

**GEOLOGICAL & PHOTOGEOLOGICAL REPORT
GREENSTONE MOUNTAIN PROPERTY
&
BEATON LAKE PROPERTY
KAMLOOPS AREA, BRITISH COLUMBIA**

Latitude 50°35' – 50°42' N; Longitude 120°34' – 120°45' W

NTS Map Number 92I10

PREPARED FOR GARY ROBERT BROWN.

By

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GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

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TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
LOCATION, ACCESS, CHARACTER OF THE REGION	1
PROPERTY	2
PREVIOUS WORK	3
SCOPE OF THE WORK	4
REGIONAL GEOLOGY	5
GEOLOGY OF THE GREENSTONE MOUNTAIN-BEATON LAKE AREA	6
Alkali Intrusive Complex	7
Intrusive Breccia Complex	7
Roper Lake Intrusios	11
Unconsolidated Deposits	13
Structure	14
Alteration	15
DISCUSSION OF SIGNIFICANT RESULTS FROM PREVIOUS WORK	15
SUMMATION	17
RECOMMENDATIONS	18
REFERENCES	19
STATEMENT OF COSTS	22
STATEMENT OF QUALIFICATIONS	22

ILLUSTRATIONS

	<u>Following page</u>
FIGURE 1 LOCATION MAP	1
FIGURE 2 CLAIM MAP	2
FIGURE 3 REGIONAL AEROMAGNETIC & GEOLOGICAL MAP	5
FIGURE 4 LEGEND FOR GEOLOGICAL MAPS	Following
FIGURE 5a GEOLOGICAL MAP (Greenstone Mountain Sheet)	Following
FIGURE 5b GEOLOGICAL MAP (Beaton Lake Sheet)	Following

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INTRODUCTION

The Greenstone Mountain and Beaton Lake tenure groups (“the Property”) lie about seven kilometres west of the open-pit copper-gold mine formerly operated by Afton Operating Company. A great deal of mineral exploration has been carried out in the region by a succession of mining companies since the early part of the 1970’s. Nevertheless, a preliminary geological examination, confirmed by geological and photo-geological mapping covering the Greenstone Mountain area (Bergey, 2006), indicated that the geology was substantially different from that shown on the government maps and described mining company assessment reports. It was recognized that this was a consequence of piecemeal detailed work based on reconnaissance government maps, without a reasonable knowledge of the semi-regional geology. Accordingly, we decided to extend our geological program to cover a rather large area surrounding both properties (about 160 square kilometres). This was intended to expand the geological revision into the vicinity of the Iron Mask batholith in order to provide a more direct comparison with the geological environment in the vicinity of the major copper-gold deposits.

LOCATION, ACCESS, CHARACTER OF THE REGION

The two large tenure groups are located 15 to 25 kilometres west-southwest of the city of Kamloops, a major urban centre in interior British Columbia lying about 275 kilometres northeast of Vancouver. In this account, “the Property” refers to the combined groups, and “the map area” refers to the area covered by Figures 5a and 5b.

Access to the area from Kamloops follows the Trans Canada Highway as far as a turnoff near Cherry Creek approximately 12 kilometres west of the city, thence via the network of gravel and dirt roads. Casual vehicle access within most of the Greenstone Mountain Property has been banned since the forest fire of 1998, but this ban will not prevent rehabilitation of access during mineral exploration.

The Greenstone Mountain group occupies the highest portion of the dome-shaped upland that surrounds Greenstone Mountain. (The summit lies within Greenstone Mountain Provincial Park, located adjacent to the south-western corner of the claims.) Local relief is high; elevations vary from about 1200 metres in the northwest to 1800 metres on Greenstone Mountain. Almost the entire Greenstone Mountain claim group lies within the area that was burnt-off during the 1998 fire. Rock exposures are abundant in the

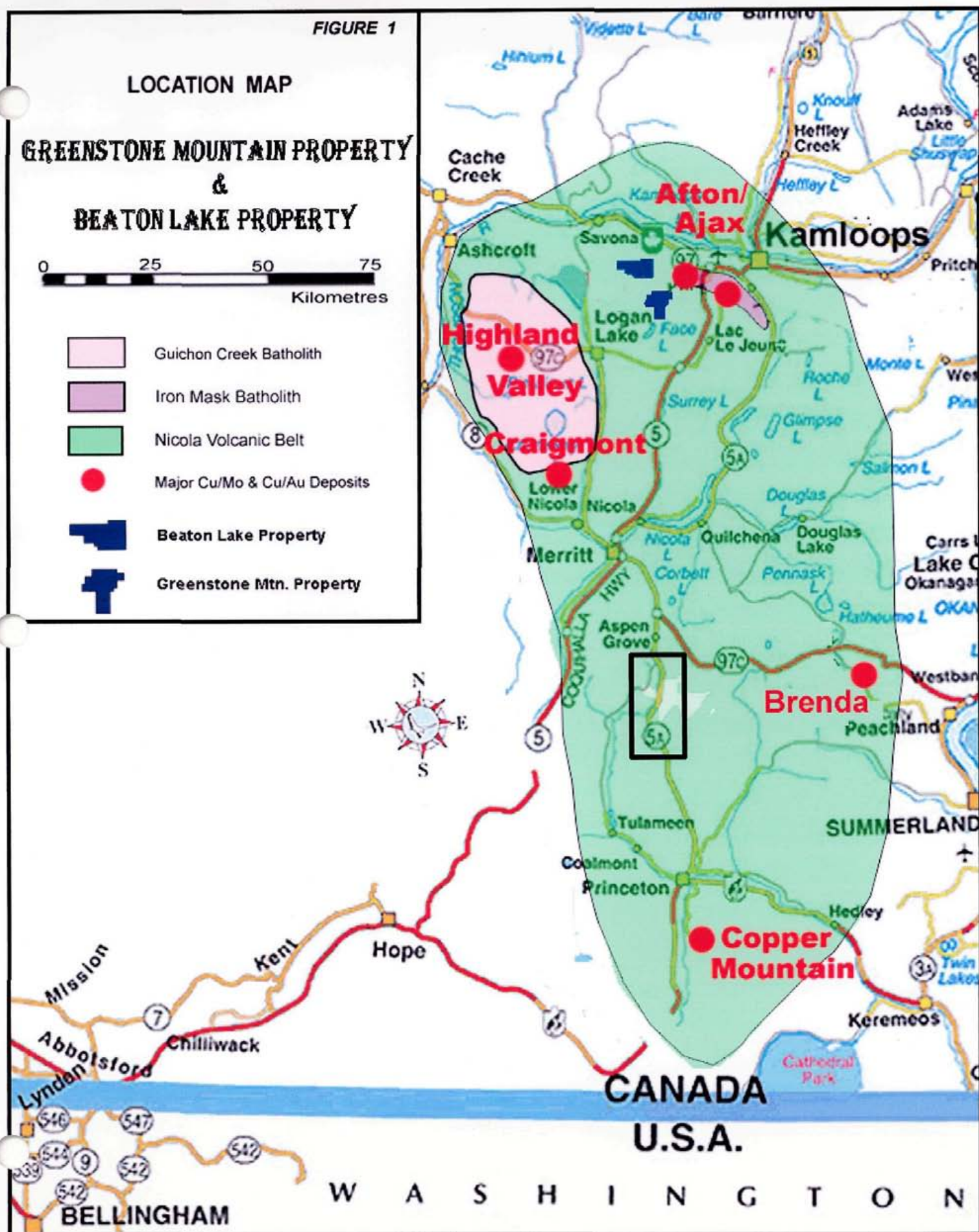
FIGURE 1

LOCATION MAP

GREENSTONE MOUNTAIN PROPERTY
&
BEATON LAKE PROPERTY



- Guichon Creek Batholith
- Iron Mask Batholith
- Nicola Volcanic Belt
- Major Cu/Mo & Cu/Au Deposits
- Beaton Lake Property
- Greenstone Mtn. Property



northern two-thirds of this property. Geological mapping and photo-geological interpretation are facilitated by the absence of dense forest cover. The Beaton Lake group extends from the foothills of Greenstone Mountain to the margin of the Cherry Creek valley. Elevations in the valley are below 700 metres. Local relief is relatively low except in the extreme western part of the property (west of Duffy Creek). Rock exposures are relatively scarce over most of the area.

