


Ministry of Energy & Mines
Energy & Minerals Division
Geological Survey Branch

**ASSESSMENT REPORT
TITLE PAGE AND SUMMARY**

TITLE OF REPORT [type of survey(s)] Geological Mapping on the Mila and Chuck Mineral Claims	TOTAL COST \$ 32,850.09
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AUTHOR(S) Christopher O. Naas SIGNATURE(S) 

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S) _____ YEAR OF WORK 2012

STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S) 5342032

PROPERTY NAME Mila / Chuck Creek

CLAIM NAME(S) (on which work was done) 604833, 605834, 605836, 605837, 605838, 605840, 605841, 605842

COMMODITIES SOUGHT Copper, zinc, gold

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN _____

MINING DIVISION Kamloops NTS 082M12

LATITUDE 51 ° 34 ' 10 " LONGITUDE 119 ° 38 ' 30 " (at centre of work)

OWNER(S)

1) Christopher O. Naas 2) _____

MAILING ADDRESS

2130-21331 Gordon Way

Richmond BC Canada V6W1J9

OPERATOR(S) [who paid for the work]

1) Christopher O. Naas 2) _____

MAILING ADDRESS

2130-21331 Gordon Way

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PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Property is underlain by the Paleozoic Eagle Bay Assemblage. The most common rock types on the Property are foliated andesitic tuffs and limestones. Mineralization consists of stratiform zones of disseminated to massive sulphides

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS _____

Assessment reports: 09959, 12465, 13325, 13557, 14045, 27609, 27610, 28045, 28811, 29214, 29836, 30328, 31652, 32413

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	1:5,000, 1:10,000, 1,500 ha		32,850.09
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
TOTAL COST			\$ 32,850.09

ASSESSMENT REPORT
GEOLOGICAL MAPPING
on the
MILA and CHUCK MINERAL CLAIMS
(605833, 605834, 605836, 605837,
605838, 605840, 605841, 605842)
Kamloops Mining Division, British Columbia, Canada

NTS 82M/12

Latitude: 51°33'N

Longitude: 119°38'W

Owner: Christopher O. Naas

Operator: Christopher O. Naas

by

Christopher O. Naas, *P. Geo.*

September 7, 2012

BC Geological Survey
Assessment Report
33665

SUMMARY

The Mila area is known to host massive sulphides (Nicanex showing) with significant copper, lead zinc and to a lesser extent gold and silver. Historical drill results include up to 11.28 metres of 0.34% Cu.

Previous soil sampling in the Mila area has identified anomalous copper and zinc values associated with the known mineralized horizon(s). The Chuck area, and Chuck Creek specifically, is the source of several historical gold-in-silt anomalies.

The 2012 work program work was undertaken between June 8 and June 17, 2012. Work involved geological mapping of available outcrops on the Property. The goal was to identify the various geological units on the Property using the same geological legend as developed at Yellowhead Mining Inc.'s nearby Harper Creek deposit. The Property and Harper Creek are both hosted within the rocks of the Eagle Bay Assemblage. Correlating the geological units would assist in determining the stratigraphic position of the known Mila mineralization with respect to the Harper Creek mineralization.

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- I. Abbreviations and Conversion Factors
- II. Geological Sample Descriptions

1.0 INTRODUCTION

This report details the results of the work program conducted on the mineral claims with tenure numbers 605833, 605834, 605836, 605837, 605838, 605839, 605840, 605841, 605842 and 605834 (Chuck Claims). Field work was carried out over 10 days between June 8 and June 17, 2012.

1.1 LOCATION AND ACCESS

The Mila and Chuck mineral claims (collectively the “Property”) are located on NTS mapsheets 82M/12 and geographically centred at 51°33'N and 119°38'W.

Road access is gained to claims via the Yellowhead Highway (Highway 5) to the village of Vavenby. The claims are located on the south side of the North Thompson River. Forest service roads offer excellent access to the claims (Figure 1 and 2).

The Canadian National Railway mainline also passes through this area.

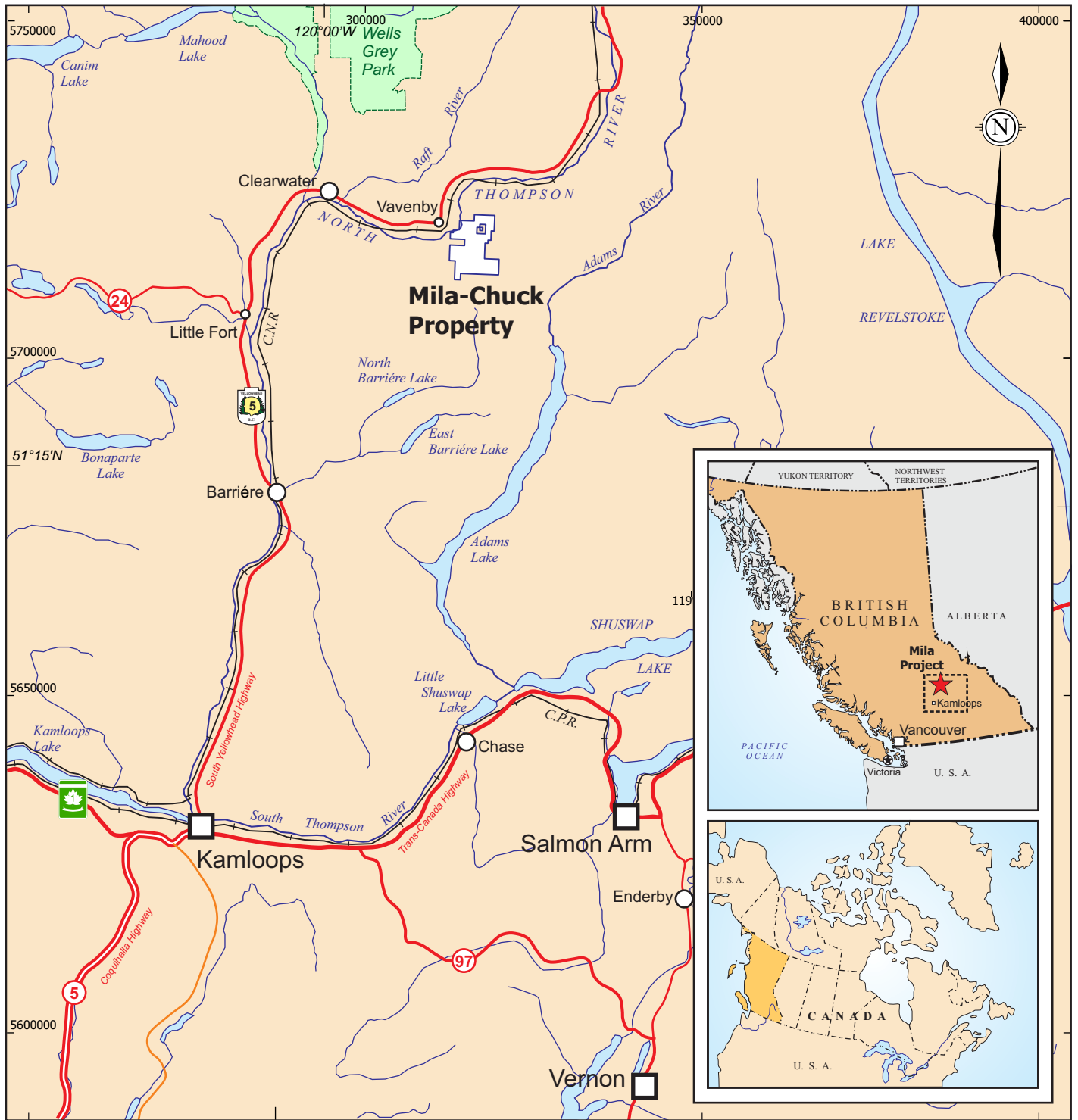
Topography is moderate to steep with elevations ranging from 1,300 metres to 1,800 metres. The area is the site of active logging and consists of a thick coniferous forest cover with heavy underbrush to wide open clear cuts. At higher elevations, small marshy alpine meadows occur (Belik, 1973).

1.2 TITLE

The Property consists of eleven MTO cell claims and are 100% owned by Christopher O. Naas. Claim details are listed below and shown on Figure 2.

Table 1: List of tenures

Tenure Number	Tenure Name	Area	Good To Date
605833	CHUCK 1	502.38	November 3, 2013
605834	CHUCK 2	502.38	November 3, 2013
605835	CHUCK 3	482.50	November 3, 2013
605836	CHUCK 4	482.45	November 3, 2013
605837	CHUCK 5	502.56	November 3, 2013
605838	CHUCK 6	502.04	November 3, 2013
605839	CHUCK 7	482.04	November 3, 2013
605840	CHUCK 8	502.19	November 3, 2013
605841	CHUCK 9	501.91	November 3, 2013
605842	CHUCK 10	100.38	November 3, 2013
837495	MILA	20.08	November 3, 2013



LEGEND

 Mila-Chuck claim group

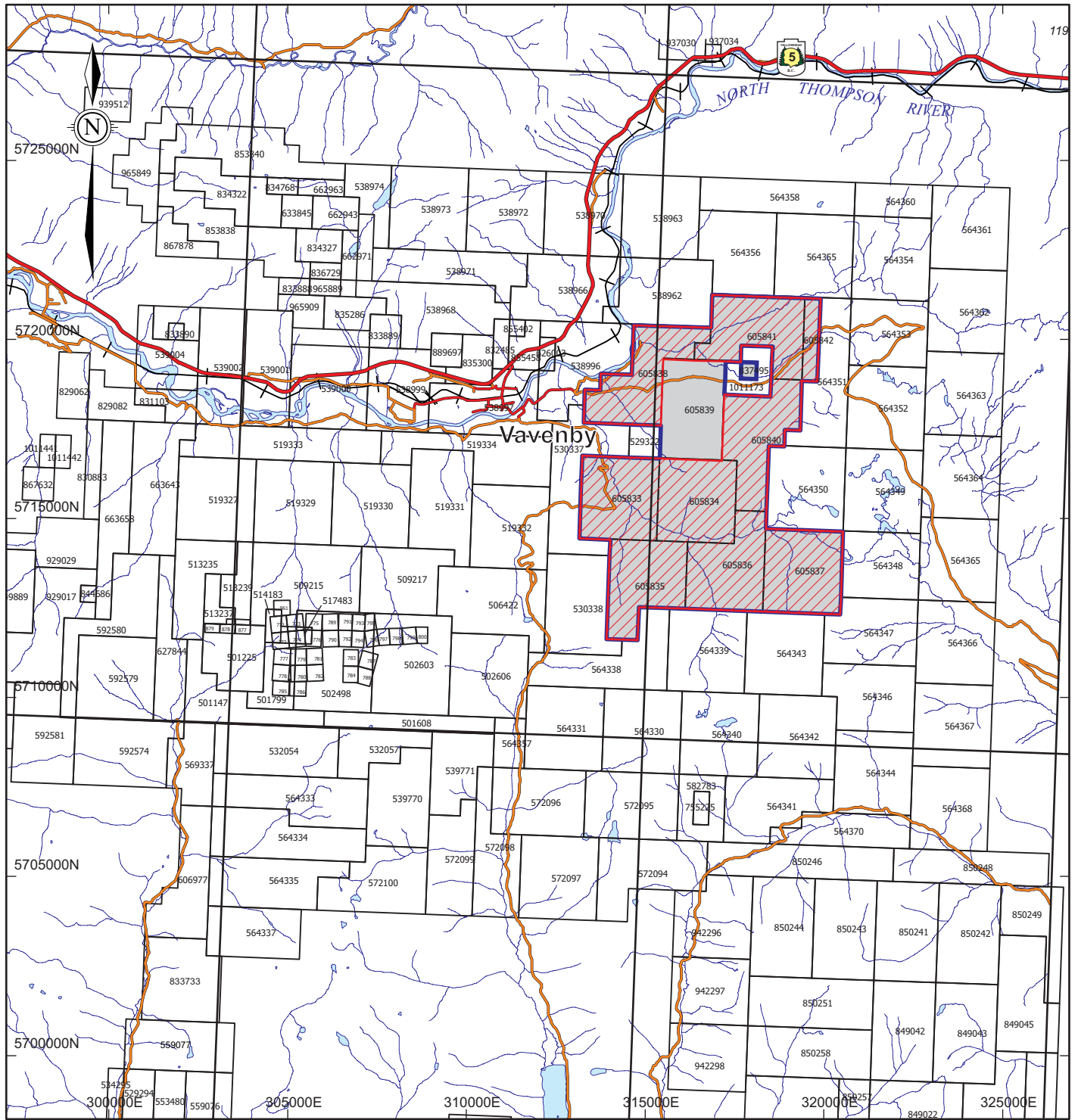


LOCATION MAP

Mila-Chuck Project
Kamloops M.D., British Columbia, Canada




Project No:	C99-Mila	By:	TV
Scale:	1:850,000	Drawn:	TV
Figure:	1	Date:	September 2012











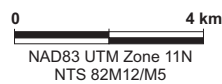
Topographic data © Department of Natural Resources. All rights reserved.

LEGEND

-  Mila-Chuck project claims
-  Work claims
-  Other tenure boundaries (as of July 26, 2012)

Topography

-  Paved road
-  Gravel road
-  Rough road
-  Railway
-  Waterbody
-  Watercourse



CLAIM MAP Mila-Chuck Property

Mila-Chuck Project
Kamloops M.D., British Columbia, Canada

Project No:	C99-Mila	By:	CN
Scale:	1:160,000	Drawn:	TV
Figure:	2	Date:	September 2012



2.0 REGIONAL GEOLOGY

The Vavenby area is underlain by Paleozoic Eagle Bay Assemblage and Fennell Formation rocks, located within the Kootenay Terrane. The Eagle Bay Assemblage has been intruded by Devonian and Cretaceous granitic rocks, and is overlain by Miocene basalts (Naas and Neale, 1991, Figure 3).

