

# ASSESSMENT REPORT

describing

## STRUCTURAL REVIEW OF CONTROLS ON GOLD MINERALIZATION

at the

### CHARLOTTE PROPERTY

(Geological Structural Review conducted April – June 2020)

Nicola 0	YE63027
Nicola 1	YE63028
Nicola 2	YE63029
Nicola 3	YE63030
Nicola 4	YE63031
Nicola 5	YE63039
Nicola 6	YE63040
Nicola 8	YE63038
Nicola 9	YE63036
Nicola 10	YE63037
Nicola 11	YE63041

Registered Owner: 1011308 B.C. Ltd.

NTS 115I/03

Whitehorse Mining District, Yukon Territory

61°04'00"N Lat, 137°09'50"W Long

UTM (NAD 83): 386917E, 6883515N, Zone 8

**Prepared for:**

Nouagoha Mining Inc. (Operator)

1600, 333 – 7th Avenue SW

Calgary, AB T2P 2Z1

**Prepared by:**

L. Walton, P.Geo.

**June 10, 2020**

## Table of Contents

INTRODUCTION .....	1
Location.....	1
Access.....	1
Mineral Tenure .....	1
WORK HISTORY .....	3
GEOLOGY.....	4
2020 STRUCTURAL ANALYSIS.....	4
INTERPRETATION AND CONCLUSIONS .....	4
REFERENCES.....	5
STATEMENT OF QUALIFICATIONS.....	5
Figure 1: Nicola Claims.....	2

### APPENDIX A:

Report: Structural review of controls on Au-mineralisation at the Charlotte Project, central Yukon by C. Buchanan, BGS Consulting Ltd.

### APPENDIX B:

Statement of Expenditures

## INTRODUCTION

In 2020, Nouagoha Mining Inc. (“Nouagoha”) initiated a desktop study of the regional and property scale structural geology features of the Charlotte property, Yukon. The study serves as the primary content in this assessment report for eleven Nicola claims that constitute part of the Charlotte property.

Nouagoha contracted BGS Consulting Ltd. of Edmonton, Alberta, to review the existing public and private geological datasets and provide an analysis of structural trends. The objective of the study is to develop structural geology tools to enable identification of high-value targets on the Charlotte property and within the mineralized vein systems. The report provided by the consultant (Appendix A) summarizes the geological setting, property geology and mineralization, structural setting, and interpretation of structural features. Additional information to fulfill assessment report requirements is provided below.

### Location

The Charlotte Property is located in the Mt. Nansen area at the south end of the Dawson Range, 180 km north of Whitehorse (airmiles) and 60 km by road west of Carmacks, Yukon (Figure 1 in Appendix A). The property is located on NTS map sheet 115I/03 and is centered at latitude 62°06' N and longitude 137°16' (UTM 386917E and 688351N, NAD 83, zone 8N).

### Access

Access to the property is provided by the all-weather gravel Mt. Nansen Mine road from Carmacks. A local network of roads and trails provides access to all the exploration workings and showings on the Charlotte property.

### Mineral Tenure

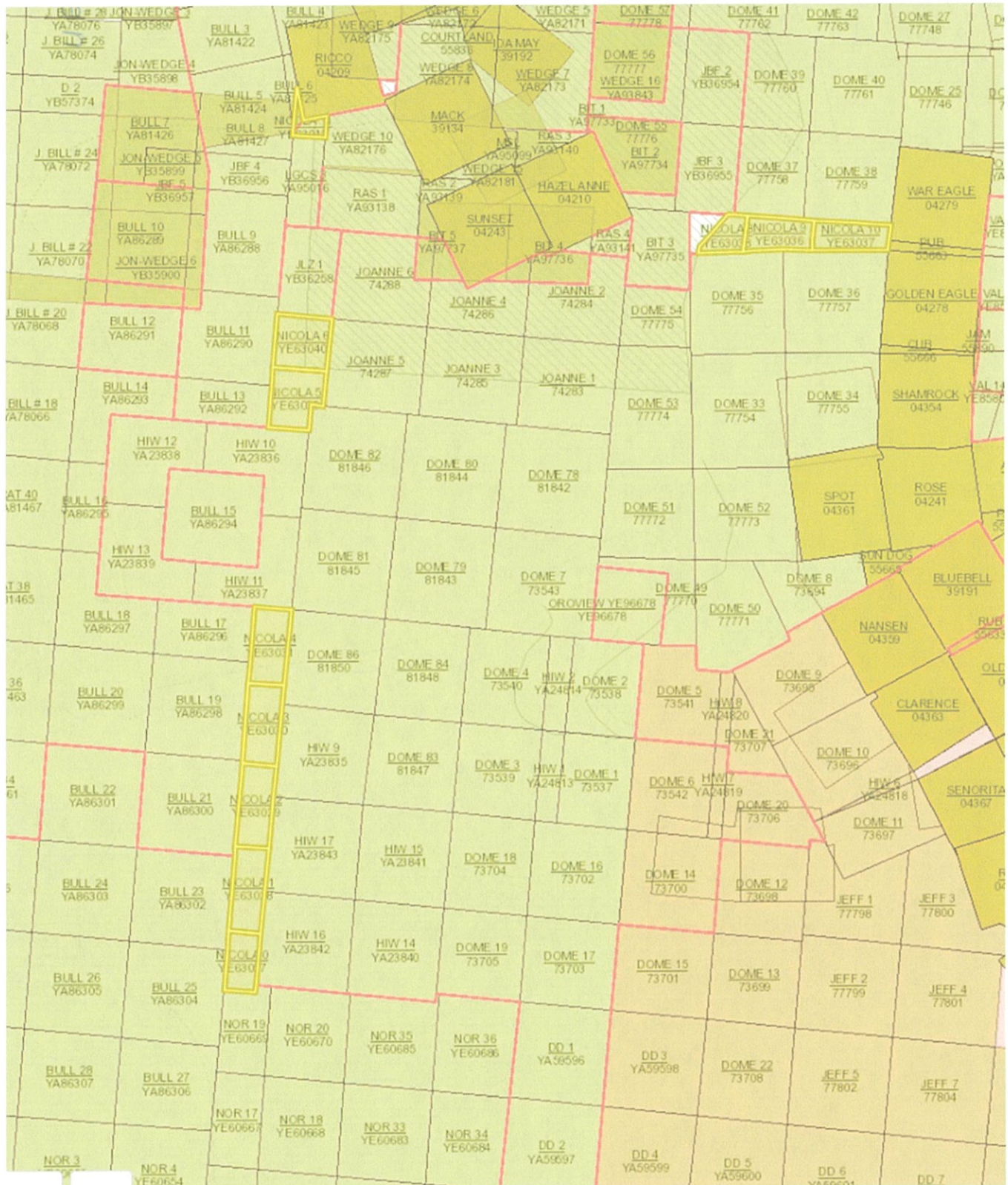
The Charlotte Property is in the Whitehorse Mining District. The property consists of 139 full or fractional quartz mining claims and leases that are in good standing and cover an area totalling 2317.8 hectares (approximately 23 km<sup>2</sup>). The claims are registered in the name of 1011308 B.C. Ltd. Nouagoha Mining Inc. is the operator on the Charlotte property. The Nicola claims are shown in Figure 1 (Charlotte claim block is shown in Figure 2 - Appendix A).

Details concerning the Nicola claims are listed below:

Claim Name	Claim Number	Grant Number	Claim Owner	Expiry Date*
NICOLA	0	YE63027	1011308 B.C. Ltd.	2026-06-20
NICOLA	1	YE63028	1011308 B.C. Ltd.	2026-06-20
NICOLA	2	YE63029	1011308 B.C. Ltd.	2026-06-20
NICOLA	3	YE63030	1011308 B.C. Ltd.	2026-06-20
NICOLA	4	YE63031	1011308 B.C. Ltd.	2026-06-20
NICOLA	5	YE63039	1011308 B.C. Ltd.	2026-06-20
NICOLA	6	YE63040	1011308 B.C. Ltd.	2026-06-20
NICOLA	8	YE63038	1011308 B.C. Ltd.	2026-06-20
NICOLA	9	YE63036	1011308 B.C. Ltd.	2026-06-20
NICOLA	10	YE63037	1011308 B.C. Ltd.	2026-06-20
NICOLA	11	YE63041	1011308 B.C. Ltd.	2026-06-20

\*Expiry dates include 2020 work which has been filed for assessment credit

Figure 1: Nicola Claims – NTS map sheet 1151/03



(modified from Yukon Mining Recorder map viewer – see also Figure 2, Appendix A for Charlotte property mineral claims)

## WORK HISTORY

The following chronology of work history is summarized from Heiner and Norton (2010), Struyk and Dadson (2011), Dadson and Struyk (2012), Quist (2014), and unpublished company reports.

