary of the lower Sixty Mile River. (NTS: 115N/09)

The survey was conducted by Ground Truth Exploration with a three man crew from February 14 to March 2, 2012. 80 line-km were gridded for the survey. It was established using handheld GPS units, being flagged at a frequency of 25m and grid stations with written flags every 50m. The grid consists of 178 lines perpendicular to the creek centerline, with a spacing of 25m between lines. The magnetic field survey was conducted along all grid lines in 'walk mode', with a GPS tagged reading being recorded every 0.5 of a second.

The survey has identified several distinct anomalous magnetic lineaments that warrant follow-up sampling.

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## 1.0 Introduction

Ground Truth Exploration was contracted by Joel Spurlock to conduct a ground total magnetic field survey on the Twenty Mile placer property, continuing the surveys completed in 2009 and 2010. A grid totalling 80 line-km was established and ground magnetic survey conducted on the property between February 14<sup>th</sup> and March 2, 2012. The purpose of the exploration program was to identify potential gold bearing, magnetite rich placer channels on the Twenty Mile property. The survey was conducted by: Chad Cote, John McGrath, and Rian Lougheed-Smith.

### Personnel:

Rian Lougheed-Smith	Chad Cote	John McGrath
Box 70	Box 1494	Box 70
Dawson, YT	Dawson, YT	Dawson, YT
Y0B 1G0	Y0B 1G0	Y0B 1G0

## 2.0 Location and Access

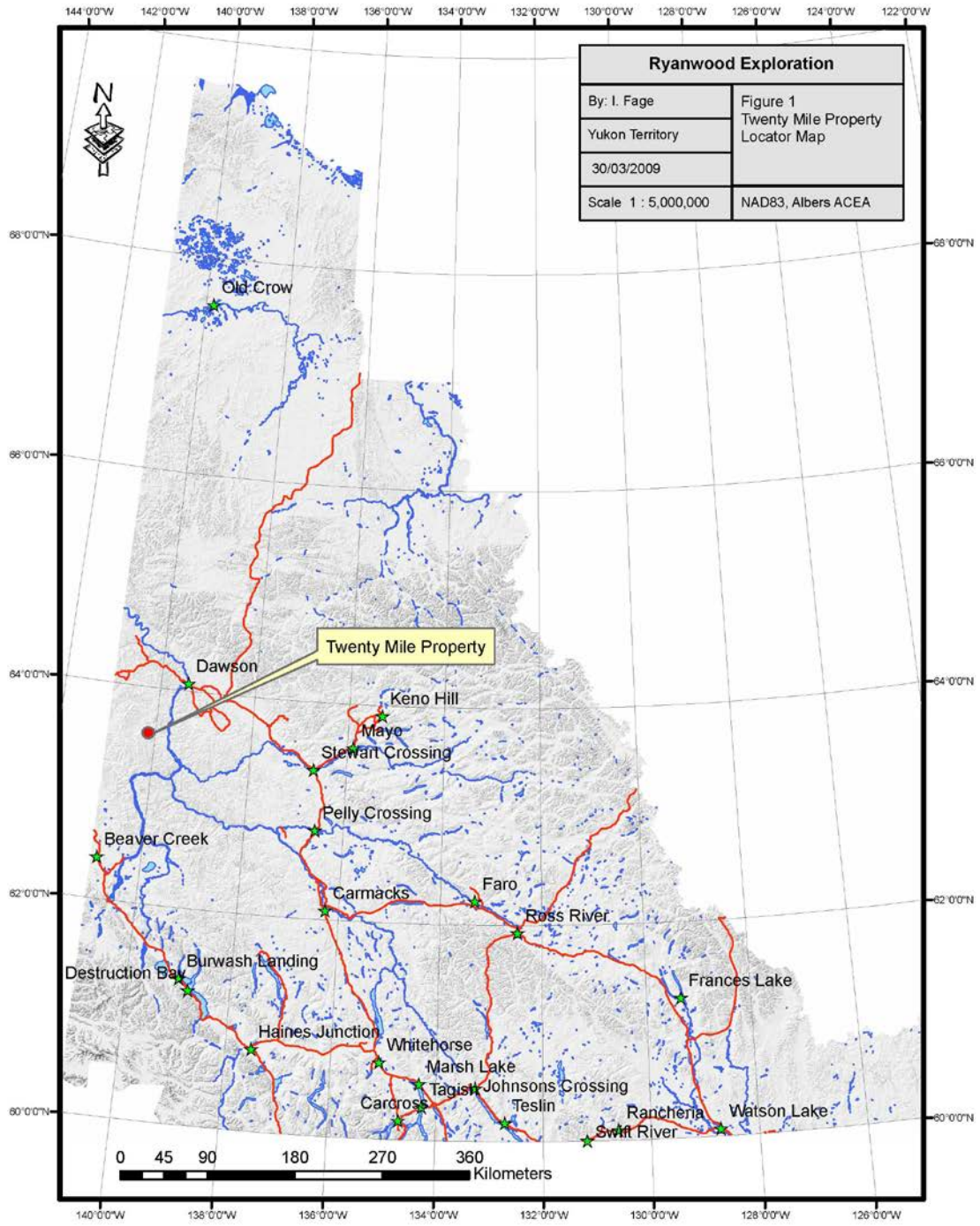
The Twenty Mile placer property is located within the lower Sixty Mile drainage system in central Yukon Territory. It is centered at: 63° 35'N, 140° 06'W, on NTS mapsheet: 115N09. (*Figure 1*). The property is located 65km Southwest of Dawson City on the Twenty Mile Creek which is currently accessible in winter via the Yukon and Sixty Mile rivers by snowmobile, and accessed by helicopter in summer. The neighbouring Ten Mile Creek placer mine is currently accessed from Dawson City by barge on the Yukon River to the mouth of the Sixty Mile River (70km) and then by road to the Ten Mile Creek mine (12km).

