Report

on the

Preliminary geology, petrography and petrophysics

of the

Kringle Group of claims

in the

Nanaimo Mining Division

in

092L/08 (or 092L040)

at

50 21 N and 126 07 W

for

Mikkel Schau, owner

June 15, 2002

Mikkel Schau, PGeo

0.0 SUMMARY

Kringle Group Claims are located along the Island Highway centred on the 250km marker past Sayward, along and east of the Adam River. The group is staked on a skarn and hydrothermal system associated with a contact between the Triassic Vancouver Group and the Jurassic Adam River Batholith. Early altered dykes are near, and fresh porphyry dykes cut, the altered contact. The main copper mineral occurrences are in road-cuts exposed along the Island highway but mineralization is found in the adjacent bush and logging road cuts as well.

Sulphide bearing granodiorite-diorite shows local chlorite rich alteration and elsewhere, magnetite-biotite-pyrite veining. In the skarns, magnetite concentration, some with local blebs of pyrrhotite, pyrite, chalcopyrite and bornite(?) are developed in, or near, garnet rich skarn. Pyroxene rich skarns contain disseminated pyrite and minor chalcopyrite. Garnet veins in reaction skarns carry local molybdenite. Argillicly altered dykes in the carbonate country rock are mineralized with sulphides and locally these dykes are stained with abundant malachite. Thin bedding parallel layers and veins of pyrrhotite and/or pyrite are found in reaction skarns. Wollastonite has been identified in these skarns.

Grab samples have returned assays with up to Cu values of 7.05% and silver of 67.2 ppm in sulphide-bearing skarn. Similarly, Cu assays 2.2% and silver 16.5 ppm, in altered dykes. Assayed values of Mo as high as .112% have been obtained. Pods of relatively pure magnetite return 36.7% dissolvable Fe, 6 ppm As, and .005% P. Relatively pure wollastonite pods are present and have been analysed.

This is a grass roots project and the extent of the postulated hydrothermal system is still being explored. Hence estimates of volumes and concentrations require defining by geophysical and other methods. There is a possibility that adjacent showings in the country rock (PUFF Group claims) are also part of the same mineralizing system, in which case, this discovery may become a significant prospect. Because transportation is accessible, the possibility of an industrial mineral such as wollastonite being present in sufficient quantity to be economic becomes a important consideration.

Obtaining funding for a next phase of exploration or the optioning of the property to someone with the means to carry out a program, would appear to be the next phase in this project. A possible exploration scenario costing about $50,000 would provide enough new information to make an informed decision as to whether to drill or not.

0.1 TABLE OF CONTENT

2.0 PROPERTY LOCATION, ACCESS, AND TITLE

The main showing is a new one, located along the Island Highway with the help of a PAP grant received in 2000, and explored further and enlarged in 2001 with the continued aid of a PAP grant (Figures 1,2).

Claims of the Kringle Group contain the easily identifiable 250 km marker on the Island Highway (Highway 19) within the 092L040 trim sheet (Figure 3). The claims are staked along a line parallel with the Island highway, but located to the east about a hundred meters or so of the road, and largely west of the adjacent logging main. Additional claims at each end are positioned along a nearby logging main.

The KRINGLE Group, newly formed, comprise 10 claims totaling the 10 units shown below:

Name	Record	Units	Anniversary	Date	year recorded
KRINGLE-1	387580	1	June 15	2007	2001
KRINGLE-2	387581	1	June 15	2007	2001
KRINGLE-3	387582	1	June 15	2007	2001
KRINGLE-4	387583	1	June 15	2007	2001
PUFF 11	391127	1	June 15	2007	2001
PUFF 12	391128	1	June 15	2007	2001
PUFF 13	391129	1	June 15	2007	2001
PUFF 14	391130	1	June 15	2007	2001
PUFF 15	391131	1	June 15	2007	2001
PUFF 16	391132	1	June 15	2007	2001

The anniversary date is adjusted to take into account the work listed herein.

All claims, which are focused principally on precious metals, but include an ancillary interest in base and industrial metals, are wholly owned by Mikkel Schau.

The land situation is typical; I believe I have claimed the mineral rights in a lawful manner; the region, including the claimed area, is in a Timber License previously logged and reforested; and to the best of my knowledge the land claim treaty process has not directly discussed these lands. It is, however, listed on MapPlace as part of the Kwakiutl_Laich_Kuul_Tach SOL. There has been no impediment to my claiming or working the land to time of writing. And I have no expectation of any. In fact, people of nearby communities would like there to be more exploration, and possibly mining, to shore up the local economy.

Fig. 1.Location Map of Kringle Group in BC

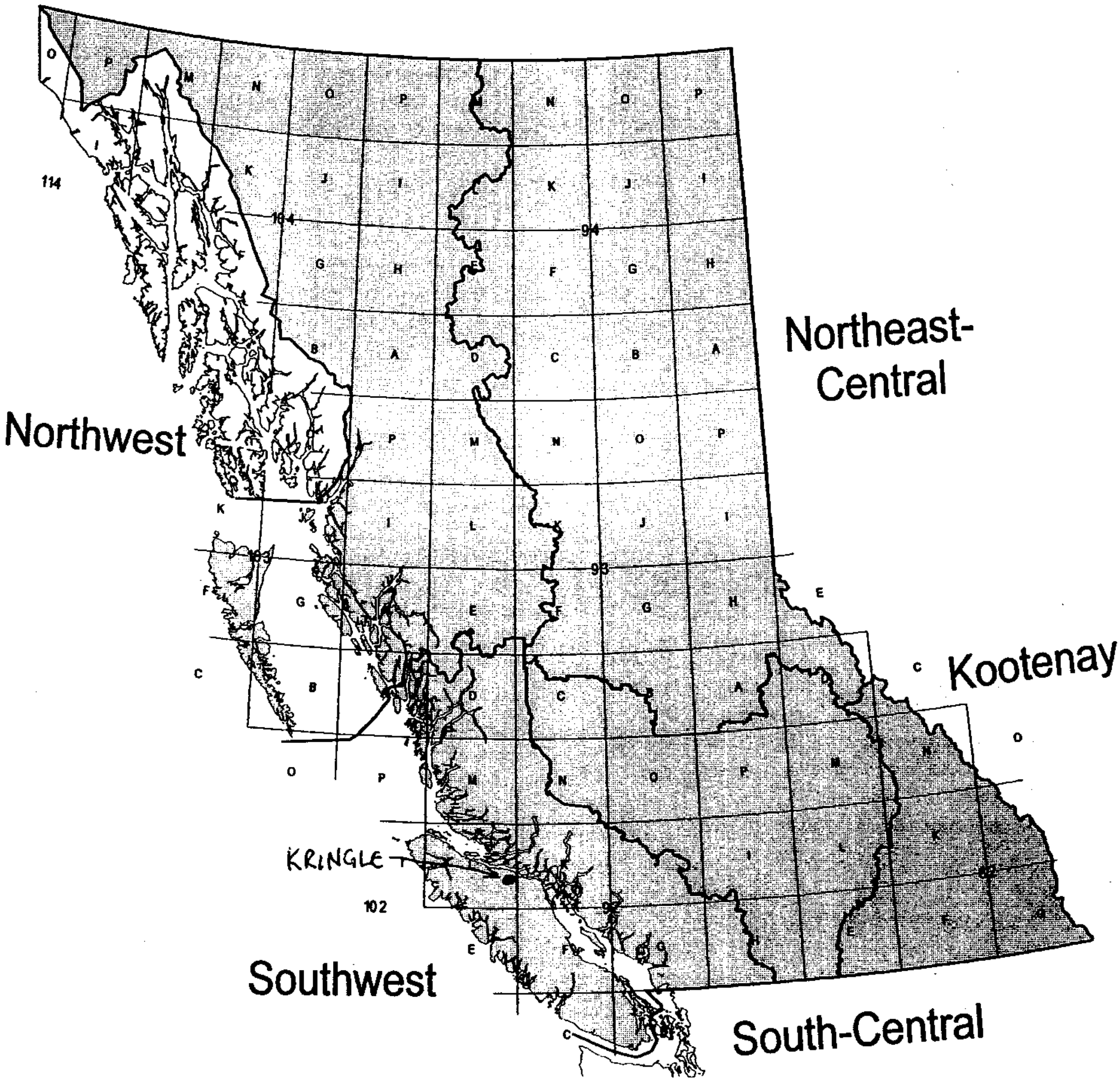
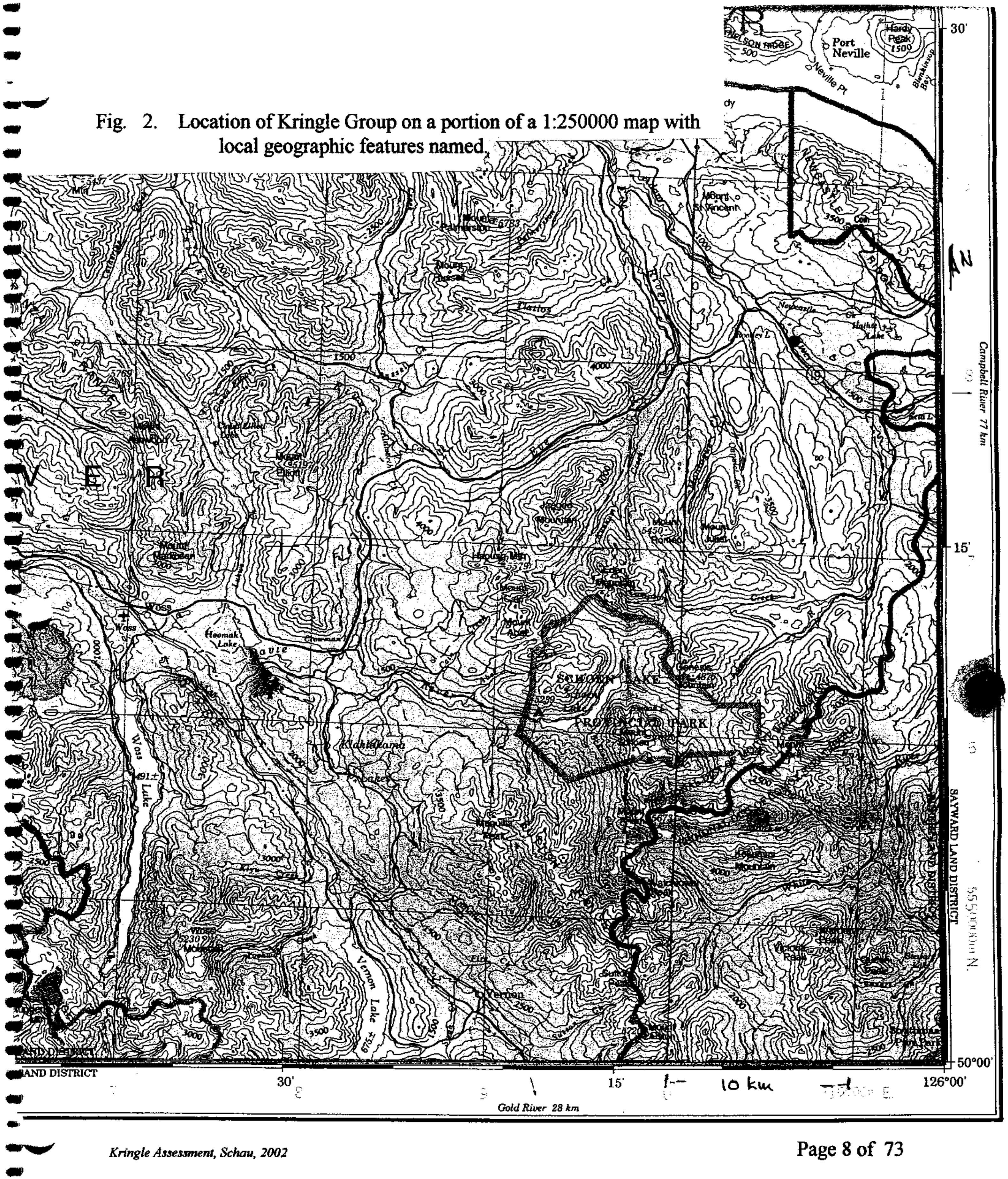


Fig. 2. Location of Kringle Group on a portion of a 1:250000 map with local geographic features named.



3.0 PREVIOUS WORK

The main showing discussed in this report has not been noted in previous work, although prospecting work has been carried out in the general Adam River region for about a century.

The ground was prospected for silver and gold in the first quarter of the century and showings of copper and gold veins were reported. Some distance south of the claims, but in the same geological context, a showing (Lucky Jim) of a contact deposit with copper (5.92%), silver (1.8 opt) and gold (.9 opt) has been described as early as 1918 (page K270, 1918 BC Minister of Mines Report).

Logging opened up the area in the 60's and regional prospecting campaigns located scattered copper rich showings. A large block was staked in 1965 by W.R. Boyes, and was taken over shortly thereafter by Western Standard Silver Mines.

AR 1993, commissioned by Bethlehem Copper Corporation, and carried out by W.M. Sharp, P.Eng., in 1969 sketched in the regional geology of a large area, some of which includes the area currently claimed. He noted the presence of a large NW trending granodiorite batholith emplaced in a sequence of Karmutsen "basalt-andesites" and the Quatsino Limestone. He notes that much mineralisation of the area is mainly in veins. The first mention of the Billy Claims occurs in this report as a parcel covering widely dispersed copper mineralization. The geological framework presented by Mr. Sharp has not changed substantially, although he mentioned the occurrence of Bonanza volcanics in the general region; this latter conclusion has not been confirmed by later workers.

AR 3795, commissioned by Sayward Explorations Ltd, and carried out by Sheppard and Associates in 1972, reported on the geology of the Billy Claims Group and documents showings now known as Minfile 092L163 (in Billy 19) and 092L249 in (Billy 11). These showings are west of the Adam River. In this report the mineralized nature of amygdaloidal portions of basalts and the adjacent faults is stressed.

Outlying parts of the Billy Claims once covered the current Kringle Claim Group, but no mineral locations were noted on these peripheral claims. The main showings were located to the west of the Adam River. Geological mapping by consulting economic geologists outlined the contact between granodiorite and the Quatsino and Karmutsen Formation on the east side of the river especially along the logging mains.

In 1974 the GSC published a map of the area (Mueller et al, 1974) that generally follows the geology determined by previous consultants. No Quatsino limestone was indicated near the claims despite Sheppard's mapping (see above).

AR18255, commissioned by Germa Minerals, and carried out by L.J. Peters of Cossack

Minerals in 1988, concerns a report on geochemistry and geophysics of the area studied by Sayward Explorations. Most of the work was done on Adam's Claim west of the Kringle Claims, whereas only Eve's Claim overlaps part of the Kringle Group.

A geological compilation of area in digital form (Massey, 1994) contains contacts assembled in part from previous assessment reports. The Quatsino limestone in this compilation occupies a larger area in the vicinity of the claims than on (op cit) 's map.

Thus sporadic and widespread mineralization of copper and silver with occasional gold values occurs in country rock adjacent to a large granodiorite batholith. The country rock is mainly feldspar-phyric basalt, as amygdaloidal or massive flows, or as thin sills with intercalated but minor beds of limestone and associated clastics, overlain by thicker beds of limestone. The actual surface expression of the limestone is uncertain, in part, because it is a recessive unit. New roads have exposed new subcrops and the area mapped as underlain by limestone has been enlarged. Earlier workers foccussed on mineralized veins and did not find any showings on the contact. Now, that the Island Highway has been finished, the contact between intrusive and country rock has become the most highly rated potential target.

The contact zone on the east side of the Adam River is now considered a high priority target region. The mineralized zones of this contact occur in road cuts of the Island Highway. The extremely good access also makes industrial minerals such as wollastonite or garnetite possible targets.

4.0 SUMMARY OF WORK DONE

The area has been prospected by walking logging roads and trails, and by excursions into the dense second growth timber and steep river valley (250 ha.)

Preliminary geological traverses have been conducted along available roads, as well as in selected locations along the Adam River, and other significant off road sites (250ha).

35 Samples of the mineralized contact area, where well exposed, have been collected and analysed for 30 or 32 aqua regia soluble elements by ACME laboratories.

35 samples as above have been analyzed for precious elements (Pt, Pd, and Au) by fire assay and ICP-ES- Finish (also ACME Labs)

5 samples from representative units have been analysed for total whole rock composition (major oxides+C, S, LOI and 5 traces by $LiBO_2$ fusion and ICP-ES analysis, by ACME)

5 samples from samples noted above have also been analysed for total trace element composition (30 trace elements by $LiBO_2$ fusion, ICP-MS finish, 10 trace elements usually in sulphides by dissolution with acid and ICP-ES finish, by ACME)

4 check assays to check high values.(by ACME)

1 sample of silt was analysed (Acme Geo4).

Petrography of 12 samples has been processed.

Density of 27 samples has been determined

Magnetic Susceptibility of 45 sample locations have been determined

The raw data is located in appendices A to G inclusive.

5.0 DETAILED DATA AND INTERPRETATION

5.1/ Purpose

This work is aimed at understanding the nature of the mineralizing events along and in the vicinity of a contact between basalt, limestone and granodiorite batholith. Previous experience with this highly prospective combination of lithologies makes it likely that metal concentrations of some value may have accumulated in the skarns and other associated contact phenomenae.

5.2/General surficial geology

The Kringle Claim group straddles the north-north west flowing Adam River south of its confluence with Eve River. The river runs in a typical U shaped valley, between tall hills trending roughly the same direction. Local areas of till have been noted in lower areas where road construction has laid it bare. At least three different terraces indicate that the river has had a complex geomorphic history. The river is currently incising its course through thick, earlier river and till deposits.

The course of the river is along the outcrop trend of the Quatsino Limestone and it and adjacent creeks seem to occupy high strain/fault zones. The hills are variably covered with colluvium and thin till deposits; only where logging roads expose subcrops, or in outcrops on cliff faces or steep sided valleys are bedrock visible.

5.3/ General remarks about Skarns

Contacts between batholiths and hosting country rock show a variety of features, some of which are favourable for accumulations of large masses of economically interesting minerals.

These contacts are often zoned both in space and time. The deposits can be analysed as noted below:

1/ metamorphic (reaction) vs ore skarns
2/ proximal vs distal types
3/ in country rock or intrusive roc

and

3/ prograde versus retrograde assemblages.

Metamorphic skarns are the early metamorphic mineral assemblages that predate the later hydrothermal events. Kwak (1994, p.382) has summarized the literature and notes that "metamorphic reactions involve very limited movement of components, generally on the scale of centimetres, by a largely static intergranular fluid (diffusion) rather than active flow (infiltration) associated with hydrothermal fluids. The gangue mineralogy and high Fe contenet, as well as uncommonly high contents of some minor elements, typically identifies an ore skarn sample from one produced by purely metamorphic processes" .

Kwak (op cit) also notes that not only is there zonation in mineralogy away from the contact, into the country rock creating exo-skarn, but that as a result of inward diffusion of moisture in the surrounding rock endo-skarn is formed.

In deciding whether ore skarns are proximal or distal is largely a matter of distance. A proximal oreskarn generally produced within approximately 300 metres of the granitic contact by the interaction of hot (>300 C) ore-metal bearing hydrothermal fluids and suitable host rocks, consisting commonly of calcite and dolomite marbles. Uncommon, but occasionally large deposits more than 300 metres away are called distal ore skarns. As well as this, there are ore bearing endoskarns formed within the granitic body near the contact. A usual way to classify ore skarns is by the principal ore metal (Kwak, op cit).

Sangster (1969) has discussed magnetite skarns and the features associated with them. Ray et al (1995) has summarized skarns by their principal ore metals in BC and have noted some geochemical regularities in associated rocks which distinguish Au, Fe, Cu, Mo, W and Sn skarns from each.

The decision as to whether mineral assemblages are prograde or retrograde is mainly a matter of how hydrous the gangue minerals are.