The exploration history of the region dates back to the Klondike Gold Rush of 1898 when placer miners travelling along the Yukon River started prospecting in the Nansen Creek area.

In 1943 the Brown-McDade quartz vein deposit was discovered immediately to the east of the Charlotte property. Underground drilling and development resulted in the delineation of the Webber and Huestis mineralized zones. Activity in the area ceased after 1946.

In 1958 the Mt. Nansen Exploration Syndicate was formed and explored the Webber and Huestis zones. The syndicate then established Mt. Nansen Mines in 1963 and focused on trenching and diamond drilling the Webber Zone.

By 1964 Peso Silver Mines Limited acquired control of Mt. Nansen Mines and expanded exploration on the Brown-McDade, Webber, and Huestis zones with underground development and diamond drilling.

In 1967 a small mill was constructed on the property and operated intermittently until 1976 when it closed.

During the 1960s and 1970s, the area adjacent to the Mt. Nansen mine area was explored. Soil geochemistry and airborne geophysics were completed by Cyprus Exploration Corporation over copper porphyry mineralization (Cyprus Zone) on what is now the northwest corner of the Charlotte property. This work was followed by diamond and percussion drilling. During this period work was conducted by several companies on the neighbouring Klaza property and the adjacent Etzel property to the west.

In 1984 the Mt. Nansen mine was acquired by BYG Resources Inc. ("BYG"). Chevron Minerals Ltd. optioned the Mt. Nansen property in 1985 and carried out an extensive exploration program from 1985 to 1987. Oxide mineralization near surface was evaluated and the underground sulphide zones were expanded.

Chevron dropped their option on the Mt. Nansen property and BYG became the sole operator. Exploration consisting of trenching and diamond drilling continued on the Brown-McDade, Dickson, and Huestis zones. The previously unrecognized Flex Zone was discovered during this period and believed to represent a near-surface oxide zone amenable to surface mining and leach treatment. Between 1989 and 1994, BYG focused on metallurgical testing, environment studies, permitting, and completing a feasibility study.

BYG commenced commercial gold production in 1997. Initial mill throughput was designed for 700 tonnes/day and annual gold production at 50,000 ounces. From 1997 to 1999, the mine produced 37,500 ounces of gold and 143,000 ounces of silver. During this period, exploration work continued on the Brown-McDade, Flex, Huestis, Webber, and Orloff-King mineralized zones.

The mine was forced to close in 1999 due to operational issues and problems with waster treatment. Attempts by BYG to restructure the company and bring the mine back into production failed and the Mt. Nansen property was declared abandoned in 1999.

In 2004 PricewaterhouseCoopers was appointed receiver of the former BYG property and subsequently divided the property into a core claim block, consisting of the mine site and related infrastructure, and a peripheral claim block consisting of 186 mineral claims and 13 mineral leases. 10173531 Saskatchewan Ltd. (“Saskco”) purchased the peripheral claims and leases in 2007, augmented by the purchase of four additional claims and an option to purchase the Dome 12 claim.

Sasko completed an airborne VTEM-Magnetic survey in 2008 over what is now called the Charlotte property. Guinness Exploration Inc. optioned the Charlotte property in 2009 from Saskco and completed trenching, mapping, sampling, and drilling on the Flex Zone. In 2010 the focus was on GPS confirmation of drill collars and data compilation.

In late 2010 Ansell Capital Corp. optioned the Charlotte property from Guinness Exploration Inc. In 2011 and 2012, Ansell completed diamond drilling, soil sampling, geological mapping, trenching, and claim staking. During this period, Rockhaven Resources Ltd. drilled the adjacent Klaza property.

In 2013 Ansell Capital Corp. completed a ground IP geophysical survey over the Flex and Orloff-King zones and commissioned a mineralogical study of mineralized rock samples. In 2014 1011308 B.C. Ltd. became the registered owner of the Charlotte Property.

Rockhaven Resources Ltd. has continued to advance the adjacent Klaza project. An updated resource estimate was released in 2018 and the company is working on an updated Preliminary Economic Assessment.

## GEOLOGY

A description of the regional setting, property geology, and mineralization is provided in the structural geology report (Appendix A).

## 2020 STRUCTURAL ANALYSIS

The structural geology analysis is described in the consultant’s report (Appendix A). A key reference used is the geological map and high-resolution aeromagnetic data produced by Ryan et al. (2016). The geometry and orientation of four fault/lineament groups were examined to identify patterns important for the development and localization of gold-bearing epithermal and Cu-Au porphyry systems in the Charlotte property area.

## INTERPRETATION AND CONCLUSIONS

The following interpretation and conclusions are summarized from the findings in the structural analysis report (Appendix A).

- The Charlotte property is crosscut by a mid- to late-Cretaceous regional, northwest-trending fault zone
- The fault zone consists of an array of R-shears, R’-shears, and P-shears which indicate the fault zone has dextral sense of shear
- Casino suite intrusive rocks at the Charlotte property (Cyprus Zone) are spatially associated with extensional domains within the fault zone
  - The intrusives are also associated with magnetic lows
  - The coincidence of magnetic lows and local extensional domains are high-priority exploration targets for Cu-Au-Mo porphyry targets in the region

- Au-bearing epithermal quartz veins within the project area have orientation patterns similar to the regional fault zone
  - These vein systems form in small-scale fault zones that are local analogues for the regional zone
  - Au-mineralisation is kinematically associated with the regional fault zone that controls the location of Casino suite intrusive bodies, and it is expected there is also a genetic relationship between the intrusive rocks and epithermal vein systems

The report concludes that the following tools be considered when identifying regional and property scale exploration targets on the Charlotte property:

- Look for subtle linear magnetic anomalies in the vicinity of Casino suite intrusive rocks (reprocessing of the magnetic data may be required to identify the targets)
- Step-over zones between northwest trending fault systems may represent reconnaissance-style exploration targets

Compilation and analysis of historical soil geochemical results combined with structural geology areas of interest may lead to new exploration targets.

## REFERENCES

Dadson, P. and Struyk, N., 2012, Assessment Report on the 2012 Trenching and Diamond Drill Program, Charlotte Property. Yukon Mineral Assessment Report #096109, 312 p.

Hiner, L. and Norton, C., 2010, Assessment Report on the 2010 Trenching and Diamond Drilling Program, Charlotte Property. Yukon Mineral Assessment Report #095315, 320 p.

Quist, B., 2014, Summary Report of the 2013 Geophysical Work and Mineralogical Study on the Charlotte Property. Yukon Mining Incentives Program Report No. 2013-060, 248 p.

Ryan, J.J., Westberg, E.E., Williams, S.P., and Chapman, J.B., 2016. Geology, Mt. Nansen-Nisling River area, Yukon; Geological Survey of Canada, Canadian Geoscience Map 292 (preliminary).

Struyk, N. and Dadson, P., 2011, Assessment Report on the 2011 Trenching and Diamond Drilling Program, Charlotte Property. Yukon Mineral Assessment Report #095861, 1184 p.

## STATEMENT OF QUALIFICATIONS

I, Lori Walton, of Edmonton, Alberta hereby certify that:

I am a graduate of the University of Alberta in 1987 with an M.Sc. degree in Economic Geology.

I have worked in Yukon and various other provinces, territories, and countries as a geologist since 1987.

I am a member in good standing of the Association of Professional Engineers and Geoscientists of Alberta, Registration No. 82840

I am the author of this assessment report and reviewed the structural study that is the primary content of this report.



Lori Walton, P. Geo.

## APPENDIX A

**Structural review of controls on Au-mineralisation at the Charlotte  
Project, central Yukon**

**Charlotte Project  
Carmacks, YT**

NTS Sheet 115I/03  
61°04'00"N Lat, 137°09'50"W Long  
UTM (NAD 83): 386917E, 6883515N, Zone 8

**Work Completed:  
April 30, 2020**

Prepared For:  
Nouagoha Mining Ltd.  
1600, 333-7th Avenue SW  
Calgary, AB  
T2P 2Z1

Prepared by:  
Mr. Chris Buchanan

BGS Consulting Ltd.  
5130-190A St. NW  
Edmonton, AB T6M 2R5  
Canada

May 29, 2020

## **Summary**

The Charlotte Project is located within the Mount Nansen area, an historical Au mining district in the south-central portion of the Yukon Territory. The closest community is Carmacks, YT. The Mount Nansen area is known for Cu-Au-Mo porphyry mineralisation and associated Au-bearing epithermal veins. These occurrences extend over a strike-length of fifteen kilometres.