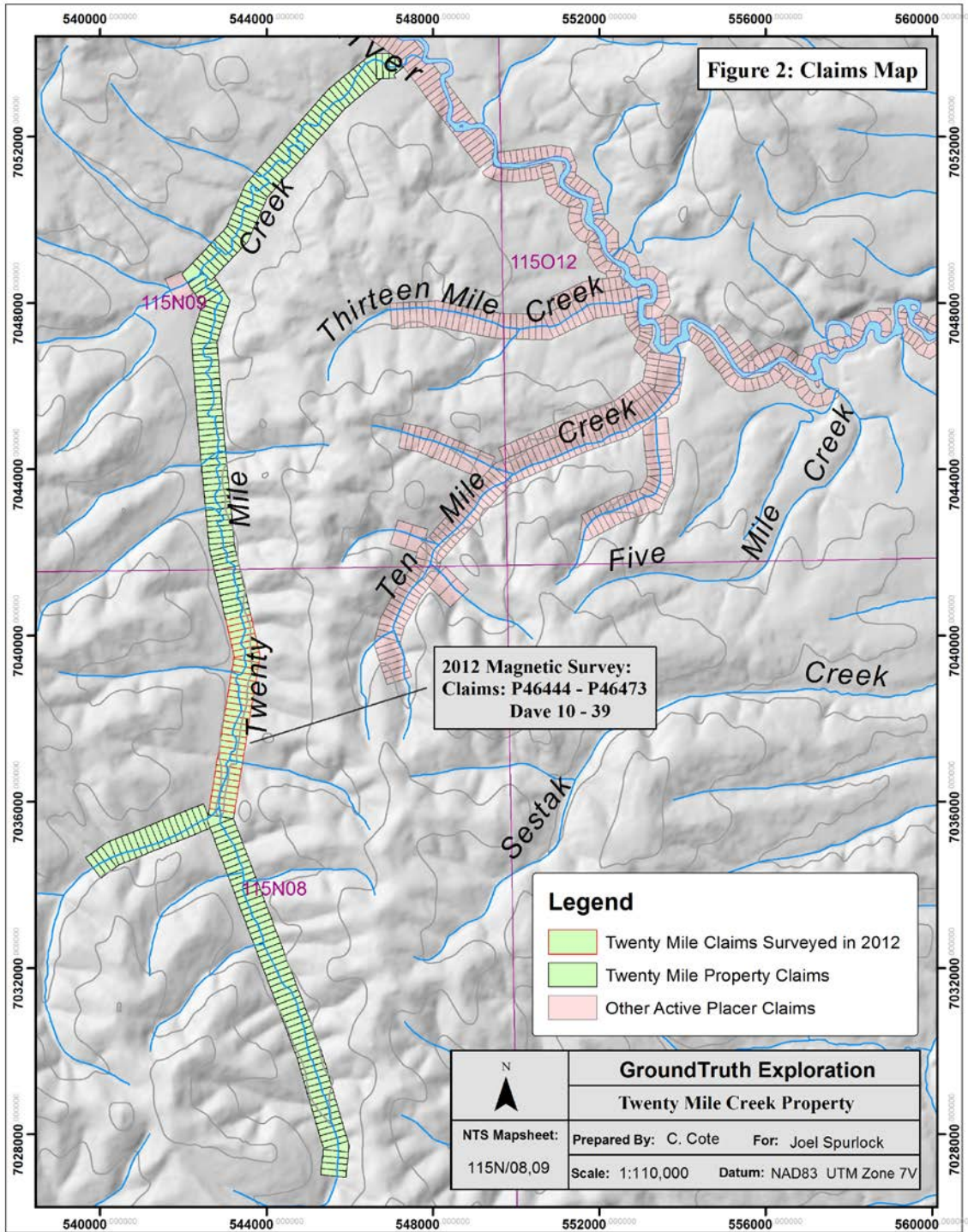
## 3.0 Property

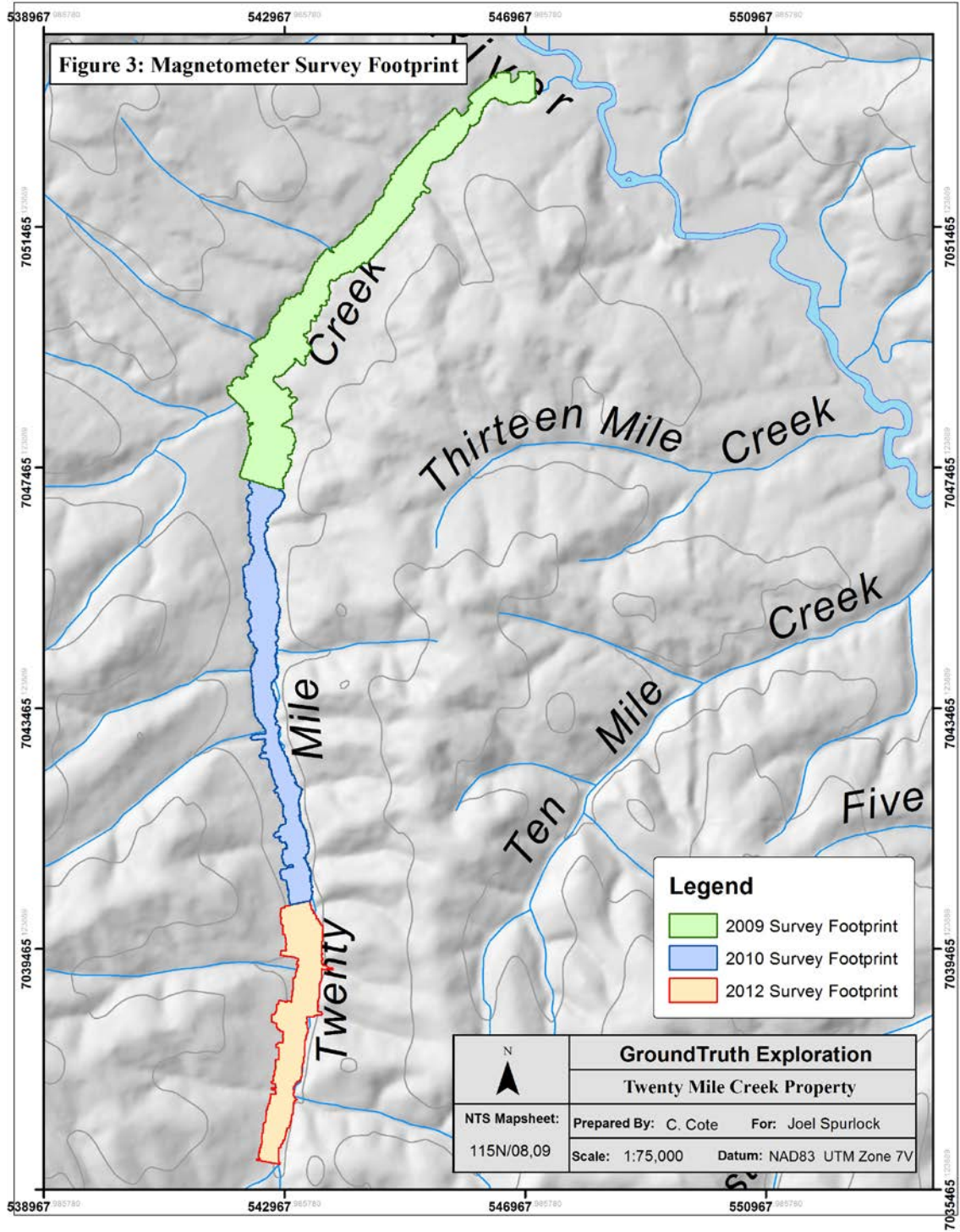
The Twenty Mile property consists of 218 contiguous placer creek claims on the Twenty Mile Creek (*Figure 2*).

