GEOCHEMICAL AND GEOLOGICAL REPORT

ON THE BONNIE PROPERTY

Bonnie 1-6: YE70761 - YE70766

Whitehorse Mining District

NTS: 105 - C - 05

Centered at 563520E, 6698400N (NAD83 UTM Zone 8)

Work Performed

July 9, 2017

Owner of claims: Tao Song

Operator: Tao Song

Submitted by: Tao Song

Date: July 6, 2018

CONTENTS

1 INTRODUCTION

The Bonnie property is situated in the Cabin Lake area of southern Yukon. The property is underlain by the oceanic Cache Creek terrane comprising mafic meta-volcanics, argillite, minor chert and limestone. It was explored for asbestos in the 1970s. Six claims were staked to cover the known Riba asbestos showing.

On July 9, 2017, rock sampling and prospecting were carried out on the Bonnie property. Eleven samples were collected, and one sample was sent to ALS for XRD testing. The result returned 75% tremolite - ferro actinolite, consistent with the chemical composition of nephrite jade.

The XRD results warrant further investigation to locate the contact zone between serpentinite and the other rock unit.

2 LOCATION AND ACCESS

Bonnie property consists of six claims, located at about 11 km northeast of Jakes Corner, 75km southeast of Whitehorse and 5km from the Alaska highway (Figure 1). The claims are accessible by helicopter from Whitehorse. A 7-km-long tote road was noted in a historic report at Mile 855.7 of the Alaska highway, but it was not engaged in the 2017 exploration program.

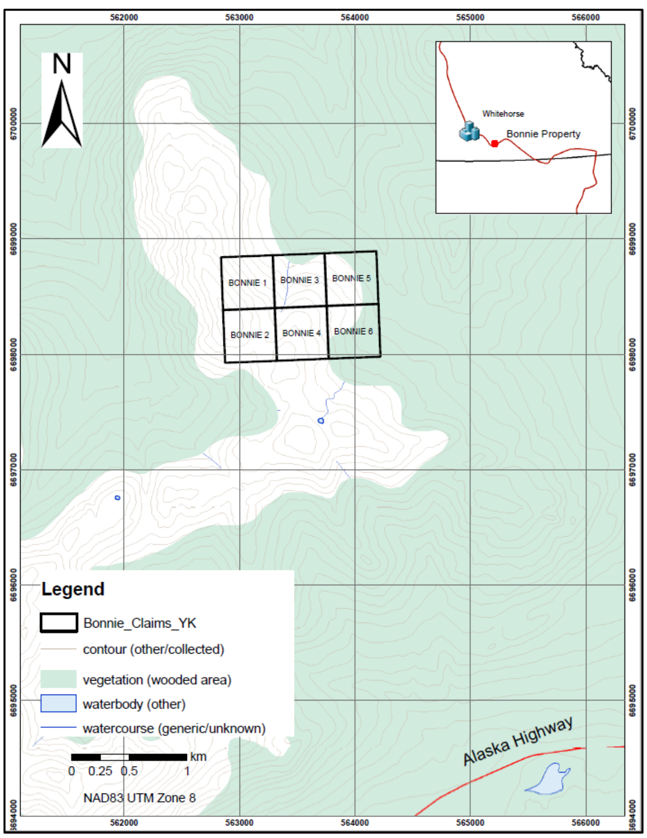


Figure 1 Bonnie Property location

3 PHYSIOGRAPHY AND CLIMATE

The elevations of the property range from 1270 to 1590 meters. It is moderately steep with a gentle mountain top. Outcrops occur well near the top and become rare down the slope. The climate is characterized by long cool winters and short warm summers. Exploration programs are best implemented between May and September.

4 PREVIOUS EXPLORATION

The property was mainly explored for asbestos in the 1960s – 1970s. Bulldozer trenching was recorded for a length of 152.4 m and a width of 36.6 to 61 m. Chrysotile fibers were considered good quality at 2% in trenches.

In 2012-2013, the property received some exploration (soil and rock sampling), probably for listwanite type gold. The report is not available till today but may become accessible in near future. The previous owner decided to let the claims lapse.

5 REGIONAL GEOLOGY

The property lies in the north end of the Cache Creek Terrane (CCT). The CCT is an oceanic terrane, extending from southern BC into southcentral Yukon (Nelson, 2007). It consists of ultramafic, clastic and carbonate rocks. The CCT hosts more than 50 jade occurrences in BC.

The Cabin Lake area has ultramafic units mapped by YGS, and four asbestos occurrences recorded in Minfile (Figure 2). Ni and chromite occurrences were also recognized in the past exploration. Small scale placer gold operations have been active in the Jakes Corner area.

