TECHNICAL REPORT

PURPLE ONION PROPERTY MACKENZIE MOUNTAINS

NTS: 106B/01, 106B/02 and 105O/16
Mackenzie Mining District, Northwest Territories, Canada
64°03’7.095” N and 130°30’22.658”W

July 06, 2012

PREPARED FOR:

PURE LIVING MEDIA

PREPARED BY:
Aurora Geosciences Ltd.

TECHNICAL REPORT

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Northwest Territories, Canada

Effective Date:
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1 SUMMARY

This report was commissioned by Pure Living Media Inc. ("PLV") and was prepared by Gary Vivian, M.Sc., P.Geo (the "Author"). The Purple Onion Property is a conceptual play based upon stream sediment results released by the Northwest Territories Geoscience Office in early 2011. The primary purpose of this report is to provide background information on the general area concentrating on the idea the PLV ground sits within the Selwyn Basin (hosting the Howard's Pass, Jason and Tom Deposits). The area has had little exploration work completed and as such most of the PLV ground has not had any exploration completed upon it. It is PLV's full intent to evaluate the Purple Onion for its potential to host economic base metal (Zn-Pb-Ag) mineralization.

The PLV Property comprises 44 mineral claims containing 73,605.84 acres or 29,787.23 hectares. The property lies within the Selwyn Basin approximately 200 km southwest of Norman Wells in the Northwest Territories or 275km northeast of Mayo in the Yukon Territory. The property covers an area some 24 km long by up to 13km wide and is owned 100% by Coltstar ventures Inc.

The Purple Onion Property is situated on the eastern margin of the Selwyn Basin, a late Precambrian to Devonian depositional basin characterized by off-shelf deep water shale in a basin bounded by platform carbonates to the northeast. The area is well known for its propensity to host large lead-zinc sedimentary exhalative (SEDEX) massive sulphide deposits. These types of deposits have been discovered in Cambrian (Faro or Anvil), Silurian (Howard's Pass) and Devonian (MacMillan Pass; Tom and Jason) shale.

The Gayna River Deposit, lead-zinc-silver mineralization hosted in carbonates similar to Pine Point, is also are within MMICP is contiguous to Chevron Canada's Crest iron deposit, which is believed to be the second largest, undeveloped, iron-ore deposit in the world. According to Hatch Consulting Ltd. (2002), the Crest iron deposit has a (non 43-101 compliant) resource estimate of 20-30 billion tonnes, of which half is suitable for open-pit mining. A number of economically significant occurrences of mineralization exist to the south of the MMICP. The closest of these is the Coates Lake (Redstone)Copper deposit, which has a resource of 33.6 million tonnes, grading 3.92% copper and 9 grams per tonne silver.

The Pure Living Media Inc. ground was acquired in the Spring of 2012 under an option agreement with Coltstar Resources based upon the positive stream sediment sampling results from the NTGO during the 2007 and 2008 field season. There has been little work completed on the Purple Onion and the potential for hosting a SEDEX massive sulphide resource is indicated from the prospective Earn group stratigraphy, the encouraging stream sediment results and the conceptual affinities to the SEDEX deposits of the Selwyn basin.

During the summer to late fall of 2012, a first phase prospecting, sampling and mapping program has been proposed for the Purple Onion property comprising $97,000. A second phase of airborne geophysics has been proposed for 2013, possibly using the fixed wing Geotem survey totaling $420,000. The second phase is dependent upon results of the first phase but will be required to systematically evaluate the Purple Onion claims for SEDEX style mineralization.

2 INTRODUCTION

This report was commissioned by Pure Living Media Inc ("PLV"), with offices at 509-207 West Hastings Street, Vancouver, BC, V6B 1H7, and was prepared by Gary Vivian, M.Sc., P.Geo (the "Author"). The author was asked to undertake a review of the available data and assess the base metal potential for hosting economic base metal mineralization on the basis of a Selwyn/SEDEX type environment. The identification of these areas would be based on the regional and general geology of the area as well as the recent stream sediment data made available by the Northwest Territories Geoscience Office. These data will be used to provide observations and interpretations for a conceptual model to follow.

The Author was retained to complete this report in compliance with National Instrument 43-101 of the Canadian Securities Administrators ("NI 43-101") and the guidelines in Form 43-101 F1 for application to the Canadian National Securities Exchange (CNSX). The Author is a "Qualified Person" within the meaning of National Instrument 43-101. This report is intended to be filed with the CNSX.

A detailed review of the historical exploration records pertaining to the Purple Onion Property, available through the Northwest Territories Assessment Report File, has been undertaken. In the preparation of this report, the Author has utilized geological maps, geological reports, claim assessment maps and claim maps prepared by the Geological Survey of Canada and the Northwest Territories Geoscience Office. Most of this information is available online via the Northwest Territories' SID Database and the Northwest Territories Geoscience Office.

The most significant websites, from which the author drew information, are as follows:

Northwest Territories Geoscience Office: www.nwtgeoscience.ca/
NWT Mining Recorder's Office: www.ainc-inac.gc.ca/ai/scr/nt/erd/mm/mro/index-eng.asp
NWT Government and Assessment Reports: http://gateway.nwtgeoscience.ca/
Natural Resources Canada: http://apps1.gdr.nrcan.gc.ca/mirage/db_search_e.php

The Author has no reason to doubt the reliability of the information comprised within this report. A test audit of the Coltstar database did not reveal any discrepancies with the original material filed by the original license holders for assessment purposes. The Author has independently reviewed legal title to the Purple Onion property described in this NI 43-101 report.

The Author is very familiar with the exploration techniques applied to evaluating the potential of SEDEX type deposits. The Author has collectively made two small trips to the property for staking and last visited the property in September of 2011.

3 RELIANCE ON OTHER EXPERTS

Aurora Geosciences Ltd has provided copies of all the relevant maps, analytical data, presentations, assessment reports, photographs and documents relating to the Property. Reports and memoranda on

the strategy and plans for exploration with a budget have also been reviewed. The Author has no reason to believe that any of the data supplied by previous explorers in the area or from the NTGO (Northwest Territories Geoscience Office) is neither incorrect nor incomplete. This report is based upon the author's personal examination of all available reports in the area of the Purple Onion property. on the MMICP as well as three separate visits to the property in August 2010 and 2011 (see Section 2). The information, opinions and conclusions contained herein are based on:

- Information available to the Author at the time of preparation of this report;
- Assumptions, conditions, and qualifications as set forth in this report; and
- Data, reports, and other information supplied by any third party source

For the purpose of the report, the Author has completed a tenure data search on Northwest Territories website (www.ainc-inac.gc.ca/ai/scr/nt/erd/mm/mro/index-eng.asp). However, the limited research by the Author does not express a legal opinion as to the ownership status of the mineral claims, collectively comprising the Purple Onion property.

The Authors' commission permits PLV to file this report with the Canadian National Stock Exchange and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites.

As of the date of this report, the Author is not aware of any material fact or material change with respect to the subject matter of this technical report that is not presented in this report, which the omission to disclose would make this report misleading.

4 PROPERTY LOCATION AND DESCRIPTION

The Purple Onion Property within the Mackenzie Mountains, Northwest Territories, Canada is located on NTS Map Sheets 106 B/1 and 2 and 105 O/16, close to the NWT and Yukon border (Figure 4.1). The property is geographically centered at 64° 03" 7.095' N latitude and 130° 30' 22.658' W longitude or UTM 427052E and 7104180 N, Zone 9W, NAD 83.

The property consists of 44 mineral claims (Figure 4.2 and Table 4.1) comprising a total of 73,605.84 acres or 29,787.23 hectares. Coltstar Resources had a staking dispute with Eagle Plains Resources and as such Coltstar had to amend their property boundaries to mend with the Eagle Plains ground.

The Purple Onion property is located 200km southwest of Norman Wells, NT and 275 km northeast of Mayo, YT. The property covers an area up to 24km long by up to 13km wide in a northwest-southeast direction.

Figure 4-1 Property Location Map

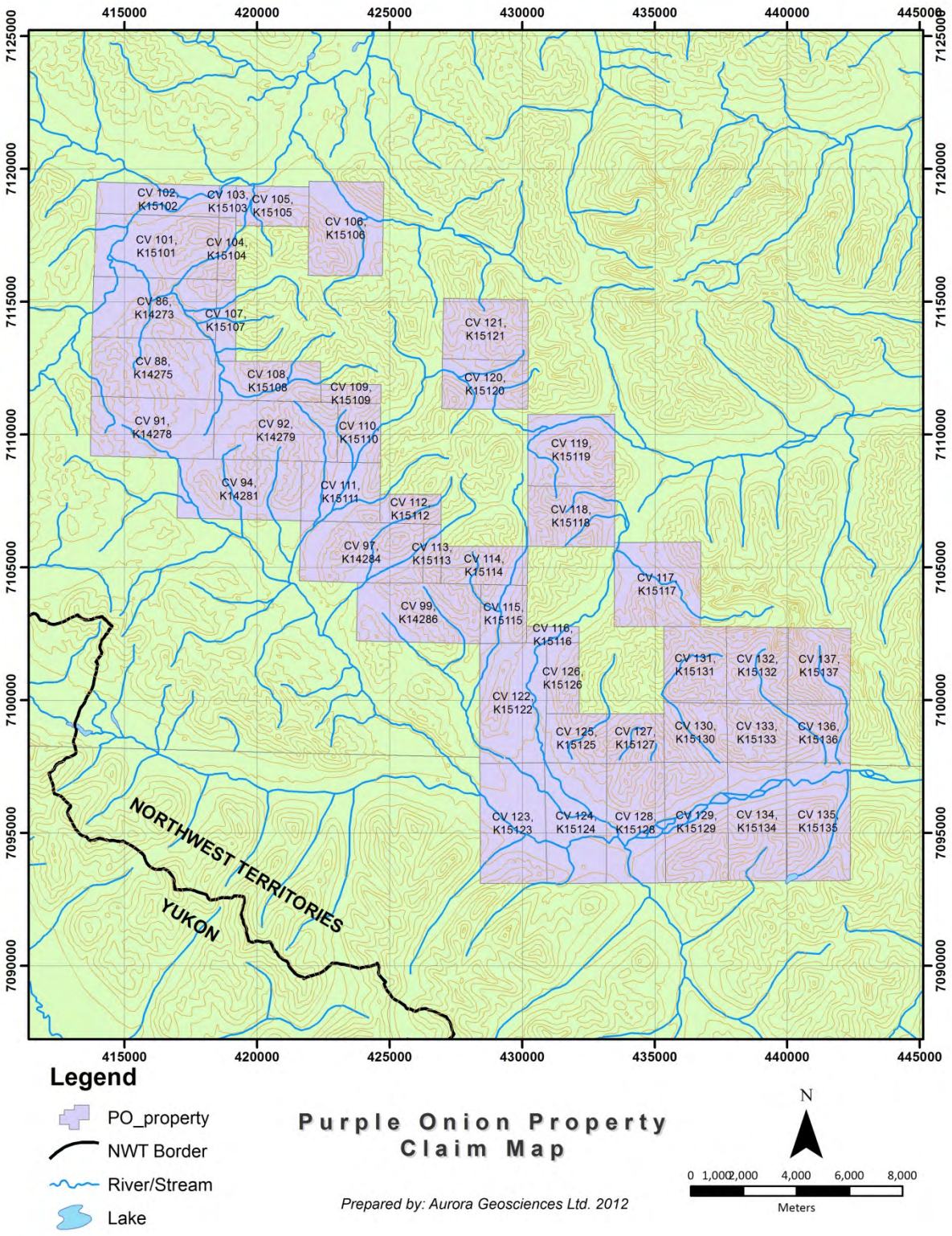

Figure 4-2. Purple Onion Property Claim Map

The property was originally staked in September of 2010 and required amendments to that staking which were completed during September of 2011. Mineral claims are valid for a period of 10 years as long as assessment work is filed to hold claims in good standing. The assessment work is valued at $2per acre per year.

The property covers a total area of 300 km^2 and falls within both the Gwhich'in and Sahtu Dene Settlement Areas.

PLV has the option to purchase a 100% of the right, title and interest in the Purple Onion claims of Coltstar by completing the following:

i) a cash payment of $70,000 by no later than May 31, 2012.

ii) issuing 300,000 common shares of PLV

iii) Coltstar maintains a 0.5% NSR on the Purple Onion claims.

iv) once PLV completes work commitments of $72,310 by September 14, 2012 and $253,103.36 by September 19, 2013, they can purchase the 0.5% NSR by paying an additional 100,000 shares of PLV.

Table 4-1 Claim Summary

CLAIM TAG	CLAIM NAME	NTS	Anniversary Date	Acreage
K14273	CV 86	106B02	2012-Sep-14	2,582.50
K14275	CV 88	106BO2	2012-Sep-14	2,582.50
K14278	CV 91	106B02	2012-Sep-14	2,582.50
K14279	CV 92	106B02	2012-Sep-14	2,582.50
K14281	CV 94	106B02	2012-Sep-14	2,582.50
K14284	CV 97	106B02	2012-Sep-14	2,582.50
K14286	CV 99	106B01, 02	2012-Sep-14	2,582.50
K15101	CV 101	106B02	2013-Sep-19	2,582.50
K15102	CV 102	106B02	2013-Sep-19	1,549.50
K15103	CV 103	106B02	2013-Sep-19	232.43
K15104	CV 104	106B02	2013-Sep-19	387.38
K15105	CV 105	106B02	2013-Sep-19	1,031.97
K15106	CV 106	106B02	2013-Sep-19	2,479.20
K15107	CV 107	106B02	2013-Sep-19	520.63
K15108	CV 108	106B02	2013-Sep-19	1,290.73
K15109	CV 109	106B02	2013-Sep-19	343.47
K15110	CV 110	106B02	2013-Sep-19	903.87
K15111	CV 111	106B02	2013-Sep-19	1,704.45
K15112	CV 112	106B01, 02	2013-Sep-19	601.72
K15113	CV 113	106B01, 02	2013-Sep-19	387.38

K15114	CV 114	106B01	2013-Sep-19	1,138.88
K15115	CV 115	106B01	2013-Sep-19	760.29
K15116	CV 116	106B01	2013-Sep-19	223.64
K15117	CV 117	106B01	2013-Sep-19	2,530.85
K15118	CV 118	106B01	2013-Sep-19	1,807.75
K15119	CV 119	106B01	2013-Sep-19	2,169.30
K15120	CV 120	106B01	2013-Sep-19	1,446.20
K15121	CV 121	106B01	2013-Sep-19	1,807.75
K15122	CV 122	106B01, 105P16	2013-Sep-19	2,582.50
K15123	CV 123	105P16	2013-Sep-20	2,582.50
K15124	CV 124	105P16	2013-Sep-20	2,582.50
K15125	CV 125	106B01, 105P16	2013-Sep-19	1,033.00
K15126	CV 126	106B01	2013-Sep-19	929.7
K15127	CV 127	106B01	2013-Sep-19	1,066.00
K15128	CV 128	105P16, 105B01	2013-Sep-20	2,582.50
K15129	CV 129	105P16	2013-Sep-20	2,582.50
K15130	CV 130	106B01	2013-Sep-19	1,291.25
K15131	CV 131	106B01	2013-Sep-19	1,549.50
K15132	CV 132	106B01	2013-Sep-19	1,549.50
K15133	CV 133	106B01, 105P16	2013-Sep-19	1,291.25
K15134	CV 134	105P16	2013-Sep-20	2,582.50
K15135	CV 135	105P16	2013-Sep-20	2,582.50
K15136	CV 136	106B01, 105P16	2013-Sep-19	1,291.25
K15137	CV 137	106B01	2013-Sep-19	1,549.50
				73,605.84

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

The Purple Onion property is located approximately 275 km east of Mayo, and 200 km south west of Norman Wells, Northwest Territories. Access to the property requires a helicopter due to the mountainous terrain and lack of reasonable sized lakes. Fixed wing, float-equipped aircrafts have be used in the past to access a few lakes approximately 30 to 50km west of the property including Misty Lake, Yukon. The closest infrastructure other than the communities of Mayo, Ross River and Normal Wells include the North Canol Road and Macmillan Pass Airstrip which lie approximately 120km south of the property. All historic work in the area and on the property has been staged out of the Yukon Territory.