Claim Number	Owner
P 46355 - P 46394	Joel Spurlock (100%)
P 46435 - P 46443	Joel Spurlock (100%)

A footprint of the 2009, 2010, and 2012 surveys is indicated in figure 3.







## 4.0 Physiology and Geology

The Twenty Mile property is located within the Yukon Tanana Terrane. Locally, the landscape is composed of moderately sloped, tree covered hills ranging in elevations from 1200 to 5000 feet. The area experiences typical climatic conditions for central Yukon Territory with short, warm and dry summers and cold winters. Temperatures range from -20°C to -60°C in the winter and +10°C to +30°C in the summer.

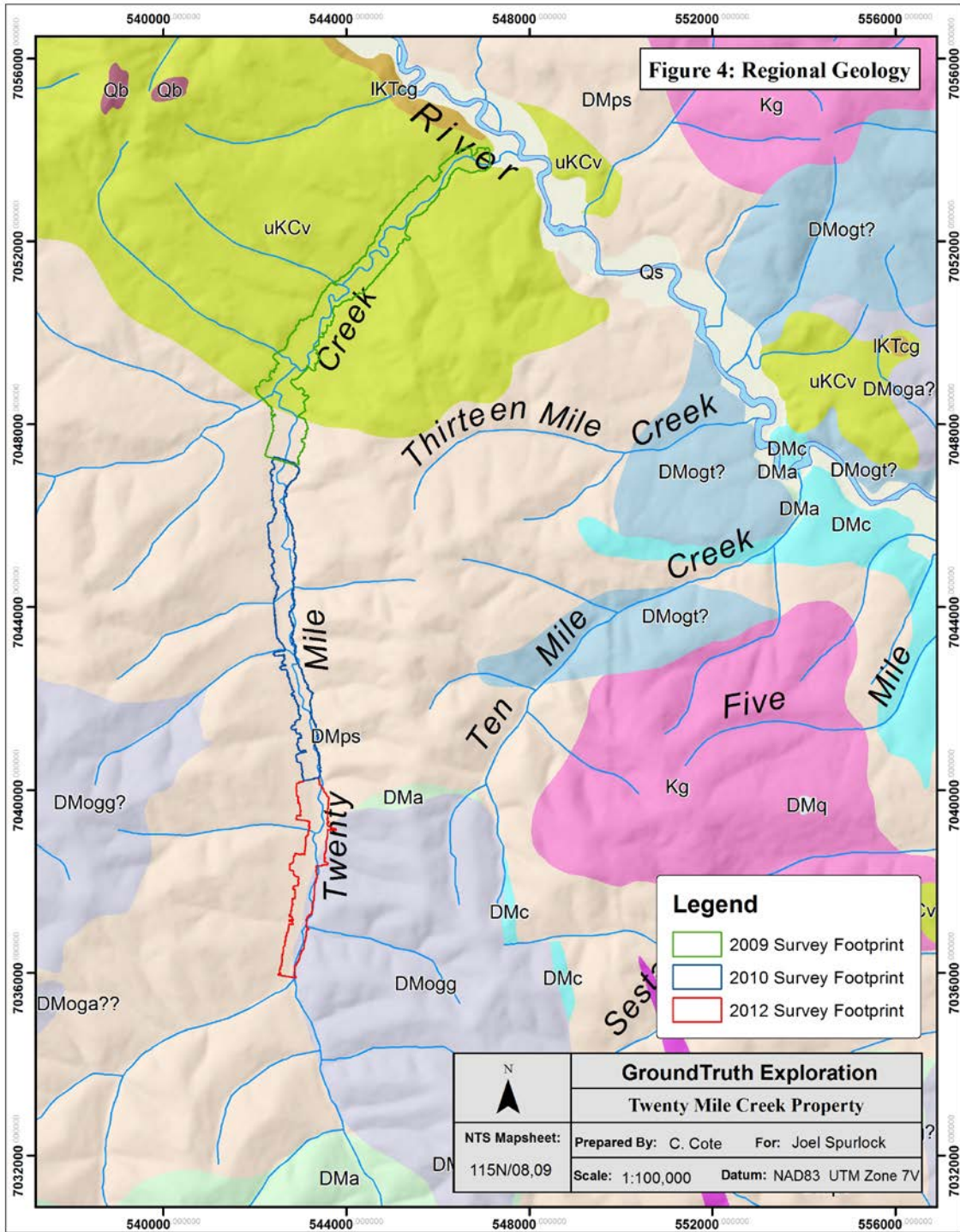
The Twenty Mile property is underlain by an Upper Cretaceous Carmacks Volcanics unit from the mouth of the Twenty Mile Creek to 8km upstream. This unit is composed of rhyodacite and dacite, commonly biotite and hornblende phyrlic, dominated by lesser andesite and basalt; minor rhyolite. The upper portion of the creek is underlain by a Devonian Quartz-Mica Schist until 17 km upstream, where the stream runs along the contact between this Schist and a Devonian to Mississippian, pink to orange K-feldspar rich, granitic orthogneiss, commonly with biotite, banded to layered (*Figure 4*).

## 5.0 Regional Magnetics

The 2012 ground survey of Total Magnetic Field Intensity is compared to a 2002 airborne survey showing the gridded 1<sup>st</sup> vertical gradient of total magnetic field intensity derived by Targetted Geoscience Initiative's airborne magnetic (Shives et al, 2002), (*Figures 5a, 5b*).

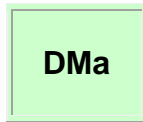
This comparison identifies several significant structural lineament representing both magnetic low and magnetic high zones that cut across the ground survey. Non-linear Magnetic highs identified throughout the ground survey correlate well with moderate magnetic highs in the airborne regional magnetics and are not attributed to the existence of placer magnetite deposits.

One major magnetic high lineament has been identified in the ground survey that is not observable in the regional airborne. This local anomaly is a more suitable target for placer magnetite channels and future exploration (*Figures 5a, 5b, and 6*).



(Ryan and Gordey, 2004)

## Geology Legend



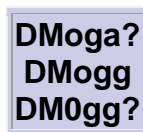
Devonian to Mississippian

**AMPHIBOLITE:** amphibolite schist and gneiss; metabasite; probably derived from mafic to intermediate volcanic or volcanoclastic rocks; locally associated with psammite or interlayered with orthogneiss.