Ore skarns generally display sequence of mineral assemblages beginning with largely anhydrous early phases (called prograde) to secondary, progressively more hydrous or other volatile-rich assemblages (called retrograde). The sequence is in response to decreasing temperatures and fluid characteristics caused by cooling and mixing cooler meteoric water with hotter igneous-derived fluid (Kwak, op cit). Of great interest is the nature of the altered rock; could be country rock (exoskarn) or intrusive (endoskarn).

Prograde assemblages do exhibit a zonal pattern going out from the source of the ore solutions and each zone has been progressively overprinted, at some time, on some previous zone (Kwak, op cit). Paragenetic studies play an important part in the unravelling of the ore forming events. Sangster (op cit) has suggested that the garnet (reaction skarn) is overprinted by magnetite (ore skarn) and that sulphides overprint both.

Thus, a few very important criteria necessary to critically evaluate a showing include:

- size of the mineral domains:
  - thin layers with country rock details -> reaction skarn
  - or
  - Amorphous large mono-mineralic blobs -> ore skarn
- the nature of the mineralogy;
  - anhydrous or hydrous
- the nearness to the contact (< or > 300 m.)
- Alteration in country rock (exoskarn) or in intrusive (endoskarn)
- the sequence of veining

5.4/ Regional Geology

Contacts between country rock batholith are possible regions of metal concentrations. Basalts of the Karmutsen Formation, limestones of the Quatsino Formation are metamorphosed and metasomatised in the locally sulphidized contact of the Adam River Batholith.

5.4.1Units

Vancouver Group

The units are generally as described by Massey (1994) but many lithological details are taken from Carlisle(1972).

The Vancouver Group (Karmutsen, Quatsino, and Parson Bay Formations) underlies much of the region to the south-west of the claims.

The *Karmutsen Formation* (or "subgroup" of Carlisle, 1972) is a low potash tholeiite basalt mass of remarkably consistent structure and thickness that constitutes the lower third of the Vancouver Group in this area. The lower 2500 to 3000 m. invariably consists of classical closely packed pillow lava. the next 600 to 1000m consist of pillow breccia and aquagene tuff, typically with unsorted beds ½ to 2 m thick in the lower half. The upper 3000m is composed of amygdaloidal and non-amygdaloidal basalt flows intercalated with, particularly in the upper third of the unit, are sporadic and commonly incomplete sequences of 3 to 20 m thick consisting of thin discontinuous bioclastic, micritic, cherty or tuffaceous limestone. Overlain by closely packed pillows, which are overlain in turn by pillow breccia.

The structure of the unit is marked by gently folded and locally severely faulted areas. The folding is part of a regional shallowly north plunging antiform, and many showings are located near the regional axis. The faults and well developed linears trend north and north westerly directions as well as easterly directions and separate large panels of gently dipping lavas.

The volcanic rocks have been metamorphosed to lower greenschist grades. Albitized feldspars, amygdules and veins of pumpellyite, prehnite, epidote, calcite, and chlorite are widely noted. Near contacts with later intrusives, amphibolite bearing assemblages are more common.

Considerable regional variation is shown on aeromagnetic map, including local positive anomalies, within the area underlain by the Karmutsen, indicating that magnetite concentrations of the volcanic rocks are not uniform and/or area is underlain by highly magnetic bodies.

The *Quatzino Formation* is a thin ribbon traversing the country in a north-northwest direction, to the northeast of the Karmutsen Formation. It is seen to stratigraphically overlie the Karmutsen, and is known to vary in thickness from as much as 500 m to the west near Alice Lake to a thinner 150 m or so further east. In the Adams river area it is a distinct, easily recognizable unit, but the thickness is in doubt, because where best exposed it is deformed contact with the granodiorite. The Adam River follows part of its outcrop pattern.

The formation consists of grey limestone beds. Where undeformed it is a coarsely bioclastic, light grey, indistinctly bedded and non fissile (Carlisle, 1972). Where deformed near plutons it becomes a light grey, finely recrystallized limestone. Fossils indicate that the Quatsino Formation is upper Triassic in age (mainly Karnian, perhaps partly lower Norian (Muller et al, 1974).)

The expected negative aeromagnetic signature is not noticeable on the map although the limestone is not magnetic. More detailed aeromagnetic surveys are necessary to delineate the outcrop pattern. Perhaps underlying magnetic units mask the effect of a thin layer of non magnetic Quatsino Formation?

The *Parson Bay Formation* is considered to overlie the Quatsino Limestone. According to Carlisle, 1972, it is characterized by thinly laminated alternating fissile and non fissile black carbonaceous limestone with extremely fine grained siliceous matrix. None was recognized in immediate vicinity of the area considered in this report. It is possible that some of the silty reaction skarns intercalated with black limestone noted on the property, north of the 250km marker, may represent some hitherto unrecognized Parson Bay Formation along the western flank of the Adam River Batholith. The effect of the carbonaceous beds in any contact reaction with oxidizing intrusives is currently not known.

Jurassic Intrusives

Jurassic granodiorite to diorite underlies the area to the east-northeast of the Adam River. It has been called the Adam River Batholith (Carson, 1973, Muller, et al, 1974). It is about 4 km wide and trends northwesterly in excess of 10km.

It consists mainly of mesozonal granodiorite. Rocks studied are mainly medium to fine grained biotite hornblende granodiorite and quartz diorite with a locally elevated content of mafic minerals. In thin section, pyroxene cores to amphibole grains are noted. Local veining of darker phases by lighter more feldspathic phases are common. At contacts the volcanic rock inclusions are transformed into dioritic inclusions and limestones become skarn and marble rafts.

Carson (1973), suggested that the Adam River was emplaced as a sill, along the Quatsino Formation horizon. He suggested that the sill was shaped as a gentle syncline and figured the geology in the general area on his Fig. 15 (Carson, op cit). An anticline has been postulated to the west currently expressed at surface by the Karmutsen Formation. The sense of movement of a synkinematic sill would be upper units to move away from the synclinal core. That would predict an east over west component in folds and faults.

K-Ar dates of 160 on Hornblende and 155 on biotite from a quartz diorite of this batholith confirm the synkinematic nature of pluton emplacement.

Contacts are known to be hornfelsed for short distances, with local skarnification near and in limestone beds.

The high concentrations of magnetite in these I-type intrusions are well reflected in the regional anomalies over these plutons.

Fig. 3. Detail location map of KRINGLE claims on a DEM of BC TRIM 092L040; the east side vertical line is the east side of 092L040 at 126 deg West , the west at 126 deg. 12 min.; the bottom horizontal line is the south edge of 092L040 at 50 deg. and 18 min. the northern edge is at. 50 deg 24 min. ....

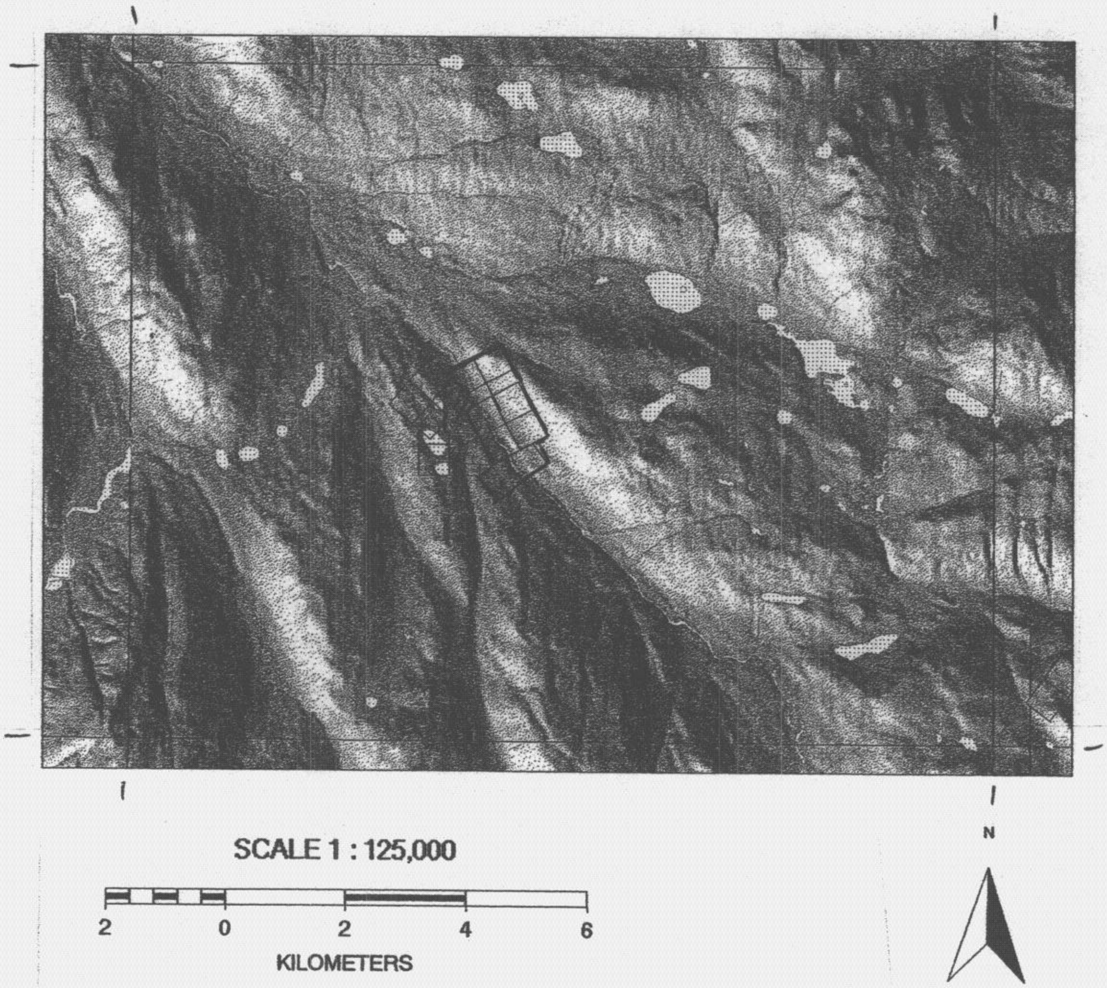
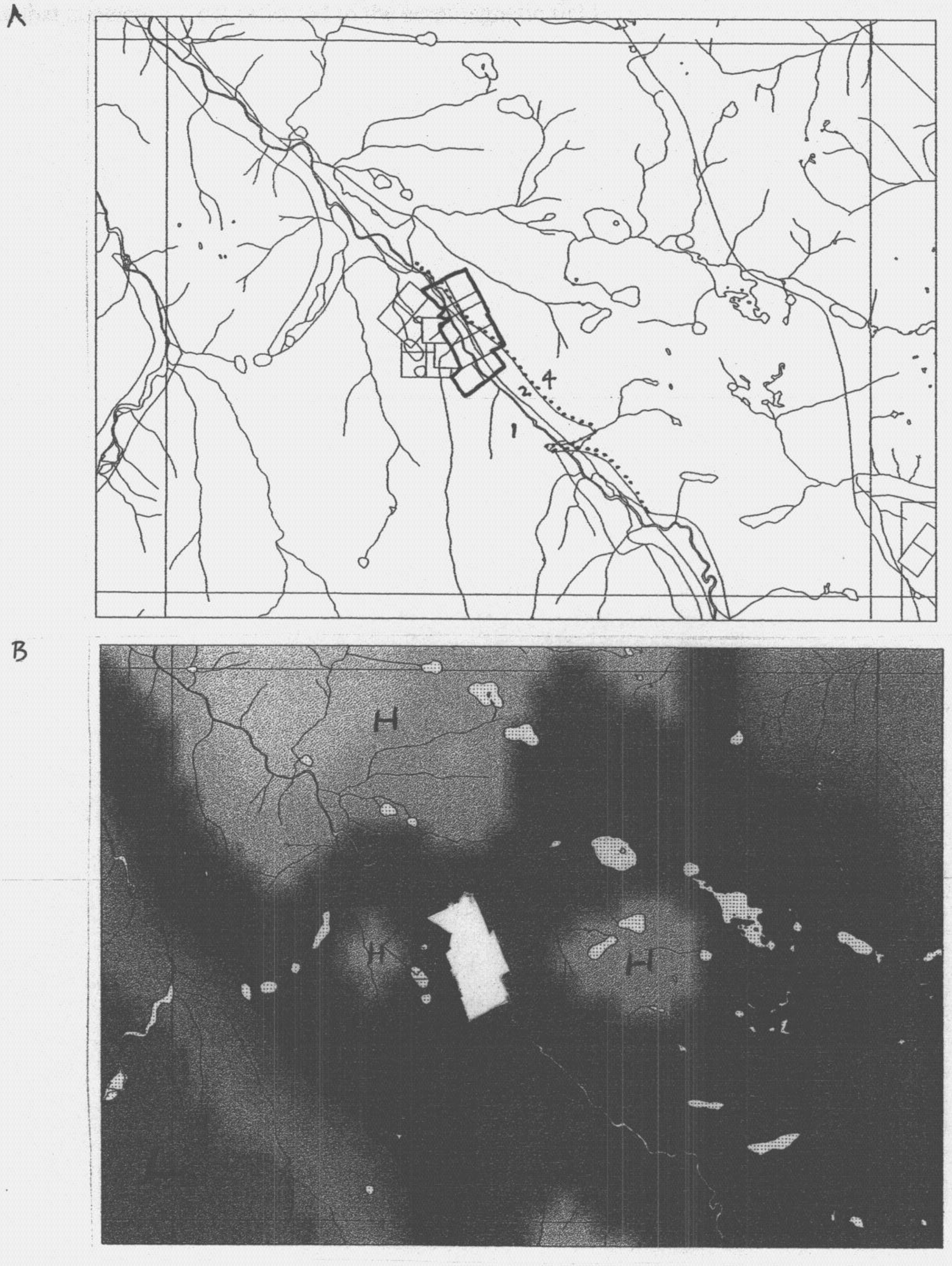


Fig. 4. Top, Map of geological contacts in 092L040. Contact of granodiorite marked by dots in vicinity of claims. Bottom; Detailed map of aeromagnetic field over 092L040, note that magnetic anomaly does not follow contacts. The dimensions, scale, and north are as shown on figure 3.



Felsic dykes

Based on very preliminary evidence, supported in part by observations made by Carlisle (1972), there appears to be at least three sets of dykes in area.

From oldest to youngest they are: Fp Porphyry "folded into tight folds" and which may predate Ji, argillically altered and mineralized porphyries and later Feldspar and Hornblende porphyries with planar or irregular contacts.

5.4.2 Regional structures

The area of interest lies within the shallow east north east dipping homocline of Triassic rocks and the Adam River Batholith, called by Muller et al (1974), the White River Block; it is bounded to the west by a major fault, the north northwest trending Eve River Fault. To the north the Johnson Strait Fault terminates the block, the eastern and southern borders are faults on adjacent map sheets. The faults in the vicinity of claimed area of interest are subparallel to the border faults, or are second or third order subsidiaries of it. It is thought that these faults contain a large normal component but dextral component is often also mentioned in reports. On a regional scale a northerly directed shallowly plunging anticline is suggested by scarce bedding determinations. The claims are the east side of this structure. Carson (op cit) suggested that the homocline mentioned above was but the western side of a larger open, shallowly plunging syncline, containing in part the Adam River Batholith (or sill, as Carson suggested).

A consequence of the synclinal model is that the Karmutsen to the west would underlie the batholith.

The region is noted for copper bearing veins and have been described as the type: copper veins in basalts. Muller et al.(1974) repeat this categorization and assigns the showings in the vicinity of the claims to his category C; veins in basalts.

5.4.3 Regional Geophysics

The magnetic character of the Adam River Batholith is well expressed on regional aeromagnetic maps. Of some interest is a magnetic domain of similar magnitude seemingly located over Karmutsen Basalts as shown on Map Place, June 2002, and presented in figure 4. The contact, between the magnetic batholithic rocks and the non magnetic limestone is not seen on the low resolution aeromagnetic map. Instead a sharp magnetic boundary is located several km to the west.

Whether a large batholith underlies a thin cover of basalt and limestone, whether the metasomatism underneath an overlying sill/batholith, or whether the basalts are intrinsically more magnetic than usual, and if so, why? seems an obvious question to seek to answer. An aerial survey with closer flight line spacing may show internal variations and help explain the anomaly. The Cu-Ag vein showings located previously are located in this anomalously magnetic region.

5.5/ Geology of Kringle Claim group

5.5.1 Introduction

Vancouver Group (Karmutsen, Quatsino, Parson Bay) is found in the southwest parts of the claim group, Jurassic intrusives are found in the north east (figure 5).

The intrusive contact, which approximates the course of the Adam River, is here developed in the upper part of the Vancouver Group. Mineralization is associated with the emplacement of the Adam River Batholith especially into the upper Vancouver Group.

5.5.2 Karmutsen Formation

The area to the southwest of the Adam River is mainly underlain by Karmutsen basalts, as a mix of autoclastic breccias, pillowed and massive flows with thin intercalations of volcaniclastic and limey sandstones cut by thin dolerite/gabbro sills.

The lithologies noted on the claims; i.e. massive and amygdaloidal basalts, intercalated calcareous sediments, and volcanic breccias and the nearness to a pure grey limestone would suggest that the rocks are from the upper part of the Karmutsen Formation.

5.5.3 Quatsino Formation

The Adam river is underlain by grey limestone. Outcrops are found by the rivers edge and on the northeast side of the river in roadcuts and outcrops, especially along the terrace edges. Bedding in the south part of property is gently east or north east, whereas nearer the pluton, the beds are steep and sub-parallel with the contact. Relic shells have been seen in the largely recrystallized limestones, suggesting a bioclastic precursor. There is no evidence to suggest that the contact with the underlying Karmutsen Formmation is anything but conformable.

5.5.4 Parson Bay Formation

The skarns north of 250km marker have local siltstone components as well as black carbonaceous limestones. These two rock types are characteristic lithologies of the lower part of the Parson Bay Formation. They are probably conformable upon the Quatsino Formation, even thogh their only found in highly strained and metamorphosed edge of the Adam River Batholith.

Should they be present, they would, by virtue of their reducing nature (carbonaceous matter) be especially reactive with the oxidizing magnetite bearing granodiorite.

5.5.5 Jurassic Intrusives

The hilly area to the northeast is mainly underlain by quartz diorite of the the Adam River Batholith. Local composition varies from diorite to leuco-diorite and are quite abrupt. One common lithology is a seriate feldspathic-phyric hornblende granodiorite. (See appendix A, B, C, and D for analytic details). There are several localities where leucocratic granodiorite veins cut melanocratic diorite hosts. Alteration and recrystallization as well as local development of high strain zones occur sub-parallel to the contacts. Endoskarns, or extremely altered zones are found along the contact zone. Coarse grained "metasomatic" skarns cutting the reaction skarn envelope appear to occur near irregularities in the contact. Sulphides appear late in the paragenetic history.

The contact is not often seen, but in the road cuts near 250km the contact between exoskarn and a seriate textured granodiorite protrusion is exposed. The contact is irregular, with large numbers of basketball sized or somewhat larger concentrically zoned skarn fragments in the immediate vicinity. Locally they are part of the contact phase of the granodiorite. The difference in this irregular, disperse contact is in sharp contrast to the planar and locally jagged contact of the Feldspar-hornblende porphyry a few tens of metres away.

5.5.6 Felsic dykes

Felsic dykes are hard to map, but are displayed to advantage in the road outcrops where many types of dykes, both fresh and extremely altered are found.

Oldest dykes are feldspar-phyric, a few meters thick and are seen in what appears to be tight folds within limestones in southern part of claim group. The limestones themselves are not obviously folded. A number of possibilities need to be tested; the dykes may be emplaced as anastomosing sills or the sills are indeed deformed from originally planar bodies, but have acted as a passive markers, mapping bedding parallel movement.

Altered dykes, locally mineralized are cut by apophyses of the granodiorite. One such thin skarnetized quartz eye dyke cuts through wollastonite reaction skarn but is heavily carbonated and argillized and carries disseminated chalcopyrite (150E in Appendix A) which is visible in widespread malachite staining on the adjacent, and hosting marble-wollastonite skarn.