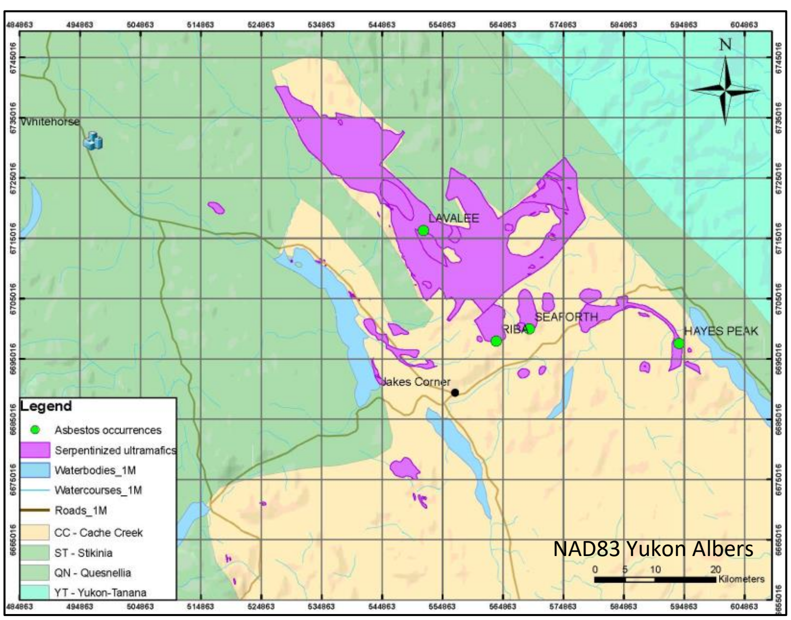


Figure 2 Serpentinite and asbestos in Whitehorse region

6 NEPHRITE JADE DEPOSITS

6.1 WHAT IS NEPHRITE JADE?

Jade is a commercial term. The term is commonly referred to two different mineral species: nephrite jade (Figure 3) and jadeite jade (Figure 4).

- Nephrite jade occurs widely throughout the world, such as Canada, China, Russia, Italy, New Zealand, Korea, Australia, United States.
- Jadeite jade in comparison occurs much rarer. Burma is the only country that produces commercial grade jadeite.

Nephrite is not a mineral but rather a habit of tremolite. As an assemblage of mineral grains, it is rock. Nephrite is defined by three major characters described below (Harlow, 2005):

1. Chemical composition: tremolite – ferro actinolite, $Ca_2(Mg^{2+}, Fe^{2+})_5\ Si_8O_{11}(OH)_2$. Actinolite is no longer a valid mineral species (Hawthorne, 2012).
2. Texture: massive, felted, interlocking
3. Grain size: microcrystalline – cryptocrystalline

Figure 3 Nephrite Jade Product

Figure 4 Jadeite Jade Product

6.2 NEPHRITE DEPOSIT TYPES

Nephrite jade is formed by contact and/or infiltration metasomatism in two different geological settings (Harlow, 2014):

1. Dolomite replacement by silicic fluids associated with "granitic" plutonism;
2. Serpentinite replacement by Ca-metasomatism at contacts with more silicic rock, such as leucocratic igneous rock, graywacke, argillite or chert.

Serpentinite type nephrite jade has been found world widely (Figure 5). Dolomite type jade is rare but is valued at higher prices.

All the known jade occurrences in Canada belong to serpentinite type.