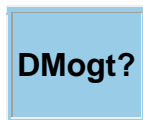
Devonian to Mississippian

**MARBLE:** marble (metacarbonate) derived from pure to impure limestone; associated calc-silicate schist derived from calcareous metapelite.



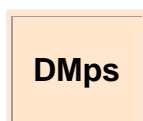
Devonian to Mississippian

**ORTHOgneiss (OLDER, 363-343 Ma):** DMog, undivided orthogneiss; DMogg, pink to orange K-feldspar rich, granitic orthogneiss, commonly with biotite, banded to layered, commonly includes or associated with DMoga; DMoga, mainly K-feldspar augen.



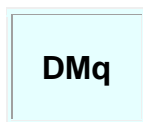
Devonian to Mississippian

**ORTHOgneiss.** commonly includes or associated with DMogg; DMogt, mainly tonalitic or intermediate to mafic orthogneiss, generally grey, banded to layered, commonly veined; commonly interlayered with amphibolite schist and gneiss, biotite.



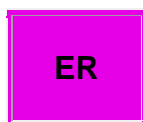
Devonian to Mississippian

**QUARTZ-MICA SCHIST:** undivided metasedimentary rocks dominated by metapsammite, semipelite and metapelite; commonly quartz-garnet-biotite-muscovite schist possibly derived from siliceous siltstone; commonly finely interlayered with garnet metapelite.



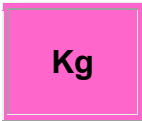
Devonian to Mississippian

**QUARTZITE:** banded to massive, grey to white quartzite; apparently clastic in origin, or in part, possibly derived from metachert.



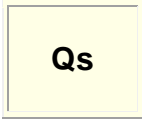
Eocene

**PORPHYRY:** Smokey quartz and K-feldspar phyric rhyolite to rhyodacite stocks and dykes, and possible rare flows.



Mid-Cretaceous

GRANITE/GRANODIORITE: Kg, pink to grey, locally porphyritic syenogranite to monzogranite plutons and dykes; Kgd, biotite-hornblende bearing granodiorite, locally foliated.