3.0 LOCAL GEOLOGY

3.1 LITHOLOGY

Eagle Bay Assemblage

The Eagle Bay Assemblage comprises four northwest-dipping thrust sheets (Schiarizza and Preto, 1987). Schiarizza (1985) divides the Eagle Bay Assemblage in the Vavenby area into eight units. At the base of the formation is a quartz-dominated succession (Unit 1) of unknown age. This is overlain by a succession of felsic to intermediate metavolcanic rocks (Units 2 and 3), and fine to coarse clastic metasedimentary rocks (Units 4 and 5) of Devonian and Mississippian age. Structurally above these rocks is a mafic metavolcanic-limestone division (Unit 6) of Cambrian age, overlain by intermediate metavolcanics (Unit 7). The carbonate member of Unit 6 is referred to as the Tshinakin limestone. The structurally highest division of the Eagle Bay Formation comprises clastic metasedimentary rocks of Unit 8. These rocks are overturned, however, and Unit 8 may be the oldest unit within the Eagle Bay succession.

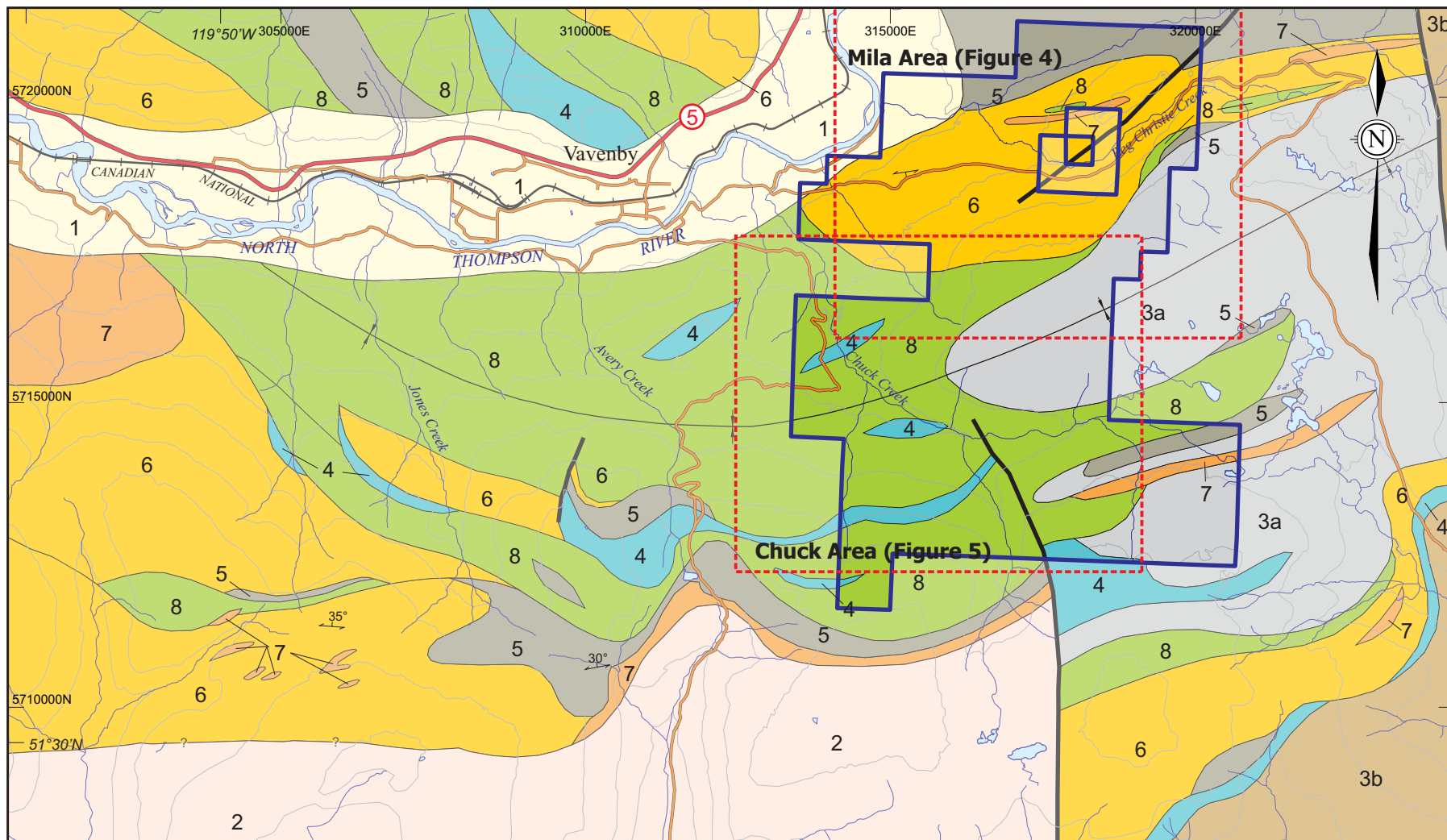
Orthogneiss

The Devonian orthogneiss consists of quartzo-feldspathic orthogneiss. It is typically a weakly to moderately foliated rock, consisting of lenses and augen of quartzo-feldspathic material enclosed in "seams" of chlorite-sericite schist. Locally it grades to virtually massive granitic rock or conversely to strongly foliated chlorite-sericite schist containing large quartz augen. Biotite is an important component of the gneiss within the thermal aureole of the Baldy batholith.

Fennell Formation

The Upper Permian-Lower Mississippian Fennell Formation in the Adams Plateau-Clearwater area, has been divided into two units by Schiarizza and Preto (1984). The lower unit is a heterogeneous assemblage of bedded chert, gabbro, diabase, and pillow basalt, which also includes units of sandstone and phyllite, Devonian aged quartz-feldspar porphyry rhyolite, and intraformational conglomerate. The upper unit is a succession of pillow and massive basalt with minor amounts of bedded chert, gabbro, basaltic breccia and tuff.

Schiarizza (1985) does not divide the Fennell Formation into two units in the Vavenby area, rather uses one unit containing rocks as previously described by Schiarizza and Preto (1984).



LEGEND

GEOLOGY

- 1 Alluvium
- Baldy Batholith**
- 2 Granodiorite
- Eagle Bay Formation**
- 3a, 3b Sediments, ± felsic volcanics
- 4 Limestone
- 5 Argillite
- 6 Felsic volcanics
- 7 Felsic flows
- 8 Mafic volcanics

SYMBOLS

- Syncline axis
- Fault
- 30° Foliation
- Mila-Chuck claims group



**REGIONAL GEOLOGY MAP
Vavenby Area**

Mila-Chuck Project
Kamloops M.D., British Columbia, Canada

Project No:	C99-Mila	By:	CN
Scale:	1:100,000	Drawn:	TV
Figure:	3	Date:	September 2012



Granitic Rocks

Cretaceous granite and granodiorite of the Raft and Baldy batholiths intrude Eagle Bay Formation rocks. In contrast to the abrupt northern contact of the Baldy batholith, a broad zone of intermixed metasedimentary and granitic rocks marks the southern margin of the Raft batholith.

Basalt

The flat-lying, undeformed Miocene basalt flows are the easternmost representatives of an extensive mass of Late Miocene to Pliocene plateau lavas which cover much of the area to the west and northwest of Vavenby (Campbell and Tipper, 1971).

3.2 STRUCTURE

Schiarizza (1985) describes the four types of structures that exist in the Vavenby area:

1. an early metamorphic foliation, axial planar to very rare small isoclinal folds, which is locally observed to be discordant to and/or folded about the dominant second generation schistosity.
2. variably oriented, but most commonly north to east-plunging isoclinal folds - the dominant syn-metamorphic schistosity is axial planar. Throughout most of the area this schistosity is parallel to bedding.
3. northwest-trending folds and crenulation with axial planar crenulation cleavage. Axial surfaces generally dip steeply to the northeast or southwest.
4. east-west trending upright folds, kinks, and crenulations of probable Tertiary age. The folds are often most prominently developed adjacent to northerly trending faults.

4.0 WORK HISTORY

This area was first staked in 1969 by Nicanex Mines as a result of discovery of copper mineralization during a regional prospecting program. Subsequent geological, geochemical and geophysical surveys during 1970 outlines the copper mineralized zone (Nicanex zone).

In 1975, the ground was restaked by Greenwood Exploration. Greenwood conducted surface geological mapping, but allowed the claims to lapse the following year.

Barrier Reef Resources staked the area again in 1977 and carried out geological mapping and geochemical and geophysical surveys during 1978. As a result, a second zone, the AFR (Nicanex Road Showing) was located, which lies parallel to the Nicanex zone. Drilling was carried out in 1979. Drilling results include 944 ppm Cu over 19.8 metres. Again the claims were allowed to lapse.

Cima Resources restaked the showings and conducted a small prospecting and soil sampling program. A rock sample returned 230 ppm Cu, 360 ppm Pb and 112 ppm Zn (Corvalan, 1984)

In 1980 the After You property was staked by A.T. Syndicate following the discovery of anomalous concentrations of gold found in heavy mineral samples on Chuck Creek, during a regional geochemical program. In 1981, an assessment program entailing geological mapping, VLF-EM surveying, soil sampling, follow-up heavy mineral sampling and rock chip sampling was carried out on behalf of Kangeld Resources Ltd. A major VLF-EM conductor outlined upstream from an anomalous gold-in-heavy-mineral sample was considered to be the potential gold source (Burgess and Troup, 1981).

In 1984 Kangeld Resources Ltd. conducted a one-hole diamond drilling program to test the VLF-EM conductor considered to be the potential gold source on the After You claims. The drill hole AY-84-1, intersected interbedded sandstones, siltstones, mudstones, limestones, andesites and an extensive sheared zone from 113.9 to 144.5 metres. Pyrite and pyrrhotite mineralization was encountered as disseminations and in quartz veins and veinlets. Gold values were found to range from 0.006 to 0.028 oz/ton, and silver values averaged 0.08 oz/ton with a high of 0.18 oz/ton. Although gold values obtained during this program were not deemed economic, they indicated that the hydrothermal fluids which passed through the shear zone were gold bearing. It was recommended that the conductor be tested for gold mineralization where it is strongest as the conductor was not tested at its strongest location in this program (Freeze, 1984).

Exploration for copper in the area continued with Newmont Exploration staking around the Cima Resources copper showings in 1984 and carrying out geological mapping, prospecting, and geophysical surveying during 1985 (Nebocat, 1985 and Limion, 1985).

In 1988, Goldbank Ventures Ltd. staked the JAR and MILA claims over the known showings. During 1989, an airborne geophysical survey was carried out over 492 line-km (Lund, 1989).

In 1990 and 1991, Goldbank conducted a two phase program consisting of 32 line-km of ground magnetics, 28 line-km of MaxMin, 16 line-km of IP, 24 line-km of soil sampling and 1,794 metres of diamond drilling. The most significant drill result was 11.28 metres of 0.34% Cu (Naas and Neale, 1991).

In 2004, in the Mila area, soil samples were collected along two main soil lines, both following the existing road network. Samples were collected at 50 metre intervals along both lines. No significant results were returned from this soil sampling program (Naas, 2005a). To the south, four moss mat samples were collected from Chuck Creek and a tributary of Chuck Creek Road side soils samples were also collected to the south of Chuck Creek (Naas, 2005a).

Exploration in the Mila area in 2005 consisted of a total of three uncut grid lines, at a spacing of 200 metres, for a total of 3 line-km. A total of 122 soil samples were collected from the B horizon, approximately 20-30 centimetres from surface. A weak east-west trend to the copper

values was recognized though the values were relatively low (<100 ppm) and the significance of this anomaly is not known (Naas, 2005b). In the Chuck area further silt and soil sampling was undertaken. A total of 2 silt samples were collected from Chuck Creek and one sample was collected from a north flowing tributary of Chuck Creek. The silt sampling program was successful in extending the 2004 gold-in-silt anomaly 3.4 kilometres downstream within Chuck Creek. A total of four lines totaling 4.5 kilometres of uncut grid was established from which 184 soil samples were collected. Other than a single sample anomaly of 120 ppb Au, located on the eastern bank of Chuck Creek, no significant results were returned (Naas, 2005b).

During 2006, an airborne geophysical survey was carried out over the claims area (Naas, 2007a) as part of a larger survey. It was recommended to incorporate the data from this survey into the 1988 airborne geophysical dataset.

In April 2007 at the Mila area, four soil grid lines were established, at a spacing of 200 metres, for a total of 8 line-km. A total of 317 soil samples were collected. Copper analyses reveals a strong east-west anomaly across all 4 gridlines. The anomaly is approximately 100 metres wide on the two eastern lines, but narrower on the two western lines. The highest copper value encountered (752 ppm) occurs on the westernmost line. This anomaly likely corresponds with the historically known massive sulphide lens (Nicanex showing). There are several subtle geochemical anomalies to the south of the main zone which may represent other mineralized horizons, although the geochemical values are substantially lower than those of the main zone. Zinc results generally mimic the copper response (Naas, 2007a).

In August and October, 2007, four additional soil lines were established east of the previously placed grid lines, also at a spacing of 200 metres, for a total of 8 line-km. A total of 324 soil samples were collected. Copper in soil geochemistry extended the previously identified geochemical anomalies to the east. The anomalies appear to follow the topography suggesting nearly flat mineralized horizons. A secondary anomaly to the south of the main anomaly is still poorly defined, but assuming a flat horizon, may be identified on the eastern most line with a soil sample result of 495 ppm Cu. Several subtly parallel geochemical anomalies are also present to the south better defined by the zinc values (Naas, 2008a).

In 2008 further soil sampling was carried out in the western area of the claims. Five soil grid lines were placed at a spacing of 200 metres, for a total of 5 line-km with 194 soil samples collected. Results of this work program revealed subtly anomalous arsenic with higher-than-background gold values in the southeastern portion of the current exploration area (Naas, 2008b)

During 2010, a work program tested areas close to and just north of Chuck Creek. A total of 10.65 kilometres of uncut grid was established from which 246 samples were collected. Four lines were oriented north-south, two lines oriented east-west and one line was established parallel to the river, approximately 50 metres from the high water mark. Three samples returned anomalous gold values: two samples of 110 ppb Au, and one at 55 ppb Au. No anomalous silver or base metal results were returned (Naas, 2010).