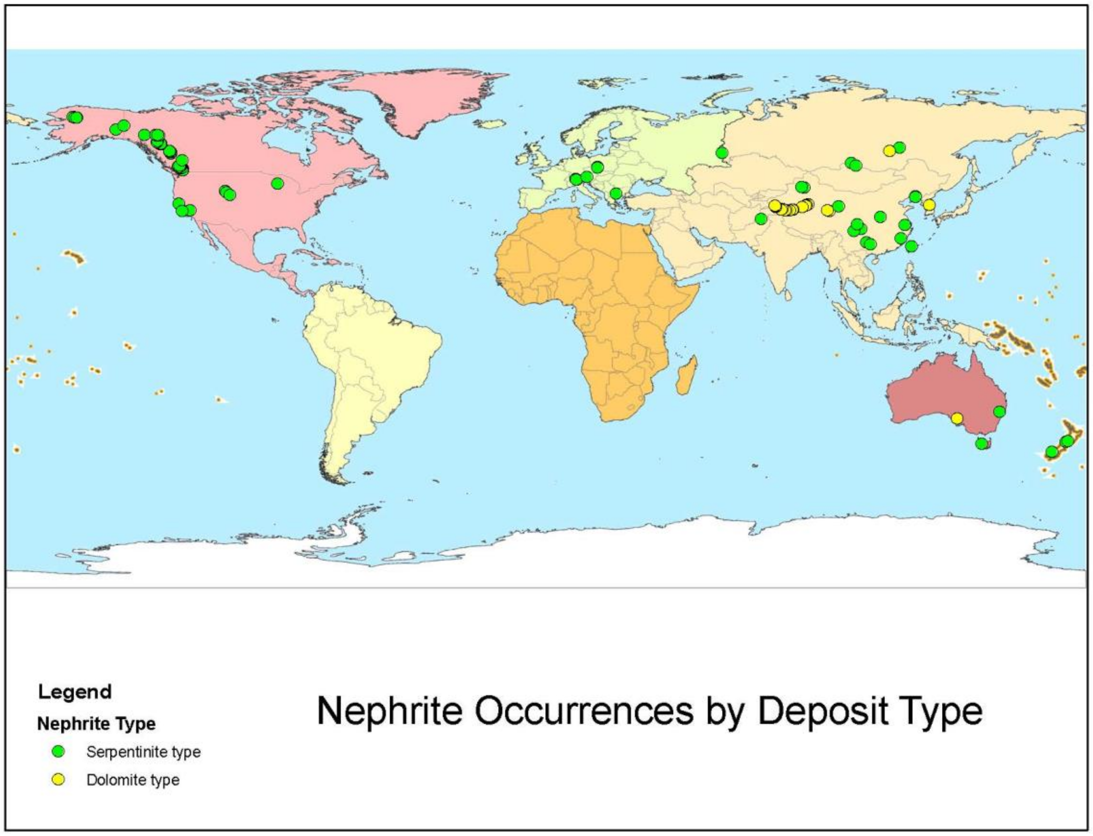


Figure 5 Nephrite occurrences by deposit type

6.3 SERPENTINITE TYPE JADE

Serpentinite type jade forms by Ca and Si metasomatism at greenschist facies, where serpentinite is in contact with Ca rich rock, such as marble and cherty argillite. It is spatially related to ophiolite belts where ultramafic rocks are variably serpentinized (Figure 6). The source of ophiolite belts is from the University of Texas.

The degree of serpentinization plays a critical role in forming serpentinite type jade. One critical factor to form nephrite is to have ultramafic rock completely serpentinized.

Serpentinite usually forms at two stages:

> 1) partial serpentinization at the ocean floor by retrograde metamorphism to form low - T stable lizardite
>
> 2) continued serpentinization at the convergent boundary by prograde metamorphism to form antigorite (Evans, 2010).

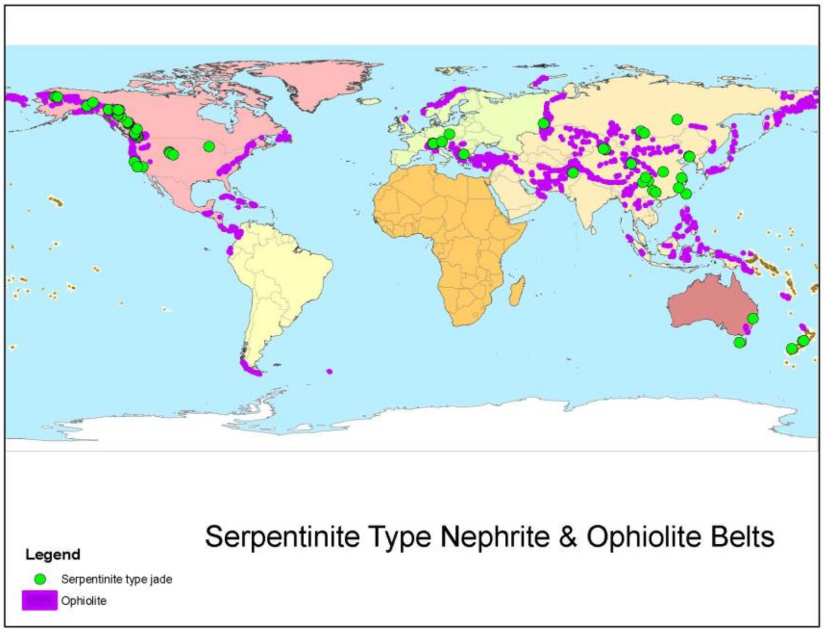


Figure 6 Serpentinite type jade & ophiolite belts

6.4 Nephrite Jade IN CANADA

In Canada, jade mining activities started in the Lillooet area in the 1950s, then moved northwards to Mt Ogden, and eventually arrived in the Dease Lake area. Annual jade production in Canada is estimated at 500 tonnes per year. Dease Lake area accounts for more than 90% of Canadian jade production over the past 20 years.

All the known jade occurrences in Canada belong to serpentinite replacement type, which is associated with oceanic terranes (Figure 7). These jade occurrences form a discontinuous linear shape from southern BC into southern Yukon.

BC has been explored for nephrite in the past 70 years, while Yukon has not caught much attention for its jade potential. Yukon has four recorded occurrences and only one was in production.