The project area is located within the Yukon-Tanana Terrane. This is a lithotectonic terrane with a prolonged geological history. The project is underlain by metamorphosed supercrustal rocks and mid- to Late Cretaceous intrusive suites, including the prospective Casino suite. The regional fault system crosscuts rock units older than mid-Cretaceous. Allochthonous Early Jurassic intrusive rocks underlie the southern portion of the area. All the Cretaceous and older rocks are overlain by upper Cretaceous mafic volcanic flows and Paleogene felsic volcanic rocks.

Mineralisation at the Charlotte Project is comprised of Cu-Au porphyry style mineralisation, like at the Cyprus Zone, and Au-bearing epithermal quartz veins. Epithermal quartz veins occur at several locations on the property and historically were mined in the Mount Nansen area. The intrusion of Casino suite plugs, Cu-Au porphyry mineralisation, and epithermal quartz veins are geometrically and kinematically associated with the northwest trending regional fault system. The intrusive plugs are bound by the regional faults and are intruded into extensional step-over domains connecting segments of the northwest trending regional faults. Aeromagnetic lineament analysis identified a large population of lineaments with orientation patterns that are interpreted to be conjugate faults formed within the regional fault system. The geometry of the identified R-, R', and p-shear conjugate faults is consistent with the formation of conjugate faults in a dextral transpressional to strike-slip fault system. Epithermal quartz veins mapped at Discovery Creek and the Flex Zone appear to have formed in higher-order faults kinematically associated with the regional fault array.

This structural model for epithermal vein and porphyry intrusions can be applied to regional exploration targets where extensional step-over domains are coincident with magnetic lows.

## **Table of Contents**

<b>Summary .....</b>	<b>ii</b>
<b>Table of Contents.....</b>	<b>iii</b>
<b>Table of Figures .....</b>	<b>iv</b>
<b>1.0 Introduction.....</b>	<b>1</b>
<b>2.0 Disclaimer.....</b>	<b>2</b>
<b>3.0 Data Conventions and Protocols .....</b>	<b>2</b>
<b>4.0 Location and Access .....</b>	<b>2</b>
<b>5.0 Regional Geology .....</b>	<b>4</b>
<b>6.0 Property geology and gold mineralisation .....</b>	<b>6</b>
<b>7.0 Structural setting of gold veins and Casino suite porphyry stocks ....</b>	<b>8</b>
<b>8.0 Conclusions.....</b>	<b>12</b>
<b>9.0 References.....</b>	<b>17</b>
<b>10.0 Certificates of Authors .....</b>	<b>18</b>

## **Table of Figures**

Figure 1_Location of the Charlotte Project (red outline).....	3
Figure 2_Quartz mining claims of the Charlotte Project .....	5
Figure 3_Regional tectonic setting the Charlotte Project .....	7
Figure 4_Geology of the Charlotte Project.....	9
Figure 5_Aeromagnetic lineament analysis_(TMI).....	11
Figure 6 lower hemisphere, equal area plots illustrating the dominant trends of the four aeromagnetic lineaments in the Charlotte Project area. ....	13
Figure 7_Casino suite intrusion in extensional zone (red arrows) developed between two, northwest trending C-plane faults .....	15

## **1.0 Introduction**

The Charlotte Project is located in the south-central portion of the Yukon Territory, near the community of Carmacks, YT (Figure 1). The Mount Nansen area is an historical Au mining district in the area, both for placer and hard rock mining. In addition to the Mount Nansen Mine there are a number of known epithermal Au and Cu-Au porphyry occurrences that extend for a strike-length of over fifteen (15) kilometres.

The project is located in the Yukon-Tanana Terrane of the northern Cordillera. This lithotectonic terrane is comprised of metamorphosed Paleozoic supracrustal rocks, the Snowcap and Finlayson assemblages, that were subsequently deformed and intruded by multiphases of Mesozoic and Cenozoic granitoids. Regional dextral faults overprint the terrane starting in the mid- to late-Cretaceous. Mineralisation within the Yukon-Tanana Terrane includes Paleozoic VMS and mid-Cretaceous porphyry deposits and associated Au-bearing epithermal vein systems.

The Charlotte Project is underlain by polydeformed metasedimentary rocks of the Snowcap and Finlayson assemblages. The metasedimentary rocks underlie the southwestern portion of the property. The northern portion of the property is underlain by middle- to Late Cretaceous granitoid intrusive rocks of the Whitehorse suite, the Mount Nansen Group, and the Casino suite. A broad geological domain of the allochthonous Long Lake suite underlies the area. Middle- to Late Cretaceous regional faults crosscut the Mount Nansen area. To the northeast of the property upper Cretaceous Carmacks Group overlies the older, polydeformed rocks. Paleogene rhyolite flows of the Rhyolite Creek complex are present east and southeast of the project area.

Mineralisation at the Charlotte Project is comprised of Cu-Au porphyry occurrences at the Cyprus zone and Au-bearing epithermal quartz veins identified across the project. Both styles of mineralisation exhibit geometric and kinematic relationships with the Late Cretaceous regional fault system and proximity to recently identified Casino suite intrusive rocks. The structural relationships between the regional faults, intrusion of the Casino suite stock at the Cyprus Zone, and epithermal vein systems are interpreted to indicate the three systems are broadly coeval. This implies that the Casino suite intrusive rocks are a primary driver of fluids that formed the mineralisation in the

porphyry and epithermal systems. Understanding these relationships allows an exploration model to be developed at both the project and regional scale.

## **2.0 Disclaimer**

This report is based upon information available at the time of preparation. It is believed that the information, interpretations, and estimates contained herein are reliable under the conditions and subject to the qualifications set forth. All information contained within the report has been garnered from studies prepared and written by qualified persons, as cited in the references (see Section 9.0).

## **3.0 Data Conventions and Protocols**

The data presented in this report adheres to several standard geological conventions and protocols for data collection and presentation.

All of the sample co-ordinates and most of the accompanying maps are projected using the UTM NAD83, Zone 8 projection. Any co-ordinates presented in the main body or appendices of the report will adhere to this protocol. The inset map in Figure 1 and Figure 3 are the only exceptions, because these maps show the entire Yukon Territory they are projected using the Lat\Long, WGS84 datum.

Structural data is presented in this report using the following conventions: planes are presented as strike\dip in right-hand rule notation (i.e., xxx/xx) and lines are presented as plunge-trend (i.e., xx-xxx).

It should also be noted that references to the geological time scale in this report are made in accordance to the time scale published by The Geological Society of America (Walker and Geissman, 2009).

## **4.0 Location and Access**

The Charlotte Project is in south-central Yukon Territory (Figure 1). The geographic centre of the claim package is at UTM 386917E, 6883515N (NAD83, zone 8N). This area is covered by NTS map sheet 115I/03 (Mount Nansen). The town of Carmacks, YT is located approximately 47 kilometres east-northeast of the project area. Whitehorse, YT is 177 km to the south on highway #2, the Klondike Highway. Whitehorse is the main transportation hub and supply centre for the Yukon Territory.

Access to the project from Carmacks is provided by a 60 km all-season gravel road, the Mt. Nansen Mine Road, that was built to service the Mt. Nansen Mine. The