During 2011, work consisted of further soil sampling in the both the Mila and Chuck Creek areas. Sampling in the Mila area consisted of establishing 5 uncut soil lines to test the western and eastern extensions of the previous work, as well as two in-fill lines near the main soil anomaly with a total of 237 sample collected. Results were uniformly low and failed to extend existing anomalies. Sampling in the Chuck area consisted of two uncut soil lines roughly parallel to, and on the south side of, Chuck Creek. These lines were designed to bracket a gold-in-soil sample of 110 ppb Au identified in the 2010 exploration program. A total of 41 samples were collected with only low gold values (≤ 10 ppb Au) returned.

5.0 CURRENT WORK

Field work was carried out over ten days between June 8 and June 17, 2011. Work consisted geological mapping of outcrop and the collection and description of 98 representative rock samples. Work was conducted throughout the Property area (Figure 3). Geological maps of the areas investigated, with reference to the outcrops visited and representative samples are presented in Figures 4 and 5.

5.1 GEOLOGICAL OBSERVATIONS

5.1.1 Lithology

There are a variety of rock types noted on the Property with many of the rock units exhibiting intense alteration and deformation. All representative samples were cut with a rock saw and further examined. From the observations, a generalized description of each of the rock units was created and a geological map was produced.

1. Tshinakin Limestone

This limestone is a thick package of rocks that forms the prominent bluffs overlooking the town of Vavenby. The limestone is found on the eastern side of the study area. It is white to pale grey in colour and is subtly foliated. The rock contains mostly white calcium carbonate with lesser grey dolomite. This limestone appears to be unaltered. The Tshinakin limestone correlates to the rock unit 6f (Limestone) from the Harper Creek legend.

2. Chuck Creek West Mafic Volcanics

The mafic volcanics in the Chuck Creek West area are dark green with yellow and pink foliations. This rock contains visible grains and no discernible quartz eyes. Foliation is moderate to intense. These rocks are pervasively chlorite altered and contain foliation parallel yellow sericite. Mafic minerals are generally not preserved. Idioblasts of iron carbonate and calcium carbonate are present throughout. Boudinaged quartz veins are present. Locally, the rock contains disseminated magnetite (~1%). This rock unit corresponds to mafic units 7c (Chlorite-Carbonate Phyllite), 8a (Sericite-Chlorite Schist), 8b (Sericite-Chlorite-Fuchsite Schist) and 8c (Polymictic Fragmental Conglomeritic Chlorite Schist) in the Harper Creek legend.

3. Chuck Creek West Limestone

This unit is limestone found on the western bank of Chuck Creek. The rock is white and massive with some grey, moderately foliated sections. It is composed predominantly of calcium carbonate with minor dolomite. Alteration is subtle with iron carbonate along fractures and in bands. No mineralization is noted in this limestone. This unit correlates to the 6f (Limestone) from the Harper Creek legend.

4. Felsic Metavolcanics

The felsic metavolcanics are found in the northern part of the property around Reg Christie Creek. These rocks are blue grey with tobacco yellow bands. They are moderately to strongly foliated and contain whitish grey, sub-rounded to augen shaped, ≤ 3 millimetre quartz eyes from 1% to 3% in abundance. Pervasive chlorite and sericite alteration is foliation parallel. Iron carbonate is fracture fill. Quartz bands are present along foliation. This unit is comparable to the 9c unit (Sericite-Chlorite-Quartz-Feldspar Schist) from the Harper Creek legend.

5. Southeast Sediments

This unit is found in the southeastern portion of the property. It is greyish green in colour with a sandy texture (very fine to medium grained) and is locally weakly foliated. The sediments contain opaline blue quartz eyes less than or equal to 1 millimetre, rounded to sub-rounded and less than 1% in abundance. The remaining quartz is grey and sub-rounded to sub-angular. Chlorite and sericite alteration are moderate and iron carbonate idiomorphs are present. This unit corresponds to 9b (Sericite-Chlorite-Quartz Schist) in the Harper Creek Legend.

6. Northeast Sediments

This group of sedimentary rocks is found in the northeastern part of the property between the felsic metavolcanics to the north and the northeast mafics to the south. These rocks are blue-green, sandy textured with subtle foliations and contain quartz eyes. This unit can be differentiated from the southeast sediments by the lack of opaline blue quartz eyes. The quartz eyes present in this unit are grey, sub-rounded and less than 1 millimetre in diameter. The quartz grains here are finer and less abundant than those found in the southeast sediments. Chlorite and sericite alteration are strong with iron carbonate in fractures and along foliations. This unit can be correlated to the 9b unit (Sericite-Chlorite-Quartz Schist) in the Harper Creek Legend.

7. Southeast Mafics

This unit is found to the east of the southeast sediments. The rocks are dark green to blue, strongly foliated and deformed. The original mafic grains are obliterated by alteration and deformation. No quartz eyes are present. Grains range in size from phyllitic to schistose. Chlorite alteration is strong and iron carbonate is foliation parallel and idiomorphic. Occasional quartz bands are present and moderate sericite is foliation parallel. Pyrite cubes ≤ 2 millimetres are disseminated throughout and are present in ~1% of most of these rocks. This unit correlates to 7b (Sericite-Chlorite Phyllite), 7c (Chlorite-Carbonate Phyllite) and 8a (Sericite-Chlorite Schist) from the Harper Creek legend.

8. *Northeast Mafics*

This unit is situated in the northeast portion of the study area with the northeast sediments to the north and the Tshinakin Limestone to the south. The unit is grey/green in colour and very strongly foliated. It can be differentiated from the southeast mafics because it is more strongly foliated and contains some fragmental textures. There is pervasive chlorite alteration, some calcium carbonate banding along foliations, and moderate sericite alteration. Iron carbonate is foliation parallel. This unit corresponds to the 7c (Carbonate-Chlorite Phyllite), 8a (Sericite-Chlorite Schist) and 8c (Polymictic Fragmental Conglomeritic Chlorite Schist) from the Harper Creek legend.

9. *Graphitic Phyllites and Sandstones*

This unit is present below the Tshinakin Limestone cliffs in the eastern side of the property. Rocks are grey to black in colour and strongly to intensely foliated. Pervasive, intense graphite is present. In places the rock has a sandy texture, but contains no opaline blue quartz eyes. Quartz bands are foliation parallel and boudinaged. Unit corresponds to 7a (Graphitic Phyllite) and graphitic 9b (Sericite-Chlorite-Quartz Schist) in the Harper Creek legend.

Detailed descriptions of each outcrop and the rock types are presented in Appendix II.

5.1.2 Structure:

Structure in the Mila area is inconsistent due to high levels of metamorphism and deformation. Measurements were taken at five of the outcrops (no other reliable measurements could be taken due to the irregularity of structure at each outcrop). From the samples that structural measurements were taken on, no definitive structure could be correlated throughout the property. Structural data is presented in Appendix II.

5.1.3 Mineralization:

Pyrite mineralization is observed in sixteen (16) of the 98 samples taken on the Property, predominantly in rocks along Chuck Creek and up the Chuck Creek Road, past the 7 kilometre mark. Pyrite occurs as finely disseminated grains to euhedral cubes from <1 millimetre up to 2 centimetres, in concentrations from trace to 3%. Complete mineralization data is presented in Appendix II

5.2 CORRELATION TO HARPER CREEK GEOLOGY

Rock units identified on the Property in this phase of exploration consist of limestones, mafic metavolcanic rocks, felsic metavolcanic rocks and sediments. Correlation of the Mila rock units with the Harper Creek rock units is summarized in the following table:

Table 2: Mila-Harper Creek Correlations

Mila Legend Rock Unit	Harper Creek Legend Corresponding Rock Unit(s)
1 - Tshinakin Limestone	6f - Limestone
2 - Chuck Creek West Mafics	7c - Calcareous-Chlorite-Sericite Phyllite 8a - Sericite-Chlorite Schist 8b - Sericite-Chlorite-Fuchsite Schist 8c - Chlorite-Sericite-Fragmental Schist
3 - Chuck Creek West Limestone	6f - Limestone
4 - Felsic Metavolcanics	9c - Sericite-Chlorite-Quartz-Feldspar Schist
5 - Southeast Sediments	9b - Sericite-Chlorite-Quartz Schist
6 - Northeast Sediments	9b - Sericite-Chlorite-Quartz Schist
7 - Southeast Mafics	7b - Sericite-Chlorite Phyllite 7c - Calcareous Chlorite-Sericite Phyllite 8a - Sericite-Chlorite Schist
8 - Northeast Mafics	7c - Sericite-Chlorite Phyllite 8a - Sericite-Chlorite Schist 8c - Chlorite-Sericite-Fragmental Schist
9 - Graphitic Phyllites and Sandstones	7a - Graphitic Phyllite 9b - Graphitic Sericite-Chlorite-Quartz Schist

Chalcopyrite mineralization in the Harper Creek rocks is generally found in intermediate to mafic metavolcanic rocks of units 7c, 8a, 8c +/- 9a (Package Fb), felsic to intermediate metavolcanic rocks of units 8a, 8c, 9c (Package Fa) and graphitic horizons of units 7a and 11a (Package E). See table below.

Table 3: Overview of Harper Creek Rock Packages (*after Naas, 2012*)

Package ID	Composition	Copper Mineralization
H	Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, frequently calcareous, and deformed 7d	No
G	Graphitic Horizon, somewhat calcareous	No
Fb	Intermediate to Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, somewhat calcareous	Yes
Fa	Felsic to Intermediate Volcaniclastics: 9c, 8c & 8a	Yes
E	Graphitic Horizon: mixed 11a silicified+7a	Yes
D	Intermediate Volcaniclastics & Fragmentals, somewhat calcareous: dominated by 8c/7c	Remobilized
C	Graphitic Horizon	Remobilized
B	Sandy Sediment dominated: 9b+8a mafic sediments in the west. 9b graphitic of 9b+9c felsic sediments +/- 8a in the east.	Remobilized
A	Orthogneiss: 10a and associated border phases 9d and others	Remobilized

The Harper Creek chalcopyrite mineralized rock packages can be correlated to Mila rock units 2, 4, 7, 8 and 9, as shown in the following table.

Table 4: Correlation of Mila lithologies to Harper Creek lithologies and packages

Mila Legend Rock Unit	Harper Creek Legend Corresponding Rock Unit(s)	Harper Creek Rock Package Correlation	Chalcopyrite Mineralization noted in Harper Creek Rocks
1 - Tshinakin Limestone	6f - Limestone		No
2 - Chuck Creek West Mafics	7c - Calcareous-Chlorite-Sericite Phyllite 8a - Sericite-Chlorite Schist 8b - Sericite-Chlorite-Fuchsite Schist 8c - Chlorite-Sericite-Fragmental Schist	Fb - Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, frequently calcareous, and deformed 7d	Yes
3 - Chuck Creek West Limestone	6f - Limestone		No
4 - Felsic Metavolcanics	9c - Sericite-Chlorite-Quartz-Feldspar Schist	Fa - Felsic to Intermediate Volcaniclastics: 9c, 8c & 8a	Yes
5 - Southeast Sediments	9b - Sericite-Chlorite-Quartz Schist	B - Sandy Sediment dominated: 9b+8a mafic sediments in the west. 9b graphitic of 9b+9c felsic sediments +/- 8a in the east.	No
6 - Northeast Sediments	9b - Sericite-Chlorite-Quartz Schist	B - Sandy Sediment dominated: 9b+8a mafic sediments in the west. 9b graphitic of 9b+9c felsic sediments +/- 8a in the east.	No
7 - Southeast Mafics	7b - Sericite-Chlorite Phyllite 7c - Calcareous Chlorite-Sericite Phyllite 8a - Sericite-Chlorite Schist	Fb - Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, frequently calcareous, and deformed 7d	Yes
8 - Northeast Mafics	7c - Sericite-Chlorite Phyllite 8a - Sericite-Chlorite Schist 8c - Chlorite-Sericite-Fragmental Schist	Fb - Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, frequently calcareous, and deformed 7d	Yes
9 - Graphitic Phyllites and Sandstones	7a - Graphitic Phyllite 9b - Graphitic Sericite-Chlorite-Quartz Schist	E - Graphitic Horizon: mixed 11a silicified+7a	Yes

6.0 CONCLUSIONS

Outcrop mapping in the Mila area identified several geological units that can be correlated to rock units identified on Yellowhead Mining Inc.'s nearby Harper Creek deposit.

Chalcopyrite mineralization at the Harper Creek deposit is most commonly found in felsic to intermediate volcanics of package Fa, mafic units of package Fb, and graphitic horizons of package E. These packages correlate with the Mila rock units as follows:

- Package Fa correlates with Mila rock unit 4;
- Package Fb correlates with Mila rock units 7 and 8; and,
- Package E correlates with Mila rock unit 9.

As a large part of the Property is covered by the rock units noted, it can be surmised that there is potential for significant copper mineralization Property.

Respectfully Submitted,



Christopher O. Naas, *P. Geo.*
CME Consultants Inc.
September 7, 2012

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8.0 CERTIFICATE

I, Christopher O. Naas, *P.Geo.*, do hereby certify that:

- I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (Registration Number 20082);
- I am a graduate in geology of Dalhousie University (*B.Sc.*, 1984); and have practiced in my profession continuously since 1987;
- I am presently a Consulting Geologist and have been so since November 1987; and,
- Since 1987, I have been involved in mineral exploration for precious and/or base metals in Canada, United States of America, Chile, Venezuela, Ghana, Mali, Nigeria, and Democratic Republic of the Congo (Zaire); for diamonds in Venezuela; and for rare metals in Nigeria. I have also been involved in the determination of base metal and gold resources for properties in Canada and Ghana, respectively, and the valuation of properties in Canada and Equatorial Guinea.

Dated at Richmond, British Columbia, this 7th day of September, 2012.