5.1 Climate

The Purple Onion property is located in the northern most part of the Selwynn Mountain Range

close to the Mackenzie Mountain Range. This part of the Northwest Territories is classified as the Taiga Cordillera Ecozone of Canada (Ecological Stratification Working Group, 1995) and can be further classified as part of the Tainga Cordillera – Low Subarctic (LS) Ecoregion.

The climate is characterized by short cool summers with mean temperature of 9.5°C and long and cold winters with a mean temperature of -19.5°C. The majority of precipitation in this region falls between May and September with an average annual precipitation of 280-350mm.

5.2 Topography and Physiography

The property is dominated by rugged mountains and narrow valleys. Rock and ice glaciers are found throughout the area along with colluvial fans and thin till veneers cover the valley floors. The elevation of the property ranges from 1000 meters to over 2000 meters.

5.3 Flora and Fauna

Vegetation at higher elevations is characterized by alpine tundra flora including dwarf shrubs, lichens, saxifrages and mountain avens. At lower elevations the vegetation is characterized by subalpine open woodland flora which includes spruce, mix of medium to low shrubs, mosses and lichens. Tree line on north facing slopes and valley bottom is about 1300 mASL and about 1500 mASL on south facing slopes.

The region has a diverse range of wildlife which include caribou, Dall's sheep, moose, mountain goat, black and grizzly bear, wolf, lynx, beaver, fox, hare, raven, rock and willow ptarmigan and bald and golden eagle.

The climatological data for the nearest weather station (Norman Wells) is shown below in Figure 5-1.

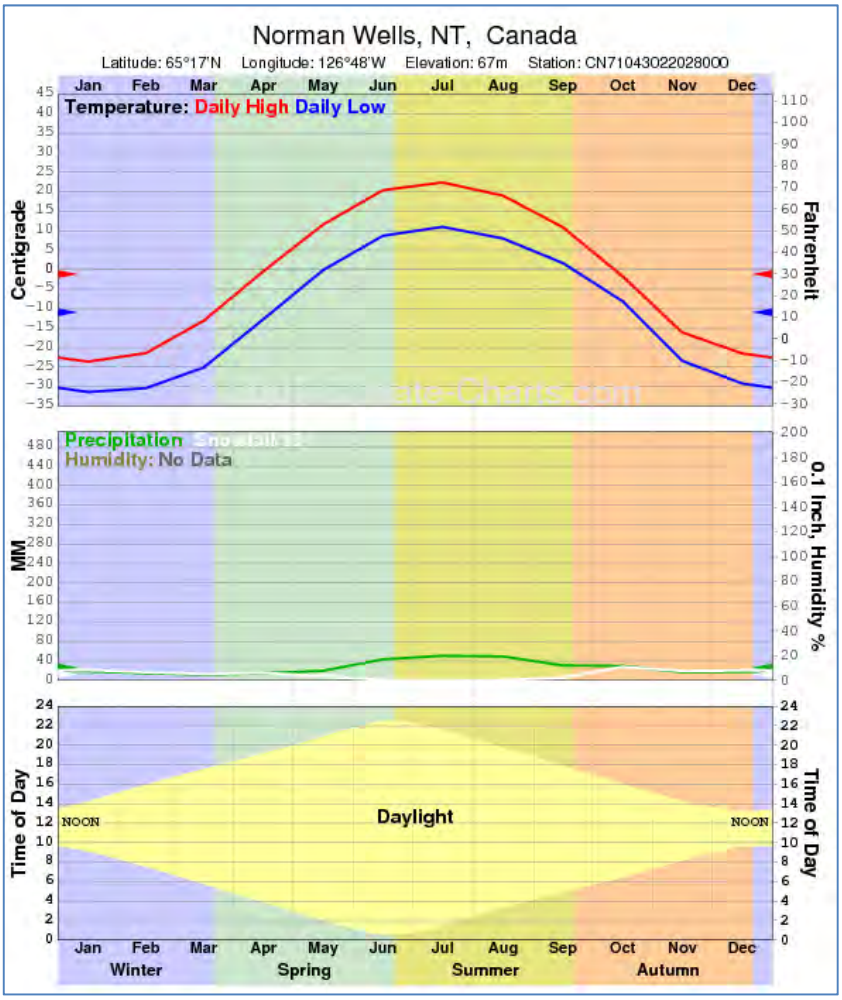

Figure 5-1 Climatological Data from Norman Wells

6 HISTORY OF MINING AND EXPLORATION

Very little historic work has actually been completed on the property. The first recorded work in the area was a regional prospecting program (Debicki, E.J., 1978) carried out by the Arctic Red Joint Venture in 1974. Several lead and zinc showings (ie. CAB and Gayna River) were discovered during this program.

Regional prospecting and mapping programs have taken place in and around the property throughout the 1970's and 1980's by a number of different companies including Canadian Nickel Company Limited (Canico), Harman Syndicate, Welcome North Mines Ltd., Serem Ltd., Noranda Exploration Company Ltd.

From the late 1970's to early 1980's Canadian Nickel Company Limited (Canico) conducted a number of geology and geochemical surveys on Prospecting Permits 524-528 which overlaps the Purple Onion property. Surveys included prospecting and mapping as well as soil and stream sediment sampling. The regional exploration program for shale-hosted Pb-Zn-Ag style mineralization resulted in the identification of a number of barite occurrences in the Besa River Formation and a number of Pb, Zn, Ag and Cu soil anomalies. In the late summer of 1980 Canico drilled 4 diamond drill holes (208.8 meter

total) to test soils anomalies. The work program was unsuccessful at finding any economic Pb-Zn-Ag mineralization and Canico determined that the barite occurrences were too remote to pursue further. Permits were left to lapse at the end of 1980.

The area containing the Purple Onion was part of a much larger regional geochemical survey conducted in 2008 and 2009, under a Joint Research Agreement between the Northwest Territories Geoscience Office (NTGO) and Natural Resources Canada. It is this data which mostly encourages further work in this area Figures 6.1 to 6.4). The NTGO stream sediment sampling reveals as significant number of anomalous results over the Purple Onion claims. Of particular interest to PLV is the high arsenic values which lends to a conceptual SEDEX model versus sedimentary carbonate MVT type mineralization in this area. The stream sediment data definitely indicate further work is warranted in this area to follow up on potential SEDEX mineralization occurrences.

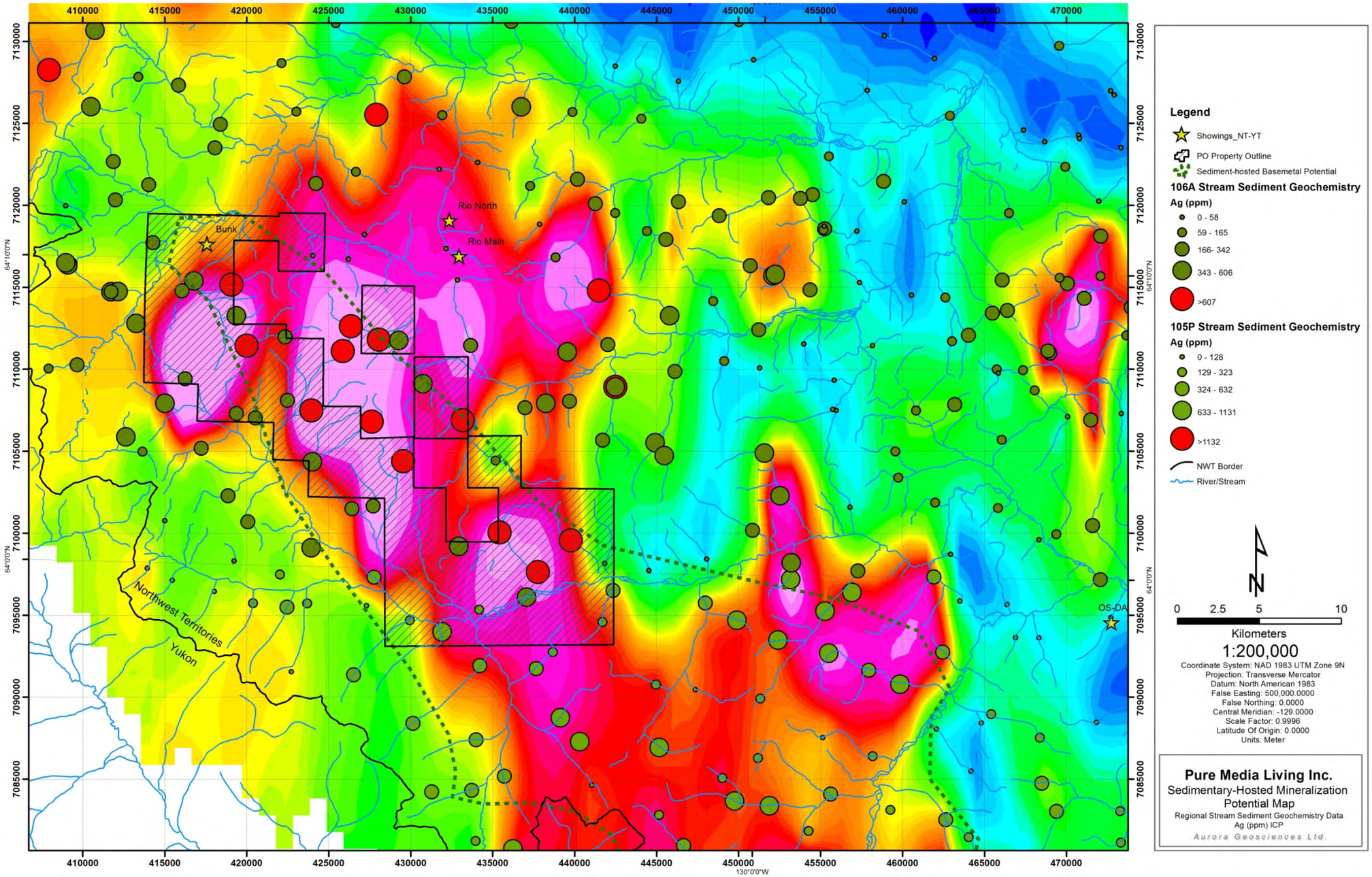

Figure 6-1. Stream Sediment Sampling Results - Ag (ppm) (NTGO, 2008)

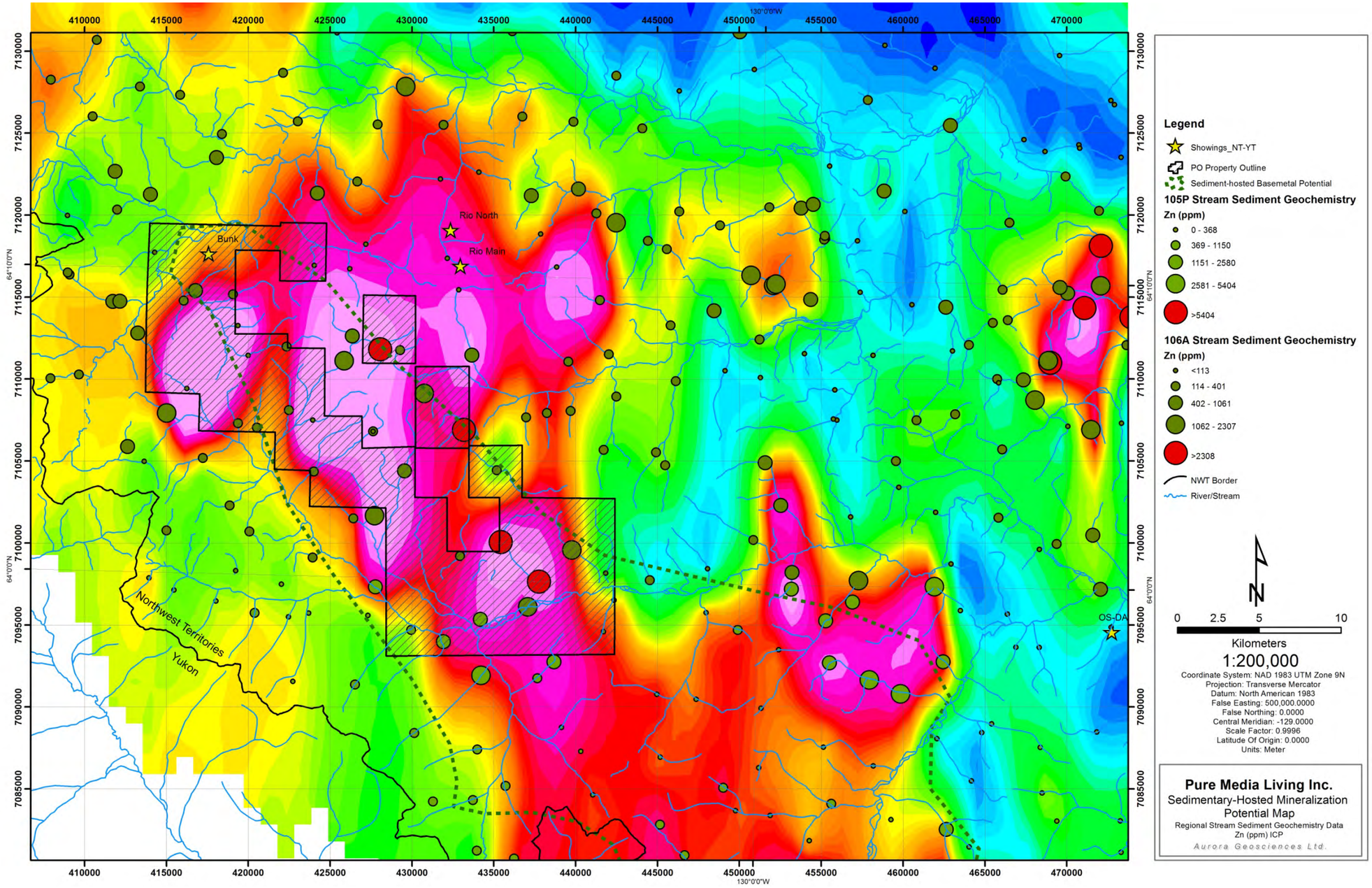

Figure 6-2. Stream Sediment Sampling Results - Zn (ppm) (NTGO, 2008)