The Greenstone Mountain massif lies within the Subalpine Spruce and, at higher elevations, the Engelmann Spruce & Subalpine Fir biogeoclimatic zones. The mountain acts as a “rain magnet” and receives an anomalously large amount of precipitation within a semi-arid region. Dense vegetation covers the southern and western slopes. The Beaton Lake group is located within the Interior Douglas-fir Zone.

Logging of beetle-killed forest is being carried out intermittently within the Beaton Lake group and along the fringes of the Greenstone Mountain group. Most of the area is covered by grazing leases.

PROPERTY

The Greenstone Mountain group is comprised of four contiguous Mineral Tenures cover approximately 1620 hectares. The Beaton Lake group is comprised of four contiguous Mineral tenures that cover approximately 1566 hectares. The Mineral Tenures and their areas in hectares are illustrated on a topographic base on Figure 2.

Titles to both groups are held by Gary Robert Brown of North Vancouver, British Columbia. The Properties are located on Map No. 92I067.

Assessment work was applied to all of the tenures in the following tabulation, which was taken from the Ministry of Energy, Mines and Petroleum Resources website. The exploration work described in the present report was carried out on parts of all of the tenures.

Privately held surface rights are confined to a small area in the northwestern corner of the Beaton Lake group, west of Beaton Lake (shown in yellow on Figure 1).

<u>Tenure Number</u>	<u>Claim Name</u>	<u>Area (hectares)</u>
<u>Greenstone Mountain</u>		
509167	gord1	512.446
509169	gord2	512.47
509174	nancy1	512.685
509178	nancy2	82.055
<u>Beaton Lake</u>		
530590		511.916
530593		491.375
530598		511.9
530.601		450.425

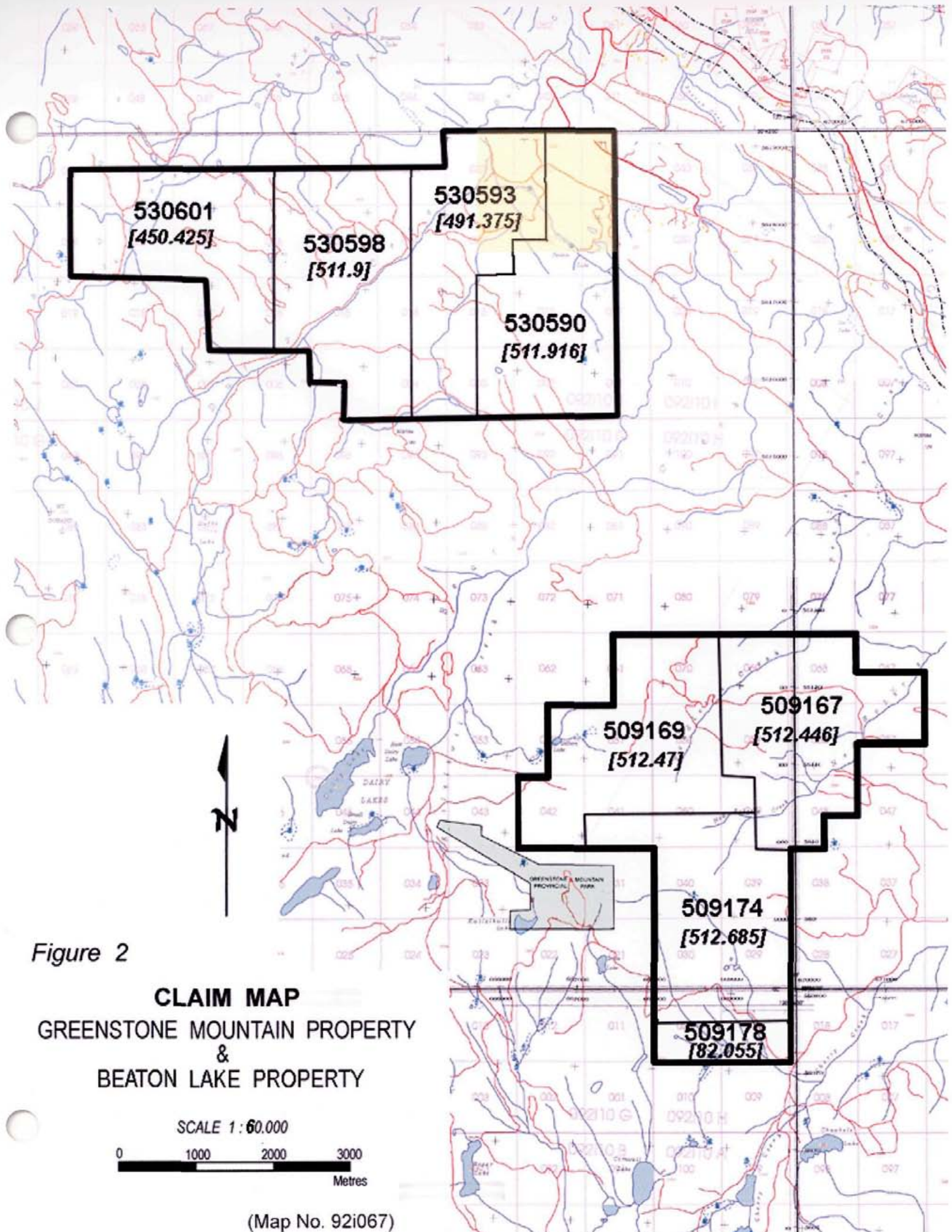


Figure 2

CLAIM MAP
GREENSTONE MOUNTAIN PROPERTY
&
BEATON LAKE PROPERTY

SCALE 1:60,000
 0 1000 2000 3000
 Metres

(Map No. 92i067)

PREVIOUS WORK

Government Geological & Geophysical Surveys

The published geological maps in the area are reconnaissance in scope. The most recent is a 1:250,000 sheet published by the Geological Survey of Canada (GSC) in 1989 (Monger & McMillan, 1989). This map is mainly a synthesis of older published and unpublished data, along with newer information apparently based on localized mapping and library research. The Monger/McMillan map was intended to update the scientific aspects of an earlier GSC reconnaissance geological map (Cockfield, 1947), a work that tends to portray the generalized geology of the region more helpfully.

The aeromagnetic map published by the GSC at a scale of One Inch to One Mile in 1973 (Cherry Creek Sheet – 92I/10) has proven to be useful in interpreting certain aspects of the geology.

Assessment reports are available from AME BC. The B.C. Department of Energy, Mines & Resources has made them a great deal more accessible by publishing all of the reports on the Internet. These and the MINFILE reports from the same Department, are indispensable exploration tools.

Exploration History

Prospecting and other mineral exploration has been carried out intermittently in the region for more than a century. The following chronological summary is confined to the results of work published during the past 40 years.

Greenstone Mountain Area

1969: E.O. Chisholm carried out a geochemical survey of an area lying northeast of Greenstone Mountain (Sadlier-Brown and Chisholm, 1969).

1972: Moneta Porcupine carried out geological and geochemical surveys on three claim groups (Gutrath, 1973; Phelps, 1973).

1972-1973: A “photo-geological” study (actually a fracture-density analysis) was undertaken in correlation with an airborne magnetometer survey over the Greenstone Mountain area by Delta Int. (Chapman, 1972; Micuch, 1973).

1978-79: Barrier Reef Resources carried out geochemical surveys on the north slope of Greenstone Mountain (Kerr, 1979; Dawson, 1979).

1980: Barrier Reef Resources carried out an induced polarization and resistivity survey on the north slope of Greenstone Mountain (Hallof, 1980).

1991-95: C.R.C. Explorations Ltd. carried out four geochemical surveys, along with some geological mapping, on the north slope of Greenstone Mountain (Payne, 1991a; Payne, 1991b; Payne, 1994; Payne, 1995).