Christopher O. Naas, *P.Geo.*

9.0 STATEMENT OF COSTS

Field

	<u>Personnel</u>	<i>Unit</i>	<i>Rate</i>	
Chris Naas		4.00	1,000.00	4,000.00
Ainsley Burrow		10.00	700.00	9,800.00
Halley Keevil		10.00	700.00	8,400.00
Matt Osborne		3.25	700.00	<u>2,275.00</u>
				<u>20,275.00</u>

Disbursements

Accomodation and Food	486.72
Truck (including fuel)	<u>725.00</u>
	<u>1,211.72</u>

Office (*Report Preparation and Map Drafting*)

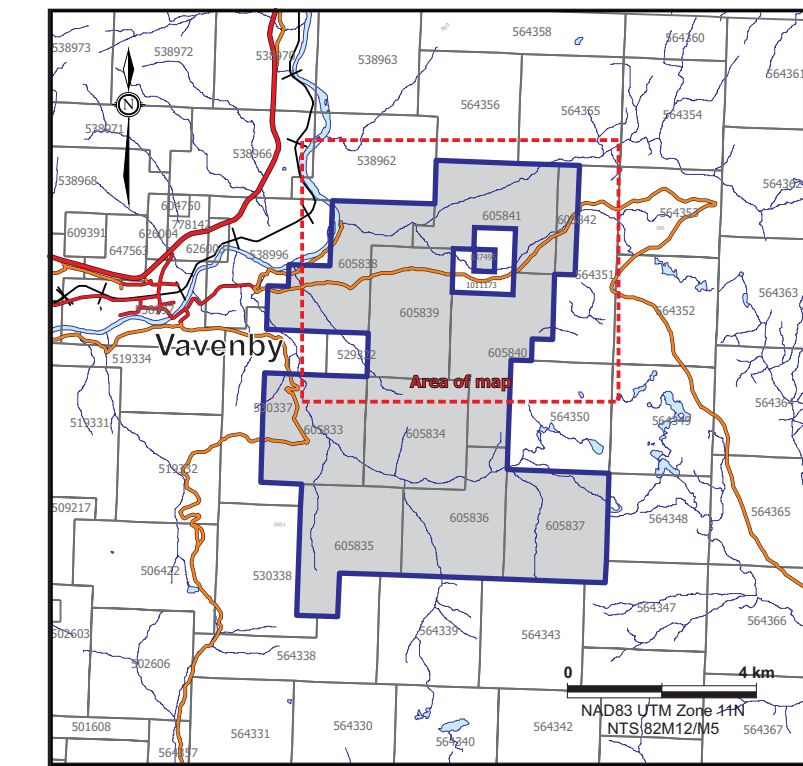
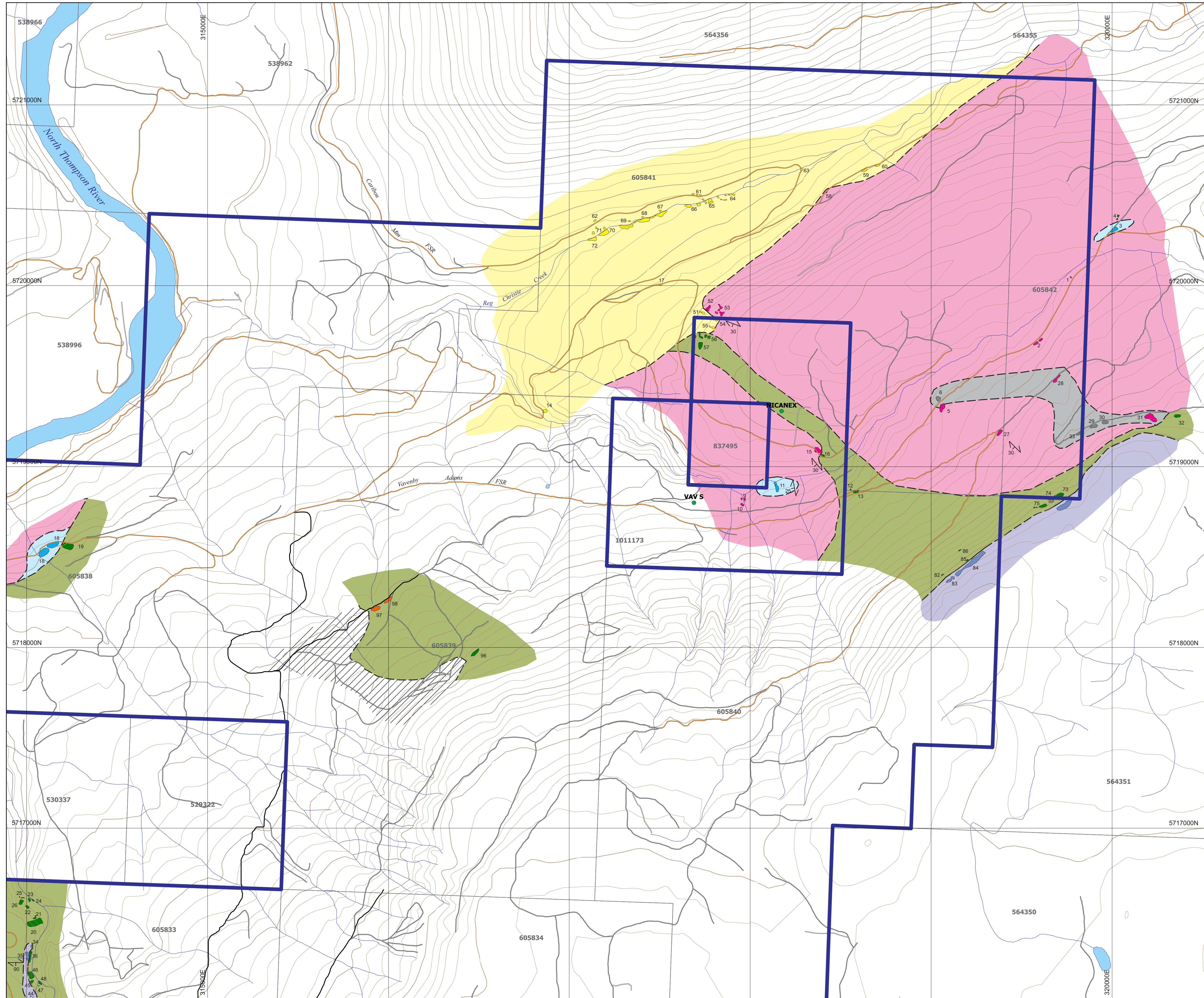
	<u>Personnel</u>	<i>Unit</i>	<i>Rate</i>	
Ainsley Burrow		4.00	700.00	2,800.00
Halley Keevil		2.00	700.00	1,400.00
Ted VanderWart		4.25	700.00	2,975.00
Christine Swanson		6.00	700.00	<u>4,200.00</u>
				<u>11,375.00</u>

Total **32,861.72**

10.0 LIST OF SOFTWARE USED

In the preparation of this report the following software was used:

Microsoft	Word 2007
	Excel 2007
Corel	CorelDraw x6
Adobe	Acrobat version 10
Micromine:	Micromine v12.5
Intuit:	Quickbooks 2010

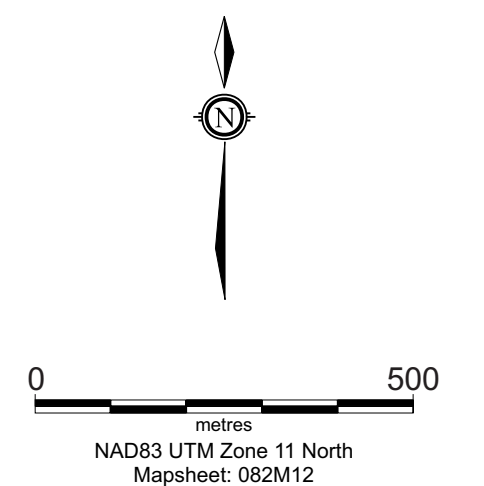


LEGEND
GEOLOGY

- Overburden
- Mafic Units (contain 7b, 7a, 8a, 8b & 8c)
- Metasedimentary Units (9b)
- Felsic Metavolcanic Units (9c)
- Limestone (6f)
- Silica Alteration (11a)
- Graphitic Alteration (7a)

SYMBOLS

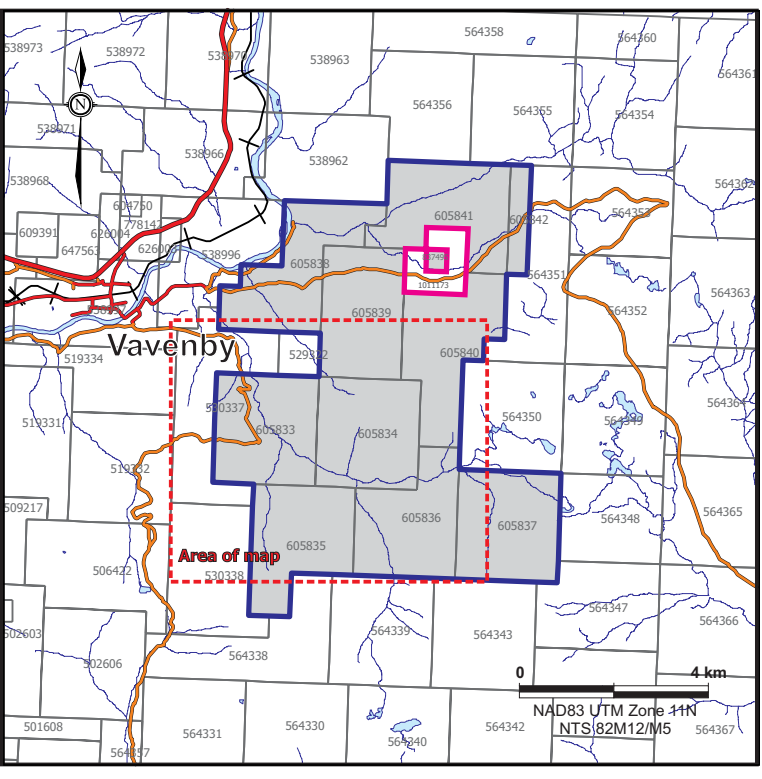
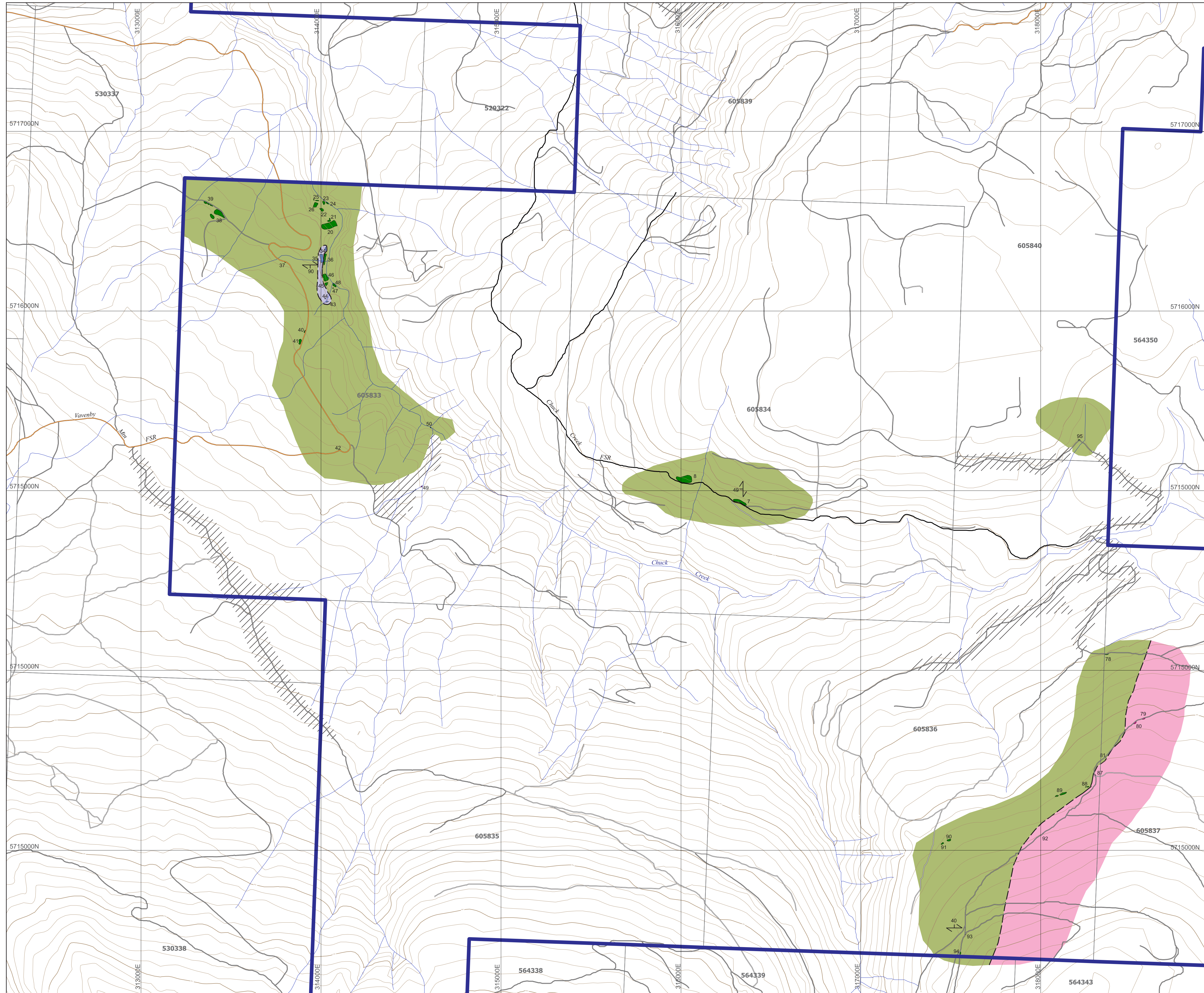
- Outcrop/subcrop
- Contact: defined; inferred
- Foliation with dip
- Lake or pond
- Watercourse
- Contour (5m interval)
- Paved Road 2 Lane
- Gravel Road, 1 or 2 Lane
- Gravel Road 1 Lane
- Rough Road - driveable
- Rough Road - condition unknown
- Access Trail - condition unknown
- Property boundary
- Mineral tenure and number
- VAV S BC Minfile or other mineral occurrence