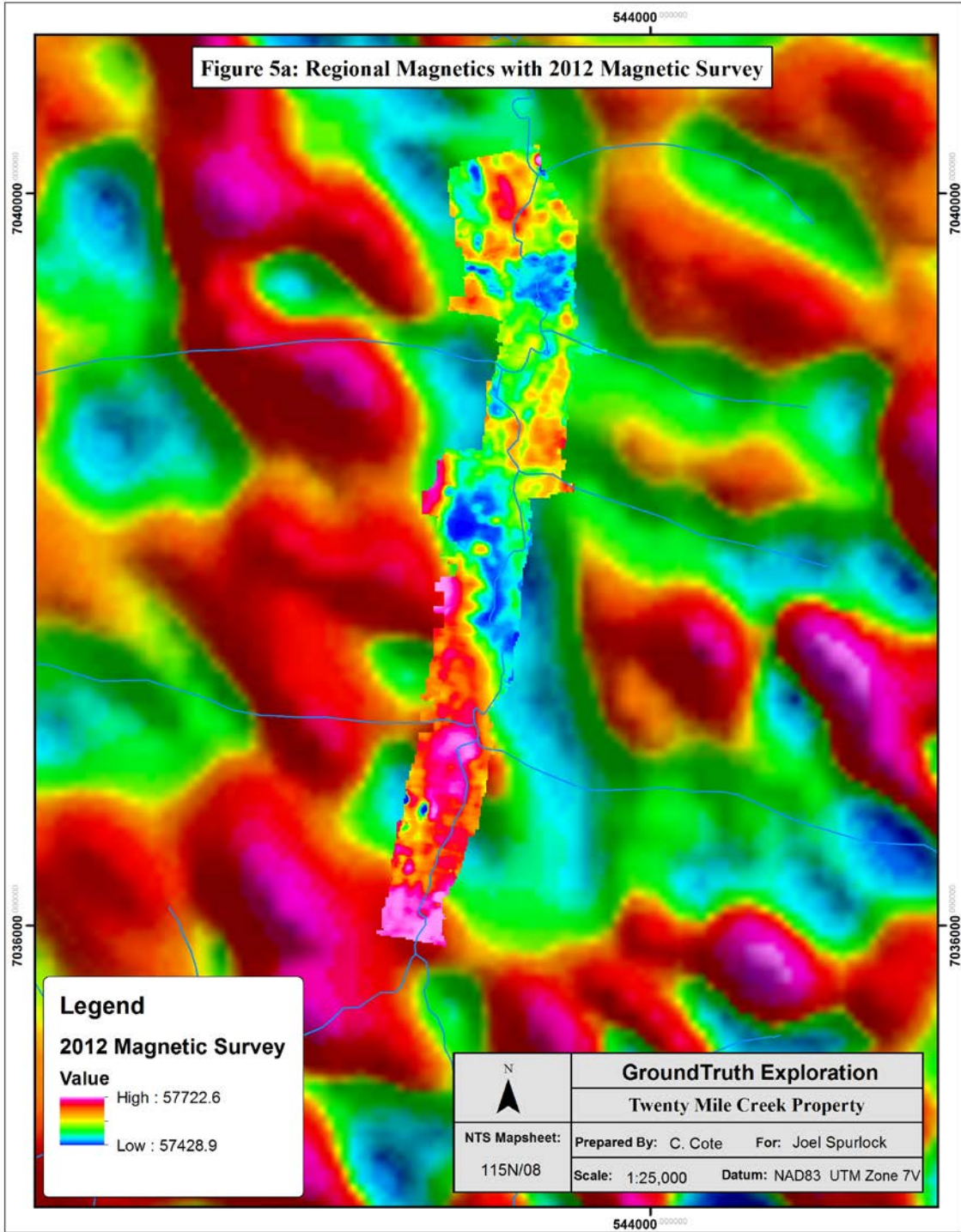
Quaternary

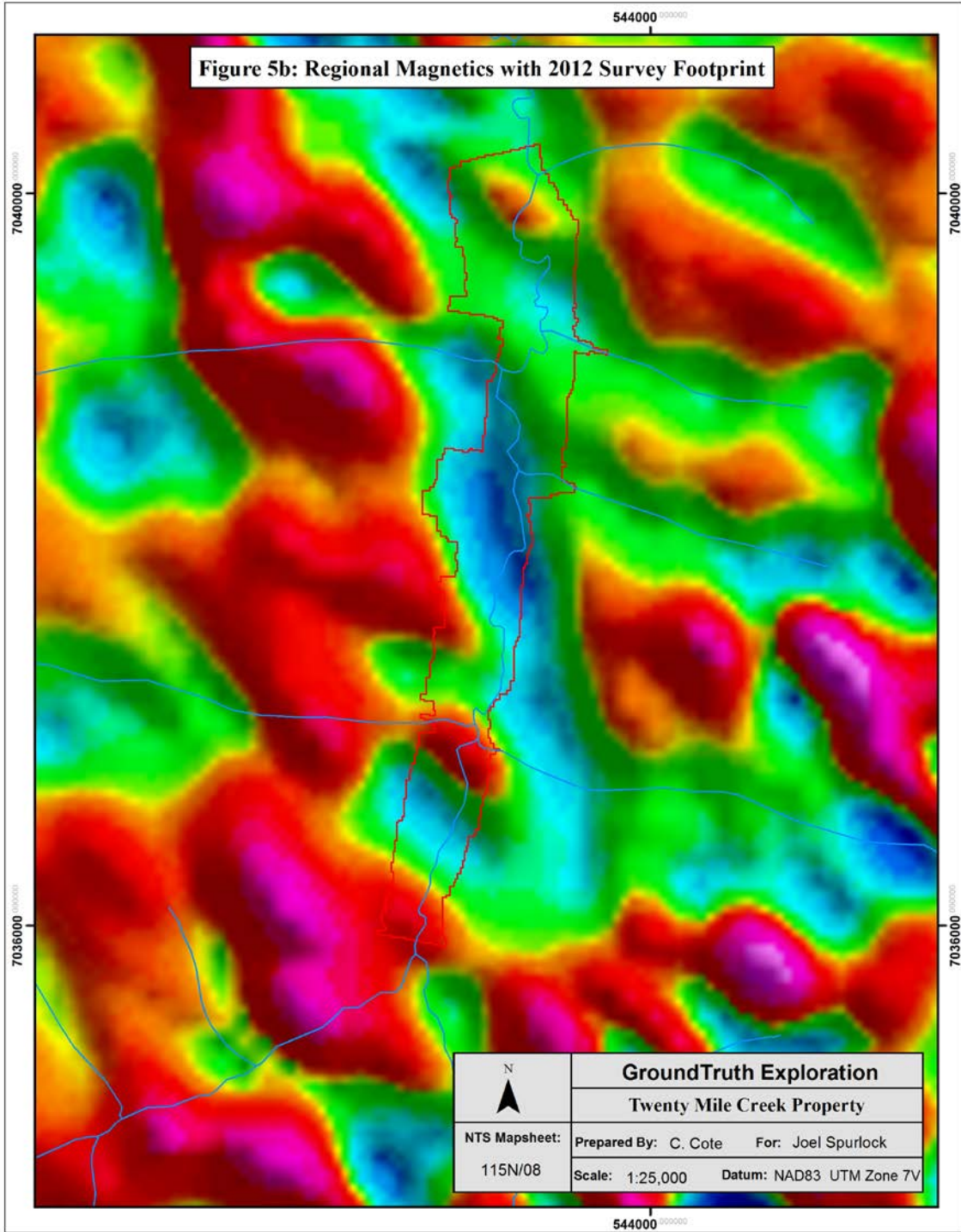
Fluvial silt, sand and gravel.



Upper Cretaceous

CARMACKS GROUP: rhyodacite and dacite, commonly biotite and hornblende phyrlic, dominated by lesser andesite and basalt; minor rhyolite.





## 6.0 Gridding Procedure

The survey grid is oriented perpendicular to the Twenty Mile Creek centerline, and continues from the grid completed in March of 2010. The grid lines were planned to be 600m in length (300m on either side of the centerline). Lines that proved to be too steep to ascend on snowshoes were shortened as needed. All grid lines are spaced at 25m. Line Numbers ascend as the grid proceeds upstream. Line stations originate at a point labelled with -000, and are followed by the cardinal direction of the line (East or West). The bearing of the grid was periodically adjusted to cross the centerline at 90° as the grid proceeded upstream.

The grid was established using handheld GPS units. The lines were flagged at a frequency of 25m with grid stations with written flags every 50m. It consists of 178 grid lines totalling 80 line-km.

## 7.0 Magnetic Field Survey

### 7.1 *Personnel and Equipment*

The survey was conducted by: Chad Cote (Magnetometer operator), John McGrath, and Rian Lougheed-Smith (Gridders). Equipment necessary to complete the survey consisted of:

Magnetometer Field Unit:	GEM Systems GSM-19T Proton Magnetometer
Base Station:	GEM Systems GSM-19T Proton Magnetometer
Data Processing:	Laptop Computer
Software:	GEM Systems proprietary magnetometer upload, download software, MapInfo mapping software, Oziexplorer for grid planning and GPS interface.
Transportation:	Skidoo Skandik 800, Skidoo Skandik 600
Grid Establishment:	Garmin map76cx GPS (x3) Snowshoes, Machete, Flagging, Marker
Camp Equipment:	Full winter camp setup for 3 persons

## 7.2 Survey Specifications

The magnetometer survey was conducted according to the following specifications:

Field Magnetometer Observation Frequency: 1 reading per 0.5 of a second.

Base Station Magnetometer: Set to record an observation every 10 seconds for the duration of the survey.

Datum: 57500 nT

Levelling: None required

## 7.3 Magnetic Field Theory Applied to Placer Exploration

In a placer setting, magnetite derived from bedrock weathering is concentrated in the main channel of a creek or river where the water flow has the highest velocity and the greatest turbulence. As a result, minerals with high specific gravity (magnetite, ilmenite, gold, etc.) are preferentially concentrated in this region of the stream as material with lower specific gravity is winnowed from the sediment. High concentrations of “black sand” (magnetite, ilmenite, chromite) are often recorded in auriferous pay streaks where the stream bed has remained relatively immobile for some period, permitting hydraulic concentration to build up a significant volume of these materials.

The materials comprising black sand are magnetically susceptible. Magnetite has a very high magnetic susceptibility of  $1200-19200 \times 10^{-3}$  SI units, ilmenite ranges from  $300-3500 \times 10^{-3}$  SI units, and chromite measures from  $3-1100 \times 10^{-3}$  SI units. Average magnetic susceptibilities for sedimentary, igneous (excluding ultramafic) and metamorphic rocks are: 0-10, 3-160 and 0-70  $\times 10^{-3}$  SI units respectively. Fluvial sediments register magnetic susceptibility in the range of 0-2  $\times 10^{-3}$  SI units. There is consequently a significant susceptibility contrast between gravels enriched with black sand and average gravels/ underlying bedrock.