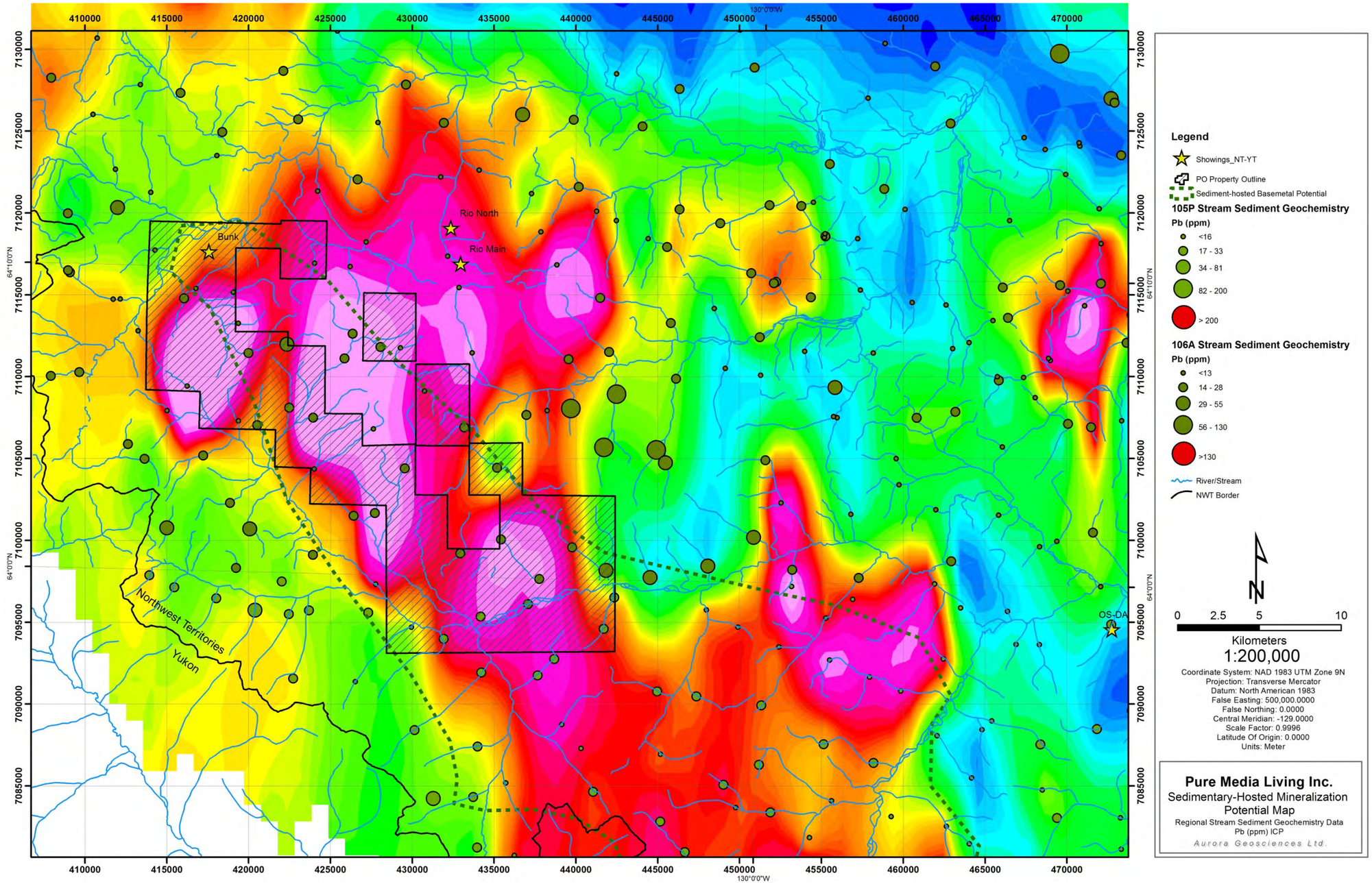

Figure 6-3. Stream Sediment Sampling Results - Pb (ppm) (NTGO, 2008)

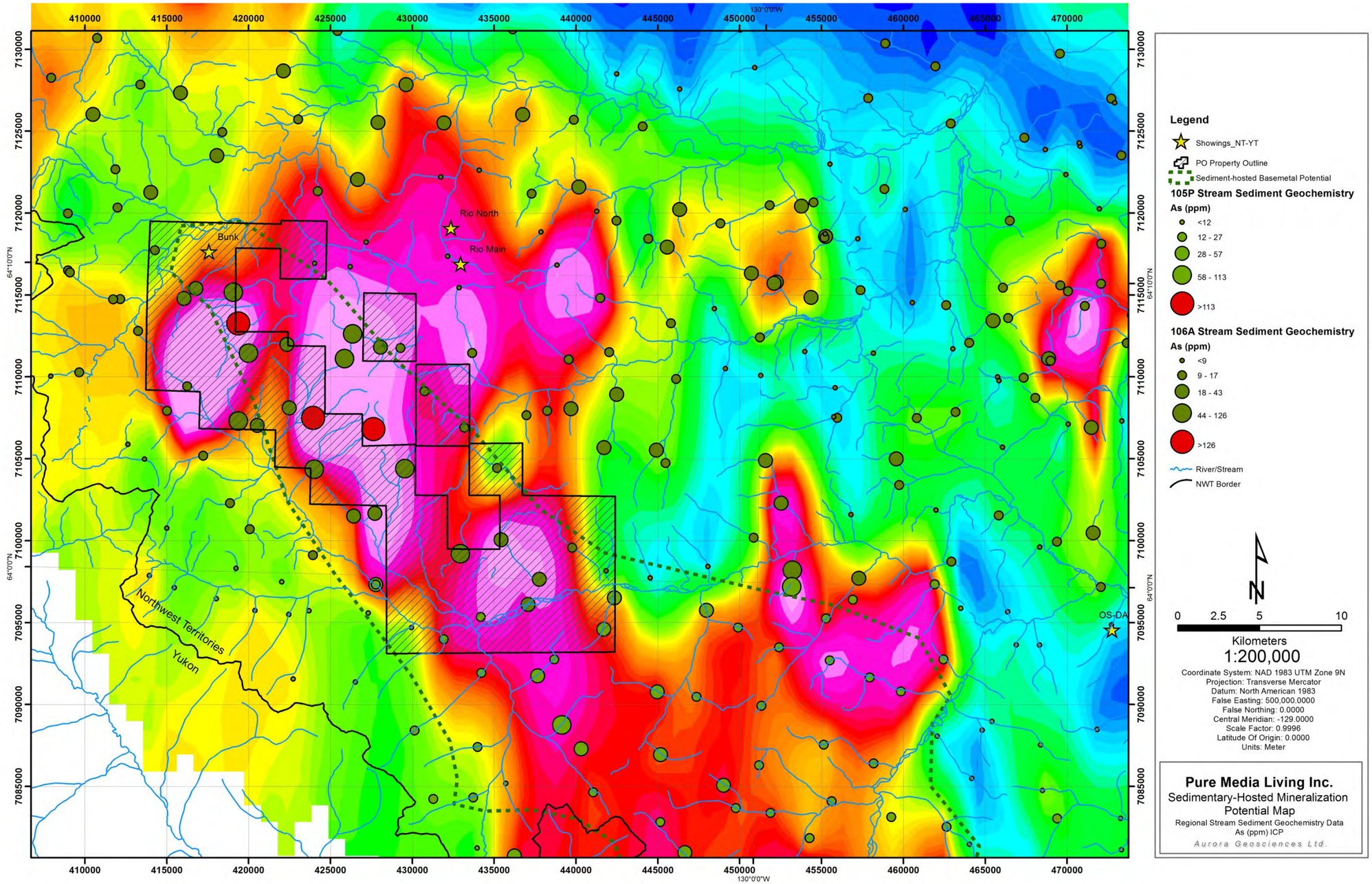

Figure 6-4.Stream Sediment Sampling Results- As (ppm) (NTGO, 2008)

7 GEOLOGICAL SETTING

7.1 Regional Geology

The Purple Onion property lies within a geological environment known as the Selwyn Basin and particularly within the Misty Creek Embayment. The Selwyn Basin is located on the east central edge of the Yukon Territory and extreme southwestern edge of the Northwest Territories, encompassing an area approximately 200 km by 250 km (Figure 7.1). The Basin thins out to the northwest and is offset up to 600km into Alaska. Remnants of the Selwyn Basin can be traced into northeastern British Columbia. The Selwyn basin definition is taken from Gordey (1993) as a "region of deep-water offshelf sedimentation that persisted from late Precambrian to Middle Devonian time. The basal deposits consist of late Precambrian rift clastics, overlain by rift clastics of late Devonian age. The northeast margin comprises time-equivalent strata of the Mackenzie Platform (MA) and along the southwest margin is the Cassiar Platform (CA) comprising Siluro-Devonian carbonate clastics. The southwestern limit is the approximate limit of the miogeocline in the Yukon". The Gordey definition spans the offshelf facies comprising the late Precambrian to lower Devonian stratigraphy and also the offshelf facies marking the irregular transition to the carbonate platform.

There has been no mapping in the area by PLV. Following is a description of the regional geology as referenced from the NTGO Selwyn-Mackenzie Shale basins (SELMA) Project (Ficsher, 2011).

The Lower Paleozoic basinal rocks in 106B and the northeastern portion of 105 O were deposited in an embayment, known as the Misty Creek embayment, whose development initiated off the NE edge of the Selwyn basin in the Early or Middle Cambrian. The embayment continued to deepen as a result of recurrent incipient rifting throughout the Ordovician (Cecile, 1982). A submarine ridge known as the Niddery high delimited the southern end of the Misty Creek embayment and the northeastern edge of Selwyn basin proper (Cecile, 2000; Fischer, 2011; *Figure 7.2).*

Facies changes at all stratigraphic levels, from Middle Cambrian to late Early Devonian, mark the transition from basinal rocks of the Misty Creek embayment to carbonate rocks of the Mackenzie platform to the east, NE, and north of the embayment; and carbonate rocks of the Ogilvie arch to the NW of the embayment. The position and character of the slope transition changed with time, and is as-yet poorly understood (Cecile, 1982). Northeast-trending structures in the Mackenzie Mountains have been suggested to represent ancestral strike-slip faults, formed during the same Late Proterozoic or Early Cambrian rifting that led to passive margin development (Cecile et al., 1997), but the relationship of the NW-trending Misty Creek embayment to this earlier rifting is not known.

Carbonate rocks of the Mackenzie platform are exposed in the eastern and northeastern parts of 106B. These rocks include the Early Cambrian Sekwi Fm., which was deposited as a carbonate ramp and open shelf along the margins of the Selwyn basin before development of the Misty Creek embayment, and younger carbonate-dominated successions of Ordovician (Franklin Mountain Fm.), Silurian (Mount Kindle Fm.), and Devonian (numerous formations) age, ranging to as young as early

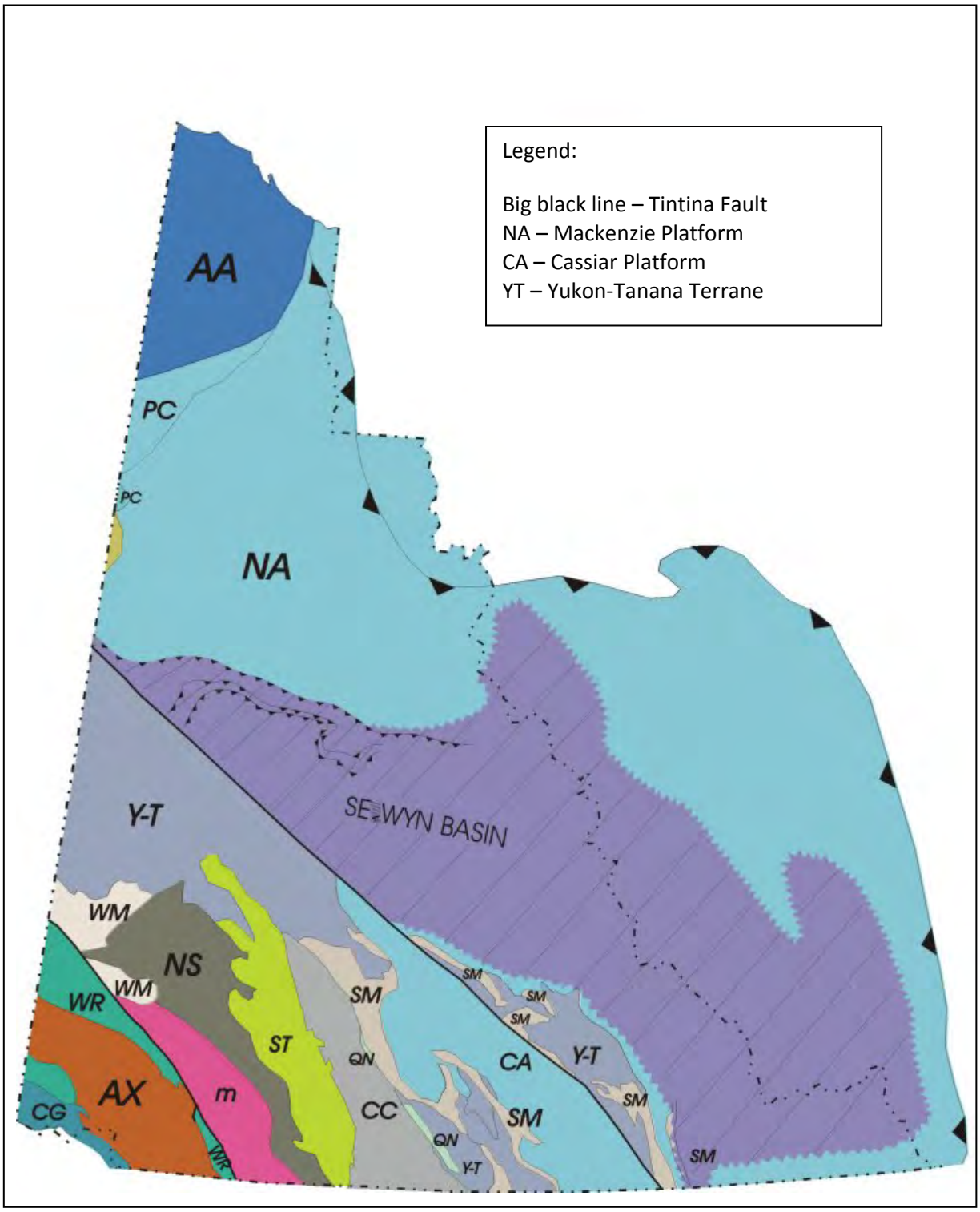

Figure 7-1 Terrane Map of Yukon and Western NWT (after Fischer, 2011)