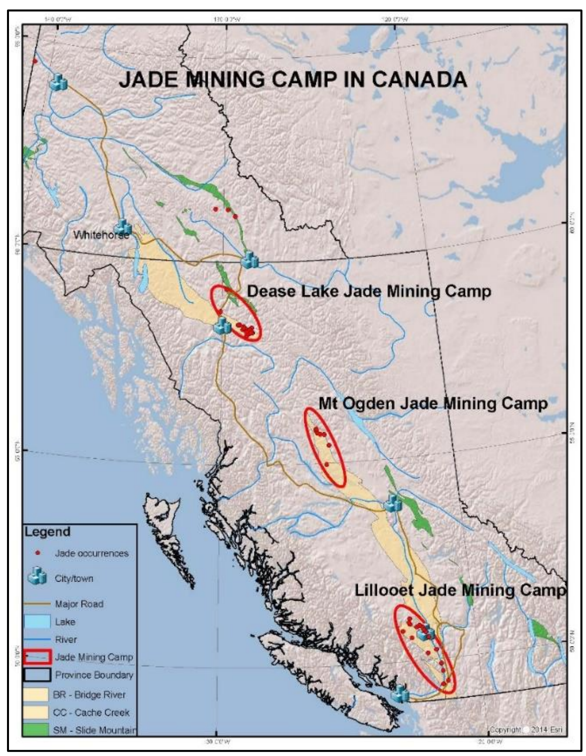


Figure 7 Jade Mining Camps and Oceanic Terranes in Canada

7 EXPLORATION 2017

7.1 Summary

Prospecting and rock sampling were performed by Tao Song on the Bonnie claims (YE70761 - YE70766) on July 9, 2017. Eleven samples were collected, and one sample was sent to ALS for XRD testing (Figure 8). The results indicate 75% nephrite content in the sample.

7.2 Prospecting & Findings

The focus of prospecting was given to historic trenches (Figure 9). A number of trenches were observed. Ultramafics in trenches are variably serpentinized (Figure 10), containing high magnetite content (5%). To the west of asbestos trenches, geology changes to brown altered basalt (Figure 11). Three kilometers southwest of this listwanite type outcrops, a placer gold project has been in operation.

Hardness testing of rocks was carried out in the field to distinguish serpentinized ultramafics, altered serpentinite and nephritic rock.

Nephritic rock and rodingite were found in historic trenches as shown in Figure 9.