Fresh feldspar and hornblende phyric-dykes with planar but irregular jagged sides are usually a few meters thick, dip steeply, and trend roughly east west. One of these dykes has been analysed (see 150C in appendix A, B, C, and D).

A thin grey fine-grained andesite dyke was noted west of the river cutting through a basaltic accumulation.

Other felsic dykes, a few hundred metres further west than the claims are heavily mineralized. It would appear that one target would be to locate felsic altered dykes.

The term fresh and altered are relative; even the freshest has been subjected to propylitic reconstitution, the matrix is a fine intergrowth of quartz, white mica, clay, and zoisite. The mafics are generally altered, to green amphibole chlorite.

5.5.7 Claim sized structures

Structures in country rock, west side Adam River

Primary layering in the basalt pile suggest very gentle north-north east dips. This marked by pillow lava interbeds. Way up is up.

Structures near contacts, east of Adam River

Primary and secondary layering in limestones and skarns are steep and generally trend North west. Bedding at (310/medium (NE)) is cut by a cross foliation at (330/90) in several places. In the south portion of the claims (south of cross fault mentioned below), the bedding is gentle to the northeast. Dykes traverse the southern beds and are seemingly folded into tight folds with axial planes approximating the bedding planes. Paradoxically, the enclosing limestone beds are similarly folded. North of this fault, steeply dipping dykes crosscut the foliated and steeply dipping rocks.

Possible interpretation of structures in regional context

The presence of shallow dipping beds, far from the contact, and steep ones, near the contact, taken in conjunction with the regional possibility of an overlying intrusive sill with a synclinal core to the northeast, which has moved out of the center, in such a way so as to upper beds move westward and lower beds move eastward makes the suggestion that the beds are cast into S folds.

The endoskarns and near contact high-strain zones in the Adam River Batholith (sill?) would be part of this re-organization. The irregularities in the contact would be places about which there would be considerable stress gradients leading to local under-pressures and over-pressures.

Faults

Along the north northwest trace of the highway, three domains can be distinguished, separated by cross faults. A southern region, with gentle dips and mainly limestone along the highway, a central area, consisting of mainly reaction skarn along the highway; and a third, northern area, showing mainly endoskarns and batholithic phases. The general trend of the highway is roughly that of the contact. Two faults, interpreted as significant cross faults, with apparent sinistral offsets, move the actual contact west ward.

The southern fault has not been found off the road, although the rock distribution as currently known supports an apparent westward movement of the block to the north. It is an interesting target.

The northern fault presumably offsets the granite to the west on its northern side, but the Quaternary fill of the Adam River precludes checking this. No evidence has been found away from the road as yet. It is an interesting target, however.

There are many small slip features, and master joints and minor faults. These show slickensides with subhorizontal slip lines. Many small slip features are the locus for veins, including some sulphide veins.

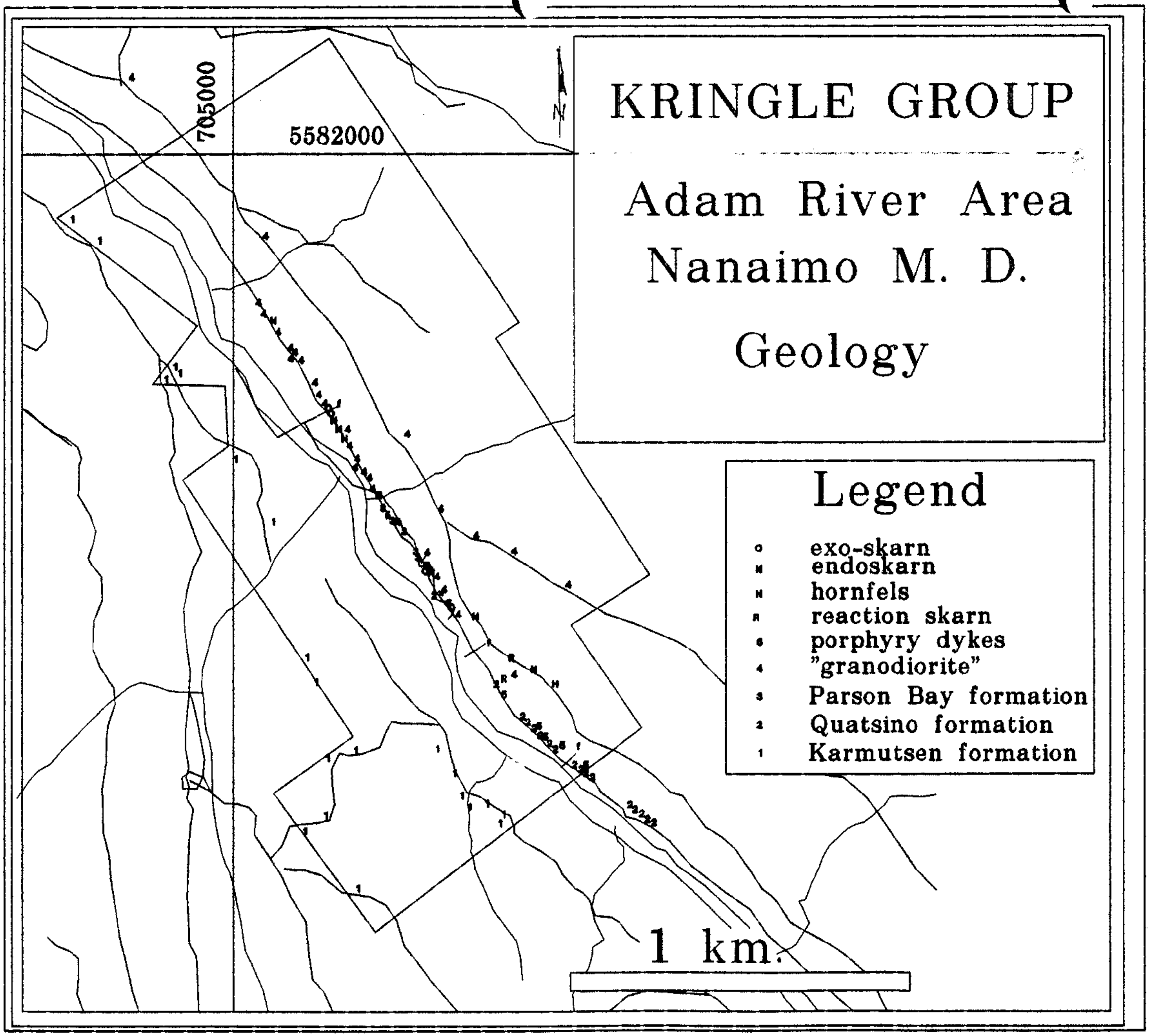


Fig. 5. Detailed geological sketch map of the KRINGLE claims.

Veins

Veining is not a predominant feature. That being said, the oreskarn contains many small intersecting veins. Garnet veins cut diopsite veins, and locally, wollastonite veins. In the ore skarns garnet veins and garnet diopsite veins marbles, the latest veins also contain sulphides. In the endoskarns, biotite-magnetite-pyrite veins are found. Elsewhere chloritic veins are abundant. In the basaltic country rock, veining is more commonly present, and the veins may carry one or all of chlorite, epidote, calcite, Kspar, quartz, chalcopyrite, pyrite. At any one locality, several mineral suites may be present. No clear picture has emerged of a spatial distribution of vein minerals as of yet. If the pluton has steep sides then veins could be expected to have lateral variation, but if the pluton dips underneath the basalts, then none would be expected. Similarly, if the pluton was overlying the area, none would be expected. It is a topic open to more work.

5.5.8 Mineralization

Skarns

Reaction skarns, although containing local very thin iron sulphide layers, are generally not mineralized with economically interesting elements. They may, on the other hand be the focus of exploration for industrial minerals such as wollastonite. Ore skarns on the other hand, contain accumulations of interesting sulphides such as bornite and chalcopyrite and molybdenite. Garnetiferous skarn with varying amounts of magnetite, contain thin veins and local replacement masses of sulphides such as bornite, chalcopyrite, pyrrhotite?, and pyrite. One such type consists of small garnet dodecahedra set in a matrix of complex iron and copper sulphides. In a non mineralized part of the same skarn this texture was seen as well with the garnet dodecahedra set in a marble matrix. Very thin veinlets of copper and iron sulphides and similar accumulations are found at the interface between skarn silicates and coarsely crystalline carbonates. Presumably the marble has been replaced by by the sulphides, and the key to the deposit is to understand where and how the marble formed.

Veins

Veins of ore skarn minerals cutting reaction skarns are locally mineralized. In on location, coalesced centimetre sized porphyroblasts of orange garnet cutting wollastonite skarn contains accessory molybdenite. Thin malachite stained, altered and gossany, sulphide veins traverse the skarns near ore skarn accumulations.

5.5.9 *Notes on skarn development*

Skarns (where country rock is limy), and hornfels (where basaltic) have formed in the contact region in a thin shell around the intrusion. One estimate of the thickness is the distance from the contact at the initial post of Kringle 1, to the highway, in a direction normal to the contact, which is near the interface between the reaction skarn and country rock limestone. The distance is about 60m, which would be a maximum estimate at this point. At the 250 km marker there is granodiorite on the hill just above the marker, and there is limestone on the slope below the highway, a distance of not in excess of 50 m. The reaction skarn envelope is obviously thin, only some tens of meters thick.

Oreskarns are irregular, and appear near intrusive irregularities. The largest oreskarn location is shown in about 40 metres southerly of the 250km marker. The dimensions are difficult to determine. Along the highway, in the best mineralized area, an estimate would be at least many tens of metres in the horizontal direction and at least six metres high.

Endoskarns, are developed in the batholith especially in the contact phases, and are marked by disseminations and veins of pyrite. Local hydration features and evidence of late hydrothermal can be seen in thin sections. Two locii have been located, one in the south and the other in the north. The northern one has more chlorite and contains a bit of chalcopyrite, whereas the southern one contains magnetite-biotite-pyrite veins and accumulations. This latter association is considered to be near the hottest part of the system, economically interesting minerals would be expected to flank it.

If the skarns formed underneath a sill, they would be expected to reflect a slower cooling time. Is it of significance that wollastonite skarns are scarce in BC?; perhaps it is only when limestones are subjected to higher ambient gas pressures (such as would obtain underneath a sill) that the condition for forming wollastonite are met.

The slow escape of volatiles from beneath the sill would also enhance the chance for diffusion and dispersion of fluids into adjacent areas. Old fractures, previous openings, such as amygdales, previous reactive mineral(oid) assemblages would all react/ and or fill with minerals from the slowly cooling fluid.

These are interesting speculations that will have to be sorted out with much more work. For the time being, they are interesting in that they do not rule out the possibility that the geologic setting on these claims may be a fertile one.

5.6/ Detailed sampling results

5.6.1 *prior to staking*

A sample of malachite-stained, argillically altered felsite? returned 2.2% copper. Pure magnetite was noted in outcrop. At a later visit a sample of sulphidic skarn was collected and assayed. It returned 6.5% copper.

5.6.2 *after staking*

Ore skarn was identified cutting the reaction skarn and zones of endoskarn were located. Sulphides occur as veins cutting, garnet skarns, granodiorite, and feldspar porphyries, and as replacement masses at contacts between rock types especially marble and garnetite. Assay locations and copper values are noted in Appendix A and shown on figures 6 and 7. The mineralization is localized, rather than dispersed.

The most important oreskarn is located adjacent to an apophysis of granodiorite and a forms a complex mixture of garnet, dioside, marble. These are cast onto noncylindroidal folds and skarn minerals rim each other. Magnetite has formed bulbous masses which impinge on coarsely crystalline marbles. Sulphide masses and veins cut the silicates, especially the garnet portions. Bornite has been tentatively identified along with, and among, chalcopyrite, pyrrhotite?, and pyrite.

Other oreskarn zones contain molybdenite has been noted as small grains in garnet veins adjacent to thin sulphidic felsites set in wollastonite skarns.

Pyrite is more common in endoskarns and pyroxene skarns. Along the road, a chloritic portion of an pyritic endoskarn shows elevated copper, but most of the samples from these areas are only mildly anomalous in copper. Paragenetic relationships have not been sorted out, although there seems to be an areal variation in the arrangement of the sulphides.

The copper sample with the highest tenor of copper as yet sampled from the main showing is given below. It is an example of the Cu-Ag mineralization which is known from the general area:

	E187880	
Cu	6.64	%; check assay 7.05%
Ag	68.6	ppm; check assay 67.2ppm
Au	8	ppb
Mo	16	ppm
W	<2	ppm
Sn	n.d.	ppm

A sample (E187881) returned 1153 ppm Mo along with 2029 ppm Cu.

Pure magnetite and magnetite-garnet masses are formed in the oreskarn zone. The magnetite masses are bulbous and extend into white coarsely crystalline marble marked with remnant carbonaceous streaks.

An example of a magnetite assay is given below:

	SL150D	
Fe	36.7	%
P	.005	%
As	6	ppm
Mn	535	ppm
V	9	ppm
La	<1	ppm

This magnetite is typical of that found in iron skarns elsewhere on the Island.

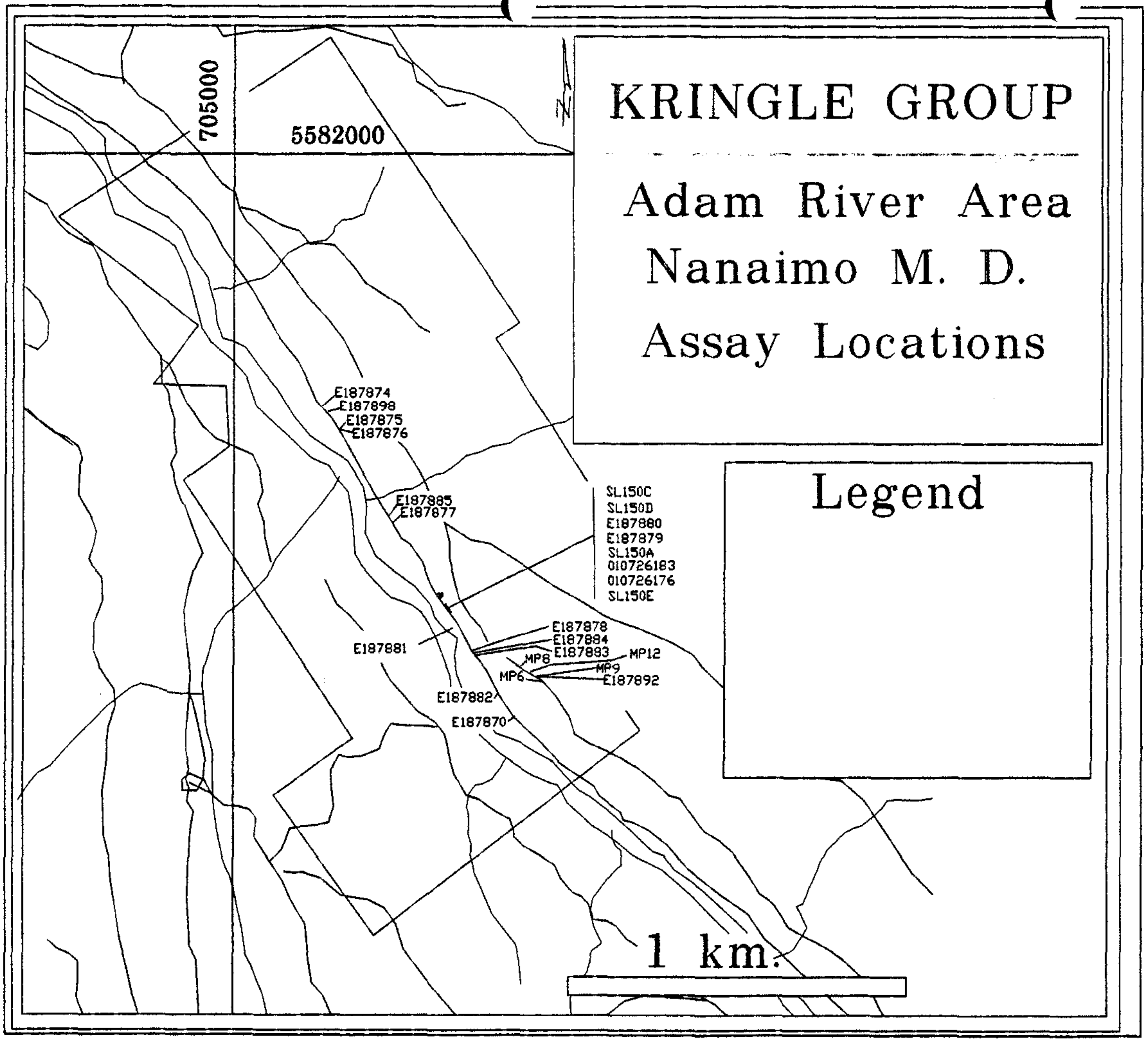


Fig 6. Detail map showing locations of Assays

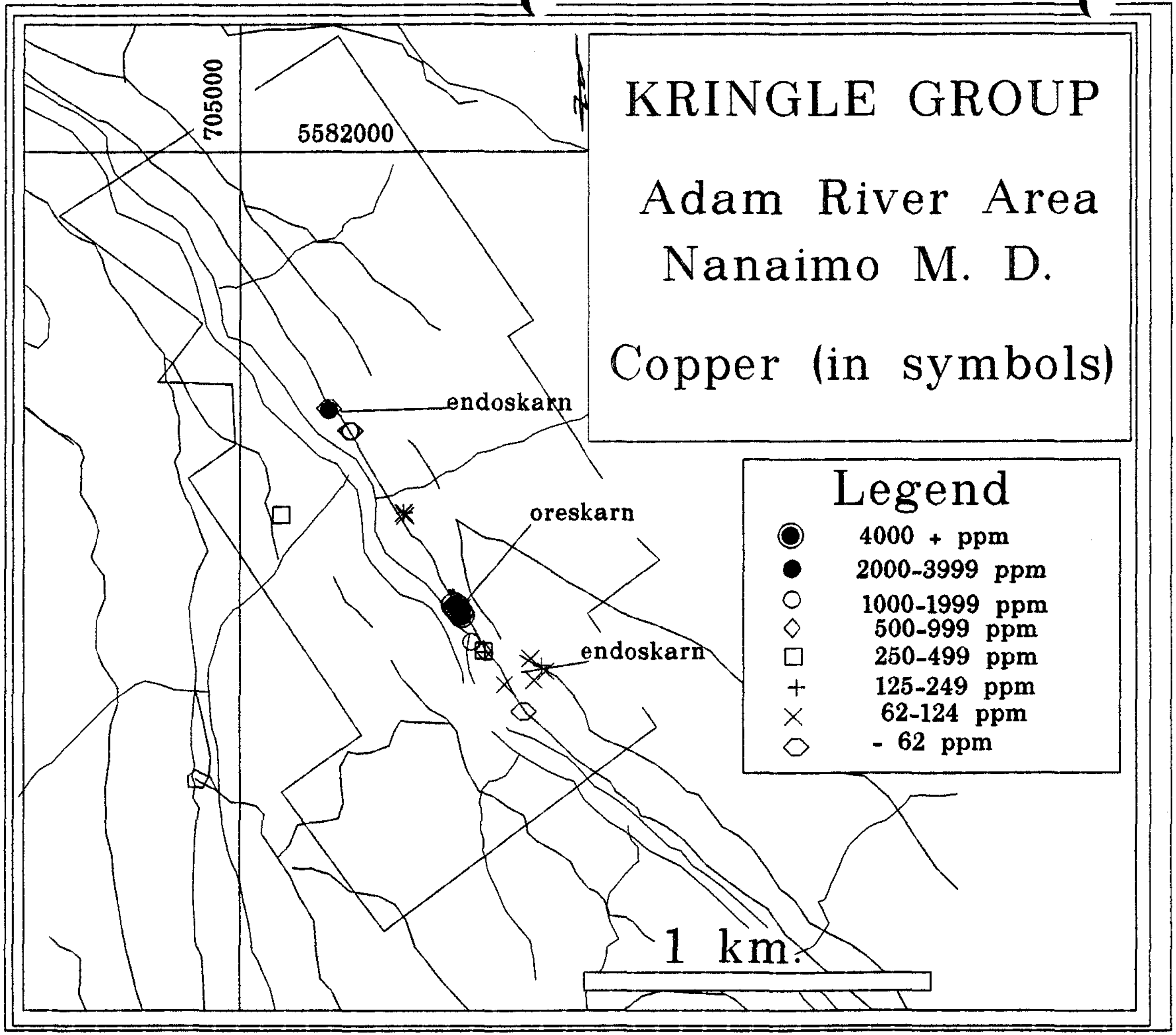


Fig. 7. Detail map showing results of Cu assays (in symbols)

Local masses of wollastonite have formed. An example assay is given below:

CaO	46.36	%
SiO2	48.18	%
MgO	.82	%
MnO	.16	%
FeOt	1.38	%

This is a fairly pure mass and typical of the type of material available. No effort has been made to seek the purest masses as yet.