2005-2006: W.R. Bergey carried out geological & photo-geological mapping of the Greenstone Mountain property on behalf of Gary Robert Brown (Bergey, 2006).

Serious exploration work has been carried out in two areas close to the western and southern boundaries of the Property in an ongoing basis during the past 20 years (e.g.

Pauwels, 2003). These prospects have been consolidated as the Rabbit North (copper-gold) and Rabbit South (molybdenum) projects of Global Hunter.

Beaton Lake Area

1969: Tupco Mines Ltd. -- geological & geochemical surveys --west of Beaton Lake (Sargent, 1969).

1972: Consolidated Cleveland Resources -- geological, geochemical & EM surveys -- north of Beaton Lake (Timmins, 1972).

1973: Abco Petroleums Ltd. -- geophysical & geochemical surveys --west of Beaton Lake (Prendergast, 1973).

1981: Teck Corp. -- geological & geochemical surveys south of Beaton Lake (Folk & Holbeck, 1981).

_____: Placer Development -- geochemical survey -- mineralized zone NW from Beaton property (Boyce, 1981).

1982: Newmont Exploration -- exploration of Au-As discovery in silicified zone -- NW of Beaton property (no reports filed).

1986- 1999: Murray Morrison on behalf of himself and a series of junior exploration companies -- geological & geophysical surveys, percussion drilling -- zone extending from western part of Beaton property to the NW for several kilometres (Morrison 1986a, 1986b, 1986c, 1987, 1989a, 1989b, 1990, 1991a, 1991b, 1991c, 1995, 1996,1997,1998, 1999).

1991-1993: CRC Explorations -- part of NW mineralized belt including NW portion of Beaton property (Payne, 1990,1991,1993).

1999-2006: Green Valley Mine, Lakewood Mining & predecessors -- large property adjoining Beaton property on the east -- ongoing exploration, including induced polarization & mobile metal ion surveys, and diamond drilling (Reynolds, 1998, 2002; Boitard 1999a,1999b, 2000; Mark 2004, 2006.)

SCOPE OF THE WORK

A preliminary geological & photo-geological survey of the Greenstone Property by the writer indicated that previous detailed geological work in the area tended to be flawed since it was based on inadequate regional geological mapping. The "Bible", as one report put it without apparent irony, is a very small scale map based on work that was carried out more than sixty years ago (Cockfield, 1947). A more recent update (Monger & McMillan, 1989) added little of value to exploration geologists and introduced some additional inaccuracies. Consequently, I decided to extend the mapping (Berger, 2006) well beyond the borders of the Greenstone Mountain group in order to provide a more up-to-date geological perspective. The present report describes an extension of the earlier mapping. Although the Greenstone and Beaton groups are about three kilometres apart, my earlier work suggested that they share the same geological environment and both groups were included within the new map area.

Additional geological mapping was carried out on the Greenstone Mountain group to address specific problems of interpretation. A complete reinterpretation of the air photos was carried out subsequently. In addition, I made a detailed review of the geochemical

and induced polarization surveys from previous work. This was followed up by an examination of the most strongly anomalous areas.

A preliminary photo-geological interpretation on 1:75,000 air photos was carried out over the area surrounding Beaton Lake group. Following its acquisition, air photos at a scale of 1:20,000 were acquired to permit a detailed interpretation. The interpretation was a cyclic affair, interspersed with field work and re-interpretations. Copies of all of the appropriate assessment reports were acquired from the Internet. Maps that were deemed to be particularly relevant to the interpretation were reduced in scale and fitted to the geological base map as overlays to assist in the interpretation.

The geological field work was carried out intermittently from June 22, 2006. Several hundred outcrops were examined and 157 rock specimens were collected. All of the specimens were examined under a binocular microscope.

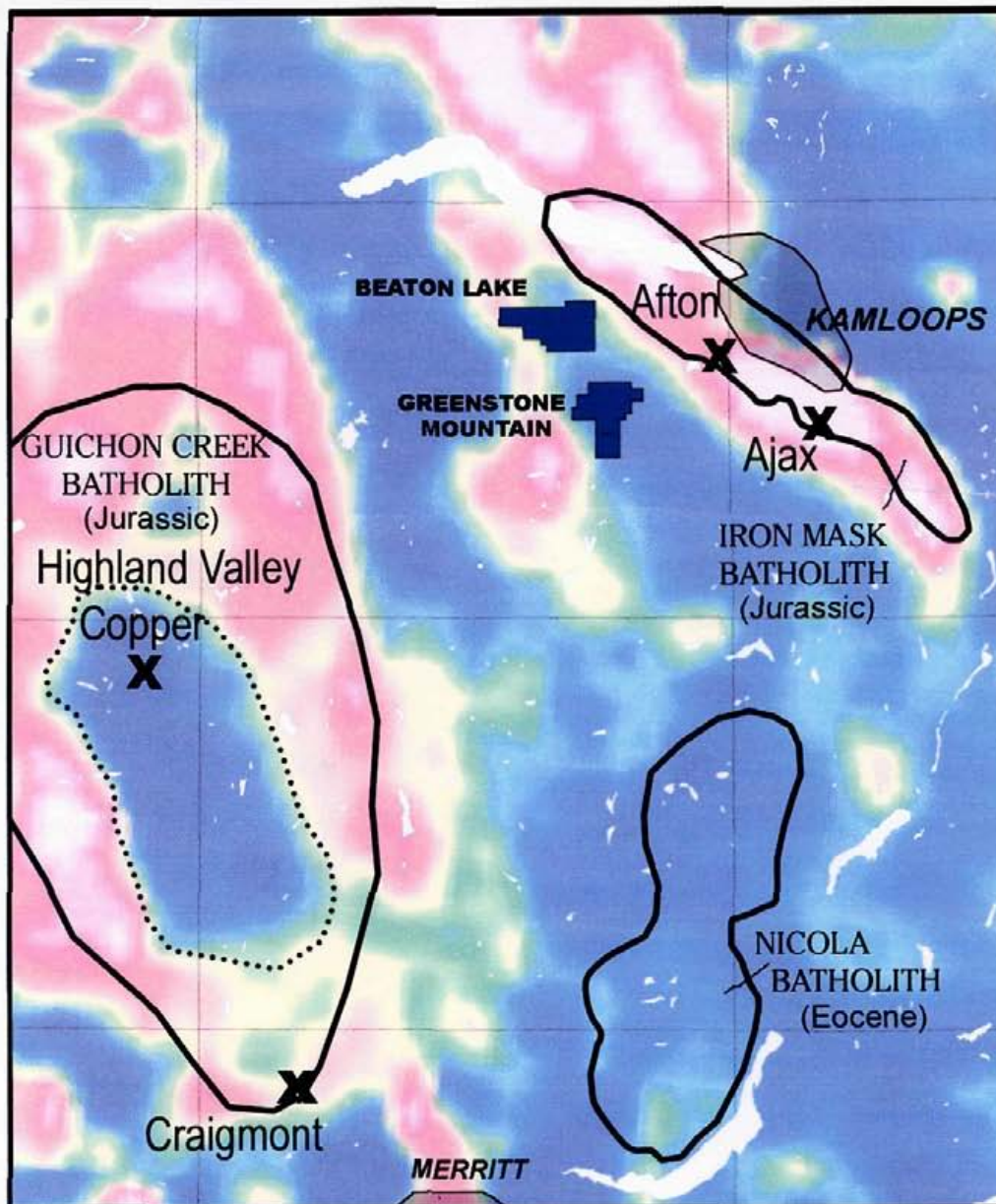
Two adjoining map sheets covering a total area of 160 square kilometres were produced at a scale of 1:20,000. These were reduced to page-size maps at 1:40,000 for insertion into the present report.