**SURFACE GEOLOGICAL MAP
AND OUTCROP LOCATIONS
Mila Area**

Mila Project
Kamloops Mining Division, British Columbia, Canada

Project No: C99-Mila	By: TV
Scale: 1:10,000	Drawn: TV
Figure No: 9	Date: September, 2012



LEGEND
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**SURFACE GEOLOGICAL MAP
AND OUTCROP LOCATIONS
Chuck Creek Area**

Mila Project
Kamloops Mining Division, British Columbia, Canada

Project No: C99-Mila	By: TV
Scale: 1:10,000	Drawn: TV
Figure No: 9	Date: September, 2012

APPENDIX I

ABBREVIATIONS AND CONVERSION FACTORS

ABBREVIATIONS

Elements		Abbreviations	
Ag	Silver	Az	azimuth
As	Arsenic	CDN\$	Canadian dollars
Au	Gold	ppm	parts per million
Ba	Barium	ppb	parts per billion
Cd	Cadmium	g/t	grams per metric tonne
Cu	Copper	oz/T	troy ounces per ton
Mo	Molybdenum	tpd	metric tonnes per day
Pb	Lead	Eq. Au	Gold equivalent
Sb	Antimony	UTM	Universal Transverse Mercator
Ti	Titanium	NAD83	North American Datum 1983
Zn	Zinc	° / ' / "	degree/minute/second of arc

CONVERSION FACTORS

Length			
1 millimetre (mm)	0.03937 inches (in)	1 inch (in)	25.40 millimetre (mm)
1 centimetre (cm)	0.394 inches(in)	1 inch (in)	2.540 centimetres (cm)
1 metre (m)	3.281 feet (ft)	1 foot (ft)	0.3048 metres (m)
1 kilometre (km)	0.6214 mile (mi)	1 mile (mi)	1.609 kilometres (km)
Area			
1 sq. centimeter (cm ²)	0.1550 sq. inches (in ²)	1 sq inch (in ²)	6.452 sq. centimetres (cm ²)
1 sq. metre (m ²)	10.76 feet (ft ²)	1 foot (ft)	0.0929 sq. metres (m ²)
1 hectare (ha) (10,000 m ²)	2.471 acres	1 acre	0.4047 hectare (ha)
1 hectare (ha)	0.003861 sq. miles (m ²)	1 sq. mile (m ²)	640 acres
1 hectare (ha)	0.01 sq. kilometre (km ²)	1 sq. mile (m ²)	259.0 hectare (ha)
1 sq. kilometre (km ²)	0.3861 sq. miles (mi ²)	1 sq. mile (m ²)	2.590 sq. kilometres (km ²)
Volume			
1 cu. centimetre (cc)	0.06102 cu. inches (in ³)	1 cu. inch (in ³)	16.39 cu. centimetres (cm ³)
1 cu. metre (m ³)	1.308 cu. yards (yd ³)	1 cu. yard (yd ³)	0.7646 cu. metres (m ³)
1 cu. metre (m ³)	35.310 cu. feet (ft ³)	1 cu. foot (ft ³)	0.02832 cu. metres (m ³)
1 litre (l)	0.2642 gallons (U.S.)	1 gallon (U.S.)	3.785 litres (l)
1 litre (l)	0.2200 gallons (U.K.)	1 gallon (U.K.)	4.546 litres (l)
Weights			
1 gram (g)	0.03215 troy ounce (20dwt)	1 troy ounce (oz)	31.1034 grams (g)
1 gram (g)	0.6430 pennyweight (dwt)	1 pennyweight (dwt)	1.555 grams (g)
1 gram (g)	0.03527 oz avoirdupois	1 oz avoirdupois	28.35 grams (g)
1 kilogram (g)	2.205 lb avoirdupois	1 lb avoirdupois	0.4535 kilograms (kg)
1 tonne (t) (metric)	1.102 tons (T) (short ton)	1 ton (T) (short ton) (2000 lb)	0.9072 tonnes (t)
1 tonne (t)	0.9842 long ton	1 long ton (2240 lb)	1.016 tonnes (t)
Miscellaneous			
1 cm/second	0.01968 ft/min	1 ft/min	50.81 cm/second
1 cu. m/second	22.82 million gal/day	1 million gal/day	0.04382 m ³ /second
1 cu. m/minute	264.2 gal/min	1 gal/min	0.003785 m ³ /minute
1 g/cu. m	62.43 lb/ cu. ft	1 lb/cu. ft ³	0.01602 g/m ³
1 g/cu. m	0.02458 oz/cu. yd	1 oz/cu. yd	40.6817 g/m ³
1 Pascal (Pa)	0.000145 psi	1 psi	6985 Pascal
1 gram/tonne (g/t)	0.029216 troy ounce/ short ton (oz/T)	1 troy ounce/short ton (oz/T)	34.2857 grams/tonne (g/t)
1 g/t	0.583 dwt/short ton	1 dwt/short ton	1.714 g/t
1 g/t	0.653 dwt/long ton	1 dwt/long ton	1.531 g/t
1 g/t	0.0001 %		
1 g/t	1 part per million (ppm)		
1 %	10,000 part per million (ppm)		
1 part per million (ppm)	1,000 part per billion (ppb)		
1 part per billion (ppb)	0.001 part per million (ppm)		