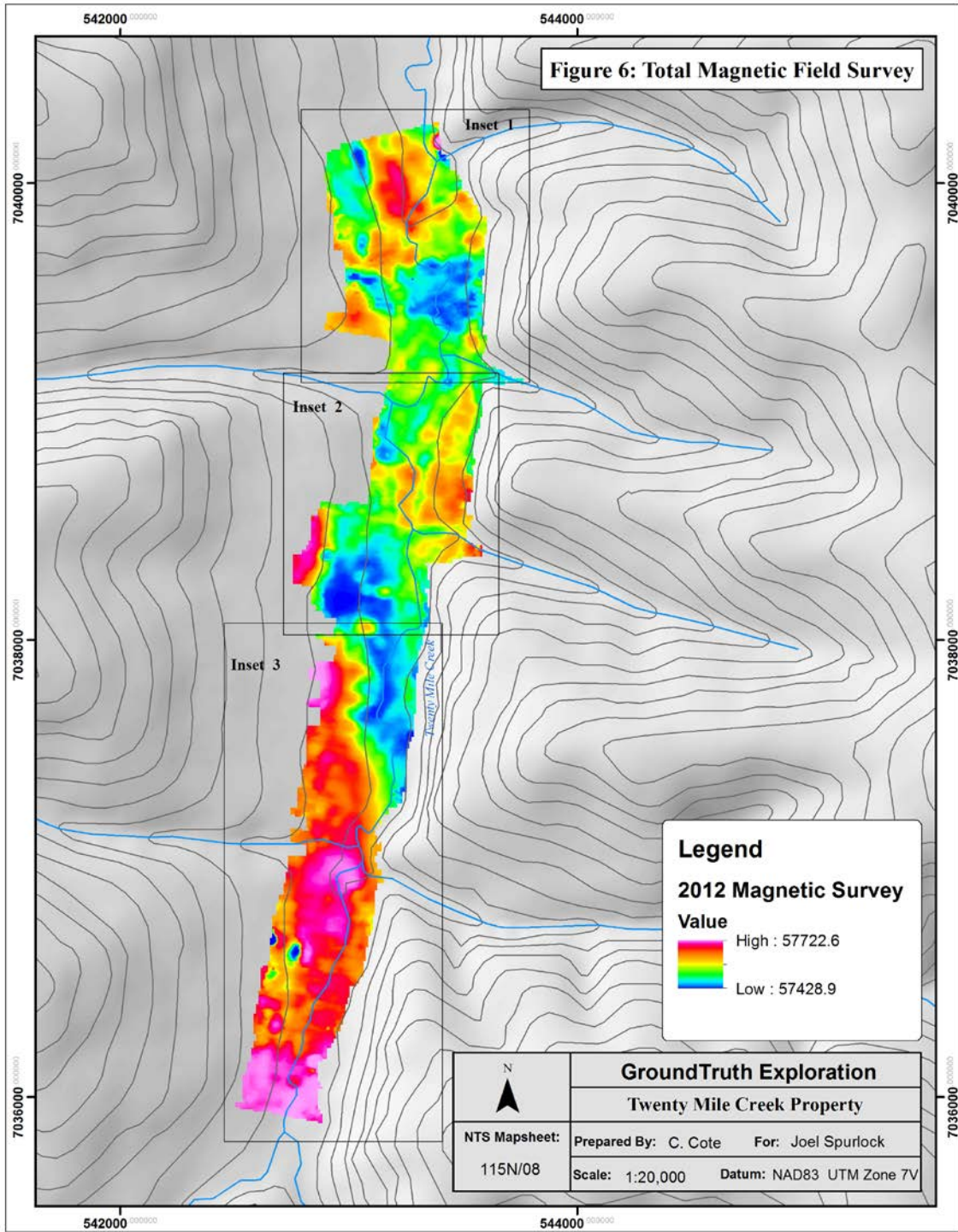
## 8.0 Results

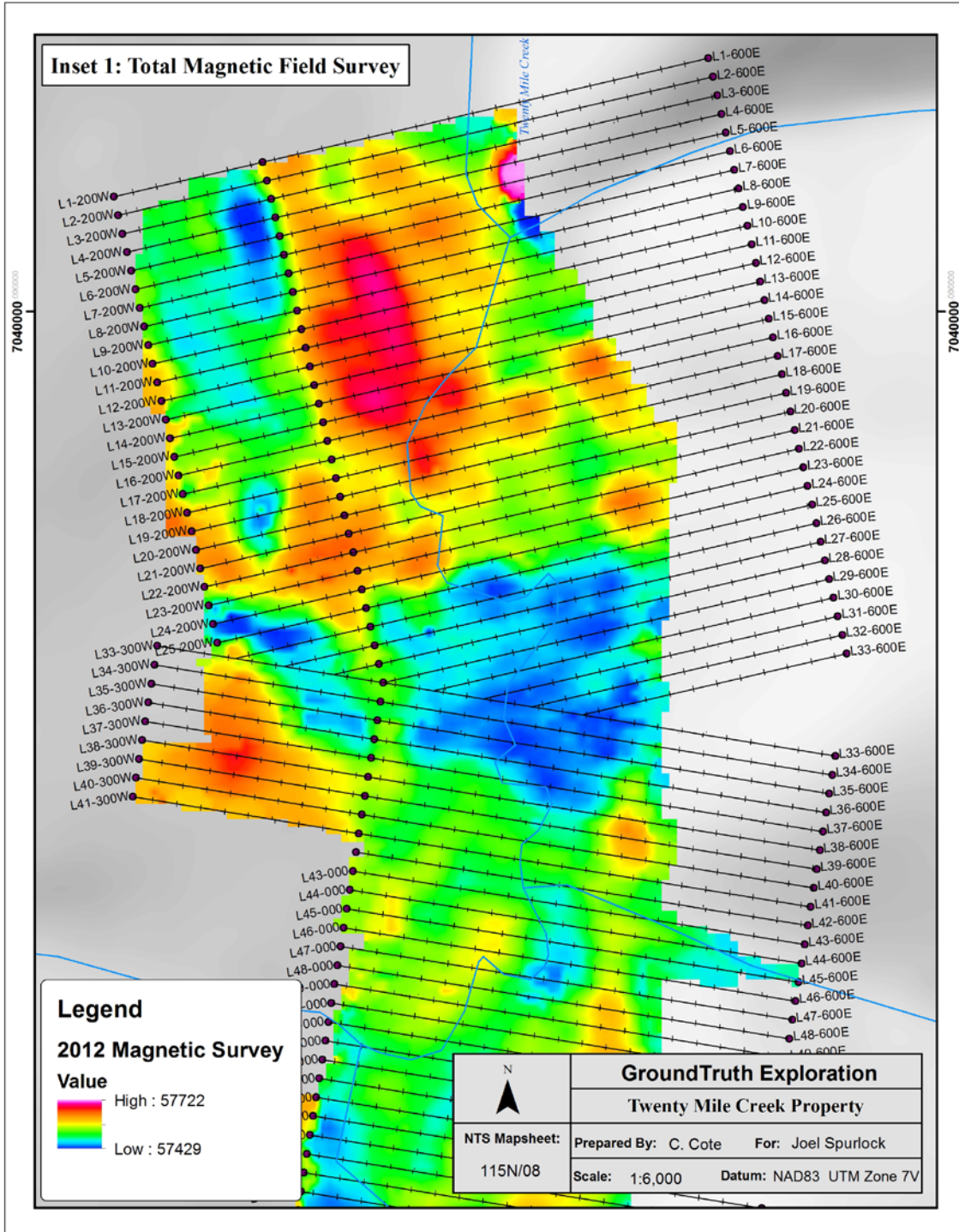
The survey is comprised of a total of 217,987 georeferenced magnetometer readings. Digital results of the magnetometer survey accompany this report in .csv format. All points are projected to NAD83, UTM Zone 7N