REGIONAL GEOLOGY

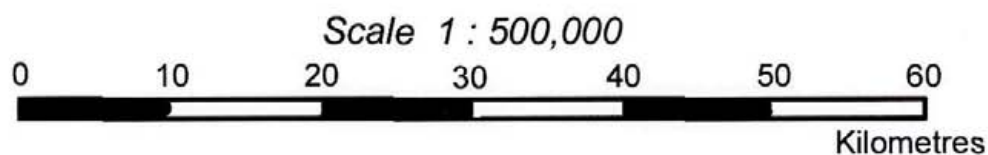
The map area is located within Quesnellia, an accreted terrane in the Intermontane Belt of British Columbia. In the southern part of Quesnellia volcanic rocks assigned to the Upper Triassic Nicola Group crop out within a north-trending belt, up to 50 kilometres in width, that extends for more than 200 kilometres from south of Princeton to north of Kamloops. The Location Map (Figure 1) shows a generalized outline of the belt as well as the location of the four major copper and copper-gold camps in the region (Afton/Ajax, Highland Valley, Craigmont and Copper Mountain).

The rocks of the Nicola Group were invaded by a large number of alkaline plutons that are believed to be co-magmatic in part with the volcanic assemblage that they intrude. The largest of these, the Iron Mask batholith, is the host for the Afton and Ajax copper-gold deposits. Much larger bodies of calc-alkaline intrusive rocks of about the same age are found along the margins of the Nicola Volcanic Belt. These include the Guichon batholith that hosts the immense copper deposits of the Highland Valley and may be the source for the copper at the Craigmont mine, located along margin of the same intrusion. The locations of the major intrusive bodies and the copper and copper-gold deposits in the northern part of the Nicola volcanic belt are shown on Figure 3 in relation to the generalized aeromagnetic data taken from the MapPlace website.

The Nicola volcanic assemblage was divided into three north-trending facies by Preto (1979) as a result his study of this unit within the area between Merritt and Princeton. His partitioning was based on field observations that suggested that major changes in the character of the volcanic assemblage took place at two regional north-south fault zones. Monger (1989) accepted the tripartite division but, apparently on the basis of erroneous data, changed the definitions and boundaries of the facies. He extended his revised sub-



REGIONAL AEROMAGNETIC & GEOLOGICAL MAP
 OF THE KAMLOOPS - MERRITT REGION, BRITISH COLUMBIA
 SHOWING BATHOLITHS AND MAJOR COPPER & COPPER-GOLD MINES
 AND LOCATION OF GREENSTONE MOUNTAIN PROPERTY



Note: Higher magnetic values are shown in red

divisions as far north as the Greenstone Mountain region, including the Property, which he indicated to be underlain by the Eastern volcanic facies of the Nicola Group intruded by several small intrusive stocks (Monger and McMillan, 1989).

Several years ago I carried out field work and photo geology within a region south of the town of Merritt (outline near Aspen Grove on Figure 1) that included a large part of Preto (1979) geological map (Bergey, 2004a,b). This indicated that the rock assemblage in most of the zone indicated to be underlain by the Central Volcanic facies (i.e., the area between the major north-south faults) was comprised of an assortment of alkaline intrusive rocks and intrusive breccia that I designated as an “intrusive breccia complex.” The most distinctive variety of intrusive breccia is composed of a heterolithic assortment of sub-rounded clasts of alkaline intrusive rock in a very sparse matrix. More commonly, the fragments are dominantly monzodiorite, monzonite and syenite, and this breccia type grades into monzonite/syenite containing sparse angular fragments of the same material. In no case did I identify any breccia that included unequivocal evidence of volcanic fragments or matrix.

A very distinctive rock type that I named “brick-red basalt” (BRB) at the discovery locality is of considerable interest. This unit underlies an area of about five square kilometers along the east side of the outcrop area of the breccia complex, and it is found ubiquitously within intrusive breccia along a north-south extent of at least 12 kilometres. BRB is most commonly composed of abundant phenocrysts of augite and smaller amounts of lath-shaped plagioclase in fine-grained, brick-red to purplish-red groundmass. The groundmass almost always is holocrystalline. Analcite is common in some of the specimens. BRB may form either the matrix or the clasts in the breccia. I believe that this rock unit is a sub-volcanic intrusion related to the alkaline intrusive suite.

Preto (1979) collected no fewer than 12 samples of material for petrographic and chemical analyses that I have interpreted to be the equivalent of BRB, all of them apparently from the intrusive breccia complex. They are categorized as “trachybasalt, potassic alkali series.” [Monger (1989) may have used these analyses in his revised sub-division of the Nicola volcanic facies.]

[The foregoing exposition may appear to be overblown in the context of the present report. However, I believe that it is of some importance to the interpretation of the complex geology of the Greenstone Mountain-Beaton Lake area.]

Reconnaissance geological mapping between the Highway 5A - Coquihala Highway junction and Highway 97C east of Logan Lake did not reveal any large masses of intrusive breccia, although there appeared to be a much higher proportion of intrusive rocks, mainly diorite, to Nicola volcanic rocks than was indicated on the government geological maps. North of Highway 97C, intrusive breccia and associated alkaline intrusive rocks appear to dominate the central portion of the Nicola volcanic belt at least as far as Kamloops Lake, including the large area surrounding Chuwels and Greenstone Mountains. The topic is discussed in more detail in the next section of this report.

GEOLOGY OF THE GREENSTONE MOUNTAIN - BEATON LAKE AREA

General Statement

All of the geological maps that I have examined that cover this part of the region indicate that it is underlain by mafic to intermediate volcanic rocks of the Nicola Group of Late Triassic age, intruded by a number of small, mainly felsic, plutons and local patches of Tertiary volcanic rocks. [The authors of many assessment reports seem to be content to classify most of the outcrop and core samples as "Nicola andesite."] However, in my recent field mapping I was unable to confirm the presence of Nicola volcanic rocks within the area covered by this report. In addition, felsic intrusive rocks are much more extensive than the few bodies shown on the earlier maps. By far the most abundant rocks in the area are alkaline intrusives and intrusive breccias that appear to be the equivalent of the nearby Iron Mask batholith. However, a connection to that body has not been verified.

Nicola Group

Exposures of volcanic rocks that are interpreted to belong to the Nicola Group were noted only in the area south of Duffy Lake, close to the southwest corner of Figure 5b, about a kilometer south of the Beaton Lake group. Nicola volcanic rocks also crop out about three kilometers east of the Greenstone Mountain group. [Nicola volcanic rocks usually can be interpreted on the air photos by an apparent stratification, almost always trending within a few degrees of north-south, in contrast to the massive appearance of the rocks of the intrusive complex.]

Alkalic Intrusive Complex

In my earlier report on Greenstone Mountain (Bergey, 2006) I discussed the associated alkaline intrusive and intrusive breccia assemblage as "Intrusive Breccia Complex." The present report merges this complex with the intrusive rocks of the adjacent Durand Lake stock and with the alkalic rocks in the Beaton Lake area to the north to form an Alkalic Intrusive Complex.

Diorite & Monzonite of Durand Lake

The Durand Lake zoned alkaline stock underlies a portion of the valley southwest of Greenstone Mountain. The suggestion that these rocks are the oldest in the area is open to some dispute. Rb/Sr age determinations quoted by Pauwels (2003) gave identical ages of 12.4 \pm 7.4 M.Y. (Early Cretaceous) for this stock and the calc-alkaline Roper Lake stock to the east. Pauwels disputes this consanguinity on the basis of petrographic similarities and mineral associations of the rocks of the Durand Lake stock to those of alkaline intrusive rocks that are believed to be related to Nicola volcanism. He believes that intrusion of the Roper Lake stock caused a "resetting of the clock" on the age determinations on the Durand Lake material. I agree strongly with Pauwels. My opinion is influenced in part by the presence of clasts of diorite and monzonite in intrusive breccia south of Greenstone Mountain that are very similar to samples that I examined of the Durand Lake diorite and monzonite. The intrusive breccia almost certainly is Early Jurassic in age. My field work in the area was very limited. However, it indicated that granodiorite of the Roper Lake stock intruded Durand Lake diorite. The outline of the

Durand Lake stock shown on Figure 5a was derived mainly from earlier sources (Bruaset, 1980; Pauwels, 2003).