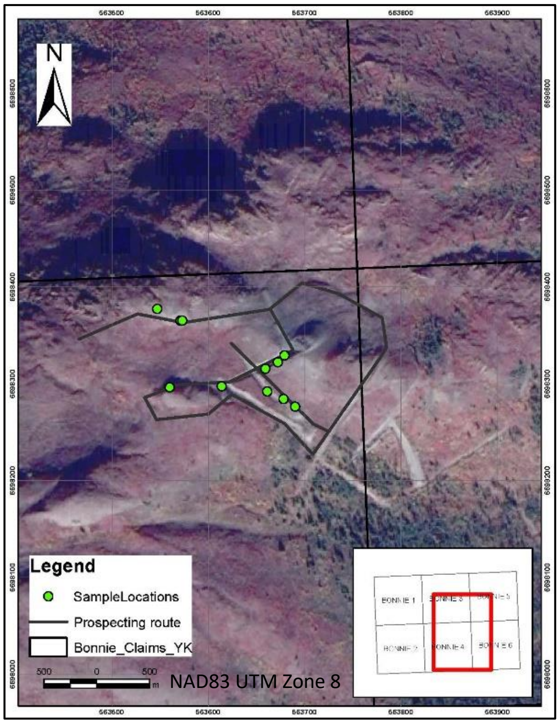


Figure 8 Prospecting route and samples

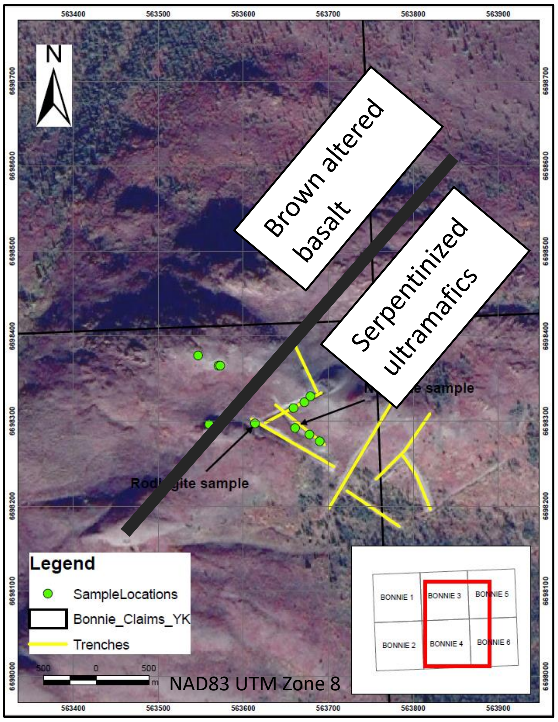


Figure 9 Historic trenches

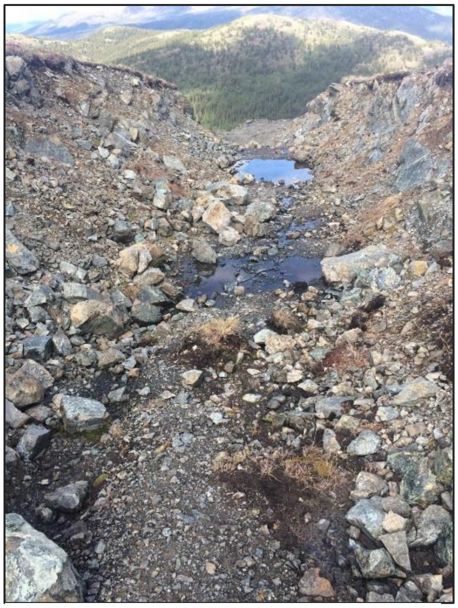


Figure 10 Trenches in serpentinite

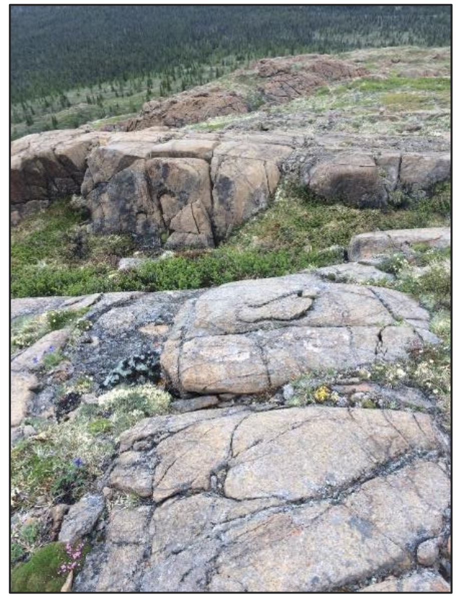


Figure 11 Brown weathered mafic-ultramafics

A piece of rock was suspected of nephrite. It is about 20 cm in size, 3-4 cm thick, disc-shaped, dark green in color, non-magnetic (Figure 12). On a hardness test, it has a Mohs hardness of 5.5 and is weakly transparent (Figure 14).

Figure 12 Suspect jade sample

Theoretically, the hardness of serpentine varies from 2 to 6. In contrast, nephrite jade's hardness varies between 5.5 and 6.5. It is sometimes difficult to differentiate jade from serpentinite by hardness. Therefore, the rock was cut by a diamond saw in Vancouver and a small piece of this nephritic rock was sent to ALS/AuTec for XRD testing (Figure 13).

Figure 13 Cut piece

Figure 14 Cut piece under the light

Rodingite was found in a trench. It is 15cm in size and is white-creamy in color (Figure 15). Rodingite is considered an alteration product at the contact between serpentinite and Ca-rich rock. In BC, the majority of commercial grade jade is associated with rodingite, such as Polar, Kutcho, and Provencher. If a jade lens has no association with rodingite, jade quality tends to be low.

Figure 15 Rodingite found in trench

7.3 Results & Interpretation

Serpentine and nephrite can be too fine-grained to determine under microscope, it makes it necessary to use advanced scientific instruments to determine the sample's content, such as XRD or Raman.

XRD results prepared by AuTec prove that this sample contains 75% tremolite – ferro actinolite (Figure 16 & APPENDIX II), consistent with the chemical composition of nephrite jade.

Table 4 - Quantitative XRD results, modal wt%.

Mineral	M180166 Ribal
Quartz	3.7
Actinolite	39.6
Caminite	5.2
Ilmenite	5.8
Talc	11.5
Tremolite	34.1
Total	**100.0**

Figure 16 XRD results

What is also noticing is this sample has no magnesite. The absence of magnesite means no CO_2 fluids involved in local geology. Since nephrite jade prefers to form in an alkaline environment, no magnesite suggests the local environment is either neutral or alkaline, which is favorable for nephrite development and preservation.

Jade deposit tends to have a zonal pattern, with high quality jade in the core, grading into poor quality jade, rodingite, serpentinite and siliceous rock outwards. Rodingite zone is usually thin, less than 0.5m in width, and white in color. The role of rodingite in forming jade deposits is not well understood. The zonal pattern reflects the replacement style of jade deposits. Jade quality is dependent on the fluid composition and local tectonics.