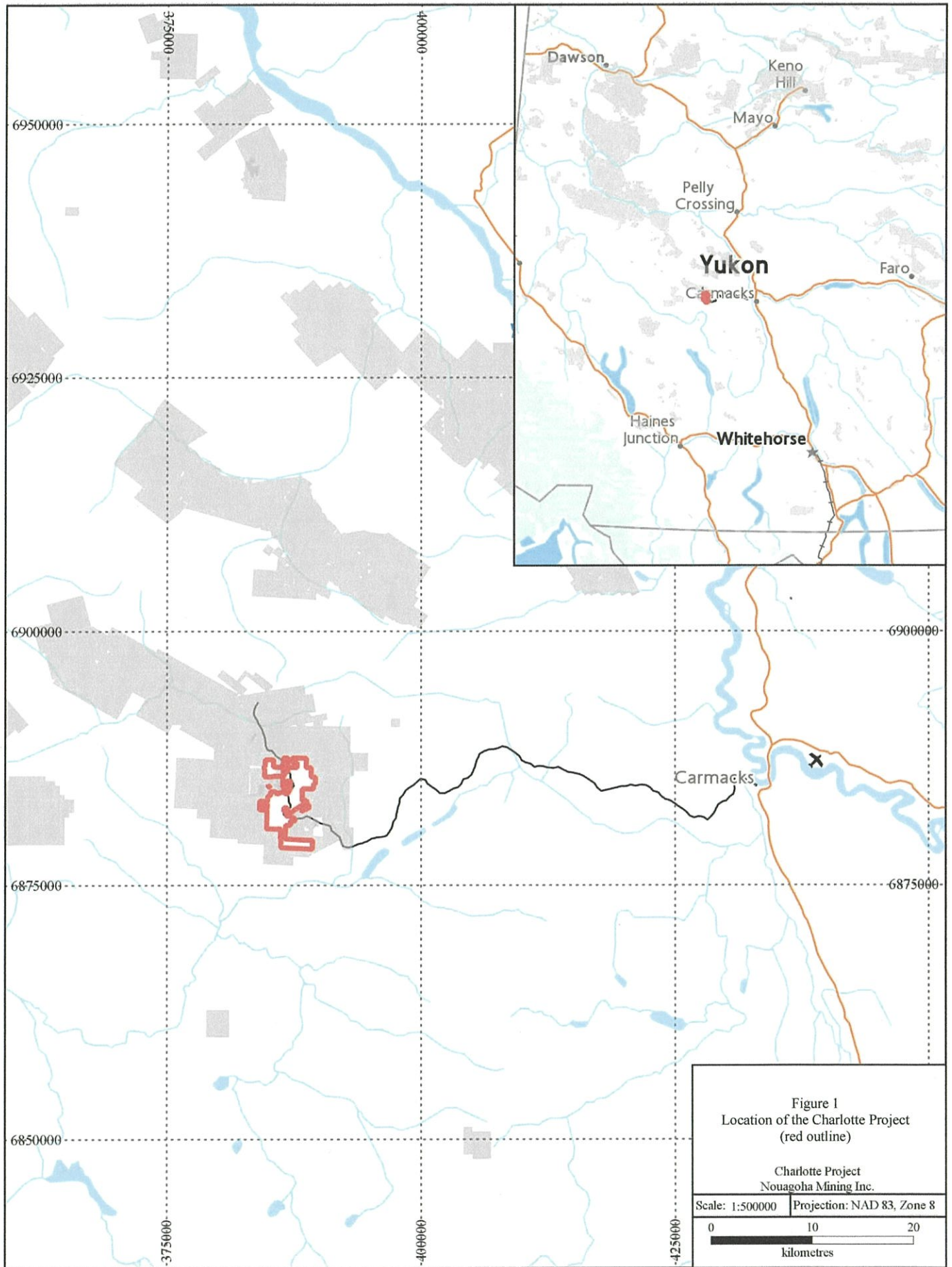


Figure 1  
 Location of the Charlotte Project  
 (red outline)

Charlotte Project  
 Nouagoha Mining Inc.

Scale: 1:500000 | Projection: NAD 83, Zone 8

0 10 20  
 kilometres

Charlotte Project is north of the deactivated mine site and can be accessed via the main road or a detour that bypasses the mine site. A network of existing exploration roads and trails in the project area provide access to the gold zones, historical mine workings, and old camp sites.

The Charlotte Project is comprised of 139 quartz mining claims, including full and partial quartz claims. Figure 2 shows the quartz claim package for the Charlotte Project.

## **5.0 Regional Geology**

The area underlain by the Property was visited by J.B. Tyrrell and D.D. Cairnes for the Geological Survey of Canada in 1898 and 1914, respectively, and has been mapped by Bostock (Bostock, 1936), Tempelman-Kluit (1984), and Carlson (1987). The geology was revised in a compilation by Gordey and Makepeace (2003).

The Property lies within the Yukon-Tanana Terrane, approximately 100 km southwest of the Tintina Fault and 100 km northeast of the Denali Fault (Figure 3). The Yukon-Tanana Terrane comprises a variety of Proterozoic and Paleozoic metavolcanic, metasedimentary and metaintrusive rocks. These supracrustal rocks represent original depositional settings in both arc and back-arc settings (Nelson et al., 2006; Piercey et al., 2006). The Tintina Fault is a transcurrent structure that records approximately 430 km of dextral strike-slip movement, likely during the Eocene (Nelson et al., 2006). This movement offset an outlier of the Yukon-Tanana Terrane, the Finlayson Lake District from the main body of Yukon-Tanana Terrane, which lies southeast of the fault. The southwestern boundary of the Yukon-Tanana Terrane is bound by the Denali Fault. The Denali Fault is another major transcurrent structure that is expostulated to have hundreds of kilometres of dextral strike-slip movement.

Regional lithologies around the Charlotte Project are comprised of schists and gneisses, which include metaplutonic gneisses, metasedimentary and metavolcanic rocks of the Paleozoic Snowcap and Finlayson assemblages. Enigmatic ultramafic and mafic units of the Amphibolite and Schist Creek mafic-ultramafic complex are interleaved with the Devonian aged metasedimentary rocks. The Paleozoic supracrustal succession are crosscut by multiple intrusive and/or volcanic events during the Late Triassic and Early Jurassic periods. The Klondike and Stikine suites of intrusive rocks are moderately

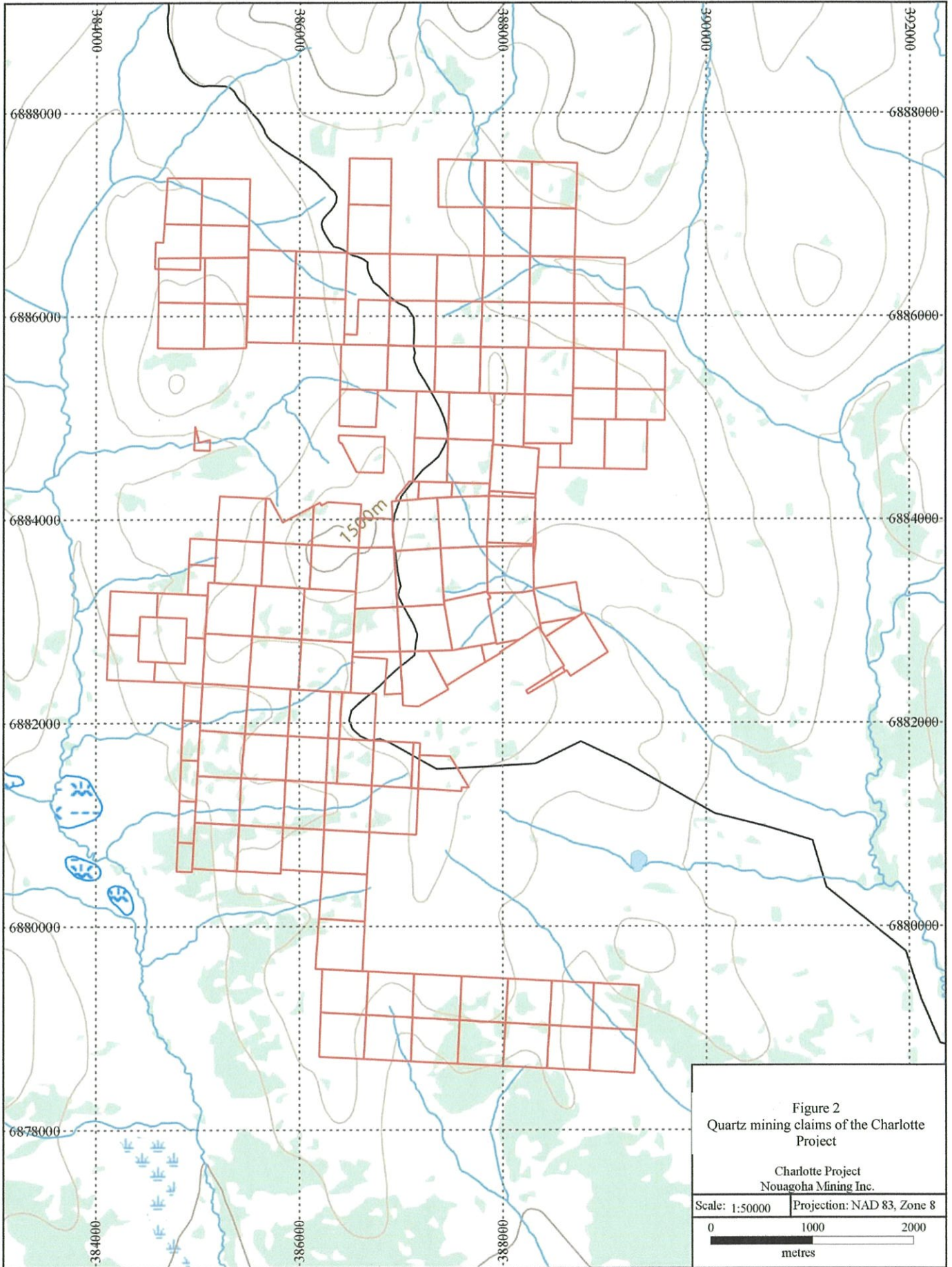


Figure 2  
 Quartz mining claims of the Charlotte Project

Charlotte Project  
 Nouagoha Mining Inc.