The Durand Lake stock is indicated to be about 3 kilometres long and 1.3 kilometres wide (Pauwels, 2003). (My recent mapping suggests that diorite related to this unit is much more widespread. However, my field work was limited and these rocks are difficult to distinguish from the adjacent units on the basis of the air photos in the densely forested terrain.) The stock is composed mainly of equigranular diorite that encloses a small body of monzonite. The two rock types are very similar in appearance except for the additional pink feldspar in the monzonite. The rocks in the stock contain a considerable amount of magnetite which is reflected in a strong aeromagnetic anomaly. According to Pauwels (2003), the diorite contains magnetite both in narrow stringers and in disseminated crystals.

The Durand Lake stock has been explored by a considerable number of percussion and diamond drill holes. Several gold and copper-gold intersections were reported. A molybdenum soil anomaly and indications of molybdenite mineralization in drill holes were noted in the easternmost portion of the diorite outcrop area (Bond and Tsang, 1990b). The gold and molybdenum mineralization may, like the age determination, be related to nearby intrusions of porphyritic granitic rock that presumably are related to the Roper Lake stock (Stevenson, 1960).

Greenstone Mountain Assemblage

The intrusive breccias and associated dioritic volcanic rocks that occupy most of the Greenstone Mountain massif form a distinct unit that I have identified on air photos and in reconnaissance fieldwork to beyond Chuwels Mountain, 18 kilometres southeast of Greenstone Mountain. A description of this breccia complex from my earlier report (Bergey, 2006) may serve as an introduction to the subject.

“Most of the rocks that I examined within and adjacent to the Greenstone Mountain Property were composed of intrusive breccia, although in many cases the determination of the both the clasts and the matrix in the field was difficult because of extensive alteration and re-brecciation. This contrasted strongly with my experience in the Aspen Grove Area where the compositions of the components of the breccia were fairly obvious. A second dissimilarity between the two areas is in the composition of the material in the breccias. At Aspen Grove the breccias were composed almost entirely of equigranular rock similar to that in the alkaline plutons that commonly are associated with the Nicola volcanic rocks. In the map area covered by the present report the clasts are most commonly composed of porphyritic rocks composed of varying amounts of augite, hornblende and plagioclase phenocrysts in a fine-grained holocrystalline groundmass.

“The fragments in the breccia tend to stand out prominently on the weathered outcrops. The ease of identification of coarse brecciation was enhanced by the recent conflagration that burned off much of the moss and lichen. The fine-textured varieties of breccia were

much more difficult to classify since these rocks greatly resembled volcanic rocks (or even clastic sedimentary rocks) in the field.

“Circular features are very evident on the air photos in the Aspen Grove area. In some cases large bodies of intrusive breccia appear to be made up of a number of coalescing breccia pipes. Circular features also are common at Greenstone Mountain, but the scale is significantly different. At Aspen Grove they tend to be one to two kilometers in diameter. In the area covered by the present report they seldom exceed 150 metres. Unfortunately, I do not have any field data from the localities where circular features are most common.

“Brick-red basalt is a diagnostic constituent of the BRX at Aspen Grove. A rock resembling BRB in all aspects that are identifiable macroscopically also constitutes most of a small outcrop area near the south-eastern corner of the Greenstone Mountain Property, as well as a single fragment of BRB in breccia was found west of Greenstone Mountain. Analcite was identified in the rock at the former locality.

“I am unable to subdivide the BCX into mappable units within the Greenstone Mountain Property at this stage. (This was also true to some extent in the Aspen Grove Area except for the delineation of the putative breccia pipes and of bodies of unfragmented monzonite and syenite.) However, I have outlined one unit adjacent to the Property that combines distinctive topographic expression with consistent lithology.

“The area surrounding the summit of Greenstone Mountain, the second highest point in the Kamloops region, can be outlined as a distinct unit on the air photos. The feature is elliptical in plan, the shape modified by a regional fault on the south and a granitic intrusion to the east. It is underlain by a distinctive porphyritic rock containing an abundance of augite phenocrysts and some plagioclase laths in a fine-grained groundmass. It bears some resemblance to the brick-red basalt (minus the brick-red colour) alluded to earlier in this account as a characteristic component of the intrusive breccia complex in the Aspen Grove Area. The rock type that underlies Greenstone Mountain appears to be a fairly common constituent in the intrusive breccias in the Greenstone Mountain area.”

This last statement is incorrect. The rocks in this assemblage, while mainly porphyritic to some extent, seldom contain varieties in which pyroxene is the principal mafic mineral. The dominance of hornblende over pyroxene is one of the characteristics that distinguishes it from the Beaton Lake Assemblage. Another important characteristic is the ubiquity of propylitic alteration, particularly in the porphyritic microdiorite that forms the host rock for the multitude of breccia pipes. The rock typically has a “greenstone” appearance that no doubt contributed to the common misidentification of this material as lava, volcanic breccia, crystal tuff and lahar of the Nicola group.

I mapped an area containing a number of small circular features in some detail. This indicated that the circular features are indeed composed of intrusive breccia and the adjacent material is mainly highly altered hornblende-phyric microdiorite. The recessive nature of the latter may be due to an abundance of joints. My reference to small breccia pipes is true for only a small part of the map area. Much larger pipes are the rule but the



circular outlines frequently are distorted by the abundant faults and by later intrusive rocks. In a large mass of intrusive breccia on the north slope of Chuwhels Mountain (partly exposed in the southeast corner of Figure 5a) the coalescing circular features average about two kilometers in diameter. Within most of the map area they appear to be less than one-half that size.

[The illustration shows a number of small breccia pipes with intervening microdiorite in the lower part of the photograph. North of the road, which follows a pair of faults, the coalescent breccia pipes are much larger and are disrupted by faulting.]

structures, a poorly mapped intrusive breccia appears to form an incomplete ring peripheral to the northeastern margin of the Durand Lake stock. This breccia contains clasts of Durand Lake diorite and monzonite locally.

In addition to the breccia that appears to be related mainly to coalescent pipe

The fragments in the breccias are mainly diorite, including an abundance of porphyritic microdiorite. Monzonite and syenite are present but they are comparatively rare. "Brick-red basalt" is present as uncommon, generally small, clasts in the breccia throughout the area. However, breccias in the extreme southern part of the claim group are composed mainly of rock-types associated with the Beaton Lake Assemblage. The rocks in this area are discussed in the following section of this report.

Beaton Lake Assemblage

A distinctive rock assemblage within the Alkalic Intrusive Complex underlies most of the Beaton Lake map area (Figure 5b) and also is found in the extreme southern portion of the Greenstone Mountain group. Like the Green Mountain Assemblage, it is composed mainly of intrusive breccia, but the composition of the rocks is markedly different. The dominant rock types are syenite, monzonite and monzodiorite, characteristic constituents of the Cherry Creek unit of the Iron Mask batholith (Logan and Mihalynuk, 2006), along with abundant "brick-red basalt" (henceforth BRB) which may form either clasts or matrix in the breccia. I did not uncover any bodies of unbrecciated intrusive rock similar

to the bodies of monzonite and syenite found commonly in the Aspen Grove area in association with intrusive breccia (Preto, 1979; Bergey, 2004a,b). However, there is evidence of a fairly large area of largely unbrecciated BRB west of Duffy Lake in the southwestern part of Map 5a.

The contact of the Beaton Lake and Greenstone Mountain Assemblages follows the north side of a pronounced break-in-slope that marks the base of the Greenstone mountain massif. The contact is largely obscured by extensive ice-contact deposits and younger granitic intrusive rocks.

There is no obvious evidence of systematic compositional change in the breccia assemblage within its 15-kilometre exposure within the map area. The breccia is composed of varying amounts of "Cherry Creek-type" intrusive rock and BRB. The Cherry Creek fragments are mainly relatively fine textured, and they may be equigranular or porphyritic. A distinctive porphyritic rock is composed of crowded feldspar laths, often displaying trachytic texture in a fine-grained groundmass. The BRB always is porphyritic, most commonly pyroxene dominant with subordinate plagioclase. The groundmass typically is very fine-textured holocrystalline. Colour varies from pale red-orange to dark red to purple. A distinctive green pyroxene is characteristic. A number of analyses of rock that I believe are nearly identical to BRB are cited in Preto (1979). They are classified as trachybasalt, potassic alkali series.