5.7/ Petrographic and petrochemical results

Microscopic examination of selected samples has been undertaking to confirm the composition of some rock types. The reports are given in Appendix D. Some whole rock major and are reported in Appendix E and complete chemical details are found in Appendix C.

5.7.1 Alteration of granodiorite

Fresh "granodiorite" is thought to consist of biotite bearing hornblende rich quartz plagioclase rocks with accessory magnetite and less pyrite. The presence of potash feldspar is only locally noted in the most leucocratic portions. The rock types near the contact are more properly quartz diorites and diorites.

Altered granodiorite may be structurally altered as are the more mafic units and veined by magnetite-pyrite-biotite veins, or may contain large concentrations of pyrite disseminated throughout the rock, replacing previous iron silicates. There is some evidence that the intrusive has been subjected to a second hydrothermal event, during which time pyrite was added. New amphibole and biotite crystallized across the old igneous fabric.

Veining also alters bounding feldspars to argillic materials or epidote and/or quartz.

5.7.2 Alteration of skarn

Reaction skarn of the general sequence of (hot) garnet-diopside-wollastonite to (colder) limestone/marble are seen. Veins of garnet cut through reaction skarns and local diopside skarns. Bulbous masses of magnetite cut the reaction skarns and create local mineral zonations. Thin sheeted veins of sulphides cut previous rocks, and locally sulphides replace portions of the garnetite and magnetite skarns. Sulphides are near edges of marble.

5.7.3 Wollastonite skarns

The presence of wollastonite, although predicted to be present in contact aureoles (Barth, 1955), is not abundant in skarns on Vancouver Island (Sangster, 1969). Both thin section petrography (Appendix D) and whole rock chemistry (Appendix E) confirms the presence of this contact metamorphic mineral on the Kringle Group. The apparent thicknesses are substantial, but the road cuts are very nearly parallel to the irregular intrusive contact and the actual thickness of the wollastonite zone needs to be determined but is probably, at most, a few tens of metres thick.

5.7.4 Alteration of hornfels

Millimetre to centimetre thick veins of biotite, magnetite, and pyrite cut hornfels developed in mafic volcanics xenoliths and/or in mela-diorite.

5.7.5Alteration of greenstone

Vesicles in basalts are now amygdales of pink feldspar, epidote, quartz and locally, set with small specks of chalcopyrite or bornite. Feldspar phenocrysts are locally altered to epidote and quartz, and the matrix is of greenstone composition. Veins contain the same alteration minerals as the host. These are somewhat higher grade than the usual prehnite-pumpellyite grade the Karmutsen usually displays (Surdam, 1968).

5.7.6 Copper and silver

Copper and silver tenors in veins are correlated (Figure 8).

5.7.7 Probable type of skarn

Ray et al (1995) have used trace elements to characterize various types of skarns. Utilizing their charts, and using the values of the required trace elements obtained from from 183 and SL150C (Appendix C for full chemical details) it is possible to estimate what type of skarn is associated with the pluton.

It is realized that the two samples are not necessarily representative of the whole pluton, but the resulting classification is possibly of some interest.

From the Rb vs (Y+Nb) (Ray et al, op. cit.) charts the skarn is a most likely Cu skarn. From Na2O+K2O vs SiO2 chart it is a Cu or Mo Skarn. From Sc vs Rb it is a Cu skarn. La vs Nb yields a Cu skarn.

It would seem that the data to date suggests that the ore skarn is an example of a copper skarn.

suggesting that the mineralizing event "softened" the host intrusive. Late poikilitic hornblende is associated with this hydrothermal event. Veining of biotite-magnetite-pyrite is common in these rocks, especially in the south of the claim group.

5.9.2 Ore skarn distribution, and hints for finding more

The intrusive contact and its thin veneer of reaction skarn trends north-northwesterly, but where deviations from this trend occur it seems that exoskarns have formed. The showing at the 250km marker is an example of this; the seriate granodiorite (183) protrudes in a westerly manner and creates skarn pockets on either side. Finding more exoskarn pockets is a primary exploration target.

Ore skarns are recessive, because, in general, the sulphide is oxidized to an acid solvent near the surface and the nearby enclosing limestones/marbles are dissolved away by this acid. Hence, as a rule, oreskarns will not appear at the surface. The enclosing garnetite and other exoskarn minerals are resistant and thus the surface may be somewhat pockmarked. Physically looking near depressions in topography near irregularities in the map trace of the contact would be a start. Exceedingly rusty soil could be a clue and karstic development in limestones another. Geochemical testing of such regions may yield useful results. Locating marble and garnetite occurences would also be helpful in localizing favourable areas. The presence of associated magnetite and local massive sulphide masses favours geophysical means to detect oreskarn accumulations.

5.9.3 Significance of magnetic basalts

The magnetic basalts are apparently more iron rich than normal tholeiite basalts (based mainly on their high magnetic susceptibility, and on a single analysis of a gabbro). No magnetite is noted in amygdales.

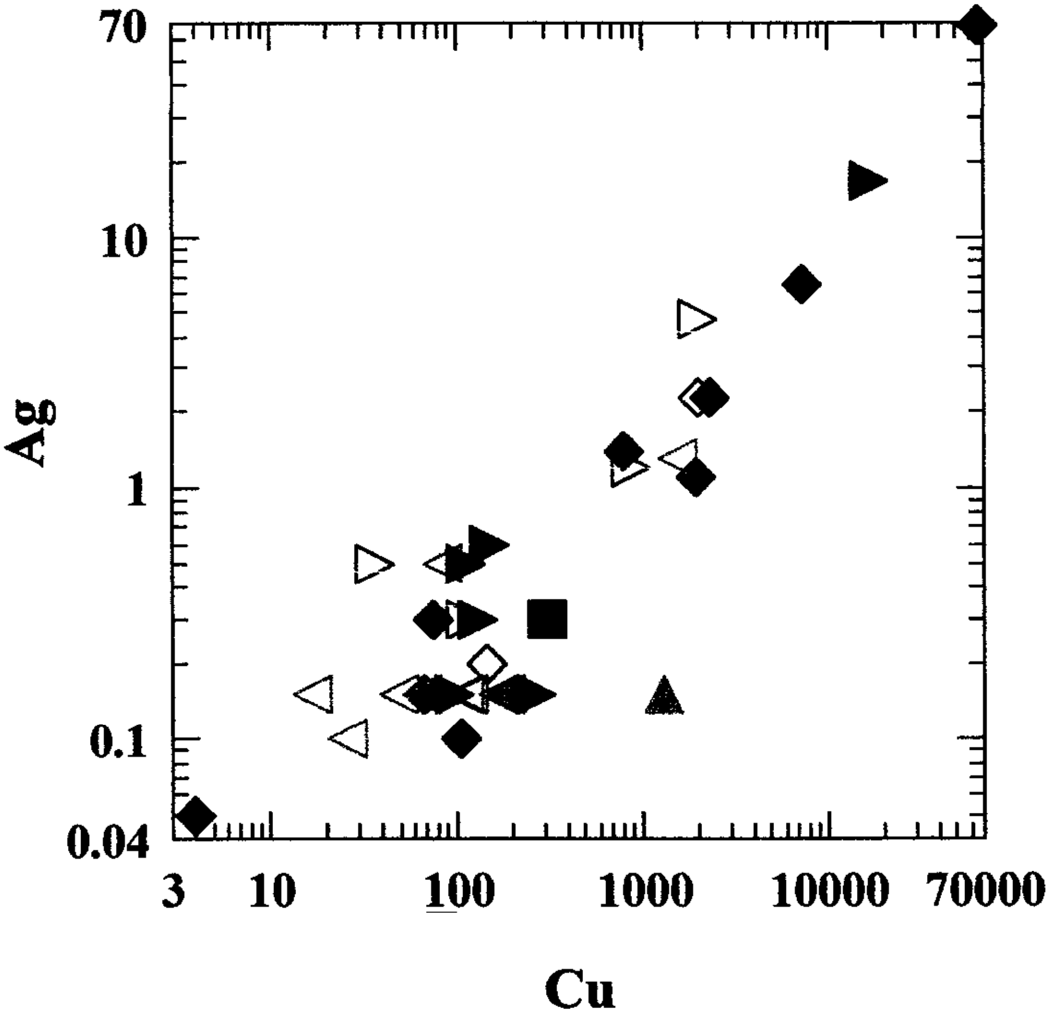
Whether the basalts are intrinsically iron rich in this part of the section, or the magnetite is part of a regional metasomatic event, the enhanced iron content has exploration consequences.

The upper Karmutsen may be exceedingly well differentiated along a tholeiitic trend. Hence this iron (and associated Ti, V and Mn) enrichment should have regional and stratigraphic expression. Currently, very few systematic lithochemical studies have been conducted on the stratigraphy of the Karmutsen Formation. It is not known whether the Karmutsen Formation is chemically zoned, through time and space.

Alternately, if the magnetite is metasomatic, then the possibility of iron oxide-copper deposits should be considered. The La and P contents of the magnetite are not elevated, hence at least one of the subclasses of metasomatic iron deposits is not applicable. The hematite bearing variety of iron oxide-copper-gold-deposit type is thus ruled out, but more reduced varieties are still possible candidates. Since a large area is underlain by rocks with silicate and sulphide filled amygdales and veins, as well as containing enhanced magnetite in the groundmass the conclusion that large scale metasomatism of some type is known to have occurred.

Currently, both models are being investigated. The hypothetical Adam River Batholith granodiorite "sill" which may possibly have overlain the area west of the river, may have been an important factor in the localization of the fluids. Detailed petrology may establish that the rocks nearest the "overlying" sill were inundated with hotter fluids than those deeper and further away from the heated body. Many new observations before these speculations can be put on a factual basis.

Figure 8, Copper (ppm) vs Silver (ppm) in lithogeochemical samples showing good correlation between the two.



5.9.4 Conclusions

The Kringle Group is located over the contact between the contact of the Adam River Batholith is formed where it cuts the upper Karmutsen, Quatsino, and Parson Bay Formations. A skarn complex including both reaction skarns and ore skarns has been located. A preliminary classification of the skarn, based on major and minor elements, puts it in the Cu skarn category. The hydrothermal system(s) implied by the ore skarn affected both the country rocks (exoskarns) and the granodiorite margin itself (endoskarn).

Sulphide accumulations of interest include bornite bearing sulphide veins and replacement masses, molybdenite bearing garnet veins, pyritic veins and disseminations in granodiorites and dykes, and pyrrhotite layers in reaction skarns. Only their presence has been documented, estimates of volumes and grades require much more work.

Magnetite in "ore skarn" and wollastonite in "reaction skarn" have been located, whether in large enough masses to be considered as industrial minerals is still unknown. The nearby transportation corridor increases the appeal of searching for these minerals.

This is a grass roots project and the extent of the postulated hydrothermal system is still being explored. Hence estimates of volumes and concentrations require defining by geophysical and other methods. There is a possibility that adjacent showings in the country rock (PUFF Group claims) are also part of the same mineralizing system, in which case, this discovery may become a significant prospect.

Speculation about structural position of the claim group will have to be more clearly stated and predictions tested with more work. The suggestion is that the Adam River Batholith is a sill, and that the showings now in the claim group formed underneath this granodiorite sill. This is a far more favourable environment for deposition of mineralization, because the mineralizing fluids have less chance to escape rapidly.

(Note added in proof: Maps from figure 3 and 4 are from MapPlace, maps for Figs 5,6 and 7 are drafted by MPS, using NAD27 base, and digitizing TRIM features onto NAD27 base. Geology is taken from Massey 1994, and modified by field data.)

6.0 FUTURE WORK

Future work should focus on establishing the areal extent of the various types of skarn bodies and their mineralization. Not only should metals be considered as a principal asset, but it may also be that industrial minerals are present in sufficient amounts to be exploited.

To find the extent the magnetic phases (magnetite, pyrrhotite) of the ore skarn a magnetic survey is clearly indicated. To find the extent of conductive portions (sulphide concentrations) of the ore skarn one of several types of survey can be contemplated; the size of the exploration commitment would seem to dictate the method. Both these surveys can be done off the same grid, which should include at least 250 m. on either side of the contact as currently located.

Interpretations of the surveys will be fraught with errors. The presence of the many roads with their infill of materials trucked in from unknown sources will pose a problem. The Adam River valley with the deep (glacio)- fluvial fill will shield anomalies located along the fault traces in the valley bottom. Nevertheless if enough surface anomalies along the valley sides are successfully tested, then deeper exploration will be easier to justify.

An indication of how widely distributed the wollastonite rich rocks are, would be of considerable interest; there is a perception that they are widespread, but whether this is merely because the apparent thickness is much greater than real thickness is an important factor in assessing the worth of this mineral accumulation.

A possible exploration scenario is given on the following page. Many others can be proposed, the main determinant is the amount of money available for further work. What is certain is that this program will need funding from a partner, or someone taking an option on the property.

A POSSIBLE EXPLORATION SCENARIO

1/ A program which could rapidly fulfill the needs outlined above, is to run a small helicopter survey (about 10km by 10km) measuring the magnetic and electromagnetic parameters simultaneously. This would focus the search.

ESTIMATED COST ; $25,000 (recent, but unofficial quote, subject to usual limitations)

2/ After the airborne survey, a more accurate GPS survey of claim posts as well as positioning, prospecting and collecting the newly located (see above) near- surface geophysical targets would be appropriate. (Using a BeepMat to help locate thinly covered magnetic and/or sulphide mineralization would be useful)

ESTIMATED COST: $10,000

3/ Petrographic analysis and detailed mapping of rock types near the contact area can establish the locations of hydrothermal ore bearing channels and the nature of the mineralizing fluids, and, possibly, estimate their extent.

More litho-geochemistry and systematic assaying of new and old showings on the property will help decide as to which type of mineralizing fluid the pluton might have generated.

Both methods will result in finding vectors towards ore skarn targets. And the results will also help in establishing the extent of industrial minerals such as wollastonite, magnetite, or garnet.

ESTIMATED COST: $15,000

At the end of this phase of the scenario, several target regions, of coincident geological and geophysical anomalies, will probably have been established. At this point there should be enough information to decide on the feasibility and design of a drill campaign

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8.0 AUTHOUR'S QUALIFICATIONS

I have been a rock hound, prospector and geologist for over 40 years. My mineral exploration experience has been with Shell, Texas Gulf Sulfur, Kennco, Geophoto, Cogema and, several mining juniors. I have worked 10 years in southern BC and spent 23 years with the GSC as a field officer focused on mapping in northeastern Arctic Canada. For the last 7 years I have prospected and explored for PGEs in Nunavut, Nunavik and BC.

I reside at 1007 Barkway Terrace, Brentwood Bay, BC, V8M 1A4

I am currently a BC Free Miner, # 142134, paid up until August 31, 2003.

During 2000 and 2001, I received Prospector's Assistance Program (PAP) grants to prospect on Vancouver Island. In 2002 I received YMIP grant to prospect in the Yukon.

My formal education is that of a geologist, I graduated with an honours BSc in 1964 and PhD in Geology in 1969, both, from UBC.

I am a P.Geol. licensed (L895) in Nunavut and NT, and a P.Geo. (25977) in BC. Because I became a P.Geo in BC in October 2001 time spent on the claims previous to this date was entered as a prospector and time after this date as a geologist.

I am sole owner of the claims in question.

I have affixed my stamp to this document on the table of content and on my statement of qualifications.

9.0 ITEMIZED COST STATEMENT

Wages:
Mikkel Schau, prospector
2 persondays sampling and recognizing prospect (not billed)

staking and mapping, (Kringle 1-4), 1P+1AT, June 15, 2001
mapping and sampling, 1 AT+1P (June 18, 2001)
mapping and sampling 1/2P + 1/2AT June 19, 2001)
collecting with volunteer 1/2V+ 1/2 P (July 26, 2001)
Dr Schau becomes P Geo.
mapping east side; 3 AT+3 PGeo(Oct 19, 20, 22, 2001)
staking and sampling logging road and up back with 1AT+1Pgeo. (Nov 18, 2001)
mapping logging road west of river with 1 AT+ 1 Pgeo. (Nov 19, 2001)
sampled group, 1/2V and 1/2Pgeo. (Nov 27, 2001)
Mapping west side, 2AT + 2 Pgeo, (June 13-14, 2002)

Mikkel Schau, prospector(P)		
3 days x 250	750	
Mikkel Schau, P.Geo., geologist(PGeo)		
mapping 7 1/2 day x 400	3000	
Alec Tebbutt, contract helper(AT)		
9- 1/2 day x 100	950	
also two volunteers 2 x ½ no wages(V)		
TOTAL Wages		*$4700*

Food and Accommodation:
20 persondays, @$60. Total Food and accommodation *$ 1200*

Transportation:
From Brentwood Bay to claims, and local transportation
4 return trips, (+ 4 trips not charged for)
5100@.38/km+8 Mill Bay ferry trips *$2058*

Analyses:

35 prepare rocks	166.25
1 prepare silt	1.40
35 Geo4 (ICP-ES of AR dissolved elements + PGE (Pt, Pd, Au) FA with ICP-ES finish	603.75
5 -4Aand B (whole rock majors and minors)	152.50
4 check analysis	46.02
geo4 on silt	17.25

Freight		60.00	
GST		75.44	
TOTAL:			*$1122.61*

Thin section preparation

Vancouver Petrographics (parts of two shipments)

1 large thin section	$ 50		
12 thin sections	$168		
Offcuts and polished slabs	$ 9		
Total		227	
Total with GST @ 7%			*$244.89*

Petrographic reports 12@$110/thinsection /inc GST	*$1320*
Petrophysics:	
45 Magnetic susceptibility measurements@$6/station /inc GST	*$ 270*
Density determinations @$5/sample /inc GST	*$ 135*

Map preparation and digitizing (5hrs@40/hr)	*$200*
Photocopies of maps, assesment reports, staking maps	*$20*
Staking fees, grouping fees,	*$110*
Exploration supplies, sample bags, hip chain coils claim tags	*$63*
Data-basing, Plotting, and Drafting(5 hrs @40/hr)	*$200*
Report preparation(10hrs@$50)	*$500*
Copies, binding 3 copies,	*$15*
Telephone (portion of Sat phone rental)	*$36.50*

Total project cost **$12,194**

10.0 APPENDICES

10.1 Appendix A Rock Descriptions of analysed samples, with Pd, Pt, Au, Ag, Cu tabulated

Assayed silts

STATION kind, type, description	all in zone 9 UTME	UTMN	ppb PD	PT	AU	ppm AG	CU
E187870 010619-183 Tributary just south of Initial Post, organic rich gravelly creek sediment	,705821	,5580361,	< 2	, 3	,< 2	,< .3	,59