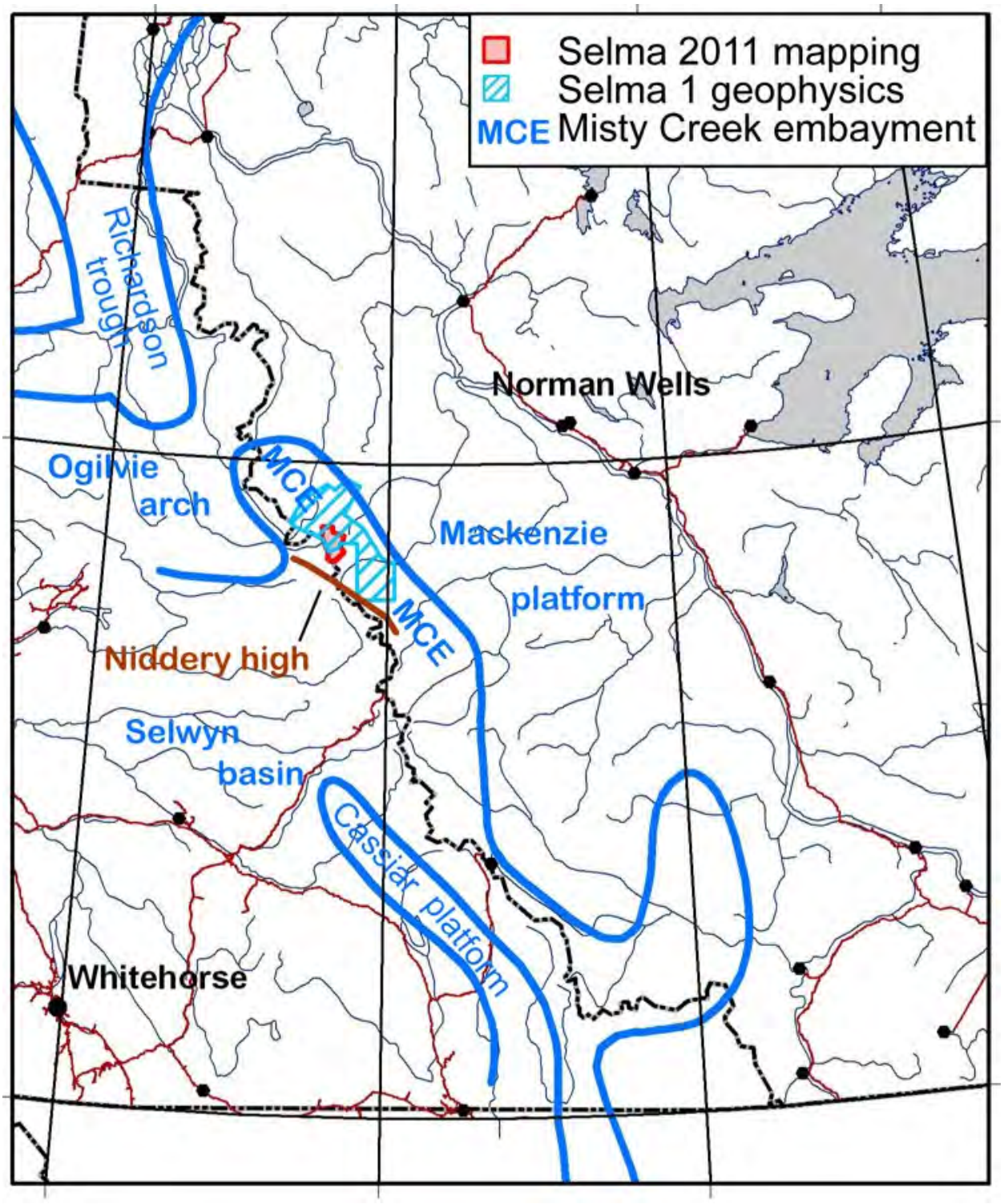

Figure 7-2 Misty Creek Embayment within the Selwyn Basin (after Fischer, 2011)

Middle Devonian. Many of these host significant mineralization of the "carbonate-hosted Zn-Pb" type (MVT).

A major shift in tectonic regime in the middle of the Middle Devonian resulted in uplift of parts of the Selwyn basin west of 106B. These rocks and other sources to the NE, north, and west shed terrigenous clastic debris across the remaining parts of the Selwyn basin and the Mackenzie platform, terminating the development of the passive margin. The youngest strata of the new regime are shale and siltstone; NE of the Hess River these strata belong to the Canol Fm., and SW of the Hess River to the Misfortune Fm, (The Canol and Misfortune formations are mutually continuous and differentiated only on the basis of overlying strata; Cecile, 2000). Repeated turbidity flows created extensive sandstone fans on top of the fine-grained siliciclastic strata. Northeastern sources produced dominantly quartzitic, coarse-clastic strata (Imperial Fm.), while western sources produced coarse quartz-chert-lithic strata (Thor Hills Fm.). The dividing line between them is roughly along the Hess River, they have not been distinguished in the 106B area, where all such rock are mapped as Earn Group (Figure 7.3 and 7.4).

Orogeny and consequent mountain-building began in the late Mesozoic. By the Late Cretaceous, the rocks of 106B had been thrust northeastward in a number of parallel belts, and folded tightly on NW-trending axes. They are largely unmetamorphosed.

7.1.1 Stratigraphy

The oldest unit in the mapped area is the Early Cambrian Sekwi Formation, which consists primarily of resistant, orange and grey weathering limestone and dolostone.

The Middle Cambrian Hess River Fm. consists of black shale, black calcareous shale, and thinly bedded lime mudstone. Although generally recessive, the nature of the thrusting has preserved it in broad, rounded, debris-covered hills where it is locally well-exposed in sheer cliffs. It is also exposed in creek cuts.

A thick succession of Rabbitkettle Fm. (which regionally is Late Cambrian to Ordovician) overlies Hess River Fm. and consist of thin- to medium-bedded, yellowish grey weathering, silty lime mudstone and lime siltstone with light grey, bedding-parallel bands and lenses of diagenetic calcite. Yellow-weathering, silty cross-laminations and current ripples are common. Horizontal burrows are locally abundant on bedding planes, and slump breccias of imbricated, elongate clasts were noted in a few places. An upper member of deeper-water deposits about 50 m thick is present in some parts of the mapped area, and consists of very thinly bedded, dark grey lime mudstone with very little terrigenous silt.

Duo Lake Fm. in the mapped area consists of black shale, black calcareous shale, dark grey siltstone, and thinly bedded to platy limestone. The upper part of this unit contains abundant black chert and beds of bioclastic limestone. Regionally, the unit is Ordovican to Silurian; we identified Early Silurian graptolites

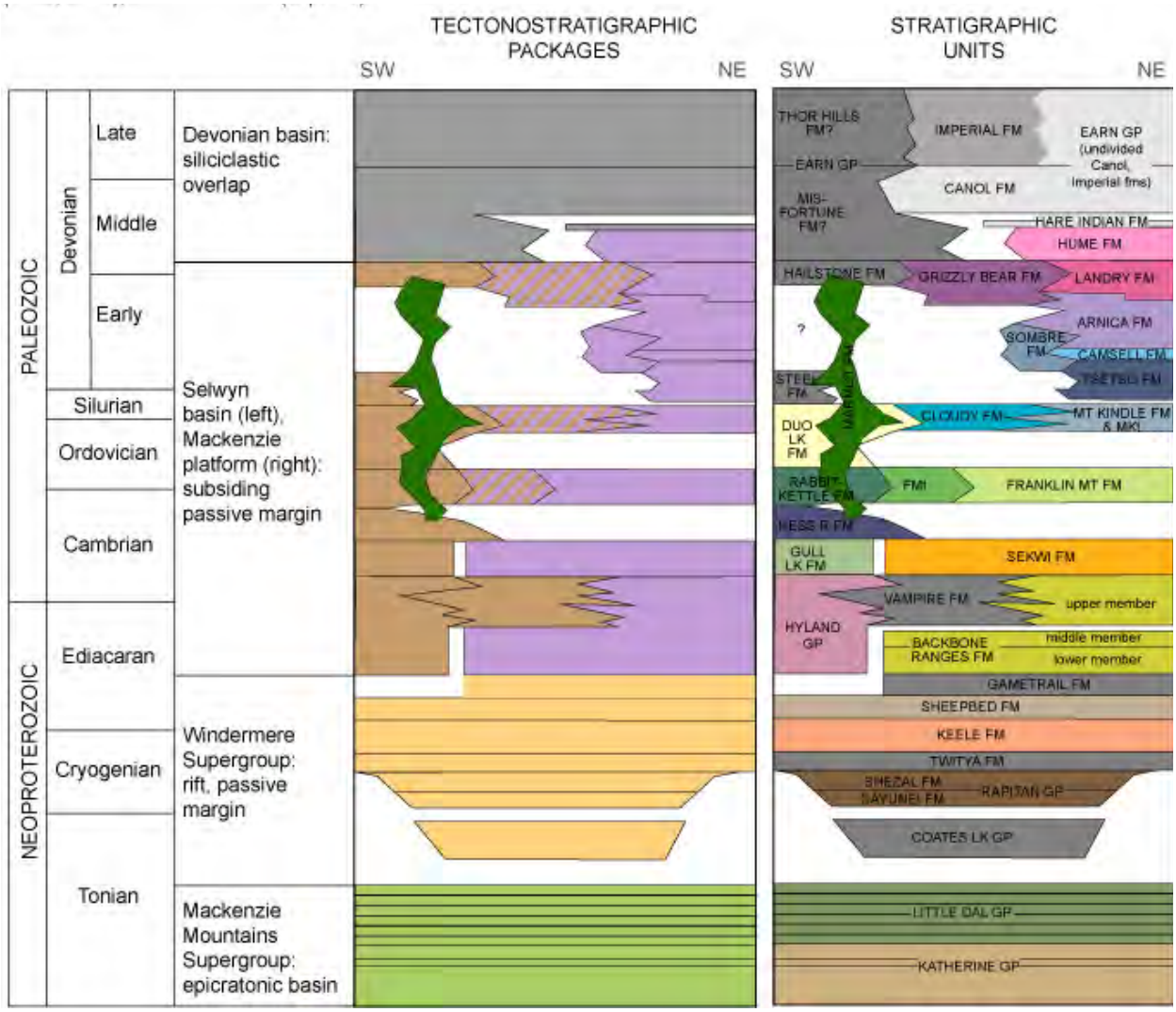

Figure 7-3 **Lithological Units for Geology Map of 106B (after Fischer, 2011)**

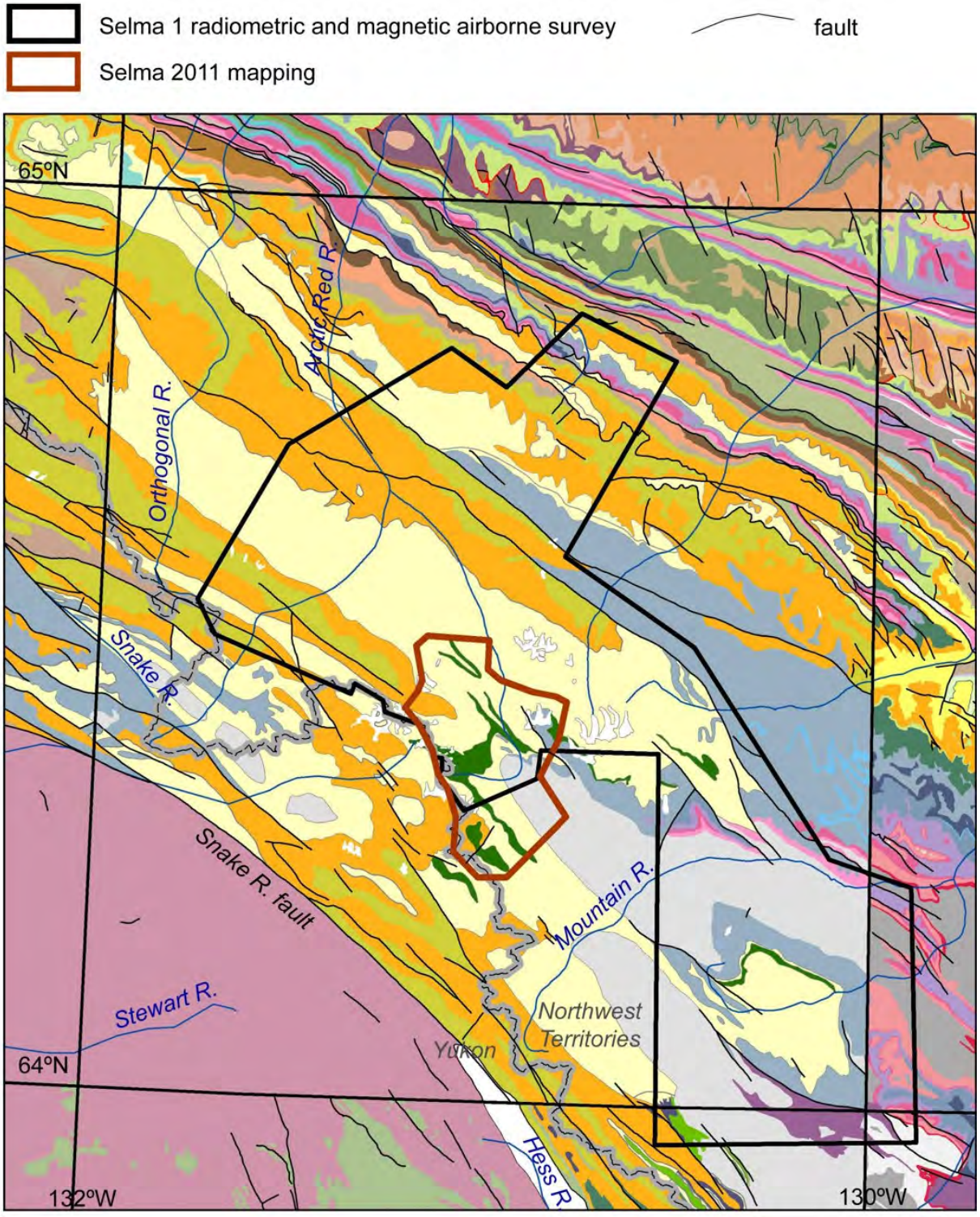

Figure 7-4 **Regional Geology Map of 106B and NW 105O (after Fischer, 2011)**

A disconformable contact with overlying Early Devonian Hailstone Fm. was noted by Cecile. In the southern part of the map area, this contact is marked by a 2-5 in-thick bed of massive, unsorted limestone conglomerate, but in the north there appears to be an intervening unit (Cloudy Fm?) of thin-bedded limestone and black shale. Cecile (1982, section 9) had previously identified an olistostrome of Cloudy Fm at the north end of the mapped area. We observed chaotically folded strata sandwiched between largely undeformed strata, and interpret this as the southern part of the same olistostrome, which is at least 8 km long.