APPENDIX II
GEOLOGICAL SAMPLE DESCRIPTIONS

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
1	Took a sample from a large boulder on the side of the river (not outcrop). Could not find any actual outcrop anywhere along the river, so took an angular boulder sample. All of the river rocks look like the same type of dark, weathered schist.	Very hard, quartz-rich and contains chlorite and sericite. Name: sericite-chlorite-quartz schist. It has angular quartz in it but no quartz eyes, so it defaults to a 9b. 5 for silica on alteration scale.	9b	08/06/2012
2	Took sample of a metasediment. Quite foliated with possible remnant bedding planes. Striking due west and dipping slightly south. It is a weathered, grey-brown phyllite or schist.	Cut surface is green-blue and chloritized.	9b	08/06/2012
3	Looks like schist in outcrop form. Green-grey-blue, foliated and contains small folds. Hard and quartz-rich.	Contains sericite, chlorite and quartz. Can't see any quartz eyes. No foliation is seen in the cut section, but the outcrop looked foliated. Very quartz-rich, therefore it is an 11a.	11a	08/06/2012
4	Very shiny and seems to be micaceous. Quite waxy - looks like a phyllite in outcrop. Contains possible emerald-green fuchsite. Very foliated and blue-green in colour. Too eroded and weathered to take a good sample, and very soft. Two small outcrops, each about a metre and a half wide.	Sericite-chlorite schist.	8a	08/06/2012
5	NO SAMPLE. Just lots of clasts inside till. Clasts of schist, quartz boulders, and some igneous clasts. Sandy, unconsolidated matrix.	N/A	N/A	08/06/2012
6	Took sample from outcrop about 5 feet across and about 5 feet up -graphite-containing schist or phyllite.	Lots of graphite but also very siliceous (graphite could have all eroded away, leaving secondary quartz). Looks like schist but possibly phyllite.	7a/9b	08/06/2012
7	Up Chuck Creek Road, large outcrop of foliated rock with perfect pyrite cubes disseminated in the matrix, up to 1cm in diameter (most 1mm or so). Not very waxy or shiny - dull grey-blue in outcrop. Strike/dip: 095/49.	Calcareous chlorite-sericite phyllite. Can see idiomorphs of iron carbonate and white streaks along foliations that are likely secondary carbonate. Acid reaction on weathered surface but on cut surface there is only reaction along cracks (secondary carbonate veining).	8a/7c	08/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
8	Waxy blue-grey rock, similar to 7 but with a less pyrite. There is a huge quartz vein about half a metre wide at parts, extending along strike in the middle of the outcrop. The outcrop is about 15 feet high and the quartz vein is 10 feet up the outcrop. Can see small faults where the quartz vein has been shifted.	Sericite-chlorite phyllite.	7b	08/06/2012
9	Outcrop on either side of a waterfall in a small creek leading down to the creek in the Mila area. Foliated, blue-grey-brown and weathered. Looks like a schist because of the foliations and doesn't look as waxy as a phyllite.	No blue quartz eyes, but looks like the other 9b's we have labelled so far.	9b	09/06/2012
10	Weathered red-grey outcrop high above the small creek on the west side. About 50 feet above the main creek, covered by moss and trees but otherwise a good outcrop. Quite weathered, doesn't look very foliated and looks like it could be derived from volcanic rock (other stuff seen so far looks like it has remnant bedding planes).	Can see cubes of pyrite 1-2mm in diameter, not foliated enough to be a 9c. Similar to sample 9.	9b	09/06/2012
11	Red, foliated, looks like you can see remnant bedding planes about 3 inches thick, but could just be foliations. Oxidized and very high above the river (at least 50 feet) on the side of a cliff that's covered in moss. Strike/dip: 346/25.	Hard and very quartz-rich.	11a after 9b	09/06/2012
12	Two large rocks, about 7 feet by 4 feet each. Covered by moss and trees beside Road 2.	Too weathered to tell.	Ignore – there is a possibility that these rocks could be angular boulders instead of outcrop (could not tell definitively in the field).	09/06/2012
13	Outcrop on south side of Road 2, likely the same as sample 12 just to the north. Not as bedded as other rocks seen in the area, but otherwise looks similar to previous samples. Red and oxidized, greyish on the weathered surface. Sloping up above the road (maybe 20-25 feet). More rounded but still foliated.	Seems like other 9b's but also very soft. Likely too soft to be a 9b.	8a	09/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
14	30ft cliff along Road 3. Some sort of thickly bedded metasediment (some beds up to 2 feet thick). Could be foliated as well, but definitely looks like there are remnant bedding planes. Muscovite-rich and chlorite-rich. Not very waxy – dull in outcrop.	Can see some quartz eyes, although not many. Since there is quartz in it, calling it a 9c.	9c	09/06/2012
15	Low-lying gossanous outcrop. Pretty covered by moss and till, just popping up on the side of the road. Waxy, weathered red and green-blue on fresher surfaces. Lots of quartz is coming through, seemingly along foliations. Looks like a schist. Not very bedded but foliated and “wiggly”.	Pretty weathered, but looks like it could be a 9b.	9b	09/06/2012
16	Looks similar to 15, except previous bedding seems to be visible and it looks more chlorite-rich. Still looks weathered but it is less eroded and contains chlorite and tiny folds. Carbonate-chlorite phyllite? There could be a contact between 15 and 16 right here.	Strong acid reaction, pyrite cubes up to 1mm across.	7c	09/06/2012
17	Low-lying small flat outcrop on the side of the road. Red weathered surface, blue-grey and quartz-rich on fresh surface.	Pretty foliated and very hard.	9c	09/06/2012
18	Very big cliffs, about 15 feet high with quartz veins throughout. Doesn't look very foliated or waxy. Huge steeply dipping beds to the west. Reddish-grey surface. Just around the corner there is a clay-rich zone that looks like a shear zone with small clasts inside it, but the same type of rock on either side of this deformed clay-rich zone.	Very quartz-rich and sandy-looking, but no quartz eyes.	11a after 9b	09/06/2012
19	Looks similar to 18, but quite a bit higher up (at least 30 feet) and greener in colour. Also has more small quartz veins through it.	Chlorite-rich with small amounts of quartz in the rock. It is mafic but with no ribbon-banding and no fragments in it, so it defaults to an 8a.	8a	09/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
20	Huge outcrop along the 800m contour line above Chuck Creek (south side). Looks like it goes all the way down to the river but can't get down all the way (on either side it is way too steep and cliffy). Lots of quartz veins through it, most of them pretty small. Brown-blue-grey on the weathered surfaces and greenish on the fresh surfaces. Looks pretty felsic – a lot of mica in it. Some areas look like they have remnant bedding but others just look foliated and metamorphosed. Could be from a volcanoclastic protolith? There are also calcite veins, most along foliations but some cross-cutting.	Looks to be igneous or volcanoclastic in origin. Lots of big magnetic black crystals up to 1mm in diameter, probably magnetite (but they streak red). There is also quartz present and possibly feldspar, but too altered to tell definitively. Light-coloured rock with lots of sericite alteration that is pervasive throughout. Not as hard as would be expected for a quartz-rich rock, so maybe quartz isn't that dominant. Looks even more weathered than sample 25. Could be just a weathered version of an 8a, since it looks similar to the other 8a's around it.	8a?	10/06/2012
21	Just north of sample 21 and closer to the river. Definitely looks like there are remnant bedding planes in this outcrop, about 2 inches thick on average. Looks felsic and is weathered brown-grey. On top of very large cliff that goes down to the river, but looks more blocky down below (more moss covered too).	More deformed than sample 20. Blue and foliated with sericite, magnetite and calcite. Still lots of magnetite crystals, but more blue-green and a bit more yellow. There are red veins coming through as well (Fe-carbonate?). The veins effervesce with acid so are definitely carbonate-rich veins. Some disseminated pyrite as well. Still mafic, and contains the magnetic black crystals that streak red.	8a	10/06/2012
22	Moss-covered outcrop that is foliated and weathered. Found along the 760m contour line above Chuck Creek (to the south). Looks similar to the other outcrops seen in this area. Blue-white-grey and weathered and doesn't look like there are remnant bedding planes.	Looks like sample 20 but with less magnetite. Almost has an igneous texture under the hand lens, and not as foliated as sample 21. Reacts with acid but could just be secondary carbonate. It looks like a very altered 8a.	8a	10/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
23	Very tall outcrop! found along the river at the 720m contour line, but looks like it goes all the way up to the top of the canyon (except up above it is mostly covered in moss and logs). Very grey/dusty and weathered. Can barely make out remnant bedding planes (or what may just look like them). The fresh surface looks quartz-rich. Can't see many quartz veins here but it is also just a really weathered sample.	Some disseminated pyrite, up to 1mm in diameter. A lot more blue-green than sample 20, and no magnetite. Mafic and contains chlorite. Not ribbon-banded, so maybe an 8a?	8a	10/06/2012
24	Very tall cliffs, pretty much the same as sample 23 (looks like the same outcrop). Very foliated and jutting out – lots of overhangs. Some have quartz “blobs” (could be secondary veining?). Cliff looks like it goes all the way to the top of the canyon, just like sample 23. Still around the 720m contour line.	Looks like sample 23 with large secondary calcite veins. Quite a bit of calcium carbonate in them (a 4/5 on an alteration scale). Probably an 8a.	8a	10/06/2012
25	Very green chlorite-rich section of overhanging rock right above the 720m contour line (around 730m or so). Looks like there are thick remnant bedding planes with some layers more erosive than others. Quite green-blue.	Can see lots of grains (~0.5mm) that look like quartz but can be scratched – could be feldspar? Does not react to acid. There is also a yellow idiomorphic texture, possibly from weathering. Different texture than everything we've seen so far!	8a?	10/06/2012
26	Directly on top of sample 25, going up the canyon to the south. Could still be a part of this outcrop, although it is generally more erosive (not as green and from under the overhang it looks cream and grey). Also looks a lot more foliated/bedded than sample 25.	Hard and does not react to acid. Very weathered and hard to tell what it is. Definitely a mafic rock. Either an 8b or 8a if it's mafic (that's all it can be in the legend) but there are some unidentifiable scratchable grains. It just looks like a weathered quartz vein, except that there is a strip of fuchsite around the outside edge of the uncut part of the rock (so there was likely a mafic rock around it).	2a? (within mafic)	10/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
27	Took this sample back in the Mila area. Beds of rock dipping to the southwest. Definitely looks like there are remnant bedding planes, so it probably came from a sedimentary rock. Some foliations along bedding. Beds are 1 to 5 inches thick on average. Slightly folded. The rock face is about ~7 feet high and ~30 feet wide. Red-beige on weathered surfaces and grey-blue on fresher surfaces. Can see shiny/waxy parts, likely muscovite-rich. Strike/dip: 140/30.	Contains some blue quartz eyes. It's stretching and kinking (which usually doesn't happen in a 9b – it's stronger and usually fractures) so it's a 9c.	9c	10/06/2012
28	Similar to sample 27 – on the same side of the road and also dipping to the southwest (with some minor folding). This outcrop is also smaller than the one sample 27 is from – only above 5 feet high and not as wide.	Graphitic, and some disseminated pyrite cubes as well.	graphitic 9b	10/06/2012
29	Very small outcrop under a lot of moss, brush and logs. Hard to see more outcrop, although it seems to extend northeast-southwest along the old road it's on the side of. It is also dipping to the southwest. Definitely looks like a graphitic phyllite.	Graphitic phyllite	7a	10/06/2012
30	Outcrop similar to 29, slightly up the road to the northeast and on the same side (the south side). Moss is growing all over it and it is pretty low-lying. Definitely looks like graphitic phyllite still.	Graphitic phyllite	7a	10/06/2012
31	Definitely a metasediment. There are muddy areas, silty areas and a few parts of the outcrop with beds a few inches in thickness. The outcrop extends all the way around the corner on the road, and there are graphitic seams throughout. This could be a gradational zone. The beds get thinner farther up the road to the east/northeast.	Very layered and lots of quartz in the rock, but also blue to dark grey and quite hard. Could still be a 9b, but very fine-grained and hard to tell.	graphitic 9b	10/06/2012
32	Looks similar to sample 31 except not as graphitic. 31 could be a graded contact.	Similar to 31, not as graphitic. Possibly a 7c.	7c?	10/06/2012
33	Thin, low-lying outcrop by road. Almost completely covered by moss and quite hard to see. Looks like graphitic phyllite with quartz veins.	Definitely a 7a – graphitic phyllite.	7a	10/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
34	Small outcrop under a bunch of moss just below the flat area next to the road. Around the 780m elevation contour line. Thick beds of white-grey rock with some foliations in the middle section. Weathered and reddish in colour. The outcrop is about 6 feet high and 30 feet wide at the top of the canyon.	Almost 100% carbonate with very few other grains (indistinguishable). Some yellow veining inside – possibly sericitization. Likely just limestone.	6f	11/06/2012
35	Huge limestone cliff about 30 feet high with something different underneath it (sample 36, about 10 feet high). The huge cliff has perfect thick beds and doesn't look nearly as foliated as what's below it. Pretty flat beds, striking east-west.	Quite weathered. Effervesces significantly with acid - calling it a 6f even though it doesn't look like a typical limestone.	6f	11/06/2012
36	Looks more foliated and much more erosive than what is above it (sample 35). Also more friable and weathered.	Looks like there is a lot of chlorite, and also a lot of the magnetic crystals that streak red. No quartz, looks mafic, and no ribbon banding, so maybe an 8a? Lots of chlorite, magnetite, and more mafic minerals. Calling it an 8a even though it's not that foliated.	8a	11/06/2012
37	Small block of very quartz-rich rock that seems to be quite competent with no visible remnant bedding or foliations. Just a block of rock on the west side of the road.	Can see some emerald-green fuchsite, although the sample is very weathered. There are also ribbon chlorite bands. 8b.	8b	11/06/2012
38	Low-lying rocky area with some 5 foot high ledges. The rock is chlorite-rich and definitely not as quartz-rich as what we just saw down the road (37). Not very shiny and dull and blue-beige-grey in outcrop with some green tints.	Very chlorite-rich and quartz-rich with a slightly mottled texture. Contains magnetite. Compositionally it's a 9e, but that is a bit odd because there is no blue quartz present.	7c/8a	11/06/2012
39	Looks the exact same as 38, and just around the corner on the same road. Took a sample because it was further up the road. Lots of low-lying bluish outcrop all along the west side of this road.	Same as 38.	7c/8a	11/06/2012
40	Small outcrop on the west side of Vavenby Mountain Road, farther south than 37 but still on the west side of the road. Competent, blue-grey rock.	Contains chlorite and carbonate bands, and looks phyllitic.	7c	11/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
41	Just south of sample 40 on the same side of the road. Looks like the same rock but slightly higher up, maybe 10-15 feet high from the road. Competent chunks of blue-grey rock with some moss cover.	Doesn't look like anything in the legend. There are tiny bits of plagioclase, and otherwise the rock is dark green. There is calcium carbonate and the mafic component falls into 7c, but it does not seem to be phyllitic.	7c/8a	11/06/2012
42	Farther south down Vavenby Mountain Road – small outcrop that is very weathered and foliated. About 4 feet high with trees growing on top of it. Red-beige and extremely weathered. Across the road are some competent blocks that look similar underneath logs, but these could just be boulders.	Contains chlorite and sericite, and looks mafic with a quartz vein. (Mafics often have idioblastic Fe-carb like this too)	8a	11/06/2012
43	Outcrop right above the 840m contour line to the west of Chuck Creek. Lots of foliations and some 1 to 2 inch thick remnant bedding planes (or possible foliations). Looks like it came from sedimentary rock. About 6 feet high straight up and down, with moss and trees growing on the flat top of the outcrop.	Effervesces strongly with acid and no prominent texture of any sort. Likely limestone/marble.	8a	11/06/2012
44	Just across a small stream leading down to Chuck Creek, across from sample 43 to the northwest along the same contour line. Maybe 830m or so, as it is a bit lower than sample 43. Very moss-covered. Likely the same as 43 across the stream. Smaller outcrop than 43, light cream-beige and weathered, and looks blue when the moss is peeled off (but could just be wet and weathered).	Looks like limestone (marble). The Chuck Creek rocks are probably limestone with mafics on the bottom.	6f	11/06/2012
45	Just below the 800m contour line, still above Chuck Creek on the southwest side. Pretty flat dip like the previous samples from this area, striking northeast-southwest. Whitish-grey in outcrop, lots of what look like remnant bedding planes.	Lots of sericite and chlorite in the sample. Can't see any quartz. Because of the composition, could be an 8a. Also looks ribbon-banded.	8b/8a	11/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
46	Took a sample from a huge cliff going all the way along the river below the 800m contour line. Just below outcrop 45 - could be the same outcrop. Extends up and down Chuck Creek (for at least another 100 feet to the south). Still looks bedded and has some blue more erosive rock near the bottom of the cliff. Lots of veins are present. This bottom part could just be a more weathered/foliated part of the same outcrop.	Compositionally, could be an 8a like sample 45.	8a	11/06/2012
47	Across the small stream beside Chuck Creek (to the south) from 45 and 46 - another bedded, mostly flat-lying outcrop. Looks weathered and blue-grey but otherwise looks like what we just saw across the stream except not nearly as huge.	Looks fragmental, and the mineral composition is similar to 8c.	8c	11/06/2012
48	Took a sample right down on the river's edge (Chuck Creek) below 47. It looks like 47 extends all the way down to the river. Took a weathered blue-red sample directly above the water. Covered in moss but the cliff is still very tall (at least 60 feet up, and extends 40-50 feet down the river to the south before we can't see it anymore, and we can't get down that way).	Quite weathered, but could be an 8a/7c	8a/7c	11/06/2012
49	Very small, moss-covered outcrop right along 920m contour line. Pretty weathered, blue-brown-grey and just above confluence of two creeks that lead north to Chuck Creek down canyon. No other visible outcrop around.	Very hard, definitely contains quartz. Sericite and chlorite are present as well. Because of the composition and because some of the quartz looks blue, calling it a 9b.	9b	12/06/2012
50	Right above the river to the south found a large weathered outcrop that extends almost vertically back up the hill to the south. Right along the 880m contour line. Seems to extend northwest around the corner of the river, but cannot get to this area due to large cliffs. The rock is dark blue-grey and foliated. Almost all of it is covered in moss, not like the huge cliffs we saw further north up the river the other day. Still fairly steep, though.	Pretty weathered in cut section. Lots of red idiomorphs (perhaps Fe-carbonate?) but can still see some grains. Quartz is present as well as chlorite, and there is some disseminated pyrite up to 1mm in diameter as well. Seems too soft to be extremely quartz-rich, and no reaction with acid, but doesn't look like a 9c. Really weathered.	Too weathered to tell, but we think it used to be mafic.	12/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
51	Large outcrop along the 800m contour line (extends above it quite a bit as well). Pretty resistant white-pink-grey rock that's covered in moss. Pretty hard, likely quite quartz-rich. Extends up the hill and gets even steeper.	Has quartz eyes and is chlorite-rich, so likely a 9c.	9c	12/06/2012
52	Just east of sample 51 (up the hill), took a sample from a similar cliff with more of a face showing (about 10-15 feet high). Looks like there are remnant bedding planes visible. Rock is greyish-white with thin beds (about an inch or less for the most part) and is weathered reddish-pinkish. Dipping moderately to the southwest.	No reaction to acid (only on the weathered crust a tiny bit). Pervasively weathered. Contains quartz eyes and is sandy, so likely a 9b.	9b	12/06/2012
53	Up the hill and more to the northeast, along the 820m contour line on the map. Also extends above for a very long way and below 10 feet or so. Large cliff of what looks like the same rock as sample 52, about 15 feet high in parts. Just looks less bedded and thicker/more competent in this particular outcrop. Continues directly up the hill, up to 840m or so. Took a sample from near the top. Thin, ripply beds (foliations?), all dipping to the southwest. Rock is hard to hammer and seems very quartz-rich. Dipping to the southwest.	Bluish in colour, no reaction with acid. Similar to 52 (sandy texture also). Really quartz-rich, almost 80% quartz, but still probably a 9b. On a scale of 1 to 5, it would be a 4 for silica alteration.	9b	12/06/2012
54	Similar outcrop to previous few samples, but more bedded and seems easier to hammer (possibly just more weathered here though). Looks like it has quartz and chlorite in it. Strike/dip: 110/30.	Could be a felsic metavolcanic.	9c	12/06/2012
55	Two small outcrops, one above the other. Both look the same as 54. Lots of moss and trees are growing on top of them, much like the other outcrops we have seen today. Looks like we are almost on top of the large ridge at this outcrop. Dipping to the southwest with a lot of small folds.	Looks like a cross between sample 54 and sample 50, but calling it a 9c due to similarity with sample 54.	9c	12/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
56	Two more outcrops even higher up than 55. Look very similar to sample 55 but more weathered and more foliated. Folded and foliated but generally dipping west/southwest. Rock breaks off along foliations.	Definitely chlorite-rich and can see subtle remnants of grains. Mafic (8a) but lots of carbonate as well.	8a	12/06/2012
57	Similar outcrop to 56. About 10 feet high and striking east-west, dipping to the south/southwest.	Looks like 56 but not as sure it's an 8a.	8a?	12/06/2012
58	Small outcrop on east side of Road 1. Low-lying, about 3 feet high off the ground, pale and looks bedded.	Colouring makes it look slightly graphitic, but otherwise looks like a 9b.	9b	12/06/2012
59	Further up Road 1 (to the east), looks like the same rock as 58 but hard and with lots of quartz veins. Pretty weathered as well.	Sandy texture, chlorite-rich, big veins going through rock. There are some 9c eyes in it, so the quartz isn't all veining. There are also 8a (mafic) interbeds in the same sample!	9c (with 8a interbeds in the same sample)	12/06/2012
60	Just east of 59 on Road 1, likely the same rock.	Same as 59.	9c (weathered)	12/06/2012
61	Low-lying outcrop along the north side of the road (Road 30) opposite Reg Christie Creek. Very flat and following the topography of the hill. Weathered red and purple, and hard to get a sample. Looks grey-blue in the fresher section and can also see some of what looks like sericite. Pretty foliated and yellowish in spots.	Very chlorite-rich with small veins (possibly Fe-carb). Very fissile. Some spots are quite hard and others are quite soft. There could be some grading going on here as well.	9c	13/06/2012
62	Just up the road to the west, outcrop on north side of the road again. Looks similar to what we just saw at 61 but less flat-lying. A large chunk of rock about 10 feet across and 3 feet up from the road level. Still weathered red and pretty hard. Quartz-rich rock. Pretty gossanous (red-purple weathering).	Very quartz-rich and contains chlorite. Foliated with bigger grains that might make it a 9c.	9c	13/06/2012
63	On east corner of Road 30 where it crosses Reg Christie Creek, took a sample from a low-lying reddish outcrop (but not as low-lying as 61). Outcrop extends up about 6 feet off of road but it's sloping, not straight up. It breaks off along foliation. There is moss on top of it as well.	Very blue and can see remnant grains. No quartz eyes visible and can't see sericite. Not that hard either.	9c	13/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
64	Large outcrop across the river (with smaller outcrop up and down the river on the side we were on – the north side). Took sample at the biggest one where we could cross the river. Large overhang about 30 feet high with slightly south/southeast dipping layers (foliations?). Goes higher up the river as well (to the east). The bottom of the cliff juts out more and is more foliated, then there's an eroded layer in the middle with a large overhang above it. 64 is the sample from below (the foliated area).	Foliated and contains chlorite. Very quartz-rich as well.	9c	13/06/2012
65	Took overhanging sample from on top of 64 (same outcrop, just above the eroded layer).	Definitely contains quartz and a bit of sericite. Quite chlorite-rich and slightly less quartz-rich than 64, but otherwise looks very similar.	9c	13/06/2012
66	Small outcrop on our side (north) of the creek. Striking east-west and dipping south, but no good places to take definitive measurements. Just some foliations and large competent blocks on top, dipping straight down to the river. Took sample from a small outcrop covered in moss (not as good as the huge cliffs on the other side of the river).	Fairly hard (definitely has quartz in it but no visible quartz eyes). A bit confusing. Looks grainy and also has sericite in it and is chlorite-rich but looks like other rocks from this area.	9c	13/06/2012
67	Took sample from large outcrop up the river on the south side. Found a small weathered and wet south-dipping outcrop on our side under a hill of moss. Very fissile, almost slaty. Breaks along planes. Red on weathered surface but blue-grey when hit in half with hammer. Looks the same across the river but can't get there from where we are!	Looks the same as the other rocks from this area but it is more foliated and slightly softer (could just be more weathered).	9c	13/06/2012
68	Same as 67, south-dipping rock underneath hill of moss and trees. The bottom is eroded out but really hard to hammer and sparks – quartz-rich?	Looks similar to other rocks in this area but a bit softer and more foliated (similar to 67).	9c	13/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
69	Took sample from part of the huge cliff that spans the entire south side of Reg Christie Creek (could actually cross the river here). The cliff goes at least 40 to 50 feet high in parts, although the top part is often covered by moss and trees. Mostly looks foliated, as dipping beds are not planar like other rocks we've seen. Again, the part of the outcrop closer to the river is more foliated and eroded. Weathered, grey-brown and moss-covered.	Looks a bit like a 9c still but there are siltier bits (almost parts that look like an 8a).	9c	13/06/2012
70	Small outcrop on north side of river (with very large cliffs on opposite side). Between 69 and 70 there wasn't that much outcrop even on the south side of the river, but here there are cliffs on that side again (about 30 feet high and covered in moss, also extending around the corner of the river bend to the west).	Very foliated but otherwise looks the same as the other rocks around it. Pretty soft and fissile as well.	9c	13/06/2012
71	Large quartz-rich rock (the size of a large boulder but looks like outcrop) dipping to the south. This outcrop is a bit closer to the road (to the north). Hard, weathered light grey with red tints.	Looks similar to others but it's extremely quartz rich. On a scale of 1 to 5 for silica alteration, this would be a 5.	9c	13/06/2012
72	Down near the river's edge, another sample similar to the previous ones (except 71). More outcrop about 30 feet high on the other side of the river as well. Still dipping to the south, foliated and covered in moss.	There are graphitic seams in this rock, which usually means it's a 9b, but there are weathered blobs in it that look like they could have been quartz eyes that are just weathered out. All of the Reg Christie Creek rocks (61-72) have a lot of silicification. There is no opaline blue quartz, but some have a few quartz eyes (up to 1/2 a cm and pretty angular and shardy). All of them are 9c's, but it is strange that none have blue quartz eyes and they're not rounded. There is also a bit of either moly or galena in some of them.	9c	13/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
73	Pretty tall outcrop along the 1200m contour line. The rock is white-beige and weathered, and is quite fissile and foliated. It has a lot of chlorite in it (can see it after cutting it open), and is quite flaky. It's about 15 feet high at our station, but it goes up a bit farther, possibly 20 feet or so.	Very foliated and almost ribbon-banded.	8a	14/06/2012
74	Two outcrops, one above the other. Still along the 1200m contour line on the map. One is about 4 feet high and another is about 10 feet high. The rock breaks along planes (pretty fissile and soft) and seems to be graphitic.	Graphitic and phyllitic.	7a	14/06/2012
75	Another very large outcrop similar to number 73 that has slightly south-dipping beds. There are a couple of sigmoidal quartz veins (maybe dextral shearing?) and the cliff face is about 15 feet high. It looks the same as 73 and 74, and some of it still looks graphitic.	Chlorite-rich and calcareous.	7c	14/06/2012
76	More outcrop on the side of Road 1, weathered and about 10 feet high. The rock slopes up the hill and goes about 50 feet down the road or so, all the way around the corner.	Looks a lot like a 9b (others we've seen).	9b	14/06/2012
77	Farther up Road 1 but still on the same side of the road (the south side) is another outcrop (quite small). Reddish and weathered like the last one, with beds dipping slightly to the south. The rock is about 5-6 feet high or so.	Similar to 76, probably the same rock.	9b	14/06/2012
78	A trench on the side of the road with tiny bits of outcrop going up and down the side of the road for about 15-20 feet. Outcrop comes out just below the grass in the trench, and all the way along the side of road. The rock is blue-grey and looks a bit graphitic. It's still foliated but not as much as the stuff we've seen. There are also bits of disseminated pyrite in it.	Sericite-rich and chlorite-rich. Looks like a schist.	8a	15/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
79	Quite a bit further up the road there's a big boulder with small similar boulders all around it. Matt thought it was subcrop, which makes sense since everything around it seems to be the same lithology. Looks grey-green and quartz-rich (maybe similar to 78?) with what looks like idioblastic Fe-carbonate weathering. There are a few bits of cubic pyrite (one is 1mm in diameter, others are smaller).	Finally an opaline blue quartz eye, which with other characteristics makes it a 9b. There is also lots of idioblastic Fe-carbonate. Sandstone.	9b	15/06/2012
80	Just up the road a bit more, there are a few more chunks of float but some looks a lot like outcrop. It looks a bit different than 79.	Disseminated pyrite in the rock, and looks like there is blue quartz as well. There is also an idioblastic texture that might even be weathered out sulphides (or Fe-carbonate?).	9b	15/06/2012
81	Found some actual outcrop on the side of the road. It looks quite schistose and seems to be quartz-rich. It is grey and about 3 feet high off the ground and 15 feet along the road or so.	Sericite-chlorite schist.	8a	15/06/2012
82	A small outcrop below a bunch of moss – definitely foliated and in the right direction jutting out of the moss, so it seems to be outcrop. The rock is quartz-rich and looks like it has chlorite in it as well. The quartz veins seem to be along foliations.	Seems to be mafic (chlorite-rich and soft) but with quartz veins (secondary). Because it's chlorite-rich and looks like a schist, and has some calcium carbonate but isn't ribbon-banded like a 7c, we are calling it an 8a.	8a	15/06/2012
83	Finally found the limestone cliff that Chris had found in the 1990s. Walked up 160 metres from the deactivated road we walked up and found a huge limestone cliff that extends very far to the northeast along the 1240m contour line. The cliff is at least 20 metres high and has a very strong acid reaction. Competent, blocky rock.	Grey-white and banded. Could be a marble and not a limestone.	6f (Tshinakin limestone on top of ridge)	15/06/2012
84	Another massive cliff (probably the same one that just got shorter in between the huge cliffs) along the 1240m contour line. It's still at least 20 metres high. The exact same as 83 and it continues pretty far to the northeast.	The exact same as 83.	6f (Tshinakin limestone)	15/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
85	Directly below 84 (slightly to the northeast) is another small outcrop that is foliated and chlorite-rich. It's only a few feet high and about 10-15 feet across.	Sericite-chlorite schist?	8a	15/06/2012
86	Looks the same at 85 but not as foliated and looks pretty weathered. It's about 40 feet wide and approximately 2 feet high. It is likely the same as 85 but took a sample here anyway.	Pink fragments. Definitely a fragmental rock. Also mafic, so an 8c for sure.	8c	15/06/2012
87	Small outcrop up the road that cuts off of Chuck Creek Road, just south of outcrop 81. Looks like some spots are just boulders but in other spots it looks like outcrop, and all are the same lithology anyways. Not too foliated and pretty blue on weathered surface. Competent rock.	There are actually opaline blue quartz eyes in this sample, so calling it a 9b.	9b	16/06/2012
88	Found outcrop along a road cut that isn't on the map. There is lots of small outcrop along the side of this cut, a couple of them a few feet high and sloping up into the hill. The one we took a sample from is about 5 feet across and 2 feet high.	Fairly fine-grained and chlorite-rich with disseminated pyrite. Pretty weathered.	8a	16/06/2012
89	Outcrop on the same side of the road as 88, but up a bit farther. It looks similar but is a bit more rounded and none of it is that foliated. It weathers red-gold whereas the last one was a bit more blue.	Weathered on the outside (almost an inch of red, soft weathering with weathered out pyrite) with a blue centre. Not very hard at all (possibly because of weathering and oxidation), and contains disseminated pyrite.	8a	16/06/2012
90	Another outcrop down the same deactivated road. Bluish and very foliated with lots of weathered out pyrite cubes.	Seems mafic except for quartz veins. Also seems to be quite phyllitic.	7c	16/06/2012
91	Just up the road, an outcrop with a lot of pyrite in it.	Seems to mostly contain chlorite with some visible grains. It looks like an 8a with 9b intercalations. (Seems mafic but has blue quartz eyes, which is strange)	8a with 9b	16/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
92	Up Chuck Creek Road past the 10km mark (right along the 1480m contour line). Not very foliated and hard to hammer. Just a small outcrop. It's pretty weathered with a dark blue surface (but a really red, soft crust that goes at least an inch into the sample).	Blue-grey with no visible disseminated pyrite like the other rocks around here. Also seems to be pretty quartz-rich upon looking at it, but then the scratcher scratches everything. There are also some light pink blades that you can see in the hand lens, which is strange.	9b?	16/06/2012
93	Very fissile rock similar to the rocks that had pyrite in them below this outcrop. Red-blue surface, very oxidized and very fissile. It dips steeply to the north, which is different from what we've seen previously. Looks like it had a lot of pyrite in it at one point but now it's all weathered out. (There are lots of empty cubic areas where pyrite would have been. Some of them are at least a few mm in diameter.) The pyrite cubes that are still there are only a few mm across. Strike/dip: 275/40.	Mafic rock with pyrite. Looks graphitic in parts but doesn't seem to have a graphitic texture, which is strange.	8a	16/06/2012
94	Just up the road, a bit higher in elevation. This rock looks a bit different, but is still dipping steeply to the north (although some of the planes are going in other directions and seem to have fractured). No visible pyrite in this outcrop either. It's weathered, fissile and foliated similar to what we just saw, and is a bit waxy as well.	Only tiny bits of disseminated pyrite exist. Mostly chlorite with some weird fragments of quartz (possibly eyes?) that are not blue (mostly white/grey). Definitely looks mafic, so calling in an 8a.	8a	16/06/2012
95	NOTE: Could be subcrop, not outcrop! Lots of boulders and some rocks sticking out of moss and till that look like they could be outcrop, but not definitive. However, they are all the same lithology so we took a sample here. These rocks extend all the way around the corner of this logging road, about 20 feet across or more.	Weathered and mafic with bits of disseminated pyrite. Likely an 8a.	8a	16/06/2012