The breccia is mainly heterolithic. The clasts may be well rounded or angular, and their density varies from clast supported to sparse fragments in a matrix of intrusive rock. The clasts vary from sand to boulder size, but most commonly they are in the range of one to five centimeters in diameter.

A common textural variety extends from near Ned Roberts Lake in the southeast to Brussels Lake in the northwest. It is composed of a heterolithic mixture of round clasts in a sparse matrix. Various geologists have mapped this rock as a conglomerate and assigned it to the Nicola Group (e.g., Morrison, 1991c). My original field work described the rock as "possibly conglomerate." Its close association with a wide array of intrusive rocks and breccias, frequently in the same outcrop area, suggests otherwise. The common reference to "volcanic cobbles" may refer to BRB and altered microdiorite.

Rocks that clearly are affiliated with the Beaton Lake Assemblage were mapped in the extreme southern part of the Greenstone Mountain Property. They appear to be contained in several coalescing breccia pipes. BRB is particularly prominent in one of the pipes, where it commonly forms the matrix of the breccia. This assemblage may be much more widespread than indicated on Figure 5a, but rock exposures are scarce in the area.

Roper Lake Intrusions

Intrusions of granitic rock are widely distributed within a north-northwest belt about six kilometers in width that extends from Greenstone Mountain at least as north far as Kamloops Lake. I have correlated these rocks with the Roper Lake stock, which lies along and south of the south margin of Map 5a, on the basis of three specimens of the

named unit. The Early Cretaceous date of 124 ± 7.4 Ma, quoted in Pauwels (2003), does not conflict with the relationship between this unit and the interpreted faulting.

These intrusions are particularly well exposed in the “burn” north of Greenstone Mountain. The commonest type of Roper Lake intrusive on the Greenstone Mountain property is a leucocratic granitic rock composed mainly of coarse-grained pale gray feldspar along with variable quantities of fairly large quartz “eyes” and a minor amount of biotite. The composition of the rock appears to be mainly quartz monzonite to quartz diorite. I will use the term “leucogranitic rocks” in the following discussion of this facies. In the same area a relatively fine-textured pink rock, that I have field classified as granodiorite, is found in close association with the leucogranitic rocks. In contrast to the latter, which form extremely bold exposures in the uplands, the granodiorite is recessive. A number of the outcrop areas outlined on Figure 5a are based entirely on air-photo interpretation.

The outcrop areas of leucogranitic rocks on the rocky uplands tend to be crudely circular, but hand specimens do not indicate brecciation. However, a close examination of the air photos strongly suggested that gross brecciation is common, with apparently rotated blocks up to 20 metres in diameter.

North of the break-in-slope, approximately along the boundary between Figure 5a and Figure 5b, the topographic expression of the leucogranitic rocks changes drastically. The unit is marked by gently rounded hills rather than by bold exposures. More strikingly, they are indicated on the air photos as circular features, frequently in coalescent groups, much like the ones that reflect clusters of breccia pipes in the Alkalic Intrusive Complex.

Rock outcrops are small and very difficult to uncover north of the break-in-slope. A typical exposure consists of a small pile of rusty blocks with one or two actual rock outcrops less than a metre across. The difficulty in locating sizeable outcrops probably accounts for the almost entire absence of granitic intrusive rocks on government geological maps within an area where at least 40% is underlain by such rocks. [Monger & McMillan (1969) outlined an area of “Triassic/Jurassic granodiorite” that surrounds the only two substantial outcrops of leucogranitic rock that I encountered in this part of the map area.] Almost all of the leucogranitic rocks that I examined in the northern part of the map area, are highly fractured, deeply stained with limonite and/or hematite, contain quartz veinlets and are silicified to some degree. As a result, the original texture is extremely difficult to determine. A number of maps accompanying assessment reports in the Beaton Lake area show zones that undoubtedly refer to these rocks. They are labeled variously as rhyolite, dacite, latite porphyry or quartz porphyry, usually without comment on provenance. However, I believe that they are coarsely crystalline feldspathic rocks similar to the leucogranitic rocks on Greenstone Mountain.

I have differentiated by colour a number of outcrop areas of leucocratic rocks in the north-central part of Figure 5b in order to emphasize their apparent dissimilarity in mode of intrusion, although I could not discern any differences in texture or composition. There is no evidence of circular features on the air photos and the rocks are highly

recessive, in contrast to the bold outcrops in the uplands and the prominent domes in the intermediate area. This recessive facies is confined mainly to the basin between the Greenstone Mountain foothills and the prominent rock ridge north of Cherry Creek.

[I am indebted to Sargent (1969) for displaying large outcrop areas of "rhyolite" in an area that I would have ignored otherwise, due to problems of access in ranch land.] Much of this area is covered by late-glacial deposits. Air-photo interpretation suggests that the leucogranitic intrusions are much more wide spread than shown on Figure 5b, concealed under a thin layer of sand and gravel. There is a good possibility that these recessive rocks may have caused the formation of the basin.

Tertiary Volcanic Rocks

Flat-lying felsic volcanic rocks are reported in a number of uncited references to be widely distributed in the area east of the map area. The rocks usually have been assigned to the Kamloops Group of Eocene age but I am by no means certain that this is the case. The unit crops out within the map area only in the northeast corner of Figure 5a.

I examined only a single, very small outcrop close to the base of this unit east of Ned Roberts Lake. This was composed of rather soft, weakly altered felsic tuff.

Unconsolidated Deposits

Basal till is not shown on the accompanying maps. Till cover is relatively thin on the upland areas, but it is considerably thickened along the zone of deformation. The direction of the most recent glacial movement is considerably different in the uplands (ca. 150°) from that along the deformation zone and its environs (ca. 130°) as indicated by Fulton (1974).



Drumlin close to north margin of the deformation zone. Coalescent breccia pipes in background. [Facing south]

The coincidence of glaciation and shearing resulted in a drumlin swarm oriented parallel to the faults. [My first impression from the air photos was of a steeply dipping stratified sequence with the strata offset at north-south faults.] The material dredged from the shear zones was highly compressed and piled up to considerable thickness on the drumlins, as evidenced by drilling data within the deformation zone in the eastern part of Figure 5a. Rock exposures are rare on the drumlins. The thick till does not preclude the use of soil geochemical techniques in the area if allowance is made for the probability of substantial down-ice displacement. [I recall finding greater than 1000 ppm copper in a till deposit located about a kilometer down ice from the Afton mine.]

Ice-contact deposits formed after the cessation of glacial movement are common in the northern part of the map area. They are particularly thick and widespread in the Cherry Creek valley, where outwash channels tended to be constricted at the margins of a wide basin. Linear sand and gravel deposit are common near the northern base of Greenstone Mountain massif and along a highly faulted zone in the south-central part of the Greenstone Mountain property. Eskers are small and surprisingly uncommon. Kames and kame terraces constitute the bulk of the identifiable glacial landforms.

Recent alluvium of consequence at the scale of the maps is present mainly along portions of Cherry Creek.

Structure

The photo-geological interpretation outlined an unusually large number of faults in the map area, covering as it does a 15-kilometre segment of a northwest-trending regional deformation zone. The most intense deformation appears to have taken place in the northeast corner of Figure 5a. The zone decreases in width toward the northwest and probably pinches out a short distance beyond the map area. The northwest-trending faults within the zone of deformation appear to be the oldest in the region. They are older than the Roper Lake intrusions of probable Early Cretaceous age, and they do not appear to offset faults of any of the other major sets. The deformation zone also includes some north-northwest and east-west faults that cannot be separated readily from younger sets with the same orientation.

A small number of east-west faults that are younger than the Roper Lake intrusions are found close to the break in slope at the base of the Greenstone Mountain massif. The trace of these faults is difficult to interpret since they are located within the older deformation zone and they also tend to be obscured by late-glacial deposits. However, I believe that they may have played a major role in shaping the landscape.