Hailstone Fm. in the study area consists of black shale and mudstone in centimeter-, meter-and decameter-scale intervals alternating with meter-scale intervals of yellowish grey-weathering bioclastic limestone. The unit was distinguished by the presence of crinoid ossicles with twin axial canals, said to be diagnostic of a late Early Devonian to early Middle Devonian age (Cecile, 1982, referencing a personal communication from A.W. Norris in 1980).

The Marmot Fm. is a mafic volcanic and volcaniclastic unit. Regionally it is interstratified with and intrudes Rabbitkettle to Hailstone formations and all intervening units. In the central part of the study area, Marmot Fm. lies directly on Rabbitkettle Fm., whereas in the north and south, it is younger, and lies within the Duo Lake Fm. near its base. Both flows and elastic units were identified, but we were unable to map them separately in the time available. A diatreme and sills were previously identified on the outskirts of the mapped area. Volcaniclastic rocks predominate along traversed paths, but large areas that were inaccessible by traverse were not investigated. A major rock type in the traversed areas is a poorly to un-sorted, clast-supported, volcaniclastic conglomerate containing fossil fragments (crinoids, corals), volcanic clasts, and limestone clasts. Cecile (1982) noted the same rock type 40 km to the southeast, associated with abundant monolithic, unsorted volcanic breccia and coinciding with an unusual thickness of Marmot Fm.. He interpreted these features to indicate proximity to a volcanic center which, in its later stages, included a subaerial edifice. The succession in the Selma 2011 area is very similar, and may represent the second major volcanic center to be identified in the Misty Creek Embayment.

We visited dolostone (including coral dolorudstone) cliffs of probable Silurian age, separated from underlying Cloudy(?) Fm. by a thin interval of quartz-pebble conglomerate and dirty sandstone. The mapping needs to be extended in order to characterize and identify this unit. The sandstone at its base is probably a platform-to-slope transitional facies.

The youngest units in the mapped area are Canol Fm. shale and siliceous mudstone with sparse thin beds of limestone, and overlying Imperial Fm. sandstone, both of which belong to the Mid-Late Devonian Earn Group. In rubble covering the base of a mountain whose upper parts are Canol Fm., we found a sample of black shale containing abundant specimens of the mollusc Tentaculites sp., which is common in the Bluefish member of the Hare Indian Fm. The Hare Indian Fm. is a black shale unit that underlies the Canol Fm. east of 106B. We also mapped a very graphitic black shale along a fault, and have yet to determine whether this belongs to the Eam Group (Bluefish member?) or an older unit. Strata to the east of the Selma 2011 area, that we examined in 2009, include a Tentaculitid-containing unit that might be Bluefish member above a thick-bedded Early-Mid Devonian limestone.

7.2 Property Geology

PLV has not completed any property geology but there have been a few companies working in the area of the Purple Onion claims. The best property geology has been taken from the Canadian Nickel work

that was completed back in the late 1970's (Debicki, 1978). Most of the area work was completed during the original findings and releases on the Howard's Pass, Tom and Jason deposits.

The geology map from the Bebicki report cannot, without significant work be reproduced but there is a table of stratigraphy (Table 7-1) for units located within the Purple Onion area and a detailed description of these units. The following is excerpted from the Debicki report noted above:

Table 7-1. Lithologies on the Purple Onion Claims

Unit Number	Unit Host	Lithologic Description
7a	**1 gr**	Felsic plutonics - granite, granodiorite, qtz monzonite (not seen on permits)
7b	**Vb**	Basic Volcanics - amygdaloidal flows - green to brown & orange weathering
6a	**Schrt**	Chert - dk grey to black on weathered & fresh surface, minor slst and shale
6b	**Schrt**	Chert - light grey to green on weathered and fresh surface
5a	**Sbrt**	Barite - bedded, finely lam, light to dark grey on fresh and weathered surface
4a	**Sslts**	Siltstone, sandstone - light to dark brown weath, grey on fresh surface, pyritc and partly calcareous
4b	**Ssltsh**	Siltstone, intbd shale - pyrtic in part, predominantly slst with shale, black weathering
3a	**Ssh**	Shale - black, silvery weathering, fissile and calcareous in part
3b	**Ssh**	Shale - dark brown to black weathering, fissile, crunchy, graptolitic
3c	**Ssh**	Shale - grey-green to brown weathering, grey-green on fresh surface, minor sandstone beds
3d	**Ssh,brt**	Shale, barite shale with spotted barite - minor pyrite and cherty in part
3e	**Ssh**	Shale, mudstone - green to maroon weatheirng, green and maroon on fresh surface (Hadrynian)
2a	**Scong**	Conglomerate - chert pebble, interbedded shale, slst, slst in part graphitic
2b	**Scong,ss**	Conglomerate, sandstone - light grey to dark grey on fresh and weathered surface
2c	**Vplc**	Volcanic, pyroclastic - polymictic, light grey, calcareous matrix, light green weathering, prob volc origin
1a	**Sls**	Limestone - dark grey to balck, fetid, blocky to flaggy-buff weathering in part
1b	**Sls**	Limestone - light to buff grey on fresh and weathered surface, finely laminated

1c	**Sls**	Limestone - light to medium grey weathering, massive, fossiliferous-graptolitic
	Sbx	Diatreme breccia - kimberlite??

In general, the mapping of the Permit block was confined to the Selwyn Basin sequences of the Road River and Besa River Formations, considered favourable for shale-hosted lead-zinc-silver deposits. The Road River Formation consists of shale, silt-stone, chert, limestone, sandstone to quartzite, conglomerate and volcanic pyroclastic breccia-conglomerate. Overlying these sequences are shale, siltstone, minor limestone, chert and barite of the Besa River Formation and shale, siltstone and sandstone of the Imperial Group. A shale similar to the Besa River Formation was found to overlie the Imperial Group and has been temporarily correlated with shales of Tertiary age known to occur in the Macmillan Pass area, Yukon, 100 km to the south.

The Road River Formation occupies the western portion of the Permit block, with a smaller sliver on the eastern side. It is generally recessive, poorly exposed and occurs at lower elevations. The Besa River Formation and overlying Imperial Group occupy the east-central portion of the Permit block. They are generally much better exposed and occur at higher elevations. The Imperial Group normally caps the tops of some of the higher ridges in the area. Cambrian Sekwi Formation carbonates and Ordovician-Devonian Mt. Kindle, Franklin Mountain and Delorme Formation carbonates occupy the western and eastern portions of the Permit block, respectively. On the eastern edge of Permit #525, a diatreme breccia with a diameter of about 500 metres has intruded the Road River Formation.

Geological mapping was carried out by detailed ground traverses and helicopter reconnaissance. Traverse locations and traverse numbers are noted on Map 3, Stream Sediment Anomaly and Traverse Locations.

The characteristics of the lithologies in the work area correspond to Table 7.2 and are as follows:

(i) Unit la

Unit la is comprised of grey to black weathering, locally buff to light brown weathering, dark grey to black micritic limestone. It is flaggy to blocky, weak to strongly fetid, locally laminated with bedding up to 10 cm thick; parts are graphitic to sooty; it contains minor fossils, bioclastics and nodules. Sedimentary structures include convoluted bedding and mega-ripples. Locally, it is interbedded with shale. Overall, Unit la becomes siltier to the west.

In the western portion of the area, Unit la becomes a silty micrite, grey weathering, and with cross laminations and ripple drift cross laminations. It grades locally to buff to grey weathering with black calcareous shale interbeds. Locally, it is intensely brecciated and re-cemented with calcite. Calcite veining up to several decimeters is common.

In the northern part of the work area, Unit la is composed of inter-beds of sandy limestone, calcareous black shale and shale-limestone conglomerate. Disseminated pyrite up to 2% occurs as euhedral crystals

and colloform aggregates up to 5 mm in size. Pyrite-calcite nodules up to 20 cm in diameter occur sparsely scattered within the limestone beds.

Unit la is assigned to the Road River Formation.

Unit lb

Unit lb is a buff-brown, buff-grey to light-grey weathering, medium-grained, grey, massive, finely laminated limestone. It is flaggy to blocky. This unit includes grey to grey-black fossiliferous limestone, thin to thickly bedded, with sparry calcite fossil fragments. It contains interbanded black, gritty, sooty to graphitic, lamellar, platey limestone and sandy, grey to grey-brown lamellar, platey limestone. Calcite, quartz carbonate and barite-calcite veins 1 - 30 cm wide cross-cut the limestone or are parallel to the bedding as zebra structures.

The Unit lb is assigned to the Road River Formation.

Unit lc

Unit lc is a light to medium grey weathering massive bioclastic and conglomeratic limestone. It is locally fetid, very resistant to weathering, generally massive, and graptolitic. It contains abundant coarse bioclastic fragments and occasional limestone clasts. Fossils include crinoids, gastropods and bryozoans. Locally, near the contacts with Unit 3b in the eastern portion of the work area, Unit lc is comprised of a collapse limestone breccia.

The unit may represent a transitional facies of the Mt. Kindle and Franklin Mountain Formations.

Unit lc is part of the Road River Formation.

Unit 2a

Unit 2a is a chert pebble conglomerate with interbedded shale and silt-stone (in part graphitic). This unit does not outcrop on the Permit block, and no facies equivalents were noted.

Unit 2a is grouped into the Besa River Formation.

Unit 2b

Unit 2b is a conglomerate-sandstone, light-grey to dark-grey on both fresh and weathered surfaces. Locally, where it occurs as a limonite-rich sandstone to silty sandstone, it is dark brown to rusty weathering and platey. This sandstone grades to a limonitic quartzite, yellow-green coloured quartzite or quartz wacke containing minor or no calcite and occasionally with a minor Unit 2c pyroclastic component.

In the north part of the work area, Unit 2b is a sandstone to rudaceous conglomerate containing clasts of grey chert and siliceous silt-stone with minor pyrite. It may be transitional with the Unit 2c pyroclastic volcanic; however, it contains depositional features such as ripple marks and cross-bedding in the sandstones. Locally, it is cut by calcite veins up to 2 cm in width which localizes the pyrite as colloform masses. The pyrite colloforms are in the same orientation as the calcite veins. Pyrite also occurs as ellipsoidal blebs 5 cm - 2 m in length along planar surfaces.

In the western portion of the work area, near the Sekwi Formation contact, Unit 2b is a grey to rusty weathering limonitic quartzite, partly calcareous and conglomerate containing fine polymictic clasts to coarse (10 cm) black chert clasts in a calcareous matrix. This conglomerate may actually be a pyroclastic tuff-breccia of Unit 2c.

Generally, Unit 2b is restricted to the western portion of the work area; it is assigned to the lower Road River Formation.

Unit 2c

Unit 2c occurs at several localities throughout the work area. It is a volcanic pyroclastic tuff-breccia, generally light green to greenish brown weathering, polymictic, light grey on fresh surfaces and with a highly calcareous matrix.

Unit 2c is interstratified with chert, shale, sandstone and limestone of the Road River Formation. According to Cecile, 1978, the volcanic centre can be placed somewhere near the southeastern portion of the work area.

Unit 3a

Unit 3a is a silvery weathering black shale, very fissile, carbonaceous and siliceous. It makes a tinkly sound when one walks upon talus slopes or felsenmeer. The unit contains interbands of chert, flaggy black graphitic chert, limestone, sandy limestone up to 4 metres thick, spotted barite and bedded barite. The chert beds are cut by numerous white, moderately crystalline quartz stringers which weather rusty.

The limestone is grey to light-grey/buff weathering, partly sandy, lamellar and platey. Within Unit 3a occur one massive bedded barite horizon (Unit 5a) and several spotted barite horizons (Unit 3d) above and below Unit 5a. Below Unit 5a, Unit 3a shales contain fine to medium grained, thickly bedded limestone (3 metres thick), spotted barite horizons (Unit 3d) (4 to 5 metres thick) and partly graphitic blocky chert. Above Unit 5a, the Unit 3a black, silvery weathering shales are non-calcareous and grade

into Unit 3d upwards (spotted barite).

Unit 3a occurs at two levels: one, as the Besa River Formation, and the other as a shale unit without barite in the Road River Formation below Unit 3b.

Along the western edge of the work area, a light grey to black siliceous, carbonaceous shale (undivided Unit 3) overlies the Imperial Group. This unit caps the top of a mountainous peak. It is similar to the shales of Unit 3a. There is no evidence for emplacement by thrusting according to field relationships observed. It has tentatively been correlated to Tertiary shales which overlie the Imperial Group, south of the work area.