Outcrop and Representative Sample Descriptions

Outcrop Number	Outcrop Description	Cut Representative Sample Description	Rock Classification (Harper Creek Legend)	Date
96	Subcrop. Small bits of the same rock, some sticking out of the moss with the same foliation and all the same lithology. Calling it subcrop because a lot of it is just sticking out of the moss. Dark blue and weathered.	Extremely green – greener than any of the chlorite-rich rocks we’ve seen so far, and has lots of carbonate veining in it. Too fine-grained to be a schist and quite foliated – likely a phyllite. There are also tiny bits of disseminated pyrite in the rock.	7c	17/06/2012
97	Found outcrop walking east on the road off of Chuck Creek (around the 2km mark). Rock is very hard and foliated. Weathered dark blue and red. Goes east along the road for ~20 feet, and is ~3 feet high off the ground. Can’t tell a dip direction because the outcrops are all over the place sticking out of the moss and it looks like there is some folding involved.	Sericite-chlorite phyllite.	7b	17/06/2012
98	Another outcrop of what looks like the same rock as 97 – pretty foliated and goes around the corner for about 30 feet. Extremely foliated, weathered and bluish in colour.	The same as 97, a sericite-chlorite phyllite. There are quartz veins along foliation, but no carbonate veining so it’s a 7b.	7b	17/06/2012

Oiutcrop/Rep. Sample Number	Location	Structural Measurement	Rock Description	Harper Creek Legend
7	Taken from outcrop up Chuck Creek Road (past 5km mark).	Foliation at 095/49	Sample taken from large outcrop of foliated rock with perfect pyrite cubes up to 1cm in diameter, but most are around 1mm in diameter. Rock is dull grey-blue in outcrop form. Idioblasts of Fe-carbonate are present, as well as white streaks along foliations that are likely secondary carbonate. The weathered surface has an acid reaction, but the fresh surface only reacts along the carbonate within foliations. This rock is a calcareous chlorite-sericite-phyllite.	8a/7c
11	Taken from outcrop at least 20m above the creek in the Mila area on the side of a cliff that is covered in moss.	Foliation at 346/25	The rock is red and foliated with subparallel planes at least 3 inches thick (could be remnant bedding planes or could just be foliations - took a measurement along one of the planes). It is oxidized, hard and very quartz-rich.	11a after 9b
27	Taken from outcrop on the side of the main logging road in the Mila area, from a rock face approximately 7 feet high and 30 feet wide.	Foliation at 140/30	The rock is slightly folded and it looks like there are remnant bedding planes from a sedimentary protolith, although these planes could possibly be foliations. Took a measurement on one of these surfaces. There are some foliations along bedding and the planes are ~1-5 inches thick on average. The weathered surace is red-beige and the fresher surfaces are blue-grey. Some parts of the rock are shiny and waxy and look rich in mica. There are some blue quartz eyes present on the fresh surface of the rock and it is stretching and kinking, which usually doesn't happen in a 9b because it is stronger and usually fractures, so we named it a 9c.	9c
54	Taken from outcrop above Chuck Creek in a large canyon above the river.	Foliation at 110/30	The rock has thin beds/foliations that are dipping to the southwest, one of which we took a measurement on. It is very quartz-rich and bluish in colour, possibly a felsic metavolcanic rock. Also appears to be chlorite altered.	9c
93	Taken from outcrop up Chuck Creek Road (past 10km mark).	Foliation at 275/40	Sample taken from a fissile, oxidized rock with a red-blue surface. The outcrop dips moderately to the north, which is different than most of the rocks in the other part of the Mila area that dip to the southwest. There are empty cubes that look like they once contained pyrite, and these cubes are ~3mm in diameter on average. Some pyrite cubes still exist in the rock. The rock seems to be mafic with slight graphitic alteration in sections of the rock.	8a