Assayed rocks

2001

Highway Showing (to become core of Kringle Claims)

nov 6, 2000, A004304

SL150A marble and calcsilicate skarn	705640,	5580644	,<2	,<2	,2	,0.3	,113
SL150C,TS,WR Feldspar and hornblende porphyry with accessory pyrite	705616,	5580683	,3	,<2	,<2	,0.1	,23
SL150D magnetite, medium grained local development of dark brown garnet	705622,	5580673	,<2	,<2	,<2	,<0.1	,4
SL150E Quartz eye bearing epidotized felsite?, with local garnet and pyroxene development and abundantly disseminated chalcopyrite (a hybrid rock)	705642,	5580644	,12	,<2	,20	**,16.5**	**,17196**

nov 23,2000

SL150E check assay for copper **2.154%**

July 9, 2001 A101911

KRINGLE CLAIMS

E187874 010618-177-990m, massive pyrite pods in altered granodiorite (Ji)	,705257	,5581249,	,4	,3	,2	,< .3	,17
E187875 010618-177-900A, chloritite with abundant pyrite with some chalcopyrite	,705319	,5581184,	4	,< 2,	< 2	,< .3	,1318
E187876 010618-177-900B rusty pyrite layer/vein in granodiorite	,705318	,5581184,	,2	,< 2,	< 2 ,	< .3	,49
E187877 010618-176-616 leucocratic dyke with chlorite and pyrite veins	,705478	,5580936,	,4	,3	,5	,0.5	,84
E187878 010618-174-164 rusty aphanite with pyrite blebs	,705703	,5580541,	,3	,3	,< 2	,1.2	,865
E 187879 010618-175-295 massive pyritic and pyrrhotitic sulphide w/ chalcopyrite	,705637	,5580653	,5	,< 2	,5	**,6.5**	**,7350**
E187880 010618-175-312 garnet skarn with abundant pyrite, chalcopyrite, bornite?	,705620	,5580673,	,12	,< 2,	8	**,68.6**	**,66405**

E187881 010618-174-236 greenish, clay altered, felsic aphanite dyke several metres thick	,705668	,5580565,	,10	,3	,5	,4.7	,2029
E187882 010618-174-045 pale aphanitic felsite with malachite stain	,705764	,5580440,	,3	,4	,< 2	,0.3	,115
E187883 010618-174-155 thin pyritic sulphide veins in aphanite (skarn)	,705708	,5580535,	,< 2	,< 2	,5	,< .3	,185
E187884 010618-174-162 chlorite and pyritic sulphide veins in white aphanite (skarn)	,705705	,5580539,	,3	,2	,3	,< .3	,271
E187885 010618-176-625 pyritic sulphide vein in white aphanite (skarn)	,705474	,5580944,	,5	,4	,< 2	,< .3	,99
E187892 010615-140A Biotite, magnetite and pyrite in gneissic diorite	,705884	,5580479,	,< 2	,< 2,	< 2	,< .3	,66
E187898 010615-138 Pyritic sulphide rich dark medium grained intrusion with inclusion of skarn (endoskarn?)	,705257	,5581244,	,< 2	,2	,2	,1.3	,3578

A101911R check assays for Cu and Mo
KRINGLE
E187880 wp175-312m, see above, **Cu=7.053%, Ag=67.2gm/mt**
skarn with abundant sulphide

E187881 wp 174-236m, see above, **Mo=.112%, (repeat) .112 %**
greenish altered felsic aphanite

August 20, 2001, A102490
010726-176, WR, TS ,705643 ,5580666, ,<2 ,<2 ,<2 ,.1 ,106
leucocratic, layered, reaction
skarn with wollastonite

010726-183, WR,TS 705635 ,5580658, ,4 ,<2 ,4 ,<.1 ,37
altered seriate granodiorite
apophysis

010726-195, LTS, PCO 705629 ,5580663, ,2 ,1 ,1 ,1.4 ,796
garnet, pyroxene ore-skarn

010726-203-1 705624 ,5580672, ,18 ,4 ,1 ,2.3 ,2023
magnetite with sulphides
in garnet and other
skarn minerals

010726-203-m 705625 ,5580670, ,1 ,3 ,4 ,0.2 ,149
marble

010726-203-s 705624 ,5580671, 10 , 2 , 1 ,2.3 ,2321
skarn with sulphides

010726-214 705621 ,5580675, ,33 ,4 ,37 ,1.1 ,1964
sulphidic skarn

010726-627 TS 705474 ,5580945, ,6 ,7 ,1 ,0.6 ,151
malachite stained
endoskarn (wollastonite
bearing meta-felsite?)

010726-627-1 WR 705474 ,5580946, ,6 ,1 ,2 ,0.5 ,115
skarn inclusion, as above

Nov 07, 2001, A103803						
B204424 wp 262 WR massive, glomero-porhyritic (fp) fine grained gabbro	,705119 ,5580938,	,8	,1	,4	,0.3	,313
A200497 Feb 26, 2002, revised March 5, 2002 (for Cd)						
B204436 MP12, altered Granodiorite, with diseminated pyrite	,705872 ,5580495,	3,	5,	4,	<.3	172
B204434 MP9 diorite with disseminated pyrite	,705884, 5580479,	2	<2	<2	<.3	111
B204433 MP10 finely layered pyroxene skarn with iron sulphides	,705850, 5580453 ,	3	<2	<2	<.3	68
B204432 MP8 pyroxene skarn with dark hornblende and disseminated pyrite	,705840, 5580517,	2	3	2	.3	76
B204430 MP6 magnetite speckled biotite-hornblende quartz diorite	,705884, 5580477,	<2	<2	<2	<.3	116

10.2 Appendix B, Petrophysics

10.2.1 Magnetic Susceptibilities of selected rocks and outcrops

Introduction

The magnetic susceptibility of a rock is a volume percent average of the magnetic susceptibility of its constituent minerals. The magnetic susceptibility of a mineral is a measure of how it responds to a magnetic field. The common rock-forming minerals are generally not particularly responsive. Minerals such as quartz and feldspar show dia-magnetic magnetism with negligible, negative, magnetic susceptibilities that do not contribute appreciably to the rock magnetism. Para-magnetic minerals such as olivine, pyroxene, amphibole, biotite and garnet, with weak, positive magnetic susceptibilities contribute a minor amount to rock magnetism. Finally, ferri-magnetic minerals such as magnetite and pyrrhotite show moderate to high complex magnetic susceptibilities and contribute largely to the overall rock magnetism. Consequently, magnetic susceptibility can be regarded as a crude measure of the volume of magnetite, and in special, usually self-evident, cases, pyrrhotite, in the rock.

Instrumentation:

All measurements were performed using a KT-9 magnetic susceptibility meter (manufactured by Exploranium Radiation Detection Systems). This instrument is capable of measuring magnetic susceptibilities in the range 0.01 x 10^{3} to 999 x 10^{3} (dimensionless SI units), which is adequate for all situations except those involving massive magnetite layers or masses. The unit was operated in "pin" mode to minimize errors introduced due to surface irregularities (Exploranium Radiation Detection Systems, KT-9 User's Guide).

Magnetic Susceptibility of sampled locations

246, Ji, Fresh granodiorite	705771, 5580864, {5}, 22.6,	24.1,	24.6
253,10/20/01, Left of vein, basalt	705272,5580275, {3},1.15,	1.26,	1.45
253,10/20/01, on chloritic vein,	705272,5580275, {3},0.59,	0.61,	0.96
253,10/20/01, basalt sill,	705272,5580275, {5},5.40,	5.66,	10.10,
253,10/20/01,	705272,5580275, {3},1.38,	1.39	1.81

Basalt breccia

253,10/20/01,0 705272,5580275,{3},6.40, 4.18, 12.40
autoclastic breccia,

253,10/20/01, 705272,5580275,{3},1.09, 1.42, 1.54,
lighter grey dyke,
Possibly andesite

253,10/20/01, 705272,5580275, {3},15.50, 16.70, 19.80
Basalt,

256,10/20/01, 705111,5580487, {5}, 7.91, 15.9, 32.6
Porph with fp and "Hb"
phens in fg matrix,
core of lava flow
or sill

260,10/20/01, 704828,5581287, {5}, 8.47, 22.7, 48.3
Porph with fp and "Hb"
phens in fg matrix,
core of lava flow
or thin sill, many
thin calcite veins

261,10/20/01, 704971,5581132, {3}, 40.2, 50.5 58.7
Blocky, massive
Porph with fp and "Hb"
phens in fg matrix,
core of lava flow
or thin sill, local
thick epidote veins

262,10/20/01, 705119,5580938, {3}, 31.1, 42.5, 43.5
Glomeroporphyritic
feldspar in fine grained
basalt/gabbro matrix,
core of lava flow
or thin sill, many

thin calcite veins

263,10/20/01, 705078,5581016, {3}, 37.1, 38.5, 38.5
Massive fine grained
basalt/gabbro,
core of lava flow
or thin sill, some joints

264,10/20/01, 704804,5581322, {5}, 12.9, 39.5, 45.3
Porph with fp phens
in fine grained
basalt/gabbro matrix,
core of basalt lava flow
or thin gabbro sill,
feldspars altered
to epidote, much
rust in partings (after
thin pyrite veinlets)

266,10/20/01, 703110,5581475,{3},40.40, 44.50, 52.10
dark grey basalt with white quartz
near epidote green area

266,10/20/01, 703110,5581475,{3},16.00, 23.80, 26.20,
green part of epidote green area,

266,10/20/01, 703110,5581475,{3},31.70, 41.10, 53.80,
light grey, fine grain
gabbro?

266,10/20/01, 703110,5581475,{5},67.10, 105.00,126.00
black vein,
magnetite and chlorite

266,10/20/01, 703110,5581475,{3},1.08, 1.19, 2.81
Green chlorite
calcite vein rim

wp102, 705369, 5581074{3}, 10.2, 11.1, 11.8
Granodiorite

Wp103, 705425, 5580989{3},4.43, 4.54, 4.81
reaction skarn,

wp104, 705457, 5580939{3}, .18, .70, .78
altered porphyry
dyke cut by sulphides,

Wp105, 705560, 5580779 {3}, .21, .56, .61
garnet veins,

wp106 705570, 5580766 {3}, -.33, -.05, -.04
wollastonite
skarn

wp108 705704, 5580633,{3}, .23, .82, 1.52
Mafic amphibole
rich hornfels

wp109,(W) 705945, 5580433,{3}, 21.9, 27.9, 38.6
hb-bio-mt
endoskarn,

wp109, (E) 705940, 5580433,{3}, -.09, .72, .76
siliceous skarn,

wp110, 705884, 5580477,{3}, 37.4, 49.3, 53.9
Granodioritic
endoskarn,

,020613-130, 705721, 5580519, {3}.05, .08, .08
grey limestone

020613-131, 705669, 5580592,{3}, -.05, .01, .10

020613-250-100S 705667,5580607,{3}, .01, .57, .67
argillic alteration
(felsite?),

SL150C 705616, 5580683,{3}, 14.4, 15.6, 16.4
Feldspar-hornblende
porphyry

020613-300S grey limestone Tectonic clast	705777,5580432, {5} -.33, .17, .33 {1}, .83
020614-135, basalt	0705656, 5580194,{5},60.0, 75.1, 89.7
020614-136, greenstone	0705601, 5580263,{5},45.1, 60.5, 71.0
020614-138, greenstone,	705228, 5579890,{3}, 21.1, 28.0, 29.9
010618-0, grey lst	705780, 5580438,{3}, .18, .23, .41
010618-10, Grey limestone	705775, 5580434,{3}, .12, .19, .37
010618-100, cream aphanite, Wollastonite(?) bearing reaction skarn	705735, 5580486, {3}, -.11, -.11, -.11
010618-110, cream aphanite, Wollastonite(?) bearing reaction skarn	705730, 5580494,{3}, -.04, -.04, -.05
010618-120, cream aphanite, Wollastonite(?) bearing reaction skarn	705725, 5580499,{3}, -.12, -.10, -.10
010618-330, Wollastonite(?) bearing reaction skarn	705626, 5580678,{3}, -.40, -.41, -.45
010618-647, rusty gossan	705477, 5580964,{5}, 1.60, 3.34, 17.0

10.2.2 Density determinations of selected samples

The densities of different rock types are important variables in gravimetric investigations. Skarns, magnetite deposits and basic rocks are well known as units with higher densities than the normal granodioritic rocks of the crust. Thus their geometry can be modeled by very detailed gravimetric surveys.

The database below has been assembled, to use when a gravimeter survey becomes available to the authour. It is also of use as a check on the estimated modal composition of rock types.

Method of determining density.

A method outlined with great clarity in Holmes (1920, p.32-33) called the "Walker Steelyard Balance" method has been used. It depends on the principle of a lever, an object of a given weight and a fixed distance from the fulcrum is used to compare to the relative distances on the other side of the fulcrum, of an object weighed in air vs the same object weighed in water.

The relation is

Specific gravity = weight in air/
weight of displaced water of same object

translated into distances on a lever:

= distance from fulcrum of rock weighed in water/
(difference in distance from same fulcrum between weighed in air and in water)

Results

The use of an old method raises the question of sensitivity, accuracy, and precision

Sensitivity:
Distance (in this report) is measured to nearest .5 mm.

Accuracy
Quartz crystal fragment (mean= 2.64) vs 2.65 (reference)

Precision
Repeat measurements +/- .02

Data:

sample	rock	Utme	Utmn	SG
Basic rocks (mainly Karmutsen Formation)				
253B Q2l=	basalt	705272	5580275	2.81
253B Qd=	basalt	705272	5580275	2.94
253CQ2=	basalt	705272	5580275	2.93
Puff=133	basalt	705809	5580021	3.00
Puff2=135	basalt	705656	5580194	2.82
Limestone (Quatsino Formation)				
WP130=	Limestone	705721	5580519	2.59
250+17S=	marble	705615	5580707	2.60
Skarns, Hornfelses etc				
variegated				
250N+540=	layered	705337	5581151	2.75
Wo-gness				
616=	Massive	705478	5580936	2.95
wo-gness=	massive	705626	5580678	2.86
wp131=	massive	705669	5580592	2.93
garnet-pyroxene-sulphide				
303=	Rich sulphide	705628	5580678	4.10
250N+80=	garnet rich	705567	5580783	3.43
250S+50=	sulphide rich	705632	5580679	3.91
magnetite-skarn				
300=	Iron rich	705627	5580680	4.37
203=	Iron rich	705625	5580670	4.40
hornfels/granodiorite-endoskarn				
140F=	GRND	705884	5580479	2.79
140C=	GRND	705884	5580479	2.77,
140C-1=	GRND	705884	5580479	2.77
Granodiorite; variable leuco-granodiorite to mela-diorite				
278=	LeucoGRND	705884	5580475	2.62
JH=	Porphyritic	705612	5580643	2.66
183=	Porphyritic	705613	5580642	2.71
L974=	Quartz diorite	705850	5580503	2.85
L959=	Diorite	705840	5580515	2.93
Dyke rocks Feldspar-hornblende porphyry				
253AQ1=	andesite sill?	705272	5580272	2.71
150C=	Typical porph	705616	5580683	2.75

Remarks:

A large variation of density is noted in the intrusive unit indicating a large variation in the composition of the intrusion, from granodiorite to diorite.

The most dense rocks are found in parts of the contact, in particular where oxides and sulphides are located.

The basalts are dense as well. A characteristic profile is generated, from NE, in the batholith, where densities vary but are generally about 2.7, to the contact zone where considerable contrast is seen, ranging from 2.6 to 4.4, into the limestones with values near 2.6 and then into the basalts at about 2.9. The contrasts, and extents, are large enough to be measured by standard ground gravimetry. Hence, after the magnetic and conductive areas have been outlined, a density survey could be a useful adjunct to locate the more dense parts of the contact.

The density is also useful as another constraint in determining the mineralogy of finegrained samples. Wollastonite, with a density of about 2.93, often forms conchoidally fracturing bedded rocks, that emulate chert in handspecimen characteristics but the difference in density (chert about 2.65) is one clue to the presence of the metamorphic mineral.

10.3 Appendix C Certificates of Analysis

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm	Au** ppb	Pt** ppb	Pd** ppb
SL146BV	1.0	209	2	31	.3	15	9	794	2.17	<1	2	<2	<1	167	.2	6.5	.8	78	20.86	.012	3	25	.95	4	.163	<1	1.47	.007	.08	<1	<1	5.9	<1	<.01	5	<2	<2	[illegible]
SL146C	.5	231	<2	58	.1	33	23	364	4.81	<1	1	<2	1	73	<.2	<.5	<.5	171	1.79	.063	7	6	.86	20	.303	2	2.61	.342	.03	<1	1	2.1	<1	.02	8	5	3	18
SL150A	1.5	113	<2	9	.3	23	16	738	3.62	19	2	<2	<1	206	.4	3.9	.7	47	14.67	.029	3	6	.12	7	.058	4	.91	.006	<.01	<1	<1	3.1	<1	1.38	2	2	<2	<2
SL150C	5.1	26	2	31	.1	3	8	436	2.42	<1	1	<2	2	25	<.2	<.5	<.5	63	.98	.046	5	13	.78	32	.115	2	1.19	.098	.08	3	<1	2.5	<1	.05	6	<2	<2	3
SL150D	<.2	4	<2	82	<.1	<1	25	535	36.70	6	15	<2	2	3	<.2	1.6	1.2	9	.50	.005	<1	4	.02	1	.001	9	.05	.005	<.01	<1	<1	.4	<1	<.01	<1	<2	<2	<2
SL150E	23.9	17196	37	230	16.5	305	122	2754	13.82	23	10	<2	1	6	8.5	7.5	<.5	520	16.16	.023	2	83	1.03	1	.039	<1	1.91	.004	<.01	8	<1	8.0	<1	1.66	5	20	<2	12
SL152	3.7	48	<2	5	.1	7	2	151	1.29	1	<1	<2	<1	67	<.2	<.5	.5	78	1.17	.015	1	18	.04	2	.195	<1	.68	.006	<.01	1	<1	1.6	<1	.01	5	2	<2	2
SL153A	28.1	489	6	47	.3	21	12	275	9.31	1	3	<2	1	6	.5	.5	.8	64	.24	.033	4	30	.45	8	.131	<1	.57	.099	.01	2	<1	7.7	<1	2.41	1	3	<2	2
SL153A2	55.1	647	8	38	.1	24	19	351	21.31	11	10	<2	1	4	.9	2.7	2.3	84	.17	.010	5	13	.49	1	.137	<1	.62	.036	.01	<1	<1	9.8	<1	9.20	<1	6	<2	<2
SL153B	13.6	236	8	68	.7	92	112	222	17.25	246	6	<2	1	5	1.3	4.9	.9	66	.28	.035	4	34	.35	5	.141	2	.32	.041	<.01	4	<1	3.6	<1	14.52	<1	69	<2	35
MB15	1.8	347	<2	81	.1	49	31	608	6.04	<1	2	<2	<1	47	<.2	1.1	.7	207	1.63	.083	7	18	1.54	104	.399	7	3.13	.257	.07	1	1	4.8	<1	.18	11	2	<2	14
RE MB15	2.0	339	<2	80	.1	49	30	608	5.90	<1	2	<2	<1	47	<.2	.8	.7	209	1.64	.082	7	19	1.53	104	.409	4	3.12	.256	.07	<1	1	4.8	<1	.17	11	3	4	21
MB54	1.5	226	<2	66	.1	67	30	534	4.71	<1	1	<2	1	33	<.2	.6	<.5	124	1.23	.066	6	49	1.95	81	.247	3	2.54	.118	.05	1	1	2.7	<1	.11	7	2	5	13
MB54B	3.0	24	<2	51	.1	86	35	583	4.72	<1	1	<2	<1	200	<.2	1.3	.5	170	1.84	.047	4	116	2.29	9	.279	4	3.38	.011	<.01	<1	1	10.0	<1	.03	14	<2	3	13
MB54C	1.2	67	<2	90	<.1	77	37	694	5.58	<1	1	<2	<1	33	<.2	<.5	<.5	136	1.20	.067	5	61	2.74	13	.306	2	2.99	.053	.01	1	1	3.3	<1	.03	8	2	<2	11
MB54D	2.1	257	<2	57	.1	69	28	479	3.76	<1	1	<2	1	69	<.2	.8	<.5	100	1.71	.066	5	66	1.73	9	.314	7	2.09	.062	<.01	<1	1	3.3	<1	.02	7	2	2	7
MB55	1.2	250	<2	84	.1	82	37	700	6.23	<1	2	<2	<1	56	<.2	1.2	<.5	200	1.18	.074	8	53	2.54	452	.304	3	2.82	.073	.03	1	1	6.2	<1	.02	11	3	5	16
STANDARD C3/FA-10R	27.4	67	35	168	5.3	38	12	797	3.31	59	25	<2	23	30	25.9	18.4	23.8	83	.61	.098	19	179	.64	163	.088	22	1.81	.047	.20	14	1	4.7	<1	.03	8	469	471	479
STANDARD G-2	1.5	8	2	43	<.1	8	4	542	2.07	<1	2	<2	4	73	<.2	<.5	<.5	45	.71	.104	7	79	.62	237	.132	<1	.90	.097	.58	2	<1	2.6	<1	<.01	5	-	-	-