Unit 3b

Unit 3b is a dark brown, dark grey to black weathering black shale, non-calcareous to calcareous, composed of beds 5 to 15 cm thick. It gives off a crunchy sound when walked on in talus or felsenmeer. Interbedded with the black shale are 5 cm beds of highly resistant siliceous silt-stone, concoidally fractured, with 3 mm thick rinds weathering to a bright, creamy, rust-brown colour. Unit 3b can be sheared with resultant well-developed cleavage and jointing, making bedding very difficult to discern.

The upper portion of Unit 3b consists of a 25-metre section of sandy shale, rusty black weathering, and an increased proportion of leucocratic material (greywacke or volcanoclastic). It is more resistant to weathering where intercalated with black shale. Rusty weathering, very siliceous concretions 10 - 20 cm in length occur throughout with very finely disseminated pyrite.

Unit 3b is graphitic and carbonaceous along shear planes. Monograptus graptolites were identified at several localities. Traces of spotted barite(?) were observed occasionally. The unit generally coarsens to the southeast. To the west, the unit contains 2 cm thick interbedded limestone beds.

Very fine disseminated pyrite occurs in some beds. Unit 3b is assigned to the upper Road River Formation.

Unit 3c

Unit 3c is a grey-green to brown weathering, grey-green (on fresh surfaces) shale with minor sandstone beds. Unit 3c has not been identified in the work area. It is part of the Proterozoic Windermere Grit sequence.

Unit 3d

Unit 3d is a dark grey to rusty weathering spotted barite horizon which grades from Unit 3a (black silvery weathering, calcareous to non-calcareous, siliceous shale) upwards into Unit 3d. Carbonate content in the shale decreases as barite content increases. The spotted barite is white to cream to occasionally dark grey, crystalline, forming elongated blebs up to 10 cm in length parallel to bedding planes and occupies a volume from 1% to 70%. Some spotted barite horizons have a considerable cherty component. Average thicknesses of Unit 3d are 10 metres and it occurs in Unit 3a, generally with one

horizon above Unit 5a and one horizon below Unit 5a. Cleavage is platey to blocky. Minor pyrite occurs in some spotted barite horizons. A black fetid nodular limestone (Unit la) contains very minor spotted barite, but this was the only barite noted in the Road River Formation.

Unit 3d is assigned to the Besa River Formation. It forms very distinctive marker horizons within this Formation.

Unit 3e

Unit 3e is a green to maroon shale and mudstone with the same colour on fresh surfaces. This unit was not identified in the work area. It forms part of the Hadrynian Windermere Grit sequence.

Unit 4 (Units 4a and 4b)

Unit 4 is a coarsening upward turbidite sequence of predominantly siltstone, and silty sandstone with minor shale. The basal section is dominated by interbeds of black shale typical of Unit 3a. These finely bedded, fissile, black shales give way to siltstones upwards in the sequence. Some of the siltstone beds are weakly calcareous. The siltstone beds contain a high proportion of limonite disseminations causing the unit to weather a rusty red colour. Bedding thickness is lamellar to thick (proportional to grain size). Average bed thickness is 3 to 10 cm, with shales at the base of the unit exhibiting platey cleavage, becoming blocky in the siltstones. Primary structures include flute casts, small scale cross-bedding, laminated bedding, ripple marks and scour channels. The unit is interpretated as a turbidite.

Unit 4 is generally resistant and caps the tops of hills and ridges. It is a very distinctive unit because of its resistant character, its obvious bedding and weathering colour. Locally, some horizons contain "concretions" of black crystalline fetid limestone up to a 20 cm diameter. Numerous sections are weakly to strongly pyritic (pyrite grains up to 5 mm).

Unit 4 is the Imperial Group which always overlies the Besa River Formation. Mapping in the work area has divided the Imperial Group (Unit 4) into the upper siltstone-sandstone portion, Unit 4a, and the lower siltstone-shale portion, Unit 4b.

Unit 4a is an interbedded siltstone and sandstone, light to dark brown weathering, grey on fresh surfaces. It is calcareous and pyritic in part.

Unit 4b is an interbedded siltstone and shale (beds 5 cm thick) which is also calcareous and pyritic in part. Siltstone beds are medium to thickly bedded. The shale is black weathering.

(xiii) Unit 5a

Unit 5a is a light grey to grey and brown.weathering laminated, massive barite. It is resistant to weathering. Lamallae alternate in colour (white, black and dark grey). Cleavage is platey to blocky. Locally

it contains laminated limestone nodules. It has a general appearance and hardness of chert. In part, the unit is highly calcareous. Barite along the northeastern margin contains distinct laminated crystalline

limestone beds.

Unit 5a occurs near the top of Unit 3a. In the southeast corner of Permit #524, the bedded barite reaches a maximum thickness of 25 metres. Locally, the horizon reacts to zinc zap solutions. Barium content reaches a maximum assay value of 59.9% Ba.

Unit 6a

Unit 6a is a dark grey to black weathering, dark grey to black chert, flaggy and finely lamellar in part. It contains minor interbeds of shale and siltstone.

In the western area, Unit 6a is light grey weathering, black, partly shaly and carbonaceous. It is composed of beds 4 - 6 cm thick with fine parallel laminations visible only on the weathered surface. Graphite along shear planes is common. Locally, it contains shale interbeds, becoming very shaly at the upper and lower contact.

Unit 6a is part of the Road River Formation.

Unit 6b

Unit 6b is a chert, light grey to grey green on weathered and fresh surfaces. It does not occur on the Permit block. The unit represents a deeper-water facies and is part of the Road River Formation.

Diatreme Breccia

A diatreme breccia, with a surface exposed diameter of about 500 metres, occurs on the eastern edge of Permit #525./ The matrix, composed of quartz, feldspar, white mica and a calcareous cement, is light green weathering and of felsic composition. The clasts are pebbles and coarse sand size fragments, rounded to sub-rounded, commonly of incorporated chert and shale wallrock material. In addition, biotite mica books up to 1 cm in diameter are common in the matrix..

7.3 Mineralization

The history of mineralization in the Canadian-Alaskan Cordillera is very long, spanning over 1.6 billion years, from Mesoproterozoic to the present time. The Paleozoic might be called "the age of syngenetic sulphides", in the sense that VMS deposits associated with rifting arcs and SEDEX deposits associated with rifting continental margins, characterize this phase of tectonic history. In particular, both peri-Laurentian and exotic pericratonic terranes of the Cordillera contain deposits that are part of a worldwide peak in syngenetic sulphide formation and preservation during Devonian-Mississippian time, probably because of dual factors of rift-related tectonics and ocean anoxia (Goodfellow and Lydon, 2007).

The mineralization is variable within any of the syngenetic deposits but essentially is dominated by Zn-Pb-Cu-Ag. The mineralization commonly occurs between two formations delineating a pause in Deformational environments. The deposits are characteristically hosted in fine-grained clastics in linear second- or third-order sediment starved anoxic basins.

Mineralization appears to be related to a local rifting event, although only in the MacMillan Pass deposits has this been well documented. Clear evidence of rifting is coincident with extensional faulting, deposition of coarse clastics, volcanism and mineralization. SEDEX deposits are the result of exhalative fluids being channeled by syn-sedimentary faults and precipitating on the sea floor. Syngenetic ores are laminated and interbedded with host rocks and can be replaced and brecciated by later ore fluids.

Volcanism can be coeval with mineralization, such as at Anvil and Mac Pass. Some occurrences within the Selwyn Basin have characteristics of both SEDEX and VMS deposits and can be classified as transitional between the two.

8 DEPOSIT TYPES

8.1 Howard's Pass ,Tom and Jason SEDEX Massive Sulphide Deposits

Syngenetic deposits in rocks of Selwyn Basin and Earn Group span a range of ages, size and grade, mineralogy, tectonic environments and levels of deformation, alteration, metamorphism and preservation. The large, significant deposits are distributed on either side of Selwyn Basin.

Some elements are common between these deposits. Mineralization occurs at or near contact between two formations, marking a pause or transition in depositional environment. Deposits are usually hosted in fine grained clastics in linear second- or third-order sediment-starved anoxic basins. In all cases, mineralization is inferred to be related to a local rifting event, although only in Macmillan Pass is this well documented. Throughout the evolution of Selwyn Basin, several local and episodic extensional events are documented. In the best of cases, clear evidence of rifting is found in the coincidence of extensional faulting, deposition of coarse clastics, volcanism and mineralization. SEDEX deposits occur as the exhalative fluids are channeled by syn-sedimentary faults and precipitate on the sea floor.

Some mineralogical, chemical and textural zoning is usually present. Syn-sedimentary ores are laminated and interbedded with host rocks, and can be replaced and brecciated by later ore fluids.

Igneous rocks can be important controls for some syngenetic deposits. Volcanism is quite often found to be coeval with mineralization such as in the Anvil and Macmillan Pass district. Volcanogenic mineralization is present at the Marg deposit. It is discussed here as it represents another end of the spectrum of exhalative activity. Some occurrences within Selwyn Basin have characteristics of both SEDEX and VMS deposits and would be classified as transitional between the two models.

A brief description of the 4 main deposits within the Selwyn basin are listed in Table 12-1.

9 EXPLORATION

Pure Living Media Inc has not completed any exploration work upon the Purple Onion Property.

10 DRILLING

No drilling has been completed on the Purple Onion Property.

11 SAMPLING METHOD AND APPROACH

Pure Living media Inc. has not completed any exploration work upon the Purple Onion Property.

12 SAMPLE PREPARATION, ANALYSIS AND SECURITY

Pure Living media Inc. has not completed any exploration work upon the Purple Onion Property.

Table 12-1. Selwyn Basin Mineral Deposit Summary

	Anvil district	***Howards Pass***	***Macmillan Pass***	***Marg***
Age	Cambrian	Silurian (Llandovery)	Devonian	Devono-Mississippian
Host Formation	Mt Mye/ Vangorda contact (correlated to Gull Lake/ Rabbitkettle)	Road River	Earn Group	Earn Group
Main minerals	Pyrite (sphalerite, galena, barite, minor pyrrhotite)	sphalerite, pyrite, and galena	galena, sphalerite and barite	pyrite, sph, cp, galena, tetrahedrite and asp
Ore zoning	Anvil cycle siliceous at base, pyritic above, barite in core	Active Member: zoned vertically and laterally: Zn/Pb+Zn increase from base to top and from center to margin; Hg/Zn in sphalerite increases from center to margin. High grade core where thickest.	Zoning of metal ratios, hydrothermal facies and sedimentary textures upward and away from vent and related syn-sedimentary fault.	Vent: carbonate massive pyrite with high Cu/ Pb and Zn/Pb ratios; footwall: carbonate-qtz-py-sericite schist
District approximate size	Pre-mining: 120 Mt 5 deposits Relatively high grade and large tonnage	Geological: 110 Mt Inferred: 360 Mt 2 deposits Low grade, large tonnage	Geological: 17 Mt calculated on 2 deposits. High grade, small tonnage. District: 3 massive sulphide deposits, 13 barite deposits	Geological: 5.5 Mt 1 deposit
Pb/Zn	Zn> Pb	Zn>> Pb	Tom and Jason: Pb≥Zn, > 1on/T Ag. Boundary Ck:: Zn> Pb	Zn>Pb> Cu
SEDEX features ***Presence of volc./intr. rocks***	Associated with facies change; diffuse stringer zones textures masked by metamorphism. Neither vent facies nor breccia. Mafic volcanics and related intrusions, spatially related to prospective contact	Fine grained laminated sulphidic ores in anoxic chert-limestone-shale basin; syn-sedimentary deformation; no evident growth fault (only slumping and thickening of strata) No	Associated with active rifting: coarse clastics, syndepositional faults, brecciated vent complexes, laminated ores, diamictites, volcanism Mafic flows and tuffs, also reworked in diamictites	**VMS** features: mineralization above metavolcanic rocks (crystal tuffs), Cu and Au; massive to layered sulphides Felsic lithic, crystal ash and lapilli tuffs and flows below mineralization
Metamorphism	Metamorphic recrystallization obliterate primary textures	Sedimentary and diagenetic textures		Upper greenschist
Alteration	Sericite	Muscovite, illite	Fe-carbonate (hydrothermal alteration) associated with silicification	Footwall alteration: sericite, Fe-carbonate, local black chlorite

13 ADJACENT PROPERTIES

13.1 Howard's Pass

The Howard's Pass deposits lie some 160 km south of the Purple Onion property. The Selwyn Project now contains 14 drill defined deposits which are complexly folded and faulted saucer-shaped bodies which contain laminated to massive sulphides. The sulphides are dominated by sphalerite and galena with minor pyrite.

Selwyn Chihong Mining Ltd (the joint venture company) has produced an updated NI 43-101 compliant resource as of Sept 12, 2011. The current resources have been established as an Indicated resource of 180.69 million tonnes grading 5.25% Zn and 1.83% Pb. The inferred mineral resource totals 216.04 million tonnes grading 4.47% Zn and 1.38% Pb (taken from the Selwyn Resources website : TSX.V SWN on July 5, 2012).

13.2 MacMillan Pass Deposits (Tom and Jason)

The MacMillan Pass deposits comprise the Tom and Jason which lie just 13km southeast of the Mac Pass and just 100km due south of the Purple Onion property. These two deposits are concentrated within the shales and turbidites of the Lower earn Group which are Devonian-Mississipian in age.

The Tom Deposit comprises three zones (East, West and Southeast) and Scott Wilson Roscoe Postle and Associates completed a NI 43-101 compliant resource for Hudbay Minerals Inc in 2007. This resource comprises an Indicated resource of 4.98 million tonnes at 6.64% Zn, 4.36% Pb and 47.7 g/t Ag and an Inferred resource of 13.55 million tonnes at 6.68 % Zn, 3.10% Pb and 31.77 g/t Ag (Deklerk and Burke, 2008 and Press Release from HudBay July 6, 2007)).

The Jason Deposit comprises two primary zones (South and Main) and Scott Wilson Roscoe Poslte and Associates completed a NI 43-101 compliant resource for HudBay Minerals in May of 2007. The current resources at Jason comprise an Indicated resource of 1.45 million tonnes at 5.25% Zn, 7.42% Pb and 86.68 g/t Ag and an Inferred resource of 11.0 million tonnes at 6.75% Zn, 3.96% Pb and 36.42 g/t Ag. Deklerk and Burke, 2008 and Press Release from HudBay, July6, 2007.)