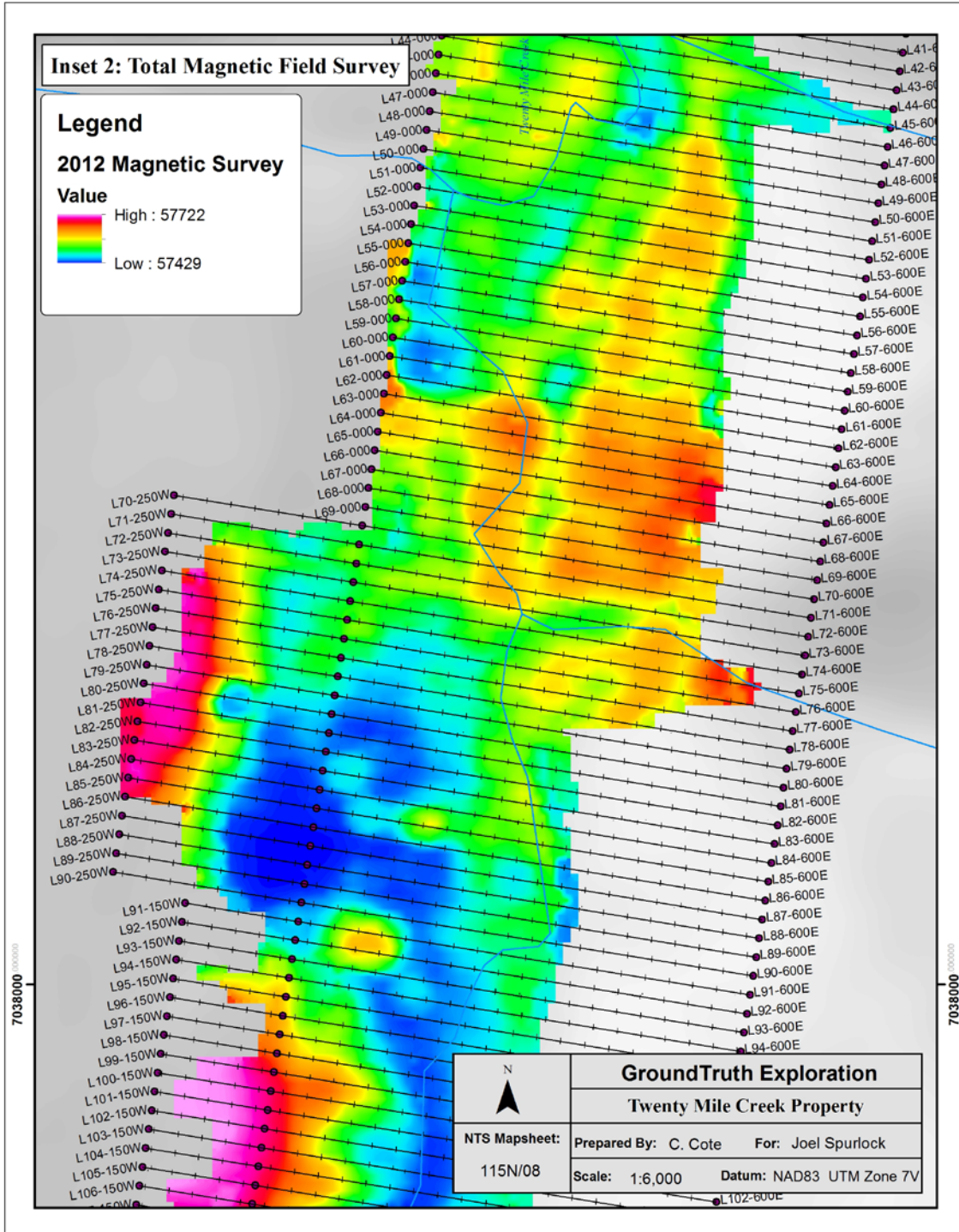
### Field Definitions:

