Characterization of The Blackwater Gold Deposit, Central B.C.

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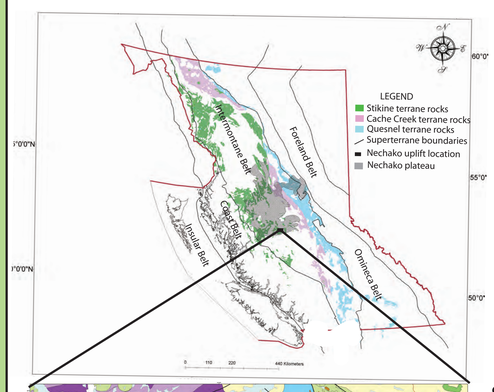
Introduction

The Blackwater Gold project is a low to intermediate sulfidation epithermal style gold deposit. It is characterized by mineralization hosted in felsic to intermediate, chaotic volcanic and volcaniclastic rocks, as well as local pervasive silica and sericite alteration. The hosting volcanic package is thought to range from Jurassic to Cretaceous in age (Lane and Shroeter, 1997)

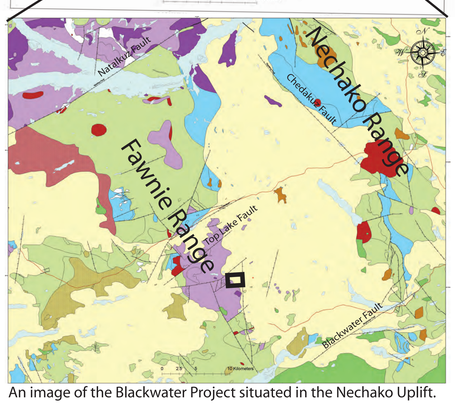
This research aims to characterize the controls to high grade gold and silver mineralizaton of the Blackwater Gold project. This will be achieved through the identification of hydrothermal alteration zonation and its association with ore zones in the Blackwater deposit. Preliminary petrographical work has aided in the identification of lithologies, sulfide mineral assemblages and alteration type and will guide future research. In addition to detailed core logging, petrography will be accompanied by SEM work, x-ray diffraction and SWIR reflectance spectroscopy to further characterize the nature of mineralization.

Geological Setting



Location

Blackwater is located 110 km southwest of Vanderhoof, BC in the Stikine subdivision of the Intermontane Belt. The deposit lies in the southern portion of Stikinia known as the Nechako Plateau. Major Structures in the area are the Fraser and Yalakom faults which border the plateau on the east and west. Physiographic terrane map adapted from Holland, 1974.



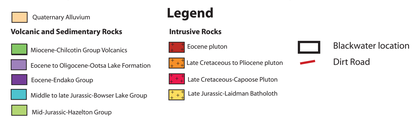
An image of the Blackwater Project situated in the Nechako Uplift.

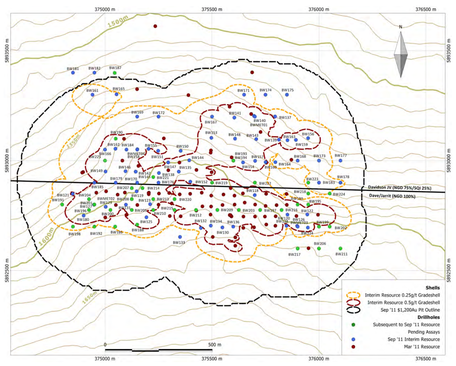
Structures of the Nechako Uplift

-The region is bound by the northeast trending Natalkuz and Blackwater faults to the north and south. The location of the northwest trending Chedakuz fault is assumed.

Geology

-Lithologies consist of volcanic flows, pyroclastic deposits and reworked volcanics, with compositions ranging from rhyolite to andesite. This simplified map of exposed bedrock geology (adapted from Massey et al., 2005), shows the deposit lying under extensive quaternary cover, but within the Jurassic Hazelton group volcanics, and bound by the Eocene Ootsa Lake Group.





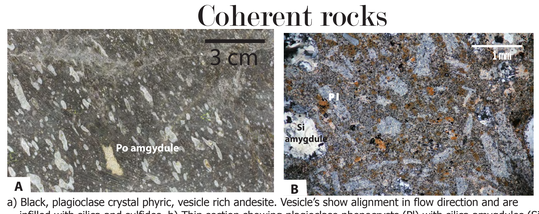
The Resource

The drill hole map to the left shows a primarily east west trending gold resource. As of September, 2011 the Blackwater mineral resource is estimated to contain 165 million tonnes averaging 1.01 g/t and containing 5.4 million ounces of gold in the Indicated category. The resource contains an additional 39 million tonnes averaging 0.94 g/t to total 1.2 million ounces of gold in the Inferred category. The mineral resource remains open to the north, east, west and at depth. (New Gold Inc. press release, September, 2011)