13.3 Chevron Canada's Crest Property

The Crest deposit straddles the Yukon/Northwest Territories border and is located approximately 450 kilometers north of Whitehorse, Yukon Territory. This deposit was discovered by a geological party of the Standard Oil Company of California, in 1961, during an extensive program of regional structural and stratigraphic geological mapping (Flower, 1963). During 1962 and 1963, an exploration program comprising geological mapping, surface channel sampling, 86 stratigraphic sections and 26 drill holes (total - 3,217 m) provided good stratigraphic control – particularly in the Iron Creek area (Flower, 1963). No physical work has been done on the property since that time.

The Crest property comprises 525 Yukon leases (27,827 gross hectares), and 1 Northwest Territories

lease (31,752 gross hectares). There are no restrictions on transfer for the Yukon leases. In the case of the NWT lease, both the transferor and transferee are required to hold a valid prospector's license at the time of transfer, and no transfer may be made if rent or royalties are outstanding. Royalties are prescribed in the applicable regulations.

The Rapitan Group is exposed over several hundred kilos and ranges in thickness from 50 to 150 meters (Hatch, 2006). The BIF at Crest outcrops in three fault bounded blocks over 50 kilos, and ranges in thickness up to 150 m, is eroded to the north and disappears under younger strata to the south. It is relatively flat-lying and undeformed. The iron ore is a fairly simple sedimentary deposit. Mineralogically, it consists of fine grained specular hematite with silica distributed as bands or nodules of red jasper. The sedimentary iron ore has been traced over a distance of 51.5 km

The jasper-hematite-type of iron-formation constitutes a significant portion of the lower 305 s of the 915 s of hematitic conglomerate at the Snake River part of the Crest Property (Flower, 1963) The greater part of the iron-formation occurs in a zone between 152 and 305 s above the unconformity at the base of the conglomerate. The iron-rich zone consists of varying proportions of three basic constituents: hematite, chert and clastic sedimentary rocks. Chevron distinguished 3 types of iron formation (Flower, 1963), on the basis of the jasper-hematite inter-relationship:

1. Nodular Iron-Formation – Consists of 60%-90% dense, very fine-grained, steel-grey to maroon-tinted hematite contained small rounded or ovoid nodules of orange-red jasper.
2. Banded Iron-Formation – Interbanded hematite and jasper. Bands range from a fraction of a centi to a in thickness may be structureless or laminated and may be interbedded in any relative proportion.
3. Irregular Iron-Formation – Characterised by irregular masses and intergrowths of hematite and jasper.

In 2006, Hatch Consulting Ltd. concluded that "the Crest iron ore deposit is believed to be the second largest iron ore deposit in the world with an estimated non-43-101 compliant 20 to 30 billion tonne 'resource', of which 50% is reportedly suitable for open-pit mining"(Hatch, 2002). Past Chevron reports show "promise of an iron ore deposit with capacity for 400 years of production." According to Hatch, (2006), Chevron's evaluation studies carried out between 1961 and 1965 indicated that, the resource material could be beneficiated with an 85% iron recovery rate.

13.4 Coates Lake Copper Deposit

The stratabound copper mineralization in the Mackenzie Mountains is hosted by Late Proterozoic strata of the Coates Lake Group that has been thrust eastwards over Palaeozoic carbonates and shale. This Group is an essentially unmetamorphosed succession that is locally well exposed in an arcuate belt less than 15 kilos wide and about 400 kilos long. The stratigraphic nomenclature has been revised several times since exploration of the area began.

The copper-bearing beds are hosted by the Transition Zone of the Coates Lake Group. The Coates Lake Group unconformably overlies the Little Dal Group, a sequence of continental clastics and carbonates.

The Rapitan Group, a marine succession of siltstones, debris flows irons formation and tillites, unconformably to conformably on-laps the Coates Lake and Little Dal Groups.

Copper mineralization is disseminated throughout the Coates Lake Group and Rapitan Formation, but the most economically significant occurrences are found in the eight beds of the Transition Zone. The Coates Lake Copper deposit has a historical geological resource of 33.6 million tonnes grading 3.92% copper and 9 grams per tonne silver (Gourlay, 2003). This resource is not considered NI 43-101 compliant. Drilling at the Keele River deposit (located 140 km northwest of Coates Lake intersected zones up to 12.5 m thick grading 2.7% copper(Western Copper Website, 2005). Sediment – hosted stratiform copper deposits or "diagenetic sedimentary" copper deposits include some of the richest and largest copper deposits in the world. The most prolific example is the Zambian Copper Belt.

13.5 Gayna River Property

The Gayna River property is located near the headwaters of the Gayna River on the eastern slope of the Mackenzie Mountains, 170 km west of Norman Wells, NWT. The 49 unit (2500 acre) property contains a number of zinc deposits outlined by Rio Tinto Canadian Exploration during the mid-1970s. Mineralization in the area consists of carbonate-hosted silver-lead-zinc similar to that mined at Pine Point from 1970 to 1990 (Eagle Plains Website). Rio Tinto completed some 27,000m of diamond drilling on the property, and suggested reserves (non-43-101 compliant) of over 50,000,000 tons, grading 4.7% zinc (Eagle Plains Website) from numerous individual orebodies, making it one of Canada's largest undeveloped zinc deposits. The best drill intersection reported by Rio Tinto included a 6.0m interval which graded 20% combined lead-zinc (Eagle Plains Website). When Rio Tinto last worked the property in 1978, company geologists suggested that further exploration would result in additional discoveries hosted by favorable stratigraphy mapped within the property area. Eagle Plains has acquired all pertinent Rio Tinto data and has begun to compile a GIS database on the Gayna River area.

14 MINERAL PROCESSING AND METALLURGICAL TESTING

No mineralogical, metal processing or metallurgical testing has been done on mineralized material from the Purple Onion Property.

15 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

No mineral resource or mineral reserve estimates have been performed on any material from the area presently covered by the Purple Onion Property in the Mackenzie Mountains, Northwest Territories.

16 OTHER RELEVANT DATA AND INFORMATION

16.1 Prohibited Disclosure

All Mineral Resource and Mineral Reserve calculations regarding adjacent properties as discussed in (*Section 14.0*) have not been verified by the qualified Author of this Technical Report. The

estimates/calculations (historical or not) are known to be prepared by independent Qualified Persons for the NI 43-101 compliant resources. , nor are the Author aware if any of the information contained therein has been audited by an independent Qualified Person. It is possible that the Historical Estimates presented in Section 14 do not conform to the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") standards of reporting pursuant to requirements under National Instrument 43-101. The Authors have not verified the character of mineralization on these properties; therefore, it cannot be confirmed that mineralization at the aforementioned deposits is indicative of mineralization described on the Mackenzie Mountains Iron-Copper Property. The data has been primarily summarized from the Government of Northwest Territories mineral assessment database and references therein and unpublished historic exploration data.

17 INTERPRETATION AND CONCLUSION

Previous work at the Purple Onion, mostly by Canico (Canadian Nickel) in the 1970's, indicates the Earn Group stratigraphy hosting the Jason and Tom deposits is present. Although Canico concluded that they could not locate any mineralization associated with SEDEX type deposits, the information from the stream sediment sampling completed by the Northwest Territories Geoscience Office (NTGO) suggests further work is warranted to verify the conclusions by Canico. It appears from the arsenic values returned from the stream sediment sampling that a host of possible shale origins is responsible for these values. The approximate geological boundaries from the newly interpreted NTGO geology suggest that significant Earn Group stratigraphy underlies the Purple Onion property. As such, the Selwyn Basin as a SEDEX dominated mineralogical environment warrants further work in this area.

The PLV claims covering the Purple Onion property are peripheral to the Strategic Metals claims which cover the central portion of the project area. The stream sediment sampling program documents a significant area of SEDEX-type potential and follow-up work is warranted to try and locate mineralization and alteration considered to be critical for this type of occurrence. The Strategic Metals claims cover only a small part of the area outlined for potential SEDEX type mineralization and the PLV claims cover a significant portion of the area suggested by the NTGO stream sediment results.

18 RECOMMENDATIONS

It is recommended that a 200-metre spaced fixed wing airborne survey be completed in 2013. The airborne survey is needed to properly assess the stream sediment sampling survey completed by the NTGO and the follow-up work which will be completed later in the summer of 2012. This survey would cost some $420,000.

PLV has a requirement to spend $72,310 prior to September 14, 2012. This is limited funding considering mobilization and demobilization will cost in the order of $30-40,000. PLV might want to consider filing cash in lieu of work and look to do a more effective and beneficial program next year. PLV will owe an additional $253,103.36 by September 19 of 2013. The total required funding to keep their commitment with Coltstar on this ground will be $325,413.36 by September 19, 2013. This is an extremely limited budget for this part of the country and this author suggests that either this year or next year a combination of what is owed over the two years should be the exploration program..

The minimum budget for 2012 is as follows:

Mobe and demobe Norman Wells via Canadian North (gear and people)	$	8,000.00
Two twin otter - 2 trips (Willow Handle Lake with gear, people and fuel)	$	8,400.00
Chopper mobe to Purple Onion (W Handle to PO is 25 miles) – 6 hrs	$	8,400.00
Chopper Mobe to move camp once in two weeks @ $5600 X 1	$	5,600.00
Chopper demob from PO to Willow Handle	$	8,400.00
Twin otter demobe from Willow handle to N Wells	$	8,400.00
Two geos for 14 days @ $1,600 per day	$	22,400.00
Camp, grub, phone, sampling gear and safety gear @ $240 per day	$	3,360.00
Shipping commercially for grub and samples	$	3,000.00
Expediting	$	2,000.00
Assaying – 100 samples X $30per sample	$	3,000.00
Assessment report	$	7,500.00
Subtotal	$	88,460.00
Contingency – plus 10%	$	8,800.00
Total Proposed Budget for 2012	**$**	**97,260.00**

An airborne program needs to be completed during the second phase of 2013 to follow-up positive stream sediment sampling results, positive results from the 2012 program and to verify stratigraphy prospective for SEDEX type mineralization. The following is a proposed budget for completing an airborne geophysical (possibly fixed wing GeoTem) survey before September 19, 2013.

Proposed second phase using a Fixed Wing GeoTem survey at Purple Onion (if possible) :

3500 line km @ 200m line spacing and $120/line km	$	**420,000.00**

This $520,000 two year budget represents the next steps and understanding this area needs an airborne survey to delineate potential targets that are more than likely buried.

Respectfully submitted,

"Gary Vivian"

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Gary Vivian, M.Sc., P.Geol.

Dated and signed this 6th of July, 2012 at Yellowknife, NT.

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20 CERTIFICATION OF AUTHORS

I, Gary Vivian, of the City of Yellowknife, in the Northwest Territories, Canada,

HEREBY CERTIFY:

1. That my business address is 3506 McDonald Drive, Yellowknife, NT, X1A 2H1
2. This certificate applies to the report titled "Technical Report, Purple Onion Property – Mackenzie Mountains – Northwest Territories, Canada" and dated July 6, 2012.
3. That I am a graduate of Sir Sandford Fleming College as a Geophysical Technologist, 1976.
4. That I am a graduate of the University of Alberta in Geology:
   a. B.Sc. – Specialization Geology, 1983.
   b. M.Sc. – Geology, 1987, U of A – The Geology of Blackdome Ag-Au Deposit, BC
5. That I have been practicing Geology since 1983:

a)	May 1983 – November 1986	Noranda Exploration Co. Ltd., Bathurst, NB
b)	December 1986 – May 1988	Noranda Exploration Co. Ltd., Timmins, ON
c)	May 1988 – Present	Covello, Bryan and Associates Ltd. and currently Aurora Geosciences Ltd., Yellowknife, NT

6. That I am a registered Professional Geologist in the Northwest Territories. I have professional designation in Manitoba, Saskatchewan, and Alberta. I am also registered with AIPG (American Institute of Professional Geologists). I have over 35 years of exploration experience concentrating in massive sulphide, magmatic sulphide, diamond, uranium and precious metal deposition. As such I am a Qualified Person for the purposes of National Instrument 43-101.
7. As a principal of Aurora, I have written this report and completed the staking of the Purple Onion claims. I last visited the property on **August 1-4, 2011.** I am responsible for all sections of this report titled – "Technical Report-Purple Onion Property - Mackenzie Mountains - Northwest Territories, Canada".
8. That I am not aware of any material fact or material change with respect to technical aspects of the report which is not reflected in the report.
9. That I am independent of the issuer as defined by the tests set out in Section 1.5, "Standards of Disclosure for Mineral Projects", National Instrument 43-101.
10. That I have read "Standards of Disclosure for Mineral Projects", National Instrument 43-101 and read Form 43-101F1. This report has been prepared in compliance with this Instrument and Form 43-101F1.
11. That, as of July 6, 2012, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated, July 6, 2012, at Yellowknife, NT.

"Gary Vivian"

_____

Gary Vivian, M.Sc., P.Geol.

21 DATE AND SIGNATURE PAGE

This report titled "Technical Report, Purple Onion Property – Mackenzie Mountains - Northwest Territories, Canada" and dated July 6, 2012 was prepared by and signed by the following author:

"Gary Vivian"

_____

Gary Vivian, M.Sc., P.Geol.

President, Aurora Geosciences Ltd

Dated at Yellowknife, Northwest Territories on July 6, 2012.

APPENDICES

APPENDIX I
Glossary of Terms and Abbreviations

Adit – common mining term for a horizontal to sub–horizontal tunnel driven into a hillside to access an ore body.

Agglomerate – a volcanic rock consisting of fragments of *pyroclastic* rocks more than 2 cm in size.

Alkaline – a term applied to igneous rocks which are characterised by relatively high concentrations of sodium and potassium.

Alluvial – deposits of sediment, usually sand and gravel, transported and deposited by a river.

Archean – period of geological time that is the older of the two main *Precambrian* divisions. Ends 2500 million years ago.

Argillaceous rocks – a group of detrital, fine grained, sedimentary rocks subdivided into silt grade (particle size range 1/16 to 1/256 mm) and clay grade (particle size < 1/256 mm).

Arsenide – a mineral formed by the combination of arsenic with another chemical

Banded iron formation (BIF) (also known as banded ironstone formations or BIFs) is a distinctive type of rock often found in primordial (Precambrian) sedimentary rocks. The structures consist of repeated thin layers of iron oxides, either magnetite (Fe_3O_4) or hematite (Fe_2O_3), alternating with bands of iron-poor shale and chert. Some of the oldest known rock formations, formed over 3,700 million years ago, include banded iron layers, and the banded layers are a common feature in sediments for much of the Earth's early history. The formations are abundant around the time of the Great oxygenation event, 2400 million years ago (mya), and become less common after 1800 mya. The reappearance of BIF conditions at 1,900 million years ago, and in association with the Snowball Earth 750 million years ago, is problematic to explain.