8 CONCLUSION

Jade and rodingite are exposed in trenches, serving as good indicators for jade exploration. The focus should be given to the contact between serpentinite and the other rock unit.

Trenching by bulldozer is recommended to expose the nephritic ore body in the next phase. The adjacency to an active placer gold project may facilitate equipment mobilization. Jade quality determination should be carried out onsite to minimize transportation cost.

REFERENCES

Evans, B. W. (2010). Lizardite versus antigorite serpentinite: Magnetite, hydrogen, and life(?).

Harlow, G. E. (2005). Jade (Nephrite and Jadeite) and Serpentinite: Metasomatic Connections.

Harlow, G. E. (2014). CHAPTER 10: THE GEOLOGY OF JADE DEPOSITS.

Hawthorne, F. C. (2012). *Nomenclature of the amphibole supergroup.* American Mineralogist.

Nelson, J. (2007). TECTONICS AND METALLOGENY OF THE BRITISH COLUMBIA, YUKON.

STATEMENT OF QUALIFICATION

I, Tao Song, submit the following information to support my competence that is required to carry out the field work and prepare for the assessment report on the Kamatash project.

Education

- Bachelor of Computer Engineering degree, specialized in database, Yanshan University, China, 2005
- Bachelor of Science degree in Geology, University of British Columbia, 2010

Experience

- 4 years of experience as a company geologist with Merit Mining, Vancouver
    - Resource modeling
    - Drill ready exploration projects and grassroot programs in Canada
    - Project evaluation from early stage to producing (Au, Cu, Pb, Zn)
    - Development of a global mining and geology database

- 3 years of experience as a consulting geologist, Vancouver
    - Drill program supervision
    - Regional targeting
    - Project evaluation
    - Resource evaluation

Professional Affiliations

- Geoscientist in Training with the Association of Professional Engineers and Geoscientists of the Province of British Columbia, Canada, System ID 164368, since February 2011.
- Member of AME BC
- Member of PDAC

APPENDIX I

SUMMARY OF EXPENDITURES

Item	Desc	Rate	Quantity	Cost
Helicopter	Bell jet ranger	1215	2.3	$2,794.50
Geologist	Field work	500	0.5	$250.00
XRD	QuantItative XRD by ALS	270.74	1	$270.74
Geologist	Report writing	500	2	$1,000.00
Truck use in Yukon	Personal vehicle	0.6	1000	$600.00
			Total	$4,915.24

APPENDIX II

XRD RESULTS

AuTec
INNOVATIVE EXTRACTIVE SOLUTIONS

Quantitative XRD Results for One Sample – ALS Workorder #VA18001833

Date:	31 January 2018
Prepared by:	Ben Eaton
Reviewed by:	
Contributors:	
Distribution:	ClientServicesCANW@alsglobal.com
Document #:	R2018-016
Revision #:	0
AuTec project #:	100433

AuTec Innovative Extractive Solutions Ltd.
A Barrick Company
323 Alexander Street | Vancouver | BC | Canada | V6A 1C4
T 604 682-1730 F 604 682-1767 W www.autec.ca

1 Introduction

One sample was received from ALS for quantitative X-ray diffraction (QXRD) analysis. The ALS sample description along with the corresponding AuTec mineralogy sample number is given in Table 1.

Table 1 – ALS and corresponding AuTec mineralogy sample description and number.

ALS Sample Number	Mineralogy Sample Number
Ribal	M180166

2 Sample Preparation

The sample was ground for approximately five minutes in a McCrone Micronizing Mill using reagent alcohol. Grinding in the Micronizing Mill reduces particles to between 5 and 10 µm in size without distorting the crystal lattices which are critical for diffraction of X-rays.

Diffraction data was collected over the range of 5-75°2θ with CoKα radiation using a Bruker D8 Focus Bragg-Brentano diffractometer. The diffractometer uses a 0.6mm divergence slit and incident and diffracted-beam Soller slits. The system is equipped with a LYNXEYE - Super Speed Detector.

Diffraction data produced is analyzed and peaks are identified using HighScore Plus software by Panalytical using the Crystallography Open Database. Refinement of diffraction data is done using Topas 5.0 by Bruker AXS.

Detection limits for X-ray diffraction depend on multiple factors, but as a general rule, if the peak to background ratio is low, the detection limit is approximately 2.0 wt%. For samples in which the peak to background ratio is high and there is good crystallinity, the detection limit can be less than 0.5 wt%. If a phase is present at less than 0.5 wt%, it could still be identified, but confidence decreases.

3 Results

The minerals identified in the sample along with their ideal chemical formulae are included in Table 2.

Table 2 – Identified minerals with ideal chemical formulae.