Outcrop/Rep. Sample Number	Location	Sulphides Contained in Rock	Rock Description	Harper Creek Legend
7	Taken from outcrop up Chuck Creek Road (past 5km mark).	Pyrite cubes up to 1cm in diameter throughout the rock, with some 1mm in diameter or less (most ~1mm in diameter).	Sample taken from large outcrop of foliated rock with perfect pyrite cubes up to 1cm in diameter, but most are around 1mm in diameter. Rock is dull grey-blue in outcrop form. Idioblasts of Fe-carbonate are present, as well as white streaks along foliations that are likely secondary carbonate. The weathered surface has an acid reaction, but the fresh surface only reacts along the carbonate within foliations. This rock is a calcareous chlorite-sericite-phyllite. A foliation measurement was taken at 095/49.	8a/7c
8	Taken from outcrop up Chuck Creek Road (past 5km mark, close to sample 7).	Pyrite (very similar to sample 7 except with slightly less pyrite).	Sample taken of waxy blue-grey rock, similar to sample 7 but with less pyrite. The middle of the outcrop contains a large quartz vein up to 50cm wide that extends along strike. The outcrop is ~15 feet high and the quartz vein is ~10 feet up. Small faults are also visible where the quartz vein has been shifted. The rock looks like a sericite-chlorite phyllite.	7b
21	Taken from outcrop in canyon above Chuck Creek.	Pyrite, less than 1% disseminated in the groundmass.	Sample taken from outcrop that looks like it has remnant bedding planes about 2 inches wide on average. The rock is felsic and weathered to a brown-grey colour. It is blue and foliated with sericite, magnetite and calcite. Red veins (likely Fe-carbonate) also run through the sample and effervesce with acid. The rock is mafic and contains the magnetic crystals that are black but streak grey (magnetite possibly?) and contains a small amount of disseminated pyrite.	8a
23	Taken from outcrop in canyon above Chuck Creek along the 720m contour line.	Pyrite, disseminated in the host rock in crystals up to 1mm in diameter.	The sample is very grey, dusty and weathered. There are slight remnant bedding planes (or what may be foliations) but they are irregular and hard to make out so no measurement was taken on them. The fresh surface is quartz-rich and there is some disseminated pyrite in the sample. It contains chlorite and is non-magnetic.	8a
50	Taken from outcrop along Chuck Creek to the south (accessed from Vavenby Mountain Road, then walked down a creek to take us to the river).	Pyrite, disseminated in the host rock in crystals up to 1mm in diameter.	Sample taken from a large weathered outcrop that extends almost vertically up the hill to the south from the river. The rock is dark blue-grey and foliated, and the cut section is too weathered to definitively tell the original rock type. Most of the rock contains red idioblasts of Fe-carbonate, but quartz and chlorite are visible. There is no acid reaction, and pyrite is present (disseminated, up to 1mm in diameter).	Too weathered
78	Taken from outcrop in a trench on the side of Chuck Creek Road (very far up road, at least 10km).	Pyrite, very small amounts disseminated in groundmass.	Sample taken from outcrop that barely comes out of the ground in a trench on the side of Chuck Creek Road, and runs for about 15 feet up and down the trench. The rock is blue-grey and looks slightly graphitic, with disseminated pyrite in the groundmass. It is only slightly foliated and is sericite-rich and chlorite-rich.	8a
79	Taken from subcrop farther up Chuck Creek Road than sample 78, on the side of the road.	Pyrite, a few cubic grains less than or equal to 1mm in diameter.	Sample taken from subcrop (large boulder with small boulders all around it of the same lithology, and some of what looks like outcrop sticking out of the ground). The rock is grey-green and quartz-rich with idioblastic Fe-carbonate weathering. The rock is sandy and there is one opaline blue quartz eye present in the sample. There are also a few grains of cubic pyrite.	9b
80	Taken from subcrop farther up Chuck Creek Road than sample 79, on the side of the road.	Pyrite, disseminated in less than 1% of the rock.	Sample taken from more subcrop in a similar spot as sample 79, just a bit farther up Chuck Creek Road. The rock contains an idioblastic texture that could either be Fe-carbonate weathering or pyrite weathering/oxidation. There is disseminated pyrite in the rock, as well as blue quartz.	9b
88	Taken from outcrop on the side of a road cut that is not on the map (it veers off from Chuck Creek Road).	Pyrite, less than 1% disseminated in the groundmass.	Sample taken from one of the small outcrops along this roadcut. There are a few outcrops here, a few feet high and sloping back into the hill. This sample was taken from an outcrop about 5 feet across and 2 feet high. The rock is weathered, fine-grained and chlorite-rich with disseminated pyrite.	8a

Outcrop/Rep. Sample Number	Location	Sulphides Contained in Rock	Rock Description	Harper Creek Legend
89	Taken from outcrop on the same side of the road as sample 88, but a bit farther up the road.	Pyrite, less than 1% disseminated in the groundmass and weathered out on the red, oxidized crust.	Sample taken from a roadcut near sample 88. It looks similar to 88 except it is a bit more rounded and less foliated. It also weathers red-gold, whereas sample 88 was a bit more blue. The sample contains almost an inch of red, soft crust that contains weathered out pyrite, and a blue centre. It is very soft (possibly due to weathering and oxidation) and contains small amounts of disseminated pyrite.	8a
90	Taken from outcrop along the same deactivated road as samples 88 and 89 were taken.	Pyrite, weathered out cubes within host rock.	Sample taken from the same deactivated road as samples 88 and 89. It is bluish in colour and very foliated with lots of weathered out pyrite cubes. It seems mafic except for quartz veins (secondary), and is phyllitic.	7c
91	Taken from outcrop up the road from samples 88, 89, and 90.	Pyrite, at least 1-3% in groundmass.	Sample taken from the same road as samples 88, 89, and 90 (just up the road). It contains chlorite with only a few visible grains. It seems mafic except it appears to have blue quartz eyes as well, which would not make sense if the rock was mafic. It appears to be an 8a with 9b intercalations.	8a w/ 9b
93	Taken from outcrop up Chuck Creek Road, past the 10km mark.	Pyrite, weathered out in cubes at least 3mm in diameter. The pyrite cubes that still exist in the rock are only a few mm across.	Sample taken from a fissile, oxidized rock with a red-blue surface. The outcrop dips moderately to the north, which is different than most of the rocks in the other part of the Mila area that dip to the southwest. There are empty cubes that look like they once contained pyrite, and these cubes are ~3mm in diameter on average. Some pyrite cubes still exist in the rock. The rock seems to be mafic with slight graphitic alteration in sections of the rock.	8a
94	Taken from outcrop up Chuck Creek Road, farther up than sample 93.	Pyrite, less than 1% disseminated in the groundmass. No big cubes like other samples along Chuck Creek Road.	Sample taken from an outcrop that is dipping steeply to the north (although some of the planes are going in other directions and seem to have fractured). The outcrop is weathered, fissile, waxy and slightly foliated. The rock contains mostly chlorite with some fragments of quartz (possibly quartz eyes?) that are white/grey, not opaline blue like the characteristic ones. It looks mafic, so it is classified as an 8a.	8a
95	Taken from outcrop up Chuck Creek Road, close to sample 94.	Pyrite, less than 1% disseminated in groundmass.	Sample taken from outcrop (could be subcrop) close to sample 94. The rock is weathered and mafic with small amounts of disseminated pyrite, so it is likely an 8a.	8a
96	Taken from subcrop up on a ridge in the middle of the map area.	Pyrite, less than 1% disseminated in the groundmass.	Sample taken from subcrop sticking out of the moss surrounded by angular boulders of the same lithology. The rock is dark blue-green and pervasively weathered. It is greener than any of the chlorite-rich rocks seen in the entire area, and has carbonate veining throughout. It is too fine-grained to be a schist and it is quite foliated, so it is likely a phyllite. There are also tiny bits of disseminated pyrite in the rock.	7c

Mila Legend	Rock Unit	Colour	Texture	Composition	Alteration	Mineralization	Harper Creek Legend
1	Tshinakin Limestone	White to light grey	Subtle foliations	White calcium carbonate with some possible grey dolomite	Unaltered	None	6f
2	Chuck Creek West Mafics	Dark green with light yellow to pink weathering	Very weakly foliated and contain fine grains that can be seen with the naked eye	Mostly wiped out, too altered to tell. Classified as mafic due to lack of quartz eyes and dark colour due to intense chlorite alteration.	Pervasive chlorite alteration, calcium carbonate and/or iron carbonate idiolblasts, some quartz veining	Local moderate disseminated magnetite	7c, 8a, 8b, 8c
3	Chuck Creek West Limestone	White to grey	Massive (white) or moderately foliated (grey)	Calcium carbonate with dolomite and fracture fill or banded iron carbonate	Iron carbonate bands	None	6f
4	Felsic Metavolcanics	Blue-grey with orange-yellow bands	Moderately to strongly foliated and schistose.	Contains quartz eyes (whitish-grey), sub-rounded to augen-shaped, less than or equal to 3mm in diameter. Quartz eyes are about 1 to 3% in abundance. Any other composition obscured due to alteration.	Pervasive chlorite and sericite alteration, iron carbonate in fractures, and quartz veins along foliation.	None	9c
5	Southeast Sediments	Greyish green	Sandy texture (very fine to medium grained) and weak to no foliations	Opaline blue quartz eyes (less than 1%) less than or equal to 1mm, and rounded to sub-rounded. The rest of the quartz is sandy, grey and sub-rounded to sub-angular	Moderately chlorite and sericite altered with iron carbonate idiolblasts	None	9b
6	Northeast Sediments	Blue-green	Sandy with subtle foliations	Grey quartz eyes (none are opaline blue) that are sub-rounded and less than 1mm in diameter. Not as quartz-rich as the sediments in the southeast and finer grained quartz. Other composition obscured due to alteration	Strong chlorite and sericite alteration with iron carbonate along foliations and in fractures	None	9b
7	Southeast Mafics	Dark green to blue	Strongly foliated and deformed	No quartz, dark in colour. Original composition obscured due to strong deformation and alteration	Strong chlorite alteration, iron carbonate foliation parallel and as idiolblasts. Occasional quartz bands and foliation parallel sericite	Pyrite cubes less than or equal to 2mm disseminated throughout and about 1% in abundance in most of these rocks	7b, 7c, 8a
8	Northeast Mafics	Green-grey	Very strongly foliated (more so than the mafic rocks in the southeast), some fragmental	Dark-coloured, no quartz present. Original composition obscured due to strong alteration	Pervasive chlorite alteration, some calcium carbonate banding along foliations, and moderate sericite alteration. Iron carbonate is foliation parallel as well	None	7c, 8a, 8c
9	Graphitic Phyllites and Sandstones	Grey to black	Strong to intense foliation, some sandy texture	Graphite, no opaline blue quartz, some grey quartz where the rocks are sandy in texture	Pervasive intense graphite seams. Quartz banding along foliations (some boudinaged)	None	7a, graphitic 9b

Legend Correlation

Mila Legend Rock Unit	Harper Creek Legend Corresponding Rock Unit(s)	Harper Creek Rock Package Correlation	Copper Mineralization noted in Harper Creek Rocks
1 - Tshinakin Limestone	6f - Limestone		No
2 - Chuck Creek West Mafics	7c - Calcareous-Chlorite-Sericite Phyllite 8a - Sericite-Chlorite Schist 8b - Sericite-Chlorite-Fuchsite Schist 8c - Chlorite-Sericite-Fragmental Schist	Fb - Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, frequently calcareous, and deformed 7d	Yes
3 - Chuck Creek West Limestone	6f - Limestone		No
4 - Felsic Metavolcanics	9c - Sericite-Chlorite-Quartz-Feldspar Schist	Fa - Felsic to Intermediate Volcaniclastics: 9c, 8c & 8a	Yes
5 - Southeast Sediments	9b - Sericite-Chlorite-Quartz Schist	B - Sandy Sediment dominated: 9b+8a mafic sediments in the west. 9b graphitic of 9b+9c felsic sediments +/- 8a in the east.	No
6 - Northeast Sediments	9b - Sericite-Chlorite-Quartz Schist	B - Sandy Sediment dominated: 9b+8a mafic sediments in the west. 9b graphitic of 9b+9c felsic sediments +/- 8a in the east.	No
7 - Southeast Mafics	7b -Sericite-Chlorite Phyllite 7c - Calcareous Chlorite-Sericite Phyllite 8a - Sericite-Chlorite Schist	Fb - Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, frequently calcareous, and deformed 7d	Yes
8 - Northeast Mafics	7c - Sericite-Chlorite Phyllite 8a - Sericite-Chlorite Schist 8c - Chlorite-Sericite-Fragmental Schist	Fb - Mafic Polymictic Volcaniclastics 8c, 8a, 7c +/- 9a hornblende crystals, frequently calcareous, and deformed 7d	Yes
9 - Graphitic Phyllites and Sandstones	7a - Graphitic Phyllite 9b - Graphitic Sericite-Chlorite-Quartz Schist	E - Graphitic Horizon: mixed 11a silicified+7a	Yes