Scale: 1:50000 | Projection: NAD 83, Zone 8

0 1000 2000  
 metres

foliated. The Early Jurassic age Long Lake suite rocks are a phase of the allochthonous Aishihik Batholith. The youngest rocks are unfoliated to weakly foliated and are represented by five plutonic/volcanic events that occurred in the Cretaceous and Tertiary: the Whitehorse Suite, Mount Nansen, Casino Suite, Prospector Mountain Suite and Carmacks. Regionally the Casino suite rocks are associated with economic Cu-Au-Mo porphyry mineralisation. During the Paleogene felsic volcanic flows and associated tuffs of the Rhyolite Creek complex were deposited and largely eroded away in the project area.

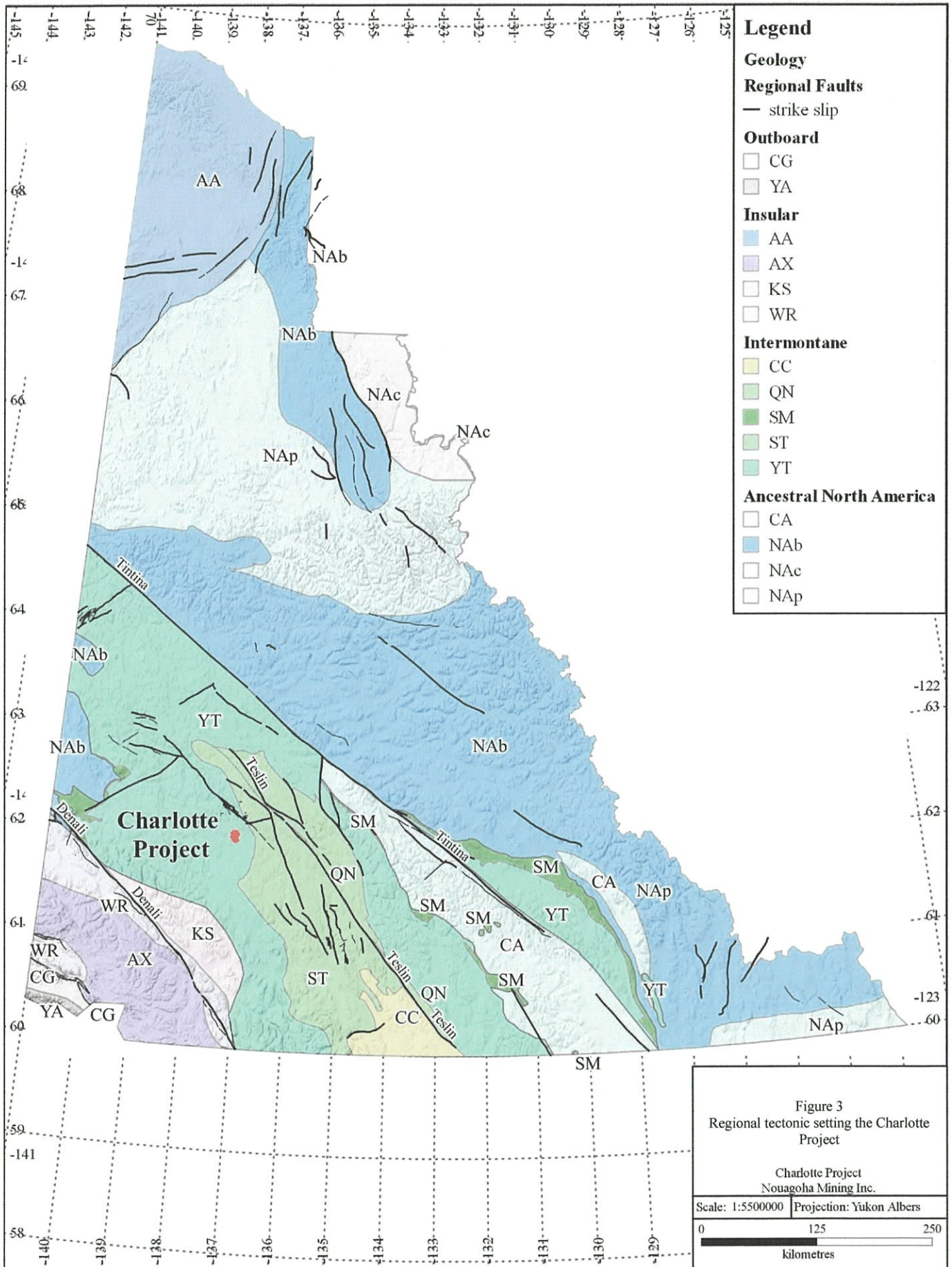
## **6.0 Property geology and gold mineralisation**

The Charlotte Project is underlain by metamorphosed Paleozoic supracrustal rocks that were subsequently intruded by Early Jurassic and mid- to Late Cretaceous intrusive suites (MacDonald, 2019). Polyphase deformation in the area includes two phases of isoclinal folding, a cryptic Late Triassic deformation event and regional transpressional to strike-slip faulting in the mid- to Late Cretaceous (Figure 4).

The southern portion of the property is underlain by infolded units of the Snowcap and Finlayson assemblages. These supracrustal rocks include quartzite and schist of the Snowcap assemblage and meta-felsite, marble, and amphibolite of the Finlayson assemblage.

The northern portion of the project is underlain by intrusive suites. These include hornblende-biotite monzogranite to granodiorite of the Dawson Range phase of the Whitehorse suite. The Whitehorse suite is overlain by the Mount Nansen Group which is comprised of feldspar-phyric andesite to dacite breccias, volcanic flows, and intermediate to felsic tuff of the Mount Nansen Group. The Mount Nansen Group is intruded by Casino suite plugs of dacite to quartz monzonite porphyries. The Casino suite is associated with mineralisation across the region and is considered highly prospective for Cu-Au-Mo porphyry systems and associated epithermal quartz veins.

The project area is crosscut by a prominent set of northwest trending dextral faults. The fault array was developed as early as the mid-Cretaceous but was active during the intrusion of the Casino suite. The main faults form an array of strike-limited segments. Where these fault segments overlap extensional domains form ideal locations



for magmas to coalesce in the upper crust and explains the location of the largest Casino suite stock at the Cyprus Zone.

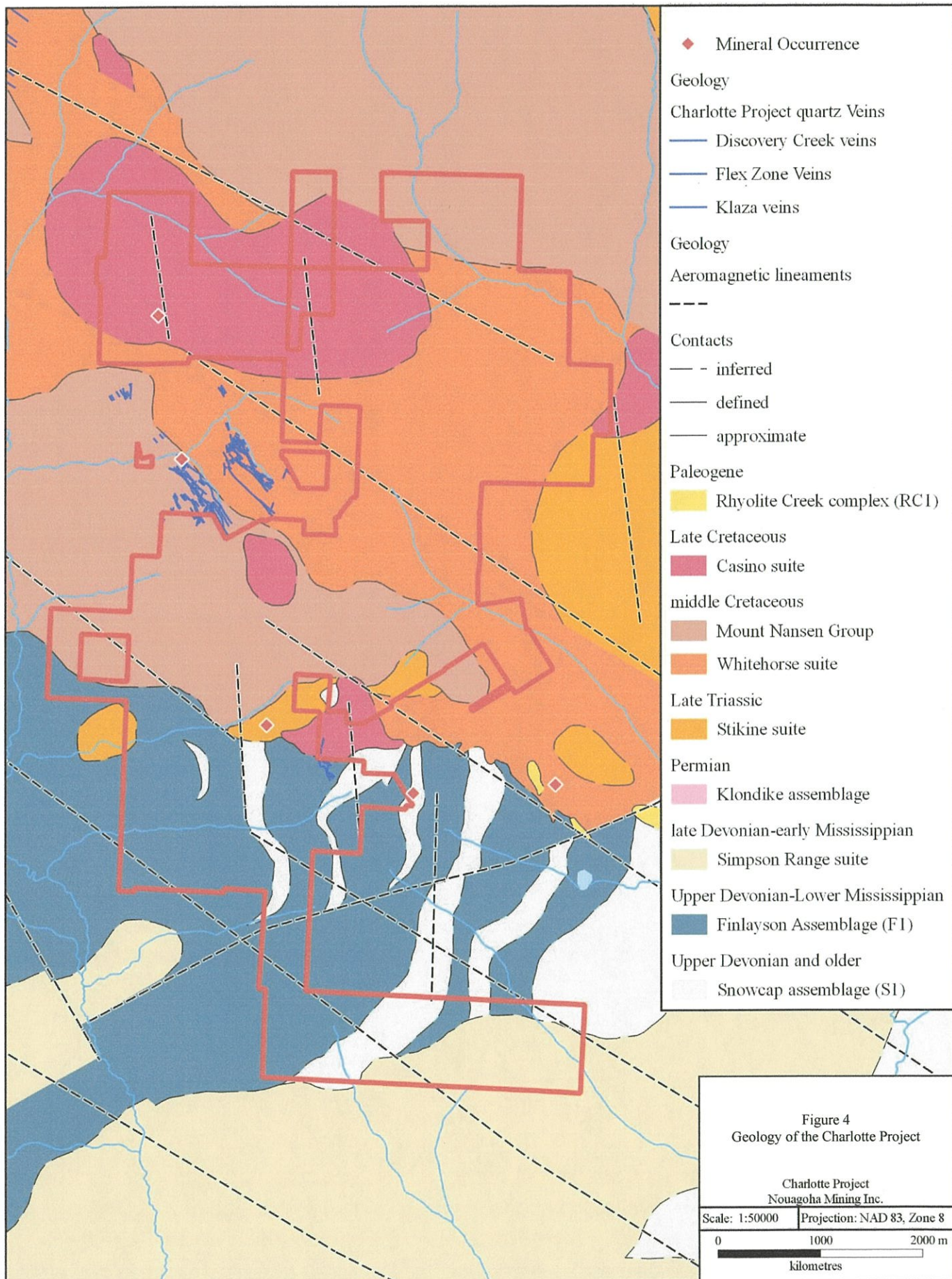
Mineralisation on the project is comprised of Cu-Au porphyry style mineralisation and Au-bearing epithermal quartz veins. The porphyry style mineralisation is currently limited to the Cyprus Zone at the north end of the property. Epithermal quartz veins are known at several locations in the project area. The primary zones on the property are the Huestis and Flex zones. Other historically significant Au-bearing quartz vein zones occur at Discovery Creek and the McDade Brown zones. These zones are located just off the property and are part of the excluded land areas that are being reclaimed (Figure 4). The decommissioned Mount Nansen Mine exploited these zones in the 1980's.