Mineral	Ideal Chemical Formula
Quartz	SiO_2
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Caminite	$Mg_7(SO_4)_5(OH)_4 \cdot H_2O$
Ilmenite	$FeTiO_3$
Talc	$Mg_3Si_4O_{10}(OH)_2$
Tremolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$

The major phases identified were actinolite and tremolite, and the moderate phase was talc. The minor phases identified were quartz, caminite, and ilmenite. Actinolite and tremolite form a solid solution series, and essentially share the same chemical formula. Actinolite has a greater presence of iron over magnesium and tremolite has a greater presence of magnesium over iron.

The modal abundances of the major, intermediate, minor, and trace phases (Table 3) vary between samples (Table 4).

The minerals used during refinement were selected with no knowledge of provenance but were selected based on best fit. QXRD values are normalized to 100% of the minerals that are detected after removal of the corundum spike value.

Corundum spikes are a known crystalline phase added at a known weight percent that can then be used to quantify amorphous content if it is present in a sample. Amorphous material will show as a hump in the background intensity between 20 and 30 °2θ. Amorphous content is not apparent in the scan data for the current sample. The Rietveld refinement plot show a value for corundum. The values in Table 4 have been normalized to 100% after removing the value that was calculated for corundum.

The diffraction pattern is found in Appendix I.

Table 3 – Major, intermediate, minor, and trace phase grouping definitions.

Grouped Amount	Weight Percent Range
Major	>30
Moderate	<30 >10
Minor	<10 >2
Trace	<2

Table 4 - Quantitative XRD results, modal wt%.

Mineral	M180166 Ribal
Quartz	3.7
Actinolite	39.6
Caminite	5.2
Ilmenite	5.8
Talc	11.5
Tremolite	34.1
Total	**100.0**

APPENDIX I

DIFFRACTION PATTERN

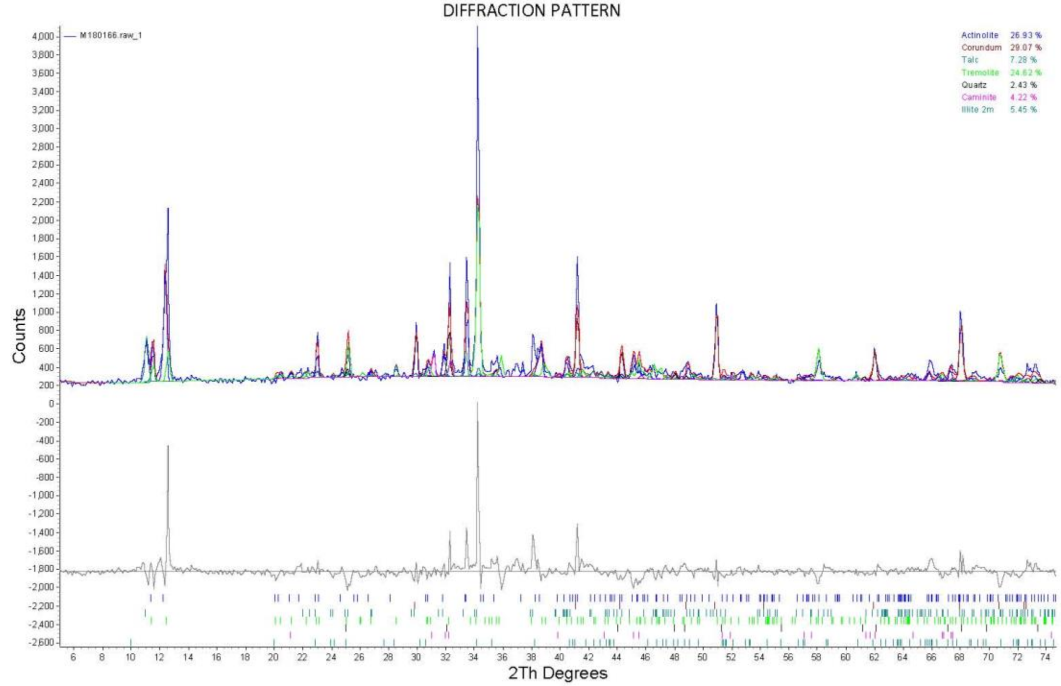
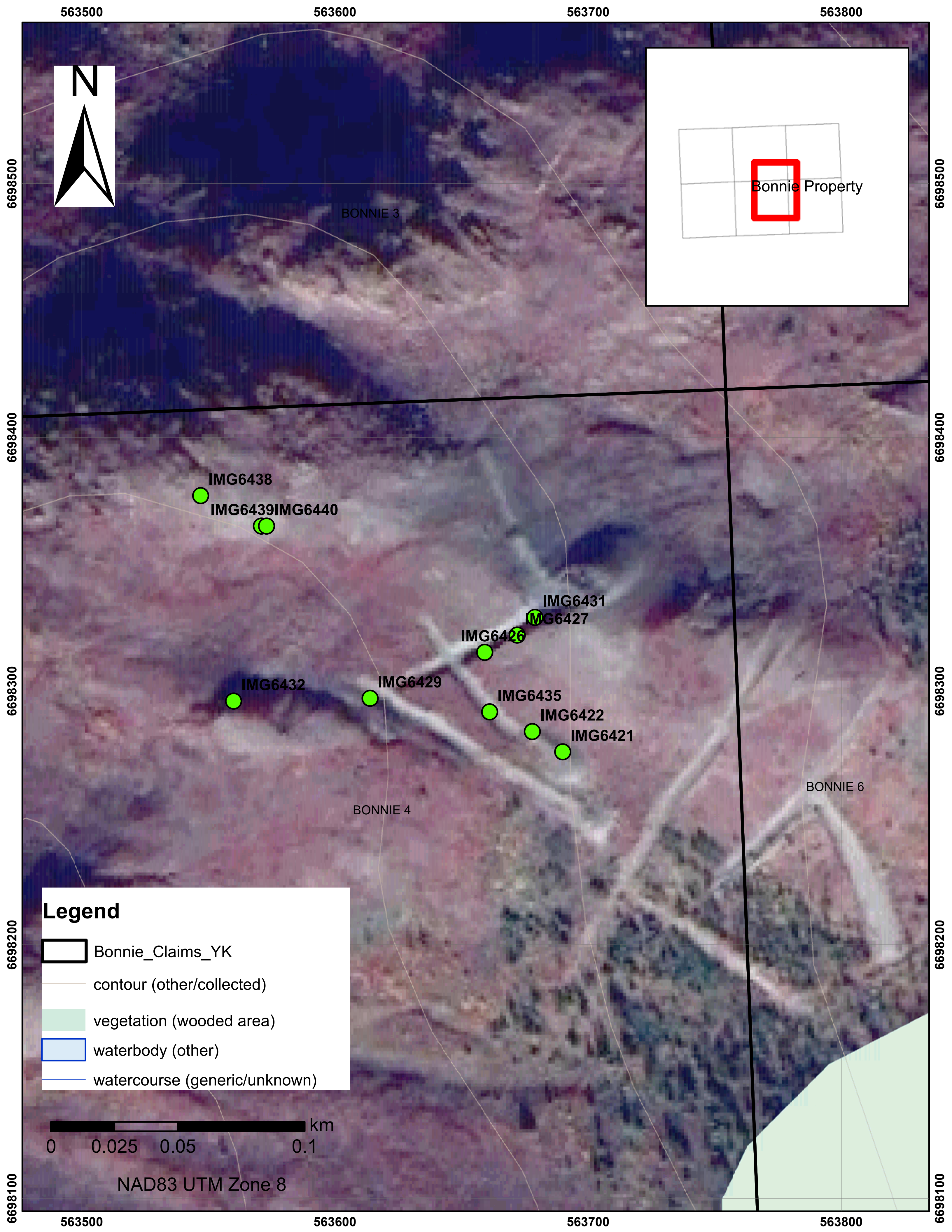