Sample type: ROCK R150 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

 Date____FA ____

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Ni ppm	Sc ppm	LOI %	TOT/C %	TOT/S %	SUM %
SL146C	48.16	13.55	12.79	6.41	10.46	2.70	.60	1.95	.18	.21	.015	212	85	41	1.8	.03	.01	98.87
SL150C	65.99	14.72	4.36	1.74	3.68	3.68	2.65	.49	.10	.09	.004	958	53	11	1.5	.02	.04	99.12
MB15	47.92	13.42	13.19	6.25	9.99	2.11	.46	2.19	.21	.20	.016	463	100	39	2.5	.02	.15	98.53
RE MB15	48.09	13.51	13.27	6.31	10.05	2.10	.44	2.19	.19	.20	.014	466	84	39	2.4	.01	.17	98.83
MB54	48.22	13.90	12.09	6.81	10.31	2.47	.43	1.79	.13	.19	.023	293	108	38	2.9	.08	.10	99.31
STANDARD SO-15/CSB	49.49	12.61	7.14	7.26	5.86	2.40	1.71	1.71	2.67	1.38	1.052	2048	75	13	5.9	2.34	5.40	99.42

Sample type: ROCK R150 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

Date ____ FA ____

SAMPLE#	Ba ppm	Co ppm	Cs ppm	Ga ppm	Hf ppm	Nb ppm	Rb ppm	Sn ppm	Sr ppm	Ta ppm	Th ppm	Tl ppm	U ppm	V ppm	W ppm	Zr ppm	Y ppm	La ppm	Ce ppm	Pr ppm	Nd ppm	Sm ppm	Eu ppm	Gd ppm	Tb ppm	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm	Lu ppm
SL146C	235	50.2	.1	18.1	3.0	10.2	7.7	2	335.5	.6	.7	<.1	<.1	435	1	106.2	26.6	8.0	19.6	3.03	16.6	4.4	1.82	4.97	.92	5.59	1.05	3.16	.53	3.12	.39
SL150C	1065	10.5	1.3	14.0	3.2	6.4	58.7	1	358.4	.6	5.2	.3	2.5	94	5	108.7	15.5	14.3	26.7	3.22	13.1	2.6	.94	3.04	.43	2.92	.61	1.99	.41	2.63	.34
MB15	469	46.2	.9	20.5	3.2	11.7	8.4	2	273.4	.6	.9	<.1	.2	469	<1	121.0	30.0	9.0	20.9	3.27	15.8	4.6	2.12	5.26	.98	5.50	1.06	3.46	.51	3.00	.34
RE MB15	508	46.6	1.4	19.2	3.1	11.1	10.6	<1	261.1	.6	.8	<.1	.3	465	<1	117.9	28.4	9.6	22.7	3.28	15.3	4.1	1.78	4.69	.83	5.22	1.09	3.23	.45	2.59	.24
MB54	300	44.8	1.0	17.3	2.4	8.8	11.4	1	305.3	.4	.5	<.1	<.1	387	2	92.3	23.8	7.3	17.6	2.67	12.0	3.7	1.55	4.02	.76	4.13	.84	2.48	.41	2.26	.32
STANDARD SO-15	2014	21.9	2.5	16.9	26.2	30.7	65.5	17	405.1	1.6	25.0	.9	20.8	156	20	1054.9	23.5	28.3	57.4	6.16	23.5	4.4	1.09	3.89	.61	3.63	.78	2.37	.38	2.48	.42

Sample type: ROCK R150 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

Data 1 FA ____

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(IS[illegible]002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Schau, Mikkel PROJECT NVI File # A101910
1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb	Pt** ppb	Pd** ppb
E 187868	3	132	11	238	<.3	56	18	850	2.30	35	<8	<2	4	41	3.0	<3	<3	68	1.08	.042	7	76	.82	40	.16	4	2.35	.08	.06	<2	8	<2	5
E 187869	<1	145	4	65	<.3	42	23	892	4.28	3	<8	<2	3	49	.2	5	<3	139	1.33	.045	4	48	1.29	24	.45	4	2.87	.07	.06	4	<2	<2	11
E 187870	5	59	4	83	<.3	18	18	1098	3.58	<2	<8	<2	3	45	.4	<3	<3	134	1.24	.075	8	25	.57	76	.17	4	2.74	.04	.05	3	<2	3	<2
E 187871	4	173	10	343	.4	77	22	705	2.83	60	<8	<2	3	62	3.7	<3	<3	79	1.62	.041	5	102	1.11	38	.18	3	2.94	.12	.08	9	7	<2	5
E 187872	<1	423	<3	31	.4	28	14	295	2.55	8	<8	<2	2	57	.2	3	<3	102	1.36	.063	3	31	.79	32	.25	<3	2.26	.09	.06	<2	5	3	19
E 187873	1	179	<3	57	.4	42	24	648	4.42	<2	<8	<2	3	45	.2	<3	<3	164	1.21	.041	4	53	1.22	25	.50	<3	3.60	.06	.05	<2	4	5	16
RE E 187873	1	180	<3	57	.5	41	24	653	4.44	<2	<8	<2	2	45	<.2	<3	<3	164	1.22	.043	4	55	1.23	25	.50	<3	3.60	.06	.05	<2	5	6	17

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: SILT SS80 60C AU** PT** & PD** GROUP 3B BY FIRE ASSAY & ANALYSIS BY ICP-ES. (30 gm)
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUN 27 2001 **DATE REPORT MAILED:** July 9/01 **SIGNED BY**.......D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data ___ FA YING

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Schau, Mikkel PROJECT NVI File # A101911

1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm
E 187874	2	17	<3	34	<.3	6	3	2362	6.00	8	<8	<2	<2	6	.4
E 187875	18	1318	<3	71	<.3	44	54	403	9.46	3	<8	<2	<2	7	<.2
E 187876	2	49	4	30	<.3	7	4	1815	4.64	6	<8	<2	<2	8	.3
E 187877	4	84	4	50	.5	18	5	232	1.00	<2	11	<2	<2	482	1.1
E 187878	14	865	3	38	1.2	37	48	609	6.84	44	<8	<2	<2	32	.8
E 187879	12	7350	<3	212	6.5	193	129	1034	13.83	85	<8	<2	<2	1	4.6
E 187880	16	66405	4	486	68.6	85	157	880	18.00	131	<8	<2	<2	1	5.7
E 187881	1153	2029	238	270	4.7	39	23	291	4.09	39	9	<2	<2	286	5.5
E 187882	4	115	<3	13	.3	6	4	395	1.71	<2	<8	<2	<2	154	.2
E 187883	3	185	3	52	<.3	10	16	145	3.30	15	<8	<2	<2	111	.8
E 187884	7	271	5	45	<.3	25	27	288	7.53	38	<8	<2	<2	29	<.2
E 187885	2	99	<3	19	<.3	13	8	266	1.41	13	12	<2	2	467	.5
E 187886	113	2476	16	1699	4.6	37	85	1535	14.52	26	<8	<2	<2	63	12.7
E 187887	46	1958	21	2034	3.8	21	115	875	12.38	103	<8	<2	<2	44	29.3
E 187888	51	3507	33	5489	7.3	25	105	916	12.97	80	<8	<2	<2	59	71.0
RE E 187888	51	3505	31	5470	7.7	25	105	922	12.90	83	<8	<2	<2	59	71.8
E 187889	2	3975	<3	27	2.2	12	3	142	1.26	<2	10	<2	<2	143	1.0
E 187890	2	780	202	96	1.6	2	16	844	5.94	40	<8	<2	5	55	.4
E 187891	2	11	3	19	<.3	2	1	691	1.32	5	<8	<2	8	23	<.2
E 187892	3	66	<3	50	<.3	17	14	299	4.37	<2	<8	<2	<2	42	<.2
E 187893	<1	191	<3	27	<.3	112	36	210	2.71	2	<8	<2	<2	25	<.2
E 187894	<1	329	<3	39	<.3	24	13	313	3.05	3	9	<2	<2	50	<.2
E 187895	19	5774	6	108	6.5	5	28	576	4.52	2	8	<2	<2	53	.6
E 187896	4	6351	5	73	9.1	5	21	454	3.38	<2	<8	<2	2	39	.7
E 187897	1	94	33	141	<.3	24	16	1986	3.86	11	<8	<2	<2	8	<.2
E 187898	<1	1578	16	103	1.3	20	8	2609	6.77	5	<8	<2	<2	37	2.1
E 187899	24	216	33	354	1.6	79	23	199	5.35	5	<8	<2	<2	7	2.5
E 187900	<1	80	<3	56	<.3	55	25	533	3.90	<2	<8	<2	<2	160	<.2
STANDARD C3/FA-10R	25	68	36	169	5.9	36	11	771	3.40	56	20	2	21	29	22.8
STANDARD G-2	1	4	3	43	<.3	7	4	529	2.03	<2	<8	<2	4	70	<.2

SAMPLE#	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb	Pt** ppb	Pd** ppb
E 187874	<3	<3	63	7.14	.120	4	22	.19	3	.06	<3	1.20	.02	.01	4	2	3	4
E 187875	<3	<3	384	.15	.049	2	72	3.11	41	.32	<3	2.81	.03	.71	<2	<2	<2	4
E 187876	3	<3	46	5.55	.112	4	18	.20	4	.05	3	1.01	.01	.01	4	<2	<2	2
E 187877	3	<3	33	9.58	.073	7	9	.08	180	.10	10	5.58	.75	.09	2	5	3	4
E 187878	<3	<3	144	5.44	.116	7	8	.14	2	.12	<3	1.49	.01	.01	<2	<2	3	3
E 187879	5	<3	227	10.31	<.001	3	24	.08	8	.06	<3	1.11	.02	.02	<2	5	<2	5
E 187880	<3	<3	126	8.85	.021	2	13	.03	3	.02	<3	.71	.01	.02	<2	8	<2	12
E 187881	<3	13	306	6.51	.332	13	97	.13	1	.11	<3	2.94	<.01	.02	<2	5	3	10
E 187882	<3	<3	100	8.57	.024	3	15	.31	3	.06	4	5.29	.02	.02	<2	<2	4	3
E 187883	<3	<3	64	1.61	.099	4	9	.44	20	.11	5	1.94	.21	.05	<2	5	<2	<2
E 187884	<3	<3	149	.49	.104	6	14	1.18	41	.22	<3	1.91	.08	.07	<2	3	2	3
E 187885	<3	3	31	8.72	.145	14	6	.08	180	.08	10	4.85	.09	.06	<2	<2	4	5
E 187886	<3	<3	266	.68	.048	4	10	1.89	14	.18	<3	3.53	.01	.01	<2	70	4	16
E 187887	<3	4	114	.35	.011	2	10	.88	5	.06	<3	1.71	.01	.01	9	134	3	9
E 187888	<3	3	139	.45	.008	2	8	.95	5	.05	<3	2.04	.01	.01	3	103	<2	14
RE E 187888	<3	<3	140	.45	.008	2	11	.95	5	.04	<3	2.05	.01	.01	<2	103	<2	13
E 187889	5	<3	83	3.12	.068	3	47	.10	3	.59	<3	.71	.01	.02	4	284	3	23
E 187890	3	4	3	.80	.010	12	32	.13	14	.01	4	.77	.02	.19	2	30	2	3
E 187891	<3	<3	5	.37	.006	10	8	.12	49	.01	<3	1.04	.03	.10	2	<2	<2	<2
E 187892	3	<3	154	.33	.063	5	52	1.39	68	.37	3	1.31	.08	1.07	<2	<2	<2	<2
E 187893	4	4	65	1.69	.056	2	114	.85	8	.29	3	1.77	.17	.03	<2	<2	10	18
E 187894	4	<3	129	1.77	.091	7	24	.98	47	.16	3	1.97	.21	.04	<2	2	<2	19
E 187895	4	3	103	2.30	.039	6	17	1.43	3	.21	4	3.02	.03	.07	<2	7	<2	<2
E 187896	<3	4	85	3.23	.028	6	20	.99	2	.15	3	2.85	.02	.02	<2	19	<2	<2
E 187897	<3	<3	39	.18	.072	9	29	1.25	98	.02	<3	1.91	.01	.11	<2	9	<2	3
E 187898	<3	3	92	10.22	.464	8	34	.34	3	.05	<3	1.73	.01	.01	7	2	2	<2
E 187899	4	<3	108	.77	.094	4	82	.40	24	.27	<3	.48	.05	.18	<2	22	6	12
E 187900	6	<3	131	2.10	.077	2	76	1.71	2	.59	<3	2.50	.01	.01	<2	2	7	18
STANDARD C3/FA-10R	18	23	86	.57	.088	19	175	.63	153	.09	20	1.82	.05	.16	22	484	468	468
STANDARD G-2	3	<3	44	.65	.093	8	80	.61	219	.14	3	.87	.07	.46	3	-	-	-

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK R150 60C AU** PT** & PD** GROUP 3B BY FIRE ASSAY & ANALYSIS BY ICP-ES. (30 gm)
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUN 27 2001 **DATE REPORT MAILED:** July 9/01 **SIGNED BY** C.L.......D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data FA

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

ASSAY CERTIFICATE

Schau, Mikkel PROJECT NVI File # A101911R
1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	MO %	CU %	AG gm/mt
E 187880	-	7.053	67.2
E 187881	.112	-	-
RE E 187881	.112	-	-
STANDARD R-1	.090	.831	100.3

GROUP 7AR - 1.000 GM SAMPLE, AQUA - REGIA (HCL-HNO3-H2O) DIGESTION TO 100 ML, ANALYSED BY ICP-ES.
- SAMPLE TYPE: ROCK PULP Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 13 2001 **DATE REPORT MAILED:** July 24/01 **SIGNED BY**.......... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

 Data FA

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

WHOLE ROCK ICP ANALYSIS

Schau, Mikkel File # A102490
1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Ni ppm	Sc ppm	LOI %	TOT/C %	TOT/S %	SUM %
010726-002A	47.20	13.58	17.09	5.25	6.52	2.33	.14	3.13	.26	.29	.003	81	52	34	4.0	.01	.02	99.81
010726-003	45.55	14.23	17.37	8.09	2.86	1.89	.06	2.68	.24	.22	.001	77	76	47	6.7	.03	.05	99.91
010726-003-1	47.93	13.58	16.48	4.80	8.08	1.53	.07	2.96	.24	.25	.001	52	52	34	3.8	.02	<.01	99.74
010726-004A	34.42	7.43	43.47	1.55	3.41	.08	<.02	.20	<.01	.14	.002	47	<20	2	8.7	.01	10.60	99.42
010726-004B	50.30	8.77	29.55	2.20	3.61	.08	.02	.60	.06	.20	.013	164	20	9	4.2	.03	2.65	99.63
010726-006	38.22	9.99	6.30	2.09	24.51	.27	.07	1.03	.08	.15	.002	63	21	19	17.2	3.62	.04	99.92
010726-007F	70.91	7.29	7.58	2.21	4.41	2.75	.99	.59	.23	.06	.005	2101	20	11	2.9	.19	1.26	100.16
010726-007T	47.92	14.27	13.02	4.25	5.77	4.99	.63	2.75	.22	.15	.015	2022	49	41	5.7	.08	2.10	99.93
010726-176	48.18	1.57	1.38	.82	46.36	.09	.03	.06	.08	.16	.006	27	83	3	.7	.35	.21	99.45
010726-183	62.37	15.04	5.54	2.42	4.93	3.55	2.99	.63	.12	.13	.003	1885	<20	15	2.1	.18	.16	100.04
RE 010726-183	62.30	15.06	5.54	2.41	4.94	3.59	2.78	.63	.13	.13	.001	1890	<20	15	2.1	.18	.17	99.83
010726-627-1	44.60	14.31	4.56	3.93	27.16	.24	.51	.87	.08	.13	.009	436	<20	21	3.4	.15	.99	99.85
STANDARD SO-16/CSB	58.12	10.93	11.01	5.52	.14	.34	6.27	.86	.26	.08	.009	847	38	11	3.6	2.41	5.35	97.24

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GROUP 4A - 0.200 GM SAMPLE BY LIBO2 FUSION, ANALYSIS BY ICP-ES. LOI BY LOSS ON IGNITION.
TOTAL C & S BY LECO. (NOT INCLUDED IN THE SUM)
- SAMPLE TYPE: ROCK R150 60C
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 31 2001 DATE REPORT MAILED: Aug 20/01 SIGNED BY ....D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

Data FA

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GEOCHEMICAL ANALYSIS CERTIFICATE

Schau, Mikkel File # A102490

1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm
010726-002A	.5	362	<2	122	.1	28	35	1148	8.60	1	<1	<2	1	75	.4	<.5	<.5	286
010726-002B	.5	409	<2	106	.2	25	33	1085	7.50	1	<1	<2	1	61	.3	<.5	<.5	276
010726-002B2	.6	230	<2	155	<.1	62	48	1457	9.48	1	<1	<2	1	61	.5	<.5	<.5	328
010726-003	.6	207	<2	160	<.1	70	54	1687	10.58	1	<1	<2	1	31	.5	<.5	<.5	369
010726-003-1	.6	287	<2	120	.1	30	36	1055	7.19	1	<1	<2	1	127	.5	<.5	<.5	271
010726-004A	81.2	4115	32	3386	9.6	19	187	958	24.40	29	<1	<2	1	29	49.5	<.5	1.0	111
010726-004B	172.8	1852	22	1221	3.5	12	96	1500	15.57	16	<1	<2	<1	42	21.9	<.5	<.5	144
010726-005	1.9	209	<2	58	.2	16	18	468	4.36	<1	<1	<2	<1	125	.4	1.2	<.5	172
010726-006	1.2	94	<2	47	.2	23	16	1116	3.34	2	<1	<2	<1	98	.2	.9	<.5	138
010726-007F	11.4	117	7	42	.3	32	5	121	3.80	8	<1	<2	2	10	<.2	<.5	<.5	51
010726-007T	1.4	476	3	29	.3	51	55	183	6.27	2	<1	<2	1	11	<.2	<.5	<.5	171
010726-008	.8	525	6	42	.7	76	67	326	5.37	4	<1	<2	<1	12	<.2	<.5	<.5	165
010726-176	.2	106	<2	3421	.1	67	4	1401	.57	11	4	<2	<1	92	59.3	1.1	<.5	401
010726-183	5.2	37	5	81	<.1	9	11	734	3.16	2	1	<2	1	76	.2	<.5	<.5	108
RE 010726-183	5.1	37	5	84	<.1	8	11	725	3.10	1	<1	<2	2	75	.2	<.5	<.5	105
010726-195	20.3	796	7	63	1.4	89	51	1370	10.65	31	5	<2	1	6	1.3	1.2	<.5	110
010726-203 skarn	.7	2321	<2	117	2.3	117	72	1398	13.64	20	9	<2	<1	4	1.7	.8	<.5	155
010726-203 marble	<.2	149	<2	14	.2	9	5	1134	4.85	21	3	<2	<1	274	.2	.9	<.5	3
010726-203-1	.8	2023	<2	87	2.3	197	241	1067	16.61	19	10	<2	<1	2	1.2	.7	.7	153
010726-214	<.2	1964	10	58	1.1	403	806	1168	25.58	62	4	<2	<1	2	<.2	<.5	1.2	50
010726-627	3.7	151	<2	34	.6	28	15	409	3.21	25	11	<2	5	327	1.2	.8	<.5	38
010726-627-1	3.3	115	<2	65	.5	18	9	394	1.83	10	2	<2	1	248	.7	2.2	<.5	43
STANDARD C3/FA-10R	27.2	65	33	177	6.4	37	12	838	3.50	56	25	<2	21	30	27.5	11.2	24.2	84
STANDARD G-2	1.6	9	2	46	<.1	8	4	568	2.08	1	2	<2	4	76	<.2	<.5	<.5	41