## **7.0 Structural setting of gold veins and Casino suite porphyry stocks**

Ryan et al. (2016) produced a regional (i.e., 1:100 000) geological map that covered the Mount Nansen map sheet and the Charlotte Project. The map is based on the integration of field mapping and interpretation of compiled, high-resolution aeromagnetic data. The striking aspect of this map is the prominent expression of the northwesterly trending mid-Cretaceous faults in the aeromagnetic data. The fault array offsets the contacts of geological units at several locations. In particular, the northwest contact of the Long Lake suite commonly exhibits apparent dextral offset along these faults (Figure 6.2; Johnston, 1988; Ryan et al., 2016). This is consistent with known movements on mid-Cretaceous faults like the Tintina and Denali faults, which offset portions of the Yukon-Tanana Terrane up to 453 km to the south (Nelson et al., 2006).

Ryan et al. (2016) mapped the most significant faults in the area and correlated the mapped northwest-trending faults to significant breaks in the aeromagnetic data (Figure 3). These faults crosscut the middle Cretaceous and older units in the area and generally cause apparent dextral offsets of the contacts. This is particularly well displayed by less extensive map units of isoclinally folded Snowcap and Finlayson assemblages. In contrast, the late Cretaceous intrusive units within the region are bounded by the regional fault array. This includes the economically prospective Casino Suite plutons in the vicinity of the Cyprus Cu-Au porphyry target area.

The compiled aeromagnetic data used by Ryan et al. (2016) is a high-resolution data set but was only utilised in the 2016 study to identify the significant faults at a



relatively large scale of 1:100 000. Reviewing the aeromagnetic data indicates that linear anomalies (lineaments) can be identified at a much finer resolution. Figure 5 presents the results of a more detailed lineament analysis of the 2016 aeromagnetic data set.

The more detailed lineament analysis highlights the same set of northwest trending faults as Ryan et al. (2016). However, an array of higher-order lineaments is identified as well. The higher-order lineaments generally have shorter strike length and more variable orientation patterns. The lineaments can be broken into four main groups based on the trend of the lineaments. These groups correspond to the following trends: (a) 307°, (b) 342°, (c) 358°, and (d) 211°. The pattern generated corresponds to the geometry of conjugate Riedel shear structures developed in brittle-ductile shear zones (i.e., R-, R'-, and P-shears). In this model the shear zone boundaries (i.e., C-shear) correspond to the regional northwest trending faults (group a; Figure 6a). The R-shears correspond to the group b lineaments that trend north-northwest (Figure 6b). R'-shears correspond to group c lineaments that trend to the north (Figure 6c). P-shears are less commonly developed but correspond to group d lineaments (Figure 6d).

The geometry and orientation pattern of these four fault/lineament groups indicate the faults developed in a dextral transpressional or strike-slip fault system. This kinematic interpretation is consistent with the mid- to late-Cretaceous displacement along the terrane bounding, first order Tintina and Denali faults (Nelson et al., 2006). It is hypothesized that the regional fault system mapped in the Mount Nansen area is a higher-order fault system that developed to accommodate displacement on the first order faults within the Yukon -Tanana Terrane. Several features of the interpreted fault zone pattern are important for the development and localisation of Au-bearing epithermal and Cu-Au porphyry systems in the Mount Nansen area.

At the Cyprus Prospect the intrusion of the Casino suite porphyry body is an important indicator of potential for a Cu-Au porphyry system. Regionally, the Casino suite intrusives are associated with Cu-Au porphyry deposits. Figure 7 is a small-scale map of the area around the Cyprus Project and depicts the geometry of a step-over formed between two segments of the northwest trending fault array that bound the Casino suite intrusion. The dextral sense of shear on the faults generated a small area of extension, the

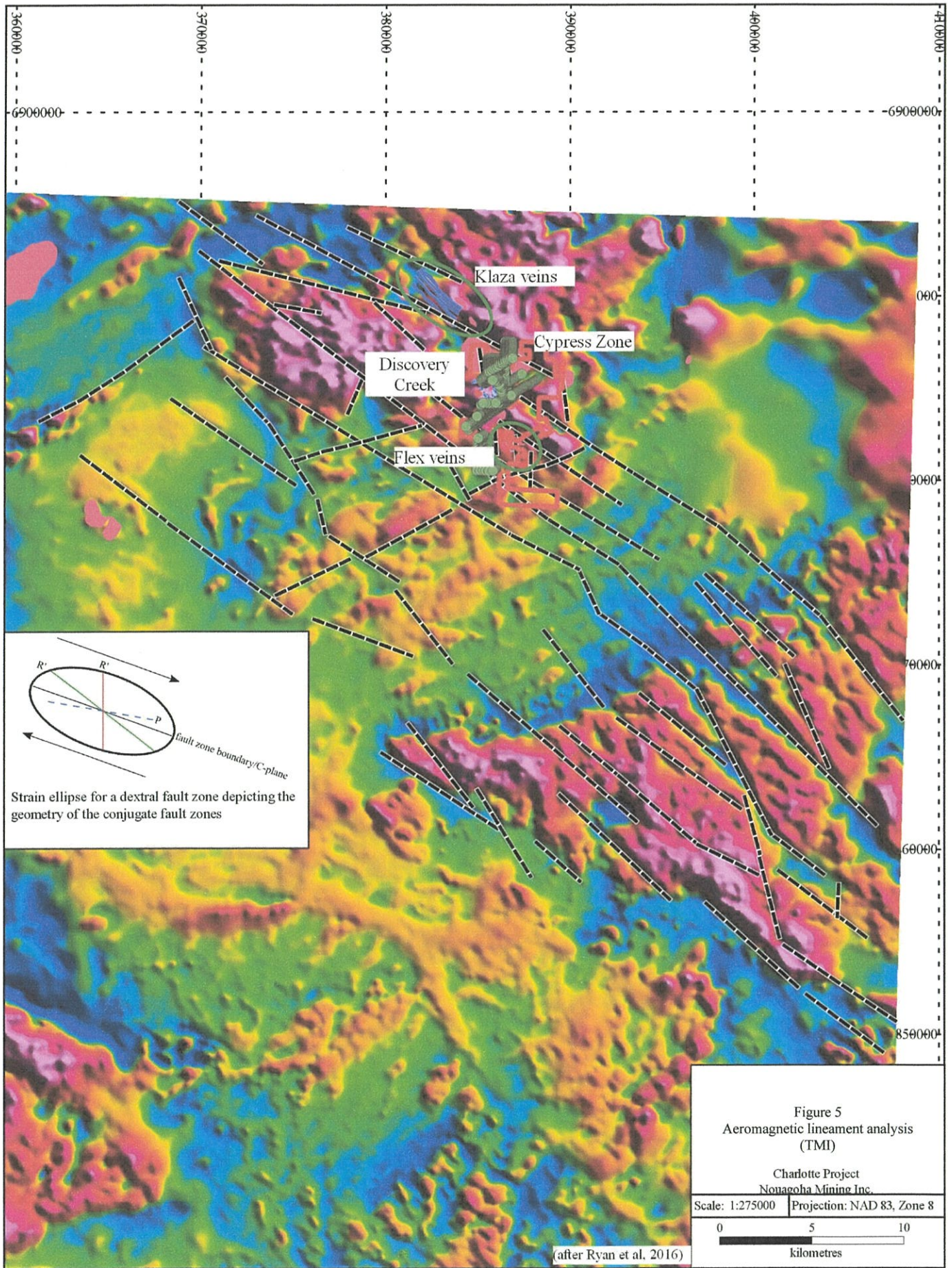
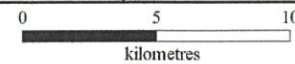


Figure 5  
Aeromagnetic lineament analysis  
(TMI)

Charlotte Project  
Nonagotha Mining Inc.