Figure 1: Rietveld refinement plot of Ribal (M180166). The blue line is the measured intensity, the red line is the calculated pattern, other coloured lines are individual mineral patterns, the grey line is the difference profile and the vertical bars are the reflection positions. The peak at 9°2θ is associated with the corundum spike.

APPENDIX III

SAMPLE LOCATIONS AND DESCRIPTIONS

Sample ID	Easting_m	Northing_m	Type	Description
IMG6421	563690	6698276	Float	Dark green serpentinite with moderately weathered surface, high magnetite
IMG6422	563678	6698284	Float	Serpentinite with nice green color on surface
IMG6426	563659	6698315	Float	Asbestos fiber 1cm, in magnetite serpentinite
IMG6427	563672	6698322	Float	1cm thick asbestos fiber in serpentinite
IMG6429	563614	6698297	Float	Rodingite, white creamy, 10cm size, found in trench
IMG6431	563679	6698329	Chip	Dark green serpentinite outcrop
IMG6432	563560	6698296	Chip	Dark grey weakly weathered volcanics
IMG6435	563661	6698292	Float	Nephritic rock, disc shape, found in trench
IMG6438	563547	6698377	Chip	Dark brown, moderately weathered listwanite
IMG6439	563571	6698365	Float	Multiple nice green color fibrous serpentine, sharp edge, weakly transparent
IMG6440	563573	6698365	Float	Grey-white limestone



563500
563600
563700
563800
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6698400
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6698200
6698100
N
Bonnie Property
BONNIE 3
BONNIE 4
BONNIE 6
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IMG6426
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IMG6435
IMG6422
IMG6421
Legend
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vegetation (wooded area)
waterbody (other)
watercourse (generic/unknown)
km
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NAD83 UTM Zone 8