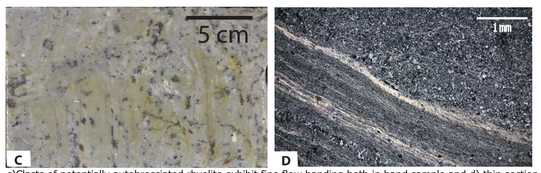
Observations From Petrographic Work

Lithologies

Coherent rocks

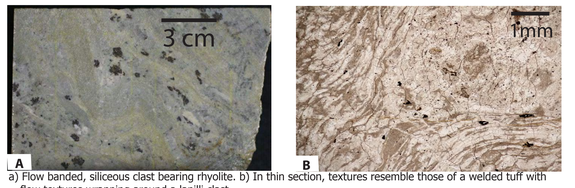


a) Black, plagioclase crystal phyric, vesicle rich andesite. Vesicle's show alignment in flow direction and are infilled with silica and sulfides. b) Thin section showing plagioclase phenocrysts (Pl) with silica amygdules (Si).

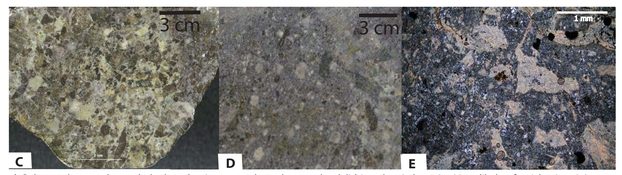


c)Clasts of potentially autobrecciated rhyolite exhibit fine flow banding both in hand sample and d) thin section.

Volcaniclastics

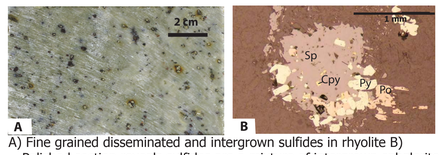


a) Flow banded, siliceous clast bearing rhyolite. b) In thin section, textures resemble those of a welded tuff with flow textures wrapping around a lapilli clast.

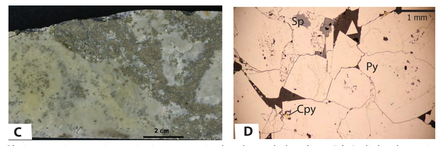


c) Sub-angular to subrounded, clast dominant, moderately sorted polylithic volcanic breccia. Most likely of epiclastic origin.
d) Sub-angular to subrounded, moderately sorted polylithic breccia. In thin section, (e) textures resemble a welded lapilli tuff.

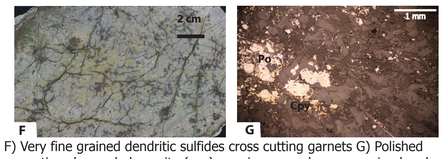
Mineralization



A) Fine grained disseminated and intergrown sulfides in rhyolite B) Polished section reveals sulfides are a mixture of intergrown sphalerite (sp), pyrite (py), pyrrhotite (po) and chalcopyrite (cpy).

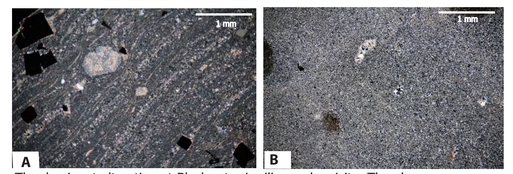


C) A massive pyrite vein in pervasively altered rhyolite. D) Polished section shows minor sphalerite (sp) and trace chalcoprite (cpy) in the pyrite (py) vein.

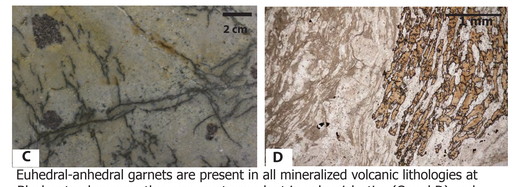


F) Very fine grained dendritic sulfides cross cutting garnets G) Polished section shows chalcopyrite (cpy) growing around course grained and dendritic pyrrhotite (po).

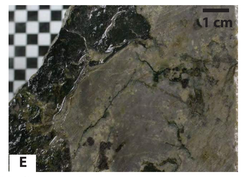
Alteration



The dominant alteration at Blackwater is silica and sericite. The above microphotographs are from the same drill hole, and spaced twenty meters apart. They potentially show the progression from less (a) to more pervasive (b) silica and sericite alteration within a lithology.



Euhedral-anhedral garnets are present in all mineralized volcanic lithologies at Blackwater, however, they are most prevalent in volcaniclastics (C and D) and rhyolites. Garnets are thought to be spessartine, a manganese rich garnet.



E) Chlorite coats fractures throughout the deposit.

Future Work

Preliminary petrographic work has enabled more accurate descriptions of rocks from the Blackwater project area and may help to establish any associations of lithologies and sulfide assemblages with mineralization. Gold has been identified at Blackwater as grains ranging from 5-50 um in diameter, which are associated with sulfides (Simpson, 2011). Further work includes the following:

-SEM work will help to determine if finer grain sizes of gold are present.

-X-ray diffraction and SWIR reflectance spectroscopy will allow for characterization of hydrothermal alteration, and determine its spatial relationship to high grade gold and silver zones

-Creation of a detailed cross section portraying relationships between high grade regions and lithology, structure, alteration and sulfide assemblages.

References

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