SAMPLE#	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm	Au** ppb	Pt** ppb	Pd** ppb
010726-002A	1.31	.095	8	11	2.27	46	.293	<1	3.53	.038	.02	<1	<1	17.9	2	<.02	16	<2	5	24
010726-002B	1.33	.101	9	9	2.18	29	.259	<1	3.35	.050	.02	<1	1	17.4	<1	<.02	16	<2	2	24
010726-002B2	1.00	.077	8	26	3.60	46	.239	<1	4.53	.030	<.01	<1	<1	28.0	3	<.02	19	<2	3	19
010726-003	.69	.077	7	30	4.29	48	.166	<1	4.94	.016	<.01	<1	<1	31.6	1	<.02	19	5	<2	20
010726-003-1	1.46	.089	8	17	2.13	30	.257	<1	3.36	.028	<.01	<1	<1	16.4	1	<.02	17	<2	<2	18
010726-004A	.34	.008	2	7	.77	7	.023	2	2.20	.006	<.01	16	<1	2.5	6	3.39	14	75	2	9
010726-004B	.59	.022	2	9	1.20	24	.057	<1	3.06	.005	<.01	6	<1	7.9	<1	1.60	16	17	<2	3
010726-005	5.07	.060	5	14	.92	14	.299	<1	4.14	.013	<.01	1	1	7.8	<1	.04	18	5	<2	11
010726-006	15.25	.030	3	15	.78	37	.207	1	4.19	.054	.03	<1	1	13.6	1	<.02	12	<2	<2	7
010726-007F	.71	.096	10	30	.31	106	.165	<1	.66	.051	.03	2	<1	3.3	<1	1.10	6	<2	3	2
010726-007T	.92	.087	3	51	.72	46	.424	<1	1.06	.110	.05	1	<1	8.5	<1	1.79	9	<2	4	23
010726-008	.90	.064	4	51	1.00	23	.475	<1	1.46	.118	.11	2	<1	7.4	1	2.23	12	2	4	22
010726-176	30.65	.027	5	29	.06	14	.018	1	.54	.004	<.01	<1	<1	1.9	<1	.19	2	<2	<2	<2
010726-183	1.56	.050	6	18	.96	275	.174	<1	2.05	.217	.09	2	<1	3.9	<1	.14	9	4	<2	4
RE 010726-183	1.49	.049	6	19	.94	269	.172	<1	2.02	.212	.09	2	1	3.8	<1	.14	9	<2	<2	<2
010726-195	11.16	.050	3	31	.06	12	.065	<1	1.85	.006	<.01	3	<1	4.4	4	1.87	5	<2	<2	2
010726-203 skarn	11.41	.010	2	31	.06	6	.076	<1	1.65	.002	<.01	4	<1	4.6	<1	2.86	4	<2	2	10
010726-203 marble	33.41	.004	2	2	.04	15	.001	<1	.16	.004	<.01	2	<1	.4	1	.28	2	4	3	<2
010726-203-1	8.91	.007	2	7	.04	5	.051	2	1.31	.002	<.01	3	<1	2.0	3	3.03	3	<2	4	18
010726-214	4.17	.024	4	19	.10	8	.047	5	.96	.002	<.01	2	<1	2.5	14	3.42	<1	37	4	33
010726-627	10.19	.328	29	8	.11	64	.089	4	4.42	.037	.06	<1	1	1.3	<1	1.76	8	<2	7	6
010726-627-1	11.32	.026	4	13	.15	141	.132	4	4.92	.038	.04	<1	1	1.6	<1	.86	10	2	<2	6
STANDARD C3/FA-10R	.62	.091	19	180	.63	157	.099	19	1.93	.044	.19	15	1	4.6	1	.02	10	480	473	484
STANDARD G-2	.69	.098	8	78	.61	218	.139	<1	1.00	.086	.55	2	<1	2.7	<1	<.02	6	-	-	-

GROUP 1DX - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY OPTIMA ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK R150 60C AU** PT** PD** BY FIRE ASSAY & ANALYSIS BY ICP-ES. (30 gm)
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 31 2001 **DATE REPORT MAILED:** Aug 20/01 **SIGNED BY** C.L. D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

 Data ___ FA ____

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

WHOLE ROCK ICP ANALYSIS

Schau, Mikkel File # A102490
1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Ni ppm	Sc ppm	LOI %	TOT/C %	TOT/S %	SUM %
010726-002A	47.20	13.58	17.09	5.25	6.52	2.33	.14	3.13	.26	.29	.003	81	52	34	4.0	.01	.02	99.81
010726-003	45.55	14.23	17.37	8.09	2.86	1.89	.06	2.68	.24	.22	.001	77	76	47	6.7	.03	.05	99.91
010726-003-1	47.93	13.58	16.48	4.80	8.08	1.53	.07	2.96	.24	.25	.001	52	52	34	3.8	.02	<.01	99.74
010726-004A	34.42	7.43	43.47	1.55	3.41	.08	<.02	.20	<.01	.14	.002	47	<20	2	8.7	.01	10.60	99.42
010726-004B	50.30	8.77	29.55	2.20	3.61	.08	.02	.60	.06	.20	.013	164	20	9	4.2	.03	2.65	99.63
010726-006	38.22	9.99	6.30	2.09	24.51	.27	.07	1.03	.08	.15	.002	63	21	19	17.2	3.62	.04	99.92
010726-007F	70.91	7.29	7.58	2.21	4.41	2.75	.99	.59	.23	.06	.005	2101	20	11	2.9	.19	1.26	100.16
010726-007T	47.92	14.27	13.02	4.25	5.77	4.99	.63	2.75	.22	.15	.015	2022	49	41	5.7	.08	2.10	99.93
010726-176	48.18	1.57	1.38	.82	46.36	.09	.03	.06	.08	.16	.006	27	83	3	.7	.35	.21	99.45
010726-183	62.37	15.04	5.54	2.42	4.93	3.55	2.99	.63	.12	.13	.003	1885	<20	15	2.1	.18	.16	100.04
RE 010726-183	62.30	15.06	5.54	2.41	4.94	3.59	2.78	.63	.13	.13	.001	1890	<20	15	2.1	.18	.17	99.83
010726-627-1	44.60	14.31	4.56	3.93	27.16	.24	.51	.87	.08	.13	.009	436	<20	21	3.4	.15	.99	99.85
STANDARD SO-16/CSB	58.12	10.93	11.01	5.52	.14	.34	6.27	.86	.26	.08	.009	847	38	11	3.6	2.41	5.35	97.24

GROUP 4A - 0.200 GM SAMPLE BY LIBO2 FUSION, ANALYSIS BY ICP-ES. LOI BY LOSS ON IGNITION.
TOTAL C & S BY LECO. (NOT INCLUDED IN THE SUM)
- SAMPLE TYPE: ROCK R150 60C
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 31 2001 DATE REPORT MAILED: Aug 20/01 SIGNED BY.......D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Schau, Mikkel File # A103803 Page 1

1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb	Pt** ppb	Pd** ppb
SI	<1	1	<3	1	<.3	1	<1	5	.04	<2	<8	<2	<2	2	<.2	<3	<3	<1	.08	<.001	<1	2	<.01	2	<.01	<3	.01	.39	<.01	<2	<2	<2	<2
B 204415	1	191	<3	209	.4	27	36	3850	13.66	20	<8	<2	<2	1	2.1	<3	<3	484	.32	.099	6	13	3.16	9	.15	<3	5.84	.01	.01	<2	6	5	20
B 204416	3	454	<3	192	.8	55	57	3708	14.89	33	<8	<2	<2	2	1.9	<3	<3	475	.34	.101	8	43	2.97	40	.16	<3	5.63	.01	.01	2	7	4	24
B 204417	141	1956	55	479	4.3	24	183	1097	23.25	76	<8	<2	<2	26	6.1	<3	<3	100	.33	.011	2	6	.85	15	.02	<3	2.26	.01	.02	6	407	<2	<2
B 204418	101	3801	62	5566	9.5	32	221	1044	25.45	59	<8	<2	<2	18	62.3	<3	<3	108	.21	.005	2	3	.79	9	.02	<3	2.04	.01	.02	9	82	<2	<2
B 204419	2	80	4	39	<.3	22	14	357	2.47	<2	<8	<2	<2	61	<.2	<3	<3	116	1.85	.068	3	20	.82	42	.15	4	2.04	.34	.10	2	6	<2	14
B 204420	<1	818	4	113	.3	74	43	1226	7.03	<2	<8	<2	<2	28	1.4	<3	<3	272	1.24	.072	4	118	3.18	6	.49	<3	3.53	.03	.02	2	5	4	32
RE B 204420	<1	831	3	113	.3	77	44	1249	7.18	<2	<8	<2	<2	28	1.3	<3	<3	275	1.26	.071	3	118	3.25	6	.49	<3	3.60	.03	.02	2	6	5	32
B 204421	3	402	<3	48	.4	26	15	455	2.91	<2	<8	<2	<2	7	.2	<3	<3	112	.34	.030	1	52	1.16	5	.24	<3	1.15	.03	.01	2	5	<2	13
B 204422	5	45134	<3	119	23.9	43	18	636	7.78	12	<8	<2	<2	5	2.1	<3	<3	211	.27	.014	1	48	1.77	2	.18	<3	1.72	.03	.01	<2	107	10	118
B 204423	3	29462	<3	144	14.5	50	27	813	7.21	4	<8	<2	<2	13	1.7	<3	<3	239	.44	.028	2	54	2.16	8	.30	<3	2.30	.03	.03	<2	74	4	49
B 204424	1	313	<3	37	.3	30	18	343	3.73	<2	<8	<2	<2	66	.2	<3	<3	185	1.83	.092	5	23	1.07	11	.19	<3	2.37	.35	.05	3	4	<2	8
B 204425	<1	129	<3	58	<.3	496	64	1089	7.34	17	<8	<2	<2	32	1.1	<3	4	154	3.55	.019	1	1163	9.36	3	.21	16	6.75	.01	<.01	3	5	10	9
B 204426	2	73	<3	28	<.3	301	38	614	3.36	3	<8	<2	<2	27	<.2	<3	<3	59	2.66	.016	1	551	4.97	3	.10	11	2.58	.02	<.01	<2	6	8	8
B 204427	1	124	<3	40	<.3	559	60	860	5.32	8	<8	<2	<2	67	.8	<3	<3	114	4.45	.019	1	1158	5.76	8	.15	7	6.22	.38	.04	2	<2	4	8
B 204428	2	158	5	24	<.3	30	13	259	3.05	2	<8	<2	<2	72	<.2	<3	<3	143	1.43	.061	3	43	.81	7	.16	4	1.54	.24	.04	<2	4	7	11
STANDARD DS3/FA-10R	11	128	33	160	<.3	35	12	822	3.23	30	9	<2	4	27	5.9	5	6	80	.55	.097	18	185	.61	147	.09	3	1.78	.04	.17	4	485	482	474

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: P1 ROCK P2 ROCK PULP AU** PT** PD** GROUP 3B BY FIRE ASSAY & ANALYSIS BY ICP-ES. (30 gm)
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: OCT 26 2001 DATE REPORT MAILED: Nov 7/01 SIGNED BY. C. L........D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data FA

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

WHOLE ROCK ICP ANALYSIS

Schau, Mikkel File # A103803 Page 2
1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Ni ppm	Sc ppm	LOI %	TOT/C %	TOT/S %	SUM %
B 204419	49.52	14.45	12.74	6.45	10.03	3.07	.29	1.84	.17	.19	.007	160	82	40	.9	.03	.01	99.69
B 204424	46.70	15.56	13.68	5.91	9.74	2.85	.08	2.46	.21	.18	.006	66	80	39	2.3	.04	<.01	99.70
B 204426	43.69	6.88	10.23	18.03	13.26	.24	.03	.44	.08	.30	.151	21	343	39	6.6	.47	.23	99.98
B 204427	42.53	14.94	9.67	12.88	9.86	.97	.18	.52	.08	.14	.179	30	501	46	7.8	.59	.09	99.83
B 204428	49.42	14.66	12.09	6.66	9.79	3.26	.08	1.78	.19	.17	.024	56	82	38	1.5	.03	<.01	99.64
RE B 204428	49.48	14.74	11.96	6.66	9.83	3.29	.04	1.77	.12	.17	.022	58	92	38	1.6	.03	<.01	99.71
STANDARD SO-17/CSB	61.09	14.10	5.93	2.37	4.74	4.10	1.43	.63	.95	.54	.447	407	35	24	3.4	2.40	5.30	99.78

GROUP 4A - 0.200 GM SAMPLE BY LIBO2 FUSION, ANALYSIS BY ICP-ES. LOI BY LOSS ON IGNITION.
TOTAL C & S BY LECO. (NOT INCLUDED IN THE SUM)
- SAMPLE TYPE: P1 ROCK P2 ROCK PULP
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: OCT 26 2001 DATE REPORT MAILED: Nov 7/01 SIGNED BY. C. L........D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Date FA

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Schau, Mikkel File # A103803 Page 2 (a)
1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	Co ppm	Cs ppm	Ga ppm	Hf ppm	Nb ppm	Rb ppm	Sn ppm	Sr ppm	Ta ppm	Th ppm	Tl ppm	U ppm	V ppm	W ppm
B 204419	43.4	.5	21.3	3.0	7.4	9.5	<1	278.1	.3	1.0	<.1	.2	403	1
B 204424	42.9	1.0	22.0	4.0	11.7	5.5	<1	365.1	.5	1.0	.1	.1	402	<1
B 204426	50.7	.3	8.8	.6	.8	1.2	<1	58.6	<.1	<.1	<.1	<.1	216	<1
B 204427	63.4	.8	13.3	.9	.9	5.1	<1	129.1	<.1	.1	.1	<.1	239	<1
B 204428	41.9	.2	18.5	2.4	8.0	3.6	<1	446.3	.4	.8	.1	<.1	326	<1
RE B 204428	42.4	.2	18.1	2.4	8.0	4.4	<1	469.6	.3	.5	.1	<.1	331	<1
STANDARD SO-17	18.7	3.5	19.9	11.9	24.6	21.4	8	301.0	4.6	12.1	.6	12.6	125	10

SAMPLE#	Zr ppm	Y ppm	La ppm	Ce ppm	Pr ppm	Nd ppm	Sm ppm	Eu ppm	Gd ppm	Tb ppm	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm	Lu ppm
B 204419	93.2	27.9	8.4	18.9	2.56	14.9	3.9	1.32	4.89	.78	4.98	.94	2.72	.35	2.59	.27
B 204424	127.4	33.9	10.5	24.3	3.45	19.6	5.2	1.66	6.38	.89	5.73	1.02	3.01	.46	3.18	.38
B 204426	21.4	15.9	2.4	5.8	.54	3.6	.9	.46	1.67	.33	2.40	.56	1.67	.29	1.88	.23
B 204427	25.4	17.6	1.5	5.4	.53	3.5	1.0	.44	1.72	.33	2.38	.58	1.85	.26	2.01	.30
B 204428	80.3	22.9	7.1	17.0	2.22	13.0	3.4	1.28	4.65	.69	4.11	.78	2.43	.34	2.11	.25
RE B 204428	83.7	24.2	7.3	17.4	2.36	13.6	3.7	1.19	4.76	.69	4.24	.84	2.31	.36	2.22	.27
STANDARD SO-17	351.2	26.5	11.4	22.9	2.95	13.1	2.9	1.04	3.94	.63	3.99	.86	2.66	.38	2.87	.38

GROUP 4B - REE - LiBO2 FUSION, ICP/MS FINISHED.
- SAMPLE TYPE: P1 ROCK P2 ROCK PULP
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: OCT 26 2001 DATE REPORT MAILED: Nov 7/01 SIGNED BY. C. L........D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Schau, Mikkel File # A103803 Page 2 (b)
1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	As ppm	Cd ppm	Sb ppm	Bi ppm	Ag ppm
B 204419	1.3	77	2	34	19	1	<.2	<.5	<.5	<.5
B 204424	.9	304	<2	48	27	1	<.2	<.5	<.5	<.5
B 204426	.6	68	<2	30	281	2	<.2	<.5	<.5	<.5
B 204427	.3	108	<2	42	460	1	<.2	<.5	<.5	<.5
B 204428	.9	155	2	26	28	<1	<.2	<.5	<.5	<.5
RE B 204428	.9	153	<2	27	27	<1	<.2	<.5	<.5	<.5
STANDARD DS3	10.6	131	35	155	36	32	5.8	5.4	5.9	<.5

GROUP 1DX - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: P1 ROCK P2 ROCK PULP <u>Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.</u>

DATE RECEIVED: OCT 26 2001 **DATE REPORT MAILED:** Nov 7/01 **SIGNED BY**......D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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(IS[illegible]002 Accredited Co.)

GEOCHEMICAL ANA[illegible]SIS CERTIFICATE

Schau, Mikkel File # A200497

1007 Barkway Terrace, Brentwood Bay BC V8M 1A4 Submitted by: Mikkel Schau

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb	Pt** ppb	Pd** ppb
SI	<1	<1	<3	1	<.3	1	<1	2	.03	<2	<8	<2	<2	2	<.2	<3	<3	<1	.08	<.001	<1	2	<.01	2	<.01	<3	.01	.42	.01	<2	<2	<2	<2
B 204429	3	22512	<3	55	12.3	19	8	295	4.02	2	<8	<2	<2	6	3.3	<3	4	67	.13	.003	<1	25	.75	6	.09	3	.82	.02	.02	5	67	4	23
B 204430 –	2	116	3	31	<.3	6	12	422	3.23	3	<8	<2	<2	167	.2	<3	<3	88	1.78	.072	4	9	.69	121	.11	<3	2.77	.34	.17	<2	<2	<2	<2
B 204431	4	30148	4	91	18.7	212	58	536	25.23	18	<8	<2	<2	54	2.6	<3	26	250	.52	.012	1	132	.51	5	.14	<3	1.14	.01	.01	4	78	3	63
B 204432 –	6	76	<3	7	.3	13	6	100	1.40	3	<8	<2	<2	229	.2	<3	<3	33	1.60	.133	8	13	.11	66	.12	<3	1.87	.28	.03	2	2	3	2
B 204433 –	3	68	3	4	<.3	17	8	45	1.69	3	<8	<2	<2	460	<.2	<3	3	22	2.23	.063	6	16	.03	85	.11	4	2.85	.35	.03	3	<2	<2	3
B 204434 –	3	111	5	25	<.3	9	17	392	3.34	<2	<8	<2	<2	97	.2	<3	<3	99	1.36	.060	4	11	.80	153	.17	5	2.20	.23	.20	3	<2	<2	2
B 204435	2	22	24	32	<.3	3	1	361	.71	<2	<8	<2	7	14	.3	<3	<3	3	.19	.009	8	8	.08	57	.03	<3	.49	.05	.14	2	2	<2	<2
B 204436 o	15	172	<3	16	<.3	7	27	160	3.26	<2	<8	<2	<2	149	<.2	<3	3	90	.62	.043	4	18	.59	82	.21	5	.97	.10	.31	3	4	5	3
B 204437	8	60588	<3	97	34.9	167	96	443	19.18	31	<8	<2	<2	50	2.7	<3	33	221	.58	.009	1	124	.55	5	.17	<3	1.20	<.01	.01	7	198	15	97
STANDARD DS3/FA-10R	11	130	30	136	.3	33	12	740	2.90	29	9	<2	4	29	5.4	6	7	70	.51	.085	16	166	.53	169	.08	4	1.59	.04	.15	5	479	486	488

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK R150 60C AU** PT** PD** GROUP 3B BY FIRE ASSAY & ANALYSIS BY ICP-ES. (30 gm)

DATE RECEIVED: FEB 26 2002 **DATE REPORT MAILED:** March 5/02 **SIGNED BY** C. L[illegible]........ D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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KRINGLE + PUFF

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Data [illegible] FA ____

10.4 Appendix D Petrographic Reports

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reaction skarns

010726-202	marble
010726-176	Leucocratic layered reaction skarn
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MP10, L930,	finely layered pyroxen rich reaction skarn

exoskarns

MP4,	Pyroxene skarn with biotite veins
010726-195-	Garnet diopside Ore Skarn-large section

endo skarns

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010726-183	Altered porphyritic quartz diorite
MP6,	Magnetite speckled biotite hornblende quartz diorite
MP9,	Diorite with disseminated pyrite
MP12,	meta-granodiorite with disseminated pyrite

Freshest igneous rock

SL150C	Feldspar Porphyry Dyke

Sample Number: 010726-202

UTM : Z 9, 705625, 5580671

Classification: Marble

Assigned to Altered Quatsino Formation

THIN SECTION DESCRIPTION

Mineralogy:

Major: calcite

Minor:

Accessory: white mica, rusty carbonate, sulphide blebs, opagues rimmed by leucoxene, sphene, small pyroxene grains, small regions with black dust, probably carbon.