The total amount of oxygen locked up in the banded iron beds is estimated to be perhaps twenty times the volume of oxygen present in the modern atmosphere. Banded iron beds are an important commercial source of iron ore, such as the Pilbara region of Western Australia and the Animikie Group in Minnesota.

Barite – a white, yellow or colourless mineral, $BaSO_4$. The principal ore of barium used in paints, drilling muds and as a filler for paper and textiles. Syn: baryte, barytes.

Basic – describes an igneous rock with a relatively low silica content (between 45–52% SiO_2). Basic rocks are relatively rich in iron, magnesium and calcium and thus include most mafic rocks.

Beneficiation – the process of concentration of the valuable components of an ore or other mineral commodity. Commonly includes multiple stages such as crushing, grinding, washing, screening, flotation, roasting, etc.

Bituminous – type of coal that contains a naturally occurring tar–like hydrocarbon mineral of indefinite composition. It ranges in consistency from a thick liquid to a brittle solid.

Breccia – a rock that has been mechanically, hydraulically or pneumatically broken into angular fragments and re–cemented

Bulk Leach Extractable Gold - more commonly shortened to BLEG is a geochemical sampling/analysis tool used during exploration for gold. It was developed in the early 1980s to address concerns relating to the accurately measuring fine grained gold, and dealing with problems associated with sample heterogeneity.

Calcite – a very common rock forming mineral comprising calcium, carbon and oxygen ($CaCO_3$).

Cambrian – period of geological time from 545 to 495 million years ago. Marks the beginning of the *Paleozic Era*.

Carbonate – a mineral characterized by a fundamental structure of CO_3. Common examples include calcite, dolomite, magnesite and siderite.

Carbonatite – a magmatic rock consisting of calcium carbonate, usually associated with nepheline–syenite systems.

Carboniferous – period of geological time from 354 to 292 million years ago. So named because of the globally extensive occurrence of coal and limestone ($CaCO_3$) that was formed during this time. In the UK the Lower Carboniferous is dominated by marine sediments. Upper Carboniferous rocks are almost entirely fresh–water and lacustrine sediments. The bulk of coal deposits in the UK occur in Upper Carboniferous strata.

Cenozoic Era – period of geological time extending from 65 million years ago to the present.

Chert – sedimentary rock that is ultra–fine grained and composed almost entirely of silica. May be of organic or inorganic origin.

Conglomerate - clastic sedimentary rock that contains large (greater than two millimeters in diameter) rounded clasts. The space between the clasts is generally filled with smaller particles and/or a chemical cement that binds the rock together

Core strategy: sets out the long-term spatial vision for the local planning authority area, the spatial objectives and strategic policies to deliver that vision. The core strategy will have the status of a *development plan document*.

Cretaceous – period of geological time from 142 to 65.5 million years ago. Marks the end of the *Mesozoic Era*.

Devonian – period of geological time from 417 to 354 million years ago.

Diamagnetic – having a small negative magnetic susceptibility.

Dolomite – a common rock forming mineral comprising calcium, carbon, magnesium and oxygen ($CaMg(CO_3)_2$.

Electrolytic – the process of extracting metal based on passing an electric current through a solution containing dissolved metals, causing the metals to be deposited on the cathode.

Evaporite – a sedimentary rock composed mainly of minerals produced by evaporation, normally from an enclosed body of seawater or a salt lake. Minerals formed in this way include gypsum, rock salt, and various nitrates and borates.

Extrusive – describes igneous rocks that have been formed by solidification of magma on or above the Earth's surface.

Felsic – In modern usage, the term felsic rock, although sometimes used as a synonym, refers to a high-silica-content (greater than 63% SiO_2 by weight) volcanic rock, such as rhyolite. In order to be classified as felsic, it generally needs to contain >75% felsic minerals; namely quartz, orthoclase and plagioclase. Rocks with greater than 90% felsic minerals can also be called *leucocratic*, meaning 'light-coloured'.

Ferromagnesian – describes rock–forming silicate minerals which contain essential iron (Fe) and/or magnesium (Mg). The most common ferromagnesian minerals include olivine, pyroxene, amphibole and mica.

Footwall – the name given to the host rock of an ore deposit that is physically below the ore deposit.

Gabbro – a coarse–grained mafic igneous rock consisting of plagioclase feldspar and pyroxene. Olivine may also be a major constituent, while hornblende, biotite, quartz, magnetite and ilmenite are common minor phases.

Gangue – the undesirable or unwanted minerals in an ore deposit.

Graben - An elongated block of the earth's crust lying between two faults and displaced downward relative to the blocks on either side, as in a rift valley.

Hangingwall – the name given to the host rock of an ore deposit that is physically above the ore deposit.

Highwall mining – mining method used to maximize the output of an open–pit coal mine. Remotely operated cutting or boring machines are used to penetrate the coal seam at the foot of the highwall (the final wall in an open–pit) to extract coal.

Holocene – period of geological time from 11,500 years ago to the present day. The youngest epoch and series of the *Cenozoic Era*.

Horst - A raised elongated block of the earth's crust lying between two faults

Hydrometallurgy – the treatment of ores by wet processes, resulting in the dissolution of a particular component and its subsequent recovery by precipitation, adsorption or electrolysis.

Igneous – one of the three main groups of rocks on Earth. They have a crystalline texture and appear to have consolidated from a silicate melt (magma).

Inductively coupled plasma mass spectrometry (ICP-MS) -- a type of mass spectrometry that is highly sensitive and capable of the determination of a range of metals and several non-metals at concentrations below one part in 10^{12} (part per trillion). It is based on coupling together an inductively coupled plasma as a method of producing ions (ionization) with a mass spectrometer as a method of separating and detecting the ions. ICP-MS is also capable of monitoring isotopic speciation for the ions of choice.

Intrusion – a body of *igneous* rock emplaced into pre–existing rocks, either along some structural feature such as a fault or by deformation and rupturing of the invaded rocks. (intrusive, *adj*).

Iron Formation - Iron-rich sedimentary rocks, mostly of Precambrian age, containing at least 15% iron. The iron occurs as an oxide, silicate, carbonate, or sulphide, deposited as laminated, deep-water, shelf-sea, and lagoonal sediments, often associated with cherts (see also BANDED IRON FORMATION). Other iron formations contain iron-rich ooids, pellets, and intraclasts, representing deposits comparable to shallow marine limestones.

Jurassic – period of geological time from 205.1–142 million years ago.

Kaolin – group of pale coloured clay minerals. In the UK kaolin is an industrial mineral extracted from kaolinised granites in south–west England. It is used as a paper filler and coater, and for high grade ceramics and pottery (china clay). .

Lenticular – lens shaped body of rock.

Limestone – any sedimentary rock consisting mostly of carbonates (calcite and/or *dolomite*).

Lode – mining term for a mineralized *vein* (used irrespective of whether the *vein* can be economically extracted).

Mafic – composed of one or more *ferromagnesian* (iron–magnesium), dark–coloured minerals, such as olivine and pyroxene, in combination with quartz, feldspar or feldspathoid minerals.

Marl – a calcareous *mudstone*.

Mesozoic Era – period of geological time from 250 to 65.5 million years ago.Subdivided into the *Triassic*, *Jurassic* and *Cretaceous* periods.

Miocene – period of geological time from 23.8 to 5.32 million years ago.

Mississippi Valley type, (MVT) – a type of *stratabound* deposit of lead and/or zinc in carbonate rocks, as occurring in the Mississippi valley, USA.

Mudstone – fine grained sedimentary rocks that are similar to *shales* in their non–plasticity, cohesion and low water content but lack fissility.

Neogene – part of the *Cenozoic Era*, comprising the *Miocene* and *Pliocene* epochs from 23.8 to 1.81 million years ago.

Neoproterozoic Era - is the unit of geologic time from 1,000 to 542.0 ± 1.0 million years ago.[1] The terminal Era of the formal Proterozoic Eon (or the informal "Precambrian"), it is further subdivided into the Tonian, Cryogenian, and Ediacaran Periods. The most severe glaciation known in the geologic record occurred during the Cryogenian, when ice sheets reached the equator and formed a possible "Snowball Earth". The earliest fossils of multicellular life are found in the Ediacaran, including the earliest animals.

Oligocene – period of geological time from 28.5 to 23.8 million years ago.

Ophiolite – a distinctive assemblage of *mafic* and *ultramaficigneous* rocks which occur in sequence from a basal *ultramafic* complex upwards to a gabbroic complex, a mafic sheeted–dyke complex and an uppermost mafic volcanic complex. Commonly associated with deep–water sediments such as *shales* and *cherts*.Generally interpreted to be derived from oceanic crust and upper mantle. Ophiolites may contain important deposits of chromite, copper and the platinum–group elements (PGE).

Ordovician – period of geological time from 495 to 440 million years ago.

Paleogene – part of the *Cenozoic Era* comprising the *Paleocene*, *Eocene* and *Oligocene* epochs, from 65.5 to 23.8 million years ago.

Paleozoic Era – period of geological time from 545 to 245 million years ago.Subdivided into the *Cambrian*, *Ordovician*, *Silurian*, *Devonian*, *Carboniferous* and *PermianPeriods*.

Permian – period of geological time from 280 to 255 million years ago, marks the end of the Paleozoic Era. Globally important source of coal.

Pliocene – period of geological time from 5.3 to 1.81 million years ago.

Precambrian - an informal name for the span of time before the current *Phanerozoic* Eon, and is divided into several eons of the geologic time scale. It spans from the formation of Earth around 4600 Ma (million years ago) to the beginning of the Cambrian Period, about 542 Ma, when macroscopic hard-shelled animals first appeared in abundance. Accounts for 90% of all geological time and ends approximately 545 million years ago.

Proterozoic - a geological eon representing a period before the first abundant complex life on Earth. The Proterozoic Eon extended from 2500 Ma to 542.0 ± 1.0 Ma (million years ago), and is the most recent part of the old, informally named ‘Precambrian’ time.

The Proterozoic consists of 3 geologic eras, from oldest to youngest:

1. Paleoproterozoic
2. Mesoproterozoic
3. Neoproterozoic

The well-identified events were:

- The transition to an oxygenated atmosphere during the Mesoproterozoic.
- Several glaciations, including the hypothesized Snowball Earth during the Cryogenian period in the late Neoproterozoic.
- The Ediacaran Period (635 to 542 Ma) which is characterized by the evolution of abundant soft-bodied multicellular organisms

Pyroclastic – fragmental volcanic material that has been blown into the atmosphere by an explosive eruption.

Pyrometallurgical – the treatment of ores by processes involving heating.

Quarrying (mining) – the extraction of rock from an open pit site.

Quaternary – the uppermost part of the *Cenozoic Era* from 1.81 million years ago to present day.

Refractory – a general term for a material that resists chemical or physical change.

Refractory ore – ore from which it is difficult to extract the valuable constituents. This material may require special treatments, such as pressure leaching, to recover the valuable minerals.

Sedimentary exhalative (Sedex) – an ore deposit formed from hydrothermal fluids discharged onto the sea–floor and hosted by sedimentary rocks such as black shale, siltstone and chert. Deposits comprise sheets or lenses of fine–grained laminated sulphides. Sedex deposits are important sources of zinc, lead and silver.

Sedimentary rocks – rocks formed from material derived from other rocks by weathering. Deposited by water, wind or ice.

Silurian – period of geological time from 440 to 417 million years ago.

Snowball Earth - the hypothesis that the Earth's surface became nearly or entirely frozen at least once, some time earlier than 650 million years ago. The geological community generally accepts this hypothesis because it best explains sedimentary deposits generally regarded as of glacial origin at tropical paleolatitudes and other otherwise enigmatic features in the geological record. Opponents to the hypothesis contested the implications of the geological evidence for global glaciation, the geophysical feasibility of an ice- or slush-covered ocean, and the difficulty of escaping an all-frozen condition. There are a number of unanswered questions, including whether the Earth was a full snowball, or a "slushball" with a thin equatorial band of open (or seasonally open) water.

The geological time frames under consideration come before the sudden multiplication of life forms on earth known as the Cambrian explosion and the most recent Snowball episode may have triggered the evolution of multi-cellular life on earth. Another, much earlier and longer, Snowball episode, the Huronian glaciation (2.4 to 2.1 billion years) may have been triggered by the oxygen catastrophe.

Stope – mining term for the underground void left after ore extraction has taken place.

Stratabound – an ore deposit that is confined to a single stratigraphical bed or horizon but which does not constitute the entire bed.

Stratiform – an ore deposit that occurs as a specific stratigraphic (i.e. sedimentary) bed.

Sulphide – a mineral formed by the combination of sulphur with another chemical element. Most economic deposits of non–ferrous metals occur as sulphide minerals e.g. galena, PbS; sphalerite, ZnS; chalcopyrite, $CuFeS_2$.

Triassic – period of geological time from 250 to 205.1 million years ago. This period marks the beginning of the *Mesozoic Era*.

Tuff -- (from the Italian *tufo*) is a type of rock consisting of consolidated volcanic ash ejected from vents during a volcanic eruption.

Tuff Breccia and Volcanic Agglomerate - as distinguished from the true ashes, these tend to occur in angular fragments; and when they form a large part of the mass the rock is more properly a "volcanic breccia" than a tuff. The ashes vary in size from large blocks ten meters or more in diameter to the minutest impalpable dust. Any ash in which large angular blocks are very abundant is called anagglomerate.

Ultrabasic – describes an igneous rock containing less than 45% silica (SiO_2), including most ultramafic rocks.

Ultramafic – composed chiefly of *ferromagnesian* (Fe–Mg) minerals, such as olivine and pyroxene.

Vein – A tabular or sheet–like assemblage of minerals that has been intruded into a joint or fissure in rocks.

Volcanogenic massive sulphide, VMS – an ore deposit typically comprising a lens of massive sulphide minerals (>60% sulphide) formed by volcanic processes normally on the sea–floor. VMS deposits are important sources of copper, lead and zinc.

Wallrock – an economic geology term used to describe the rock adjacent to an accumulation of ore minerals (veins, layers, disseminations, etc).

Workings – the current or past underground or surface openings and tunnels of a mine. More specifically, the area where the ore has been extracted.

Xenolith – a discrete and recognizable fragment of country rock in an igneous intrusion.

Zoning – in economic geology, the spatial distribution of distinct mineral assemblages or chemical elements associated with an ore–forming process.