The "north-south" fault set is composed of a small group of regional faults whose paths often deviate considerably from the general trend. They include the Cherry Creek fault in the northeast corner of Figure 5b and in the southeast corner of Figure 5a. [On the basis of air-photo evidence, this fault appears to be the northern extension of the Allison fault that Preto (1979) considered the boundary between his Central and Western facies of Nicola volcanic rocks.] Activity along the faults in this set may have been renewed

several times. The latest movement appears to be more recent than that of any of the other faults identified in the air-photo interpretation.

Alteration

Propylitic alteration is widespread, and locally intense within the Greenstone Mountain assemblage. The photograph shows fairly typical alteration of the intrusive breccia unit



in the breccia pipes. It resembles altered Nicola volcanic breccia – except for the lack of volcanic clasts. Alteration is much less widespread in the Beaton Lake assemblage, although it is possible that some of the K-spar alteration has gone unnoticed.

Leucocratic granitic rocks in the northern part of the survey area (approximately the area covered by Figure 5b) are almost always silicified and pyritized.

Within the deformation zone, sheared rock adjacent to faults commonly is intensely silicified and carbonatized. [This banded alteration has been mistaken for rhyolite and limestone in mapping and core logging.] I located only a few small exposures of silicified shear zones in the field. However, banded silica-ankerite zones tens of metres in thickness were intersected in drill core from the eastern part of Figure 5a.

DISCUSSION OF SIGNIFICANT RESULTS FROM PREVIOUS WORK

Most of the previous exploration within the Property was limited to mandatory assessment work to hold the ground and few serious exploration programs were carried out. Only three percussion drill holes are recorded within the Property, all in the northern part west of Beaton Lake. The geological surveys were reviewed in detail and were utilized in my geological interpretation. Geochemical surveys, usually copper only, and magnetometer surveys covered relatively small areas and disclosed little of interest. The exceptions were ongoing geochemical survey programs on both properties by C.R.C. Explorations. Geochemical sampling carried out on the property to the east of the Beaton Lake group obtained data of interest concerning metal associations of the area. The results of the surveys are discussed below

Greenstone Mountain Group

No fewer than seven geochemical surveys were carried out within the area north of Greenstone Mountain and east of Gilbert Lake. It covers less than 20 % of the total area of the claim group. The first three surveys were concerned mainly with copper. The final four surveys, all by C.R.C. Explorations (Payne 1991a, 1991b, 1993, 1994), were directed largely toward the detection of gold. They included gold, copper and

molybdenum, along with arsenic as a “pathfinder” element for gold. The geochemical work followed up an induced polarization survey carried out several years earlier (Hallos, 1980).

There is a broad gold anomaly about a kilometre in north-south length near the center of the survey area. The values are mainly between 20 and 40 ppb, but with seven scattered values greater than 100 ppb and up to 500 ppb (0.5 grams/tonne). A smaller, but more intense, anomaly is located in the eastern part of the survey area. This anomaly is open both to the north and to the south. Five of the anomalous values are greater than 100 ppb, with a maximum of 400 ppb. This anomaly is closely associated with a regional fault – and with wide chargeability and resistivity anomalies that follow the fault.

Copper does not correlate with any of the other metals. There is close correlation between anomalous values in arsenic, molybdenum and gold in the eastern anomaly area. Otherwise there is very poor correlation between metals. It would not be far out of line to state that gold, copper, arsenic and molybdenum have mutually exclusive geochemical distributions except in the easternmost part of the survey area.

With respect to correlation of metals with geology, anomalous amounts of copper are found almost entirely within rocks of the Intrusive Breccia Complex. Anomalies in the other metals tend to cluster around the Roper Lake Intrusions but are by no means confined to them. The strong eastern anomaly falls entirely within microdiorite and intrusive breccia adjacent to the granitic intrusions.. Surprisingly, molybdenum shows no particular preference for the granitic rocks with the exception of the granodiorite in the northern part of the survey area, but is common around their margins.

Anomalous copper values generally are confined to narrow north-northeast-trending zones. The big exception is the very strong copper anomaly that lies south of the main geochemical survey area. Values are greater than 1000 ppm and up to 4000 ppm copper. Gutrath (1973) downplayed the significance of this anomaly, suggesting that it may be due to seepage in a swampy area at the base of a steep hill. Such a swamp does exist, but it is much smaller in area than the anomaly and lies to the east of it. Most of the anomaly, as plotted, falls outside of the group on a rocky slope with abundant exposures of intrusive breccia. There is a possibility that the data could be misplotted and that the anomaly actually is located in a largely overburden-covered area to the east.

Beaton Lake Group

A geochemical survey was carried out in the north-central part of the Beaton Lake group (Payne, 1991) as part of a multi-year program that extended several kilometers to the northwest.. This is the only geochemical survey on the Beaton Group that included gold. Copper was determined, but not molybdenum or arsenic. Several narrow, continuous northwest-trending gold anomalies were detected. They cross small circular bodies of leucogranitic intrusive rocks. Correlation with copper is poor.

I have not checked the anomalies in detail. However, the survey results indicate an apparent association of gold with the Roper Lake intrusions and that there is no correlation with copper – the same situation as that on Greenstone Mountain.

East Beaton Lake Area

A considerable amount of Mobile Metal Ion surveying was carried out on the property adjoining east of Beaton Lake. A number of anomalies were detected. It is not possible to correlate the high values in this partial digestion to conventional geochemical soil-sample values. However, the anomalies appear to be preferentially associated with northwest-trending faults, and there is a very strong Cu-Au-Ag-Pd correlation – a signature of Afton-type deposits.

SUMMATION

The geological mapping and photogeology substantiate my postulated linkage between the intrusive complex of the Greenstone Mountain-Beaton Lake area and the Iron Mask batholith. The recent work did not extend into the main portion of the batholith, so it is not certain that the two intrusive complexes are directly connected. There is a possibility that the two bodies are separated by a narrow screen of Nicola volcanic rocks that is concealed beneath younger cover rocks. I have not attempted to correlate the intrusive rock-types in the map area with those in the main batholith, except for the Cherry Creek unit. The Greenstone Mountain-Beaton Lake area appears to be underlain by a much larger proportion of intrusive breccia -- and breccia pipes are much more evident. However, I believe that both are more plentiful within the Iron Mask body than is generally assumed..

The relationship between the two alkalic intrusive assemblages in the map area is obscured by extensive late-glacial deposits along an east-west line that also follows the boundary between two topographic zones. I believe that the assemblages may be separated along a complex east-west fault zone.

The granitic intrusive rocks that I have correlated with the Roper Lake intrusions are surprisingly abundant within a north-northwest-trending zone that has been traced through both the Greenstone Mountain and the Beaton Lake groups. I believe that the largest body of granitic rock may underlie a large portion of the valley occupied by Cherry Creek and may have been responsible for its formation.

The major deformation zone, which appears to extend for at least another 20 kilometres to the southeast of the map area, is comprised mainly of northwest-trending faults and associated shear zones. The central and eastern parts of the Beaton Lake group are located within the zone of deformation. Several granitic intrusive pipes in this part of the area truncate the faulting and shearing.

Data from geochemical surveys suggest that two metallogenic systems, widely separated in time, are present within the map area. Anomalous indications from a large number of Mobile Metal Ion surveys carried out along the deformation zone west of the Beaton Lake group all show a strong Cu-Au-Ag-Pd correlation. This is similar to the metallic-

element correlation pattern at the Afton mine, which lies along the northeastern margin of the deformation zone and is deemed to be Early Jurassic in age. Soil geochemical sampling on the Greenstone Mountain group indicated anomalous Mo-Au-As was associated with bodies of Roper Lake intrusions, dated as Early Cretaceous. Copper correlated negatively with these elements in this area. Significant indications of molybdenum are reported from drilling near Roper Lake, to the south. Gold showings in Roper Lake granodiorite reportedly were located adjacent to the Durand Lake stock, and nearby drilling reportedly encountered significant gold intersections. The association of gold with Roper Lake intrusions – and the lack of a correlation with copper -- was confirmed in the Beaton Lake group by a soil geochemical survey. (Mo and As were not tested.)