Texture:

Grain Size: coarsely crystalline

Description of Texture: granoblastic, well developed cleavage in each grain,

Structure: massive, was at least locally, bioclastic

Alteration: fresh

Veining: none

Comment: Coarse calcite, is extensively cleaved and some crystals show kink bands
Relic cross section of a shell present in a more carbonaceous portion of specimen

Sample Number: 010726-176

UTM: Z9, 705643, 5580666

Classification: Leucocratic layered reaction skarn

Assigned to metamorphosed Quatsino Formation

THIN SECTION DESCRIPTION

Mineralogy:

Major: Wollastonite, locally twinned

Minor: greenish diopside, epidote,

Accessory: reddish garnet, poorly zoned plagioclase, thin layers of pyrite blebs,

Texture:

Grain Size: very fine grained, slight differences help define layering

Description of Texture: granoblastic to nematoblastic subparallel elongate crystals

Structure: layered

Alteration: None

Veining: Calcite, lots quartz, clay

Comment: A reaction skarn composed mainly of wollastonite, but with minor amounts of pyroxene, garnet, or pyrite defining the vague layering. See next appendix for chemical composition of rock.

Sample Number: MP8

UTM: Z9, 705840, 5580517

Classification: pyroxene skarn with disseminated pyrite

Assigned possibly to metamorphosed Quatsino Formation, could also be a limy member in the top of the Karmutsen Formation

THIN SECTION DESCRIPTION

Mineralogy:

Major: pyroxene
plagioclase

Minor: quartz, sphene, poikiloblastic epidote, hornblende

Accessory: magnetite, pyrite cubes

Texture:

Grain Size: pyroxenes different sizes in different layers from very fine grained to fine grained, some darker patches due to more hydrous mafics

Description of Texture:
Massive, lenticular mafic blebs in lighter matrix, magnetite with sulphide blebs near, but between the blebs

Structure: disseminated pyrite in non laminated part, pyrite in veins in high strainzone.

Alteration: sulphides in magnetite cores, chlorite around magnetite/sulphide .

Veining: pyrite veins ½ mm thick,
zoisite, pyroxene, quartz, and sulphides in a vein

Comment: Clearly a metamorphic limey rock, but darker fragment could be reconstituted fragments of basalt

Sample Number: MP10

UTM: Z9, 705850, 5580453

Classification: Finely layered pyroxene rich reaction skarn

Assigned to Metamorphosed Quatsino Formation

THIN SECTION DESCRIPTION

Mineralogy:

Major: Pyroxene
Quartz

Minor: Feldspar, twinned,
scarce green amphibole,
garnet (very small isotropic grains)

Accessory: Pyrrhotite and pyrite lenses parallel with bedding, sphene,

Texture:

Grain Size: very fine to fine grained, depending on layer

Description of Texture:
granoblastic

Structure: mm to cm layered, some polycrystalline patches of pyroxene. Some disrupted or lenticular in shape. The darker layers have thin pyrrhotite layers

Alteration: .

Veining: scarce iron sulphide veins, chlorite veins

Comment: Rock is a essentially an anhydrous skarn formed from a dolomitic rock.

Sample Number: MP4

UTM: Z9, 705884, 5580479

Classification: Pyroxene skarn

Assigned to Metamorphosed Quatsino Formation

THIN SECTION DESCRIPTION

Mineralogy:

Major: diopside (high ext angle, 2nd order birefringence, prismatic, right angle cleavages not prominent)

Minor: quartz, garnet on one end,

Accessory: apatite, sphene

Texture:

Grain Size: varies from very fine to fine grained

Description of Texture: granoblastic, sugary

Structure: massive to vaguely layered

Alteration: rusty along edges .

Veining: cut by thin pyrite veins, biotite veins and thin quartzo-feldspathic vein

Comment: essentially a monomineralic calcsilicate rock. Protolith could have been a dolomitic rock.

Sample Number: 010726-195

UTM: Z9, 705629, 5580663

Classification: Garnet-diopside Skarn

Assigned to an metasomatic Ore-skarn lense

THIN SECTION DESCRIPTION A large thin section

Mineralogy:

Major: Garnet
Diopside

Minor: calcite

Accessory: calcite, pyrite

Texture:

Grain Size: Varies greatly, from coarse grained garnet, to very fine small inclusions

Description of Texture:
Porphyroblastic, and veined

Structure: Zoned, from large garnet faces in contact with small patches of marble to a gradational contact with green pyroxene, with local patchs of late hornblende overgrowth.

Alteration:

Veining:garnet veining of earlier diopside. Sulphide veins.

Comment: Garnet diopside skarn mass, which, in its more veined aspect is host to the skarn sulphides

Sample Number: 010726-627

UTM: Z9, 705474, 5580945

Classification: Malachite stained endoskarn, wollastonite bearing felsite

Assigned to a hybrid rock category: apparently an early felsic dyke has been overprinted by later calc-silicate metasomatism

THIN SECTION DESCRIPTION

Mineralogy:

Major: Plagioclase, epidote, wollastonite

Minor: quartz, sphene,

Accessory:

Texture:

Grain Size: porphyritic in finegrained matrix overgrown by small crystals of Wollastonite

Description of Texture:
Poikilitic with small wollastonite crystals growing across a previous porphyritic texture.

Structure: massive

Alteration: previous minerals are spotted and nearly overgrown by wollastonite? .

Veining: Potash feldspar (orthoclase) vein with sulphides traverses rock.

Comment: This is a hybrid rock, and more needs to be done at this site. For the present, it seems that wollastonite and epidote have overprinted an earlier felsic dyke.

Sample Number: 010726-183

UTM: Z9, 705635, 5580658

Classification: Altered porphyritic quartz diorite

Assigned to the altered parts of the Adam River Batholith

THIN SECTION DESCRIPTION

Mineralogy:

Major: Phenocrysts of plagioclase, fine grained matrix

Minor: Phenocrysts of altered mafics
Altered pyroxenes
Altered biotite

Accessory: pyrite, magnetite, magnetite/ilmenite/leucoxene

Texture: Porphyritic feldspars and mafics set in a fine grained quartzo-feldspathic matrix. The mafics and opagues form clusters. The sample is altered to a propylitic assemblage.

Grain Size: Feldspars are cm and smaller (seriate)
Mafics are ½ a cm across, matrix finer grained

Description of Texture:
Massive, porphyritic to seriate set in fine grained, igneous texture well preserved.

Structure: massive, several veins

Alteration:Feldspars->
Mafics, biotite->chlorite, epidote, and calcite, local cleavaghe with clay.
Pyroxene?->calcite, pale pyroxene, green stubby hornblende .
Matrix->finegrained clay, white mica, quartz

Veining: many with calcite, quartz, and clay.

Comment: Textures well preserved, but mineralogically a propylite

Sample Number: MP6

UTM: Z9, 705884, 5580477

Classification: Magnetite speckled biotite hornblende quartz diorite

Assigned to the altered parts of the Adam River Batholith

THIN SECTION DESCRIPTION

Mineralogy:

Major: large zoned plagiclase
Altered mafic
Late brown-green fresh hornblende
Quartz
Minor: red biotite
Magnetite
Accessory: apatite, pyrite, pyrrhotite

Texture:

Grain Size: fine to medium grain

Description of Texture:
Igneous texture well preserved, local darker patches where later hornblende developed.
Late porphyroblastic hornblende engulfs previous altered mafic

Structure: partially recrystallized

Alteration: feldspar-> epidote neoformed feldspar quatz
biotite->chlorite on edges
Early mafic->chlorite, spotted zoisite, green hornblende

Veining: ½ mm thick pyrite veins

Comment: rock seems to have had a complex history; early igneous crystallization followed by a period of deuteric alteration while cooling. Somewhat later fluid (relatively hot) flooded rock and formed new poikilitic hornblende and rimmed the prior feldspars with sodic plagioclase to cause the strongly zoned feldspars now present.

Sample Number: MP9

UTM: Z9, 705884, 5580479

Classification: Diorite with disseminated pyrite

Assigned to the altered parts of the Adam River Batholith

THIN SECTION DESCRIPTION

Mineralogy:

Major: Feldspar old zoned, and new
Poikiloblastic Hornblende with biotite inclusions
Relic pyroxene
Quartz, much later

Minor: biotite

Accessory:Mt with inclusions of pyrite set in mafic clusters, pyrite speckled through feldspars as well

Texture:

Grain Size: fine to medium grained

Description of Texture:
Granitic textures well preserved.

Structure: massive

Alteration:old feldspar as inclusions in new hornblende,
Pyroxene rimmed by amphibole and surrounded by shreds of biotite .
Chlorite rims magnetite grains
Biotite->Chlorite near opagues

Veining: several thin 1/10 mm thick pyrite with chlorite rims
Mesocratic quartzofelspathic vein

Comment: Rock displays a long cooling history, culminating with suphide and chlorite precipitating veins. It probably started as a pyroxene-plagioclase rock, but later hydrous fluids carrying potash, silica and water (and suphides) helped transform rock into current rock.

Sample Number: MP12

UTM: Z9, 705872, 5580495

Classification: meta-granodiorite with disseminated pyrite

Assigned to the altered parts of the Adam River Batholith

THIN SECTION DESCRIPTION

Mineralogy:

Major: 2 feldspars, one twinned, seriate,(plag) the other altered but not twinned(kspar)
Red Biotite
Poikiloblastic zoisite
Quartz

Minor: Blue green, hornblende
Sphene
Pyrite

Accessory: apatite epidote

Texture:

Grain Size: old texture fine to medium grained,
New texture very fine to fine grained

Description of Texture: old granitic texture overprinted by metamorhic minerals
Granoblastic, poikiloblastic, some relic granitic texture.

Structure: massive

Alteration: feldspar->zoisite, clay, neoformed feldspar
chlorite along edges of biotite
Pyrite appears to have replaced most previous amphibole grains

Veining: vein of biotite, vein of pyrite

Comment: Rock has had a complex history, an older granodiorite possibly with hornblende has been recrystallized and old feldspars are partly reconstituted, and partly replaced by large poikiloblastic zoisites. Biotite and pyrite apparently have replaced the previous mafic minerals, and sphene crystals have replaced the titaniferous opagues. Again the phenomenom of a second hydrothermal sulphide bearing event is suggested.

Sample Number: SL150C

UTM: Z9, 705616, 5580683

Classification: Relatively fresh Feldspar phyric porphyry dyke

Assigned to later porphyry dyke unit

THIN SECTION DESCRIPTION

Mineralogy:

Major: Plagioclase with several growth zones and strong optical zoning, altered matrix
Matrix of quartzofeldspathic material/clay/white mica

Minor: resorbed quartz eyes, altered mafic phenocrysts, clove brown amphibole,

Accessory: magnetite, pyrite in chlorite and mafics blebs, sphene

Texture:

Grain Size:Feldspars is up to 8mm, and mafics to 3mm in fine to aphanitic matrix

Description of Texture: Porphyritic

Structure: massive, few joints

Alteration: Feldspars are locally altered to white mica, zoisite, clay and neoformed plagioclase
Mafics some are altered to epidote and grey birefringence chlorite, others, stubby clove brown laths, remain fresh

Veining: few quartz veins, thin calcite and chlorite veins

Comment: Propylitically altered feldspar hornblende porphyry.

10.5 Appendix E Petrochemical Analytical Results

Several rocks were analysed to determine the complete chemical composition Acme methods 4A and 4B. The major oxides are shown below.

	010726-176	010726-183	010726-627-1
SiO2	48.18	62.37	44.60
TiO2	.06	.63	.87
Al2O3	1.57	15.04	14.31
Fe2O3t	1.38	5.54	4.56
MnO	.16	.13	.13
MgO	.82	2.42	3.93
CaO	46.36	4.93	27.16
Na2O	.09	3.55	.24
K2O	.03	2.99	.51
P2O5	.08	.12	.05
LOI	.7	2.1	3.4

	B204424 wp262	SL150-C
SiO2	46.70	65.99
TiO2	2.46	.49
Al2O3	15.56	14.72
Fe2O3t	13.68	4.36
MnO	.18	.09
MgO	5.91	1.74
CaO	9.74	3.68
Na2O	2.85	3.68
K2O	.08	2.65
P2O5	.21	.10
LOI	2.3	.04

Whole rock analysis provide constraints on the mineralogical composition of the rocks. Sample 176 for example is almost pure CaO+SiO2 as would be expected in a wollastonite skarn. 627 has a peculiar composition, in keeping with its unusual mineralogy.

The two porphyritic felsic rocks (183 and 150C) are dacitic in composition, and are very similar in composition, as was deduced from the thin sections.

The basalt is from a sill (262). It is tholeiitic, but more iron rich than most.

10.6 Appendix F Notes on Precision of analytical results

Precision of analytical results

Each sample batch is provided with an analyses of a standard provided by ACME Labs. Below selected elements are shown to give a sense of the precision and accuracy that the lab provides:

Geo4, aqua regia partial solution, with precious metals are done by fire assay

Standard S1 (quartz blank)

batch #	Mo	Cu	Zn	Au	Pt	Pd
A10358, Oct 18/01	<1	1	2	<2	<2	<2
A103803, Nov 7/01	<1	1	1	<2	<2	<2
A200497, Feb 26/02	<1	<1	1	<2	<2	<2

Standard DS3/FA-10R

batch #	Mo	Cu	Zn	Au	Pt	Pd
A10358, Oct 18/01	9	129	160	484	474	477
A103803, Nov 7/01	11	128	160	485	482	474
A103803, Nov 7/01	10.6	131	155	n/a	n/a	n/a, no FA-10R done
A200497, Feb 26/02	11	130	136	479	486	488

Standard C3/FA-10R

A004894, Dec 12/00	25	62	169	481	465	489
A101911, July 9/01	25	68	169	484	468	468
A102490, Aug 20/01	27.2	65	177	480	473	484

Whole Rock Analyses 4A, 4B,

whole rock is fused and mass is brought into solution:

Standard SO-15/CSB

	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5
A004893, Dec 21/00	49.30	12.67	7.22	7.14	5.78	2.36	1.79	1.72	2.64

Standard SO-16/CSB

A102490, Aug 20/01	58.12	10.93	11.01	5.52	.14	.34	6.27	.86	.26

Standard SO-17/CSB

A103803, Nov 7/01	61.09	14.10	5.93	2.37	4.74	4.10	1.43	.63	.95

Standard C-3

	Mo	Cu	Zn	Au	Pt	Pd
A004893, Dec 21/00	27	67	172	481	465	487

Standard G-2							
A004894, Dec 12/00	1	3	40	3	<2	2	
A004893, Dec 21/00	2	3	45	-	-	-	
A101911, July 9/01	1	4	43	-	-	-	
A102490, Aug 20/01	1.6	9	46	-	-	-	
	Co	V	Zr	Y	La	Eu	Yb
Standard SO-15							
A004893, Dec 21/00	22.4	154	1029.3	24.3	30.1	1.00	2.52
Standard SO-16							
A102490, Aug 20/01	408.7	113	223.0	98.5	59.6	2.47	9.78
Standard SO-17							
A103803, Nov 7/01	18.7	125	351.2	26.5	11.4	1.04	2.87

	Mo%	Cu%	Ag,gm/mt
Standard R-1 for assays			
A101911R, July 24/01	.090	.831	100.3

Part B Estimates of precision for precious metals

Calculation showing how precision estimates for precious metals were derived:

Lab Standard	FA-10R		
batch #	Au	Pt	Pd (all in ppb)
A004894, Dec 12/00	481	465	489
A004893, Dec 21/00	481	465	487
A1011911, July 9/01	484	468	468
A102490, Aug 20/01	480	473	484
A10358, Oct 18/01	484	474	477
A103803, Nov 7/01	485	482	474
A200497, Feb 26/02	479	486	488
estimate of mean	482	473	481
estimate of variability			
+/- 1 s	1.8	9	8
%	.5	2	2

This means that values of Au between 480-484 ppb cannot be distinguished with any precision, similarly Pt between 464-482ppb and Pd between 473-489ppb cannot be separated.

The lab thus indicates that their estimate of Pd is less reliable than Au, at these concentration levels. Au is well measured with a very small standard deviation.

Considering the variability given for gold above, and given that the lab reports larger instrumental variability for Pt and Pd than for Au, then by analogy it follows that the values for variability of Pt and Pd will be of a somewhat larger magnitude, than those estimated for gold, and the smaller the tenor, the larger the percent uncertainty.

Nevertheless there will be no difficulty in distinguishing anomalous samples (arbitrarily set at over 30 ppb for Au, 50 ppb for Pt and 50 ppb for Pd) from background values (also arbitrarily set at about 3 ppb Au, 3 ppb of Pt, and 15 ppb Pd, in gabbro and basalts and in contrast to the values of <2, <2, and <2 ppb respectively for other units).

No analyzed values of Pt or Pd reach the anomalous level as defined herein. One sulphidic skarn reported a value of 33 ppb Au which would be considered just anomalous, and several skarns reported high background for several of the precious elements.

10.7 Appendix G Comparison of repeated UTM determinations over several visits

This investigation arose after the repeat determinations of localities seems to deviate more than the expected better than +/-10 m claimed by the manufacturer.

Cheap GPS instrument such as the Garmin 12, used in this study, only use one of the two channels available from the satellites. Hence a number of errors are propagated, which are eliminated by the more expensive two channel system. These errors include ionospheric distortions, variable refraction through the atmosphere and a host of others. Because they mainly reside in outer space, and hence cover a lot of area, determinations near each other in time and space, are not affected as much as those far from each other in time and space. The net result is that relative positions in a small area collected on the same day are not badly affected, but superposing surveys from different times of the year when the ionosphere are markedly different, overtop of each other will yield errors in relative and actual positions (Wells, 1987).

Two instruments were used to make 21 simultaneous observations to test the between instruments variability. There is no statistical distinguishable difference between the instruments. Hence the errors are not instrumental.

The pooled estimate of variation is used below.

Precision at Base camp location: UTMN=+/-14m, UTME=+/-22m

Accuracy of locations:

250 km marker 705607+/-10m, 5580719 +/-22m

Thus the use of Garmin GPS is useful for regional studies, but when working on claims, direct measurement from set points would still appear to be the more prudent approach. It is for this reason that 250km Marker has been designated as 0,0 for future work. It is recommended that a precise differential GPS survey locate the claim posts, the geodetic markers, and the 250km marker and so minimize the uncertainty. It is possible that the full 500 metres were not claimed in all the claims.

The position of the claims shown on Map-Place are not correct (Nov 20, 2001), but seem to have been moved north a bit. The claims as shown on the maps in this report are those that follow from the GPS values obtained at the posts. These values are not "better" but underline the need for more precise positioning. The locations plotted on maps in this report has been *"tweaked"* so that observed relations between outcrops are preserved. A proper survey is needed for further detailed work.

NOTE: locations have been recorded in the appendices with the GPS coordinates measured at the time, this leads to some inaccuracy if plotted on the maps. One inclusive survey can integrate all important observations.