Scale: 1:275000 Projection: NAD 83, Zone 8



(after Ryan et al. 2016)

direction of which is depicted by the red arrows. The north-northwest trending lineaments that cross the intrusion may be either:

- (a) R'-shear developed to accommodate strain within the overall shear zone, or
- (b) Normal faults that form within the step-over to accommodate extension

Brown (1994) proposed a model for the emplacement of granitoid magma through dilatancy pumping within crustal scale transpressional shear zones and associated upper crustal strike-slip systems. In Brown's model magma ascends through the crust by migrating into progressively higher extensional domains within the shear zones. The magma coalesces into larger plutons and plugs that fill larger-scale extensional domains at upper crustal levels. This model can be extended to the Charlotte Property to explain why the Casino Suite plutons and plugs occur within extensional step-over domains between faults and are effectively bound by the fault array. Additionally, the step-over geometry could be utilised to identify other occurrences of Casino-age intrusions.

At the Discovery Creek and Flex gold-bearing quartz vein occurrences the mapped geometry of the quartz veins corresponds to the orientation patterns identified in Figure 6. At Discovery Creek the quartz veins predominantly share the C-plane orientation of the regional fault array. Short vein segments are observed to be parallel with the R- and R'-shears. The Flex occurrence quartz veins are unique in the area in that the veins have a northerly trend. However, this orientation is shared by the lineaments interpreted as R'-shears within the regional fault system (Figure 6). These quartz vein occurrences are not coincident with the regional faults but are interpreted to have formed in higher-order faults reflect the geometry and orientation pattern of the regional fault array.

## **8.0 Conclusions**

The structural geology of the Mount Nansen area reflects a prolonged, polyphase deformation history. Two generations of isoclinal folds affect the Permian and older lithological units. A third regional deformation event in the Late Triassic to early Jurassic imparted a foliation in the Stikine suite, but not the younger Long Lake suite. The regional northwest faults that are the focus of this report crosscut the Long Lake suite and must be at least mid-Cretaceous in age, or younger.

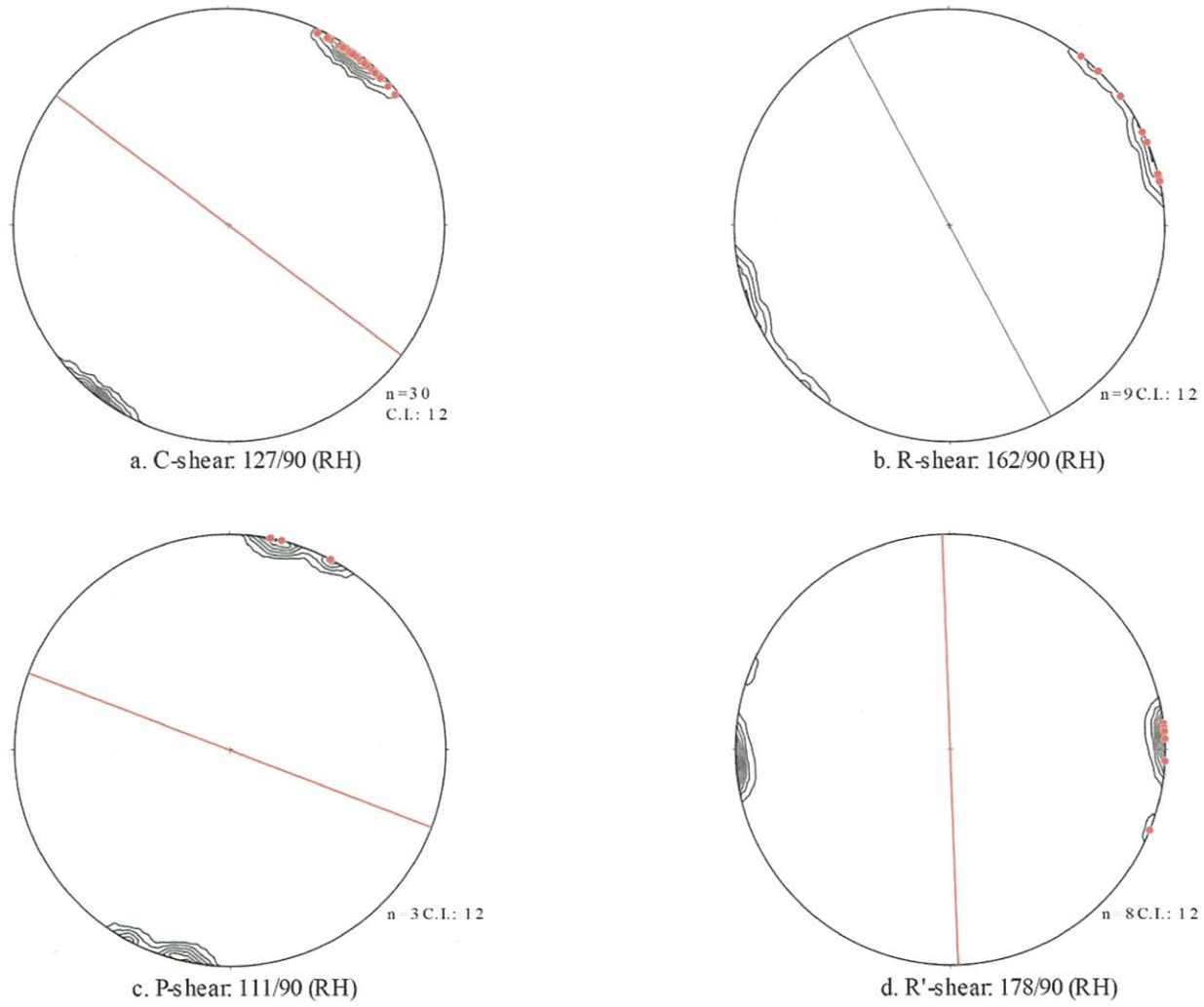
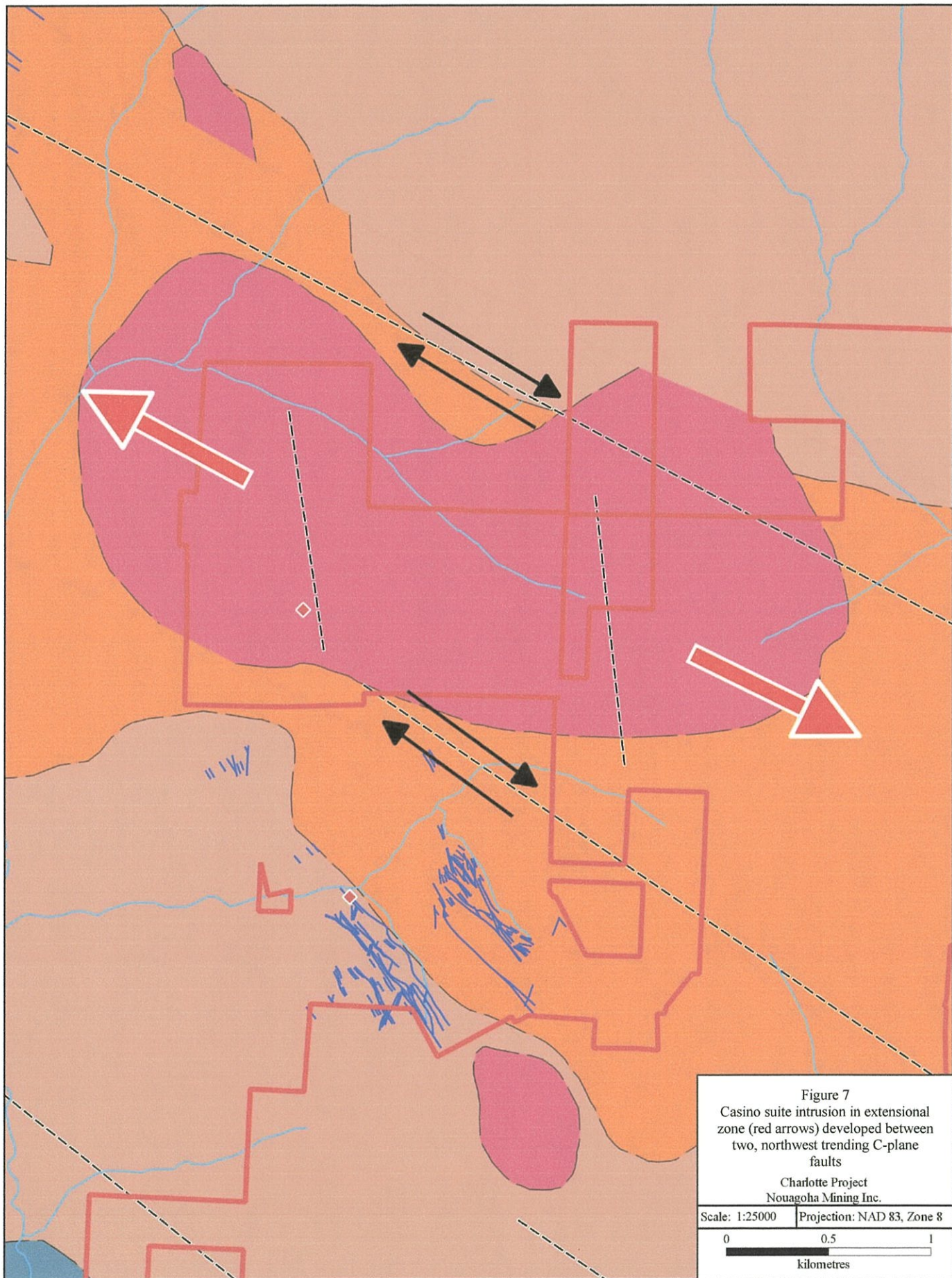