I believe that the geological work described in the present report has created a reliable base for exploration planning. The study was extended well beyond the borders of the Property in order to give a regional perspective to the local geology. If the use of this work by adjacent tenure holders results in increased exploration effort it can only enhance the value of the Property.

The results of the geological study are noteworthy for two rather startling deficiencies: the absence of volcanic rocks of the Nicola Group in an area where that unit purportedly comprised more than 90% of the bedrock, and the absence of any reference to the occurrence of intrusive breccia within an area where intrusive breccia appears to be the dominant lithology. Ironically, the only mention of the term “intrusive breccia” that I came across in a fairly intensive literature search was in a petrographic report that denied its existence. I hesitate to express any conclusions regarding these items,

RECOMMENDATIONS

1. It is recommended that detailed geological examination be carried out over the large Mo-Au-As anomaly area north of Greenstone Mountain. Additional, more detailed, geochemical sampling is an obvious choice once the local overburden conditions have been determined. For example, the particularly strong indications at the eastern edge of the anomalous zone appear to be associated with a major north-south fault. This fault, which is reflected in strong resistivity and moderate chargeability anomalies, is concealed by late-glacial deposits for a distance of at least three kilometers. This will necessitate the use of Mobile Metal Ion (MMI) techniques for geochemical follow-up. Elsewhere I prefer to use conventional soil sampling where conditions are suitable.
2. It is recommended that a similar follow-up be carried out in the vicinity of the Au geochemical anomalies in the northern part of the Beaton Lake property.
3. Serious work in the Greenstone Mountain area will require re-opening of some of the access roads. Trenching in both claim groups can be carried out during this operation.
4. Decisions regarding diamond drilling can be based on the the results of the geochemical surveys and trenching.

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W. Meyer
Sept. 30, 2007

STATEMENT OF COSTS

<u>Type of Work</u>	<u>Days</u>	<u>Cost/day</u>	<u>Cost</u>
Geological mapping	8	\$500	\$ 4000
Specimen preparation and examination	2	500	1000
Photo & map layouts	2	500	1000
Literature review, plotting	3	500	1500
Photo-geological interpretation	16	500	8000
Map & report preparation	6	500	3000
Accommodation & vehicle expense	8	150	1200
	TOTAL COST		\$ 19,700

STATEMENT OF QUALIFICATIONS

I, William Richard Bergey of 25789 - 8th Ave., Aldergrove , B.C., do hereby certify that:

1. I am a Professional Engineer (Geological) in the Province of British Columbia.
2. I have been employed in mining and mineral exploration for the past 60 years.
3. I have had many years of experience in geological mapping and photo-geological interpretation related to mineral exploration.
4. I personally conducted all of the geological work described in the above report.


W.R. Bergey, P. Eng.

LEGEND FOR GEOLOGICAL MAPS

(Figures 5a and 5b)

QUATERNARY

- a** Alluvial deposits
- ic** Ice-contact deposits: sand & gravel

TERTIARY

- Td** Felsic volcanic rocks [Affiliation uncertain]

EARLY CRETACEOUS (?)

ROPER LAKE INTRUSIONS

- Rg** Granodiorite
- R1** Quartz monzonite, quartz diorite - apparently in pipes
- R2** Quartz monzonite, quartz diorite - recessive, poorly exposed

LATE TRIASSIC AND/OR EARLY JURASSIC

ALKALIC INTRUSIVE COMPLEX

- Bx** Beaton Lake Assemblage: mainly Cherry Creek-type intrusive breccia
- Greenstone Mountain Assemblage
- Gp** *Porphyry of Greenstone Mountain*
- Gx1** Intrusive breccia: mainly in breccia pipes
- Gx2** Intrusive breccia marginal to Durand Lake stock
- Gd** Mainly porphyritic microdiorite
- Dd** Diorite & monzonite of Durand Lake Stock

LATE TRIASSIC

- Nicola Group: mainly volcanic rocks [Identified east & west of map area]
- Fault
- Au** Soil geochemical anomaly area
- 137** Specimen number
- X** Outcrop

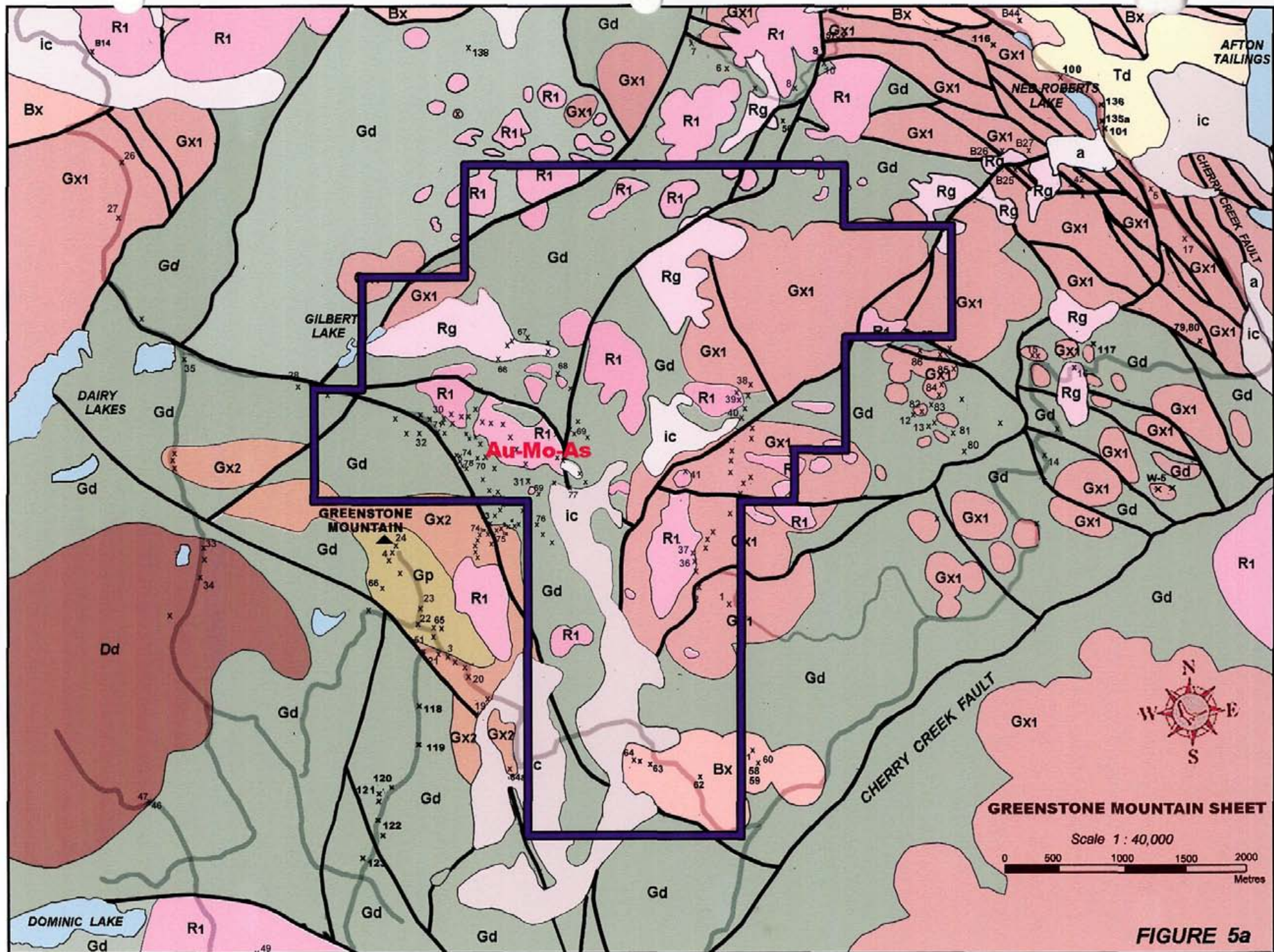


FIGURE 5B

BEATON LAKE SHEET

Scale 1 : 40,000