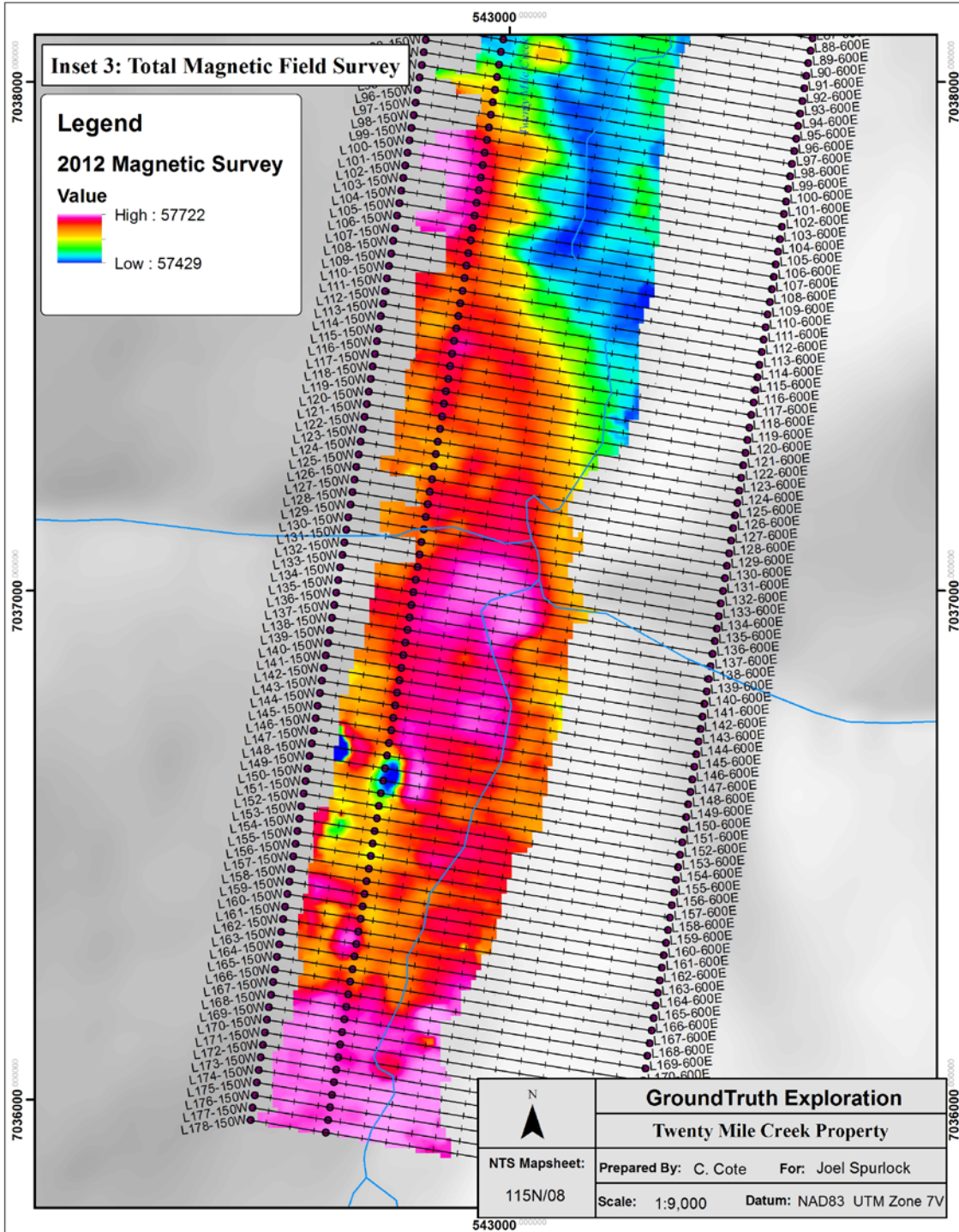
X -	UTM Easting
Y -	UTM Northing
Elevation -	Elevation

nT -	Uncorrected Field Unit Reading (Unit: Nano-Tesla)
sq -	Noise Reading
sat -	Number of Satellites Available to Magnetometer GPS
time -	Time of Magnetometer Reading
nT_cor -	Corrected Field Unit Reading (Unit: Nano-Tesla)
cor-meth -	Correction Method









**Inset 1:**

Lines 1 through 45 are generally dominated by responses from the underlying bedrock geology, masking any subtle placer channel signatures that may be present. A strong magnetic high peak is obvious between lines 6-15, while a magnetic low trough is visible between lines 24 to 38. Both anomalies are coincident with magnetic high and low features on the regional airborne magnetic survey.

Anomaly A – There is one anomalous zone on the western bench between lines 33 and 41. It is 200m long and 250m wide, open to the west and south. This is not obviously related to the regional survey, but could be a result of a magnetic high tongue part of the regional survey, visible to the west in figures 5a,b.

**Inset 2:**

Anomaly B – There is an interesting feature located between lines 47 and 78 on the Eastern portion of the grid. There is a placer bench associated with a magnetic high zone not visible in the regional survey (figure 5a,b). The bulk of this magnetic high zone is 400m long and 230m wide, with a thinner lineament running north parallel to the creek for 370m.

This bench is crosscut by a tributary stream of the twenty mile creek at line 73. It appears that the bench at has been eroded away by this creek, and the magnetic gravels have been deposited in the modern creek channel downstream of here, creating a secondary deposit 250m long. This zone would be an ideal place to do some shafting and bulk samples to see if the magnetic signature is associated with gold or not.

**Inset 3:**

The ground survey for this portion of the grid is underlain by strong magnetic signatures related to underlying bedrock. There is a strong and distinct boundary between regions of magnetic low and magnetic high readings visible between lines 95 and 121. The ground survey matches the regional survey very closely. This does not eliminate the possibility of placer gold in this region, but makes it hard to decipher any anomalous zones due to the strong and complicated interference of underlying bedrock.

## Appendix A: Statement of Expenditures

<b>Grid</b> 80km x \$150	\$12,000.00
<b>Magnetic Survey</b> 80km x \$250	\$20,000.00
<b>Snowmobile</b> 2 Snowmobiles @ \$125 each x 17 days	\$ 4,250.00
<b>Skimmer</b> 3 @ \$75 each x 17 days	\$ 1,275.00
<b>Chainsaw</b> \$35 day x 17 days`	\$ 595.00
<b>Satellite Phone</b> \$35 day x 17 days	\$ 595.00
<b>Food</b> 3 crew @ \$50 each x 17 days	\$ 2,205.00
<b>Camp</b> 3 crew @ \$35 each x 17 days	\$ 1,785.00
<b>Report</b>	\$ 1,000.00
<b>Total Project Expenses</b>	<b>\$44,050.00</b>

## **Appendix B: Statement of Qualifications**

I, Isaac Fage, having my place of residence at 982 7<sup>th</sup> Avenue in Dawson City, Yukon Territory do hereby certify that:

1. I obtained an Advanced Diploma in Remote Sensing at the Graduate Level from the Centre for Geographic Sciences, in 2008 and prior to that graduated with a Bachelor of Arts from Dalhousie University in 2002.
2. I am President of Ground Truth Exploration Inc.; the contractor that conducted the exploration field program referred to in this report. I have been employed continuously in the Yukon mineral exploration industry since March 2004.
3. I have directly supervised the field work referred to in this technical report.
4. I have authored this technical report titled: Geophysical Report on the Twenty Mile Creek Property (November, 2012)
5. This report has not been prepared for the purposes, nor in full compliance with, National Instrument 43-101.

Respectfully Submitted on this 9th day of November, 2012

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Isaac Fage

## References

**Ryan, J.J. and Gordey, S.P., 2004.** Geology, Stewart River Area (Parts of 115N/1,2,7,8 and 115-O/2-12), Yukon Territory. Geological Survey of Canada, Open File 4641, scale 1:100 000.

**Shives, R.B.K., Carson, J.M., Ford, K.L., Holman, P.B., Gordey, S., and Abbott, G., 2002.** Magnetic First Vertical Derivative Map, Stewart River Area – 115N, 1:50 000 scale. Geological Survey of Canada, Open File 4307; Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 2002-13.

**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)

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