Figure 6 lower hemisphere, equal area plots illustrating the dominant trends of the four aeromagnetic lineaments in the Charlotte Project area.

Aeromagnetic lineaments in the area are interpreted as conjugate faults within a regional scale transpressional fault system. The lineaments correspond to C-plane, R-shears, R'-faults, and P-shears. The geometry of the conjugate faults indicates the regional fault system has dextral sense of shear. The interpretation of the faults presented in Section 7.0 proposes that the northwest trending (i.e., C-plane) faults are strike limited fault segments that locally form extensional step-over between fault segments. At the Cyprus Prospect an extensional stepover is proposed as the mechanism of emplacement for the Casino suite stock. If the hypothesised genetic relationship between the northwest trending faults and the Casino suite intrusive then the faults were active through the Late Cretaceous.

Other epithermal-style vein systems in the area share similar vein geometries as the regional fault system. Historical maps of the vein systems at Discovery Creek and the Flex Zone broadly form with R-shear and R'-shear orientations, respectively. These vein systems are interpreted to have formed in higher-order fault zones kinematically related to the regional fault system. Subtle expressions of the controlling fault zones may be present in the aeromagnetic data. However, the strong magnetic signature of the Whitehorse suite intrusive rocks and the Mount Nansen Group may obscure the expression of lineaments associated with the higher-order faults. Reprocessing these portions of the aeromagnetic data may yield a finer-scale lineament pattern within these rocks. This may lead to previously unrecognised structural trends within the Charlotte Project. Any aeromagnetic lineaments that share the orientation patterns identified in section 6.0 are highly prospective exploration targets. Particularly if the lineaments are coincident with soil anomalies.

The recognition step-over zones between northwest trending systems identifies a tool for identifying regional exploration targets. If, as hypothesised in section 6.0, the prospective Casino suite intrusive rocks are preferentially intruded into extensional domains created between fault segments then these zones are important reconnaissance-style exploration targets.



Ryan et al. (2016) notes that within the Long Lake suite there are occurrences of quartz-porphyrific hornblende-biotite granodiorite plugs that are similar to the younger, more prospective Casino suite intrusives to the north. Conducting a reconnaissance exploration program to collect soil samples, biogeochem samples, complete some geological mapping, and prospecting may lead to new regional discoveries.

The Charlotte Project has long history of exploration and mining of Au-bearing epithermal quartz veins. The numerous mapped occurrences of the regionally prospective Casino suite porphyries are encouraging for the discovery of additional Cu-Au porphyry occurrences like the Cyprus Zone. Recognizing a link between regional deformation, magmatism, and epithermal quartz vein development provides geometric constraints on Au mineralisation within the known deposits and regional scale exploration targets.

## 9.0 References

- Bostock, H.S., 1936, Carmacks District, Yukon: Geological Survey of Canada, Memoir 189, 67 p.
- Brown, M., 1994, The generation, segregation, ascent and emplacement of granite magama: the migmatite-to-crustally-derived granite connection in thickened orogens: *Earth-Science Reviews*, v. 36, p. 83–130.
- Carlson, G.G., 1987, Geology of Mount Nansen (115I/3) and Stoddart Creek (115I/6) map areas, Dawson Range, central Yukon: Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada Open File 1987-2.
- Gordey, S.P., and Makepeace, A., 2003, Yukon digital geology (version 2): Open-File Report - Geological Survey of Canada, v. 2003–9(D).
- Johnston, S.T., 1988, The tectonic setting of the Aishihik Batholith, SW Yukon, *in* Yukon Geology, Whitehorse, YT, Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, v. 2, p. 37–41.
- MacDonald, K., 2019, Technical Summary Report, Charlotte Property-Draft: Ridgeview Resources Ltd. NI43-101, 95 p., [www.sedar.com](http://www.sedar.com).
- Nelson, J., Colpron, M., Piercey, S., Murphy, D., Dusel-Bacon, C., and Roots, C.F., 2006, Paleozoic tectonic and metallogenetic evolution of pericratonic terranes in Yukon, northern British Columbia and eastern Alaska, *in* p. 323–360.
- Piercey, S., Nelson, J., Colpron, M., Dusel-Bacon, C., Simard, R.-L., and Roots, C.F., 2006, Paleozoic magmatism and crustal recycling along the ancient Pacific margin of North America, northern Cordillera, *in* p. 281–322.
- Ryan, J.J., Westberg, E.E., Williams, S.P., and Chapman, J.B., 2016, Geology, Mount Nansen-Nisling River area, Yukon: Geological Survey of Canada Canadian Geoscience Map Geology.
- Templeman-Kluit, D.J., 1984, Geology of Laberge (105E) and Carmacks (115I), Yukon Territory: Geological Survey of Canada Open File 1101.
- Walker, J.D., and Geissman, J.W., 2009, 2009 GSA Geologic Time Scale: *GSA Today*, v. 19, p. 60–61, doi:10.1130/1052-5173-19.4-5.60.

## 10.0 Certificates of Authors

I, Chris R. Buchanan, M.Sc., P.Geo. hereby certify that:

1. I am currently a self-employed Consulting Geologist, located at the following address: 5130-190A St. NW, Edmonton, AB, T6M 2R5, Canada.
2. I graduated with an Honours Bachelor of Science, co-op degree in Geology from the University of Waterloo, Waterloo, Ontario, in 1996. I obtained a Masters of Science degree in Geology from Memorial University of Newfoundland, St. John's, Newfoundland and Labrador, in 2004.
3. I am registered as a Professional Geologist with the Association of Professional Engineers and Geoscientists of Alberta (APEGA), member number 142930.
4. I have worked as a Professional Geoscientist since graduation with an Honours Bachelor of Science, co-op degree from the University of Waterloo, including defending research for a Masters of Science degree from Memorial University of Newfoundland in 2004.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify by reason of my education, work experience and registration with APEGA that I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation, in its entirety, of the geological report titled "Structural review of controls on Au-mineralisation at the Charlotte Project, central Yukon." The report, dated May 29, 2020, was prepared for Nouagoha Mining Ltd., relating to the Charlotte Project.
7. I do not have, nor do I expect to receive, directly or indirectly, any interest in the Charlotte Project, properties of Nouagoha Mining Ltd. or any affiliated companies
8. I consent to the filing of this report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

Dated: May 29, 2020:

Chris R. Buchanan, M.Sc., P.Geo.

## APPENDIX B

### STATEMENT OF EXPENSES

<u>Date</u>	<u>Supplier</u>	<u>Item</u>	<u>Inv. No.</u>	<u>Total</u>
May 27, 2020	BGS Consulting	Structural Desktop Study of the Charlotte Project, Carmacks	2020-0010	\$6,063.75
<b>TOTAL EXPENSES</b>				<b>\$6,063.75</b>

*Joni Walk*