GEOLOGICAL REPORT ON MAGNESITE ALTERATION ON THE MAG GROUP IN THE BEATON – CAMBORNE AREA

CAM , MAX , And K Claims

Tenure numbers 876547899 9876433 099765444 9987655444 987655
In The Revelstoke Mining Division

Comprising The MAG GROUP

NTS 82 K 13 E
Lat. 50*50' N Long. 117*40' W

CLAIMS OWNED BY 581606 B.C. Ltd.

OPERATOR - Cascadia International And MagAlloy Corp. Of America Inc.

Consultant - K.G.Sanders, PEng

BY

D.C.Mackie, BSc
M.D.Newman-Bennett, BSc

December 22, 1999

FOREWORD

Quartz - carbonate alteration of the greenstones in the Lardeau district has long been recognized but it was not until the 1999 season that any specific examination of the phenomenon was carried out in detail.

With a minimum of interest in what it actually represented, it was generally categorized as a mix of ankerite and siderite. In the extensive work carried out recently by Granges on the Goldfinch / Independence properties [Windflower] it was once again mis-named 'fuchsitic dolomite'. The low calcium content suggests that it is not a dolomite or a dolomitic alteration. It does however recognize that there is a significant magnesium content.

The alteration was originally described by Dr.H.C.Gunning in Memoir 161 of the G.S.C. He describes its occurrence at the Agnes showing where it has the appearance of a dike. As such it had been called the 'Coon Dike'. We have re-named it the 'Sable Dike'.

However it is not a dike structure in the purest sense, but rather, a hydrothermal alteration occurrence controlled by lithology and structure. Mackie and Newman-Bennett have called the carbonatization 'Sable Dike Alteration' and it is not confined solely to the area that is the subject of this report. However nowhere else in the Lardeau District does it occur in significant tonneages.

The fact that the alteration shows an anomalous magnesium content in the form of magnesite has resulted in the current evaluation program by 581606 B.C. Ltd. commencing with a basic field examination, prospecting, and geological mapping program, which is the subject of the following geological report by D.C.Mackie, BSc, and M.D.Newman-Bennett, BSc.

Their report is of a preliminary nature because of the magnitude of the mapping program which will be on-going. The final summary report for the field season has not yet been compiled, pending the receipt of all chemical analyses from the various sample suites. For these reasons an assay plan for the map area is not included herein. This plan map can be forwarded if requested after it has been completed.

In any event, total expenditures in the 1999 field season far exceeded the assessment credits filed in this report.

All work was carried out under my supervision.

K. G. Sanders

K.G.Sanders, PEng

December 22, 1999

LOCATION MAP FOR THE MAG GROUP
Beaton Area, B.C.

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INTRODUCTION

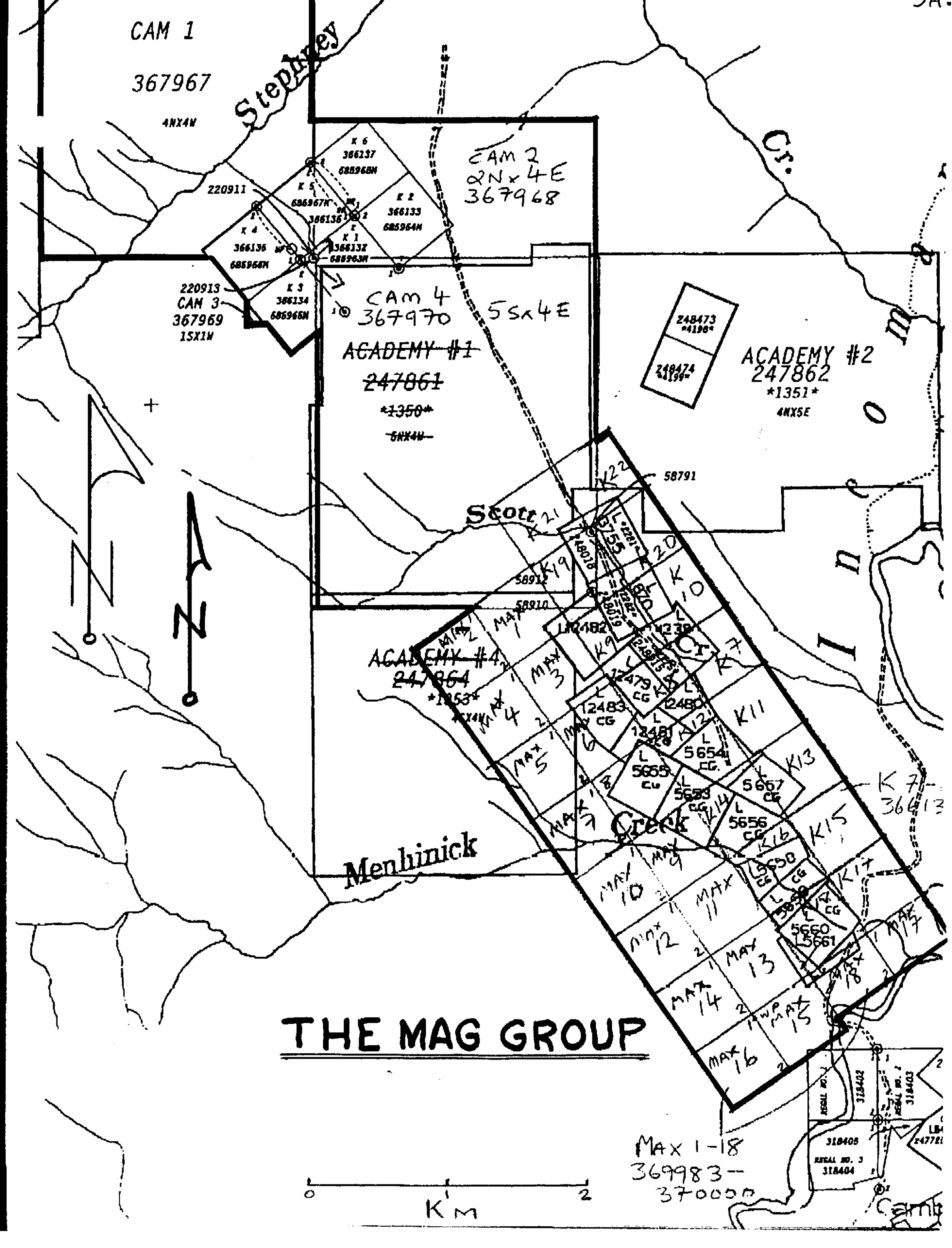
Location And Access : The subject claim group is located in the West Kootenay district in south-eastern British Columbia and is 43 km south east of Revelstoke, B.C. in the Revelstoke Mining Division.
Access is by the B.C. hiway system from Revelstoke [565 km east of Vancouver] to the old Beaton townsite via hiways 23 and 31, a distance of 61 km and crossing the Upper Arrow Lake by ferry from Shelter Bay. An all weather gravel road follows the Incomappleux River in a northerly direction from Beaton for an additional 15 km. An excellent logging road [lately unused] climbs uphill from this point for an additional 5 km to the 1006 metres asl elevation. This is roughly the centre of the claim group and the logging roads above this elevation are in a state of disrepair. The upper 2 km giving access to the 1768 metre elevation are accessible by 4WD vehicles only, but this road is as yet unopened.
Elevations on the claim group range from 518 metres to 2072 metres asl. The highest elevations are at the north end of the group and these are only accessible by helicopter or on foot using abandoned mining tote roads.

Property Definition : The Mag Group is comprised of claims K 1 to 22 inclusive [22 units], claims CAM 1 to 4 inclusive [45 units], and MAX 1 to 18 inclusive [18 units]. The total is 85 units. They are summarized as follows.

NAME	TENURE NUMBERS	ANNIVERSARY DATE
CAM 1,3	367967,367969	February 15, 2000
CAM 2,4	367968,367970	February 16, 2000
K 1-6	366132-366137	September 26, 1999
K11-14	366142-366145	September 27, 1999
K15-18	366146-366149	September 28, 1999
K 7-10	366138-366141	October 6, 1999
K19-20	366150-366151	October 6, 1999
MAX 1- 4	369983-369986	June 30, 2000
MAX 17-18	369999-370000	July 1, 2000
MAX 5-16	369987-369998	July 2, 2000

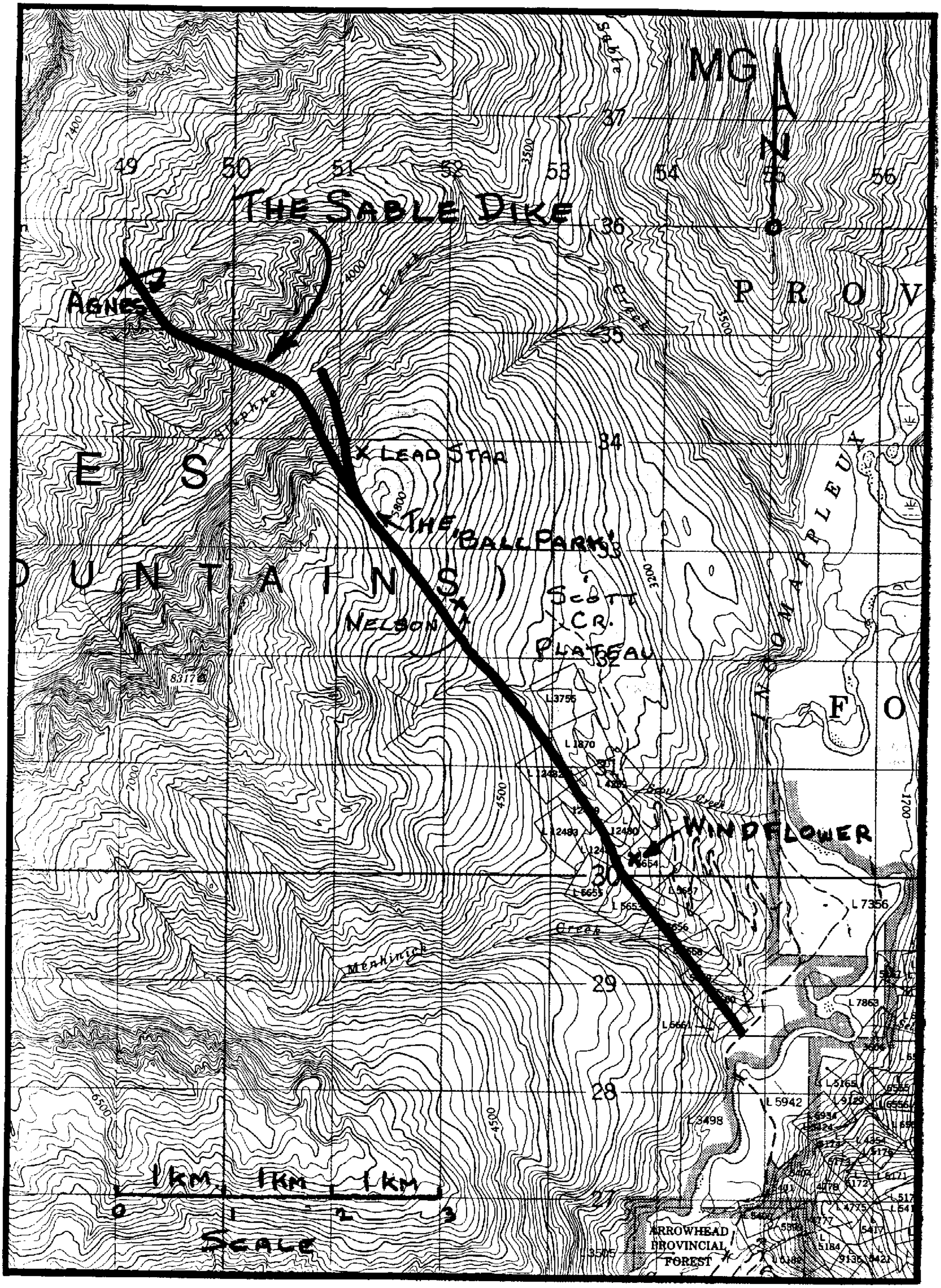
The following Crown Granted Claims underlie Claims K 7-22 and MAX 1-18:
L12479-12483
L5653-5661

History Of The Property : The present claim group contains 3 of the old mineral prospects in the Beaton/Camborne mining camp. They are the Agnes, the Lead Star, and the Nelson. The group also over stakes the Crown Granted Claims covering the Independence [Windflower] and the Goldfinch properties. These Crown Granted Claims are not owned by the present owner of the Mag claim group.
The Agnes is a quartz stockwork with minor silver and lead values within the magnesite alteration that is the subject of this report. It was recognized and worked in the very early 1900s. There is a short adit on it.
The Lead Star has had considerably more work done on it intermittently since the 1930s. There



CAM 1
367967
4NX4W
Stephney
CAM 2
2N x 4E
367968
CAM 3
367969
1SX1W
CAM 4
367970
5S x 4E
ACADEMY #1
247861
1350
ACADEMY #2
247862
1351
4NX5E
ACADEMY #4
247864
Scott
Creek
Menhinick
Cr.
58791
58910
220911
220913
THE MAG GROUP
Max 1-18
369983-
370000
0
1
2
Km

INDEX MAP



TOPOGRAPHY

are at least 2 adits on it. The exploration targets were narrow quartz veins containing galena, and sphalerite with moderate silver values. These are in or near the magnesite alteration. A 4WD access road was built to the Lead Star and beyond in the late 1980s for further development work.

The Nelson has one adit on a quartz vein also near the magnesite alteration structure but is not mentioned in this report. That work was also probably done in the 1930s.

The Independence and Goldfinch have received the most attention and were extensively developed for their gold potential in the late 1980s by the Windflower and Granges companies. Several millions of dollars were spent.

Ownership : All of the tenures in the Mag Group are owned 100 % by 581606 B.C. Ltd. whose address is 13173 Amble Green Close, Surrey, B.C., V4A6P9.

The field work being herein reported and described was paid for by Cascadia International, and MagAlloy Corporation Of America, Inc., of the same address.

Economic Assessment : The alteration structures that are covered by this claim group are currently being assessed for their magnesium content. It is thought that the principal magnesium bearing mineral is magnesite.

The alteration is a mix of carbonates of calcium, magnesium, and iron, and extensive tonneages are apparent over a linear dimension of at least 4 km.

Geologic mapping is the first step in the economic evaluation program and it is a necessity for the confirmation of existence, continuity, dimensions, and consistency of magnesium content.

Summary Of Work : A geological survey of the important portions of the claim group containing the alteration structure was carried out consistent with the objectives outlined above. The structure was mapped at a scale of 1 to 20,000 over a lineal horizontal distance of 8.75 km. The total area covered was 875,000 square metres. The following is an excerpt from the summary report of Mackie and Newman-Bennett to 581606 B.C. Ltd.

SUMMARY OF FIELD WORK; JUNE THROUGH AUGUST 1999 - SABLE "DIKE" CLAIM AREA : **As requested by K.G. Sanders of 581606 B.C. Ltd., field work on the Sable "Dike" Claim Area consisted of preliminary mapping and sampling of the Sable "Dike" structure and interpretation of petrogenesis, extent and grade. This work was completed as instructed during the months of June, July and August 1999. The intent of this summary is a preliminary outline of findings and conclusions of fieldwork and is to be followed up by a full-length, detailed report.

The Sable "Dike" structure trends NW (~310°) for approximately 10 kilometers through claims under 581606 control. The length of the structure was traversed extensively from a basecamp located at the Windflower Mine and later, two helicopter supported camps at Agnes and Stephney Creeks. Geology was compiled on a 1:20,000 topographic TRIM map by outcrop mapping and where possible, baseline mapping. A significant number of samples were taken over the entire length, to provide understanding of "ore" locations, composition, metamorphic gradations, and regional trends. A portion of these samples has been sent to Chemex Labs in Vancouver for XRF analysis.**

The specific claims on which the work was carried out are CAM 1, K 1,3,4,&5, CAM 4, K 8,9,12,14,16,18,19,&21.

The Technical Report Follows Herewith.

GEOLOGICAL REPORT ON MAGNESITE ALTERATION ON THE MAG CLAIM GROUP

For purposes of brevity, repetitive sections already covered in the first pages of this report will not be included.

INTRODUCTION

Summer field work from May to August 1999, under the direction of K.G.Sanders, P.Eng. of 581606 B.C. Ltd., consisted of preliminary mapping and investigation of the magnesium-rich Sable Dike Claims, approximately 20 kilometers northwest of Trout Lake, British Columbia, Canada. The 50 square kilometer mountainous study area has been the location of mining activity on and off for the past 100 years. This mining activity was focused on silver-lead-zinc showings and in later years, gold. None of these mines are currently in operation. The focus of our fieldwork was investigation of a carbonate alteration zone associated with previously mined metal deposits. K.G. Sanders, an experienced professional who has worked this area for 50 years, was among the first to recognize the potential for a large magnesium resource in the altered rock associated with metal mining. This alteration is characterized by the authors, consequently supporting previous work, as metasomatic alteration of mafic volcanic rocks, ie. carbonitization and re-crystallization to magnesium-rich carbonate rocks.

Fieldwork was accomplished by outcrop mapping, baseline traverses and representative sampling in addition to a review of geologic and mining literature. Geologic units and structural trends were mapped, delineating zones of metasomatic alteration, including and focusing on the Sable Dike. It is our opinion that the results of this work indicate a good potential for developing large extents of high concentration magnesium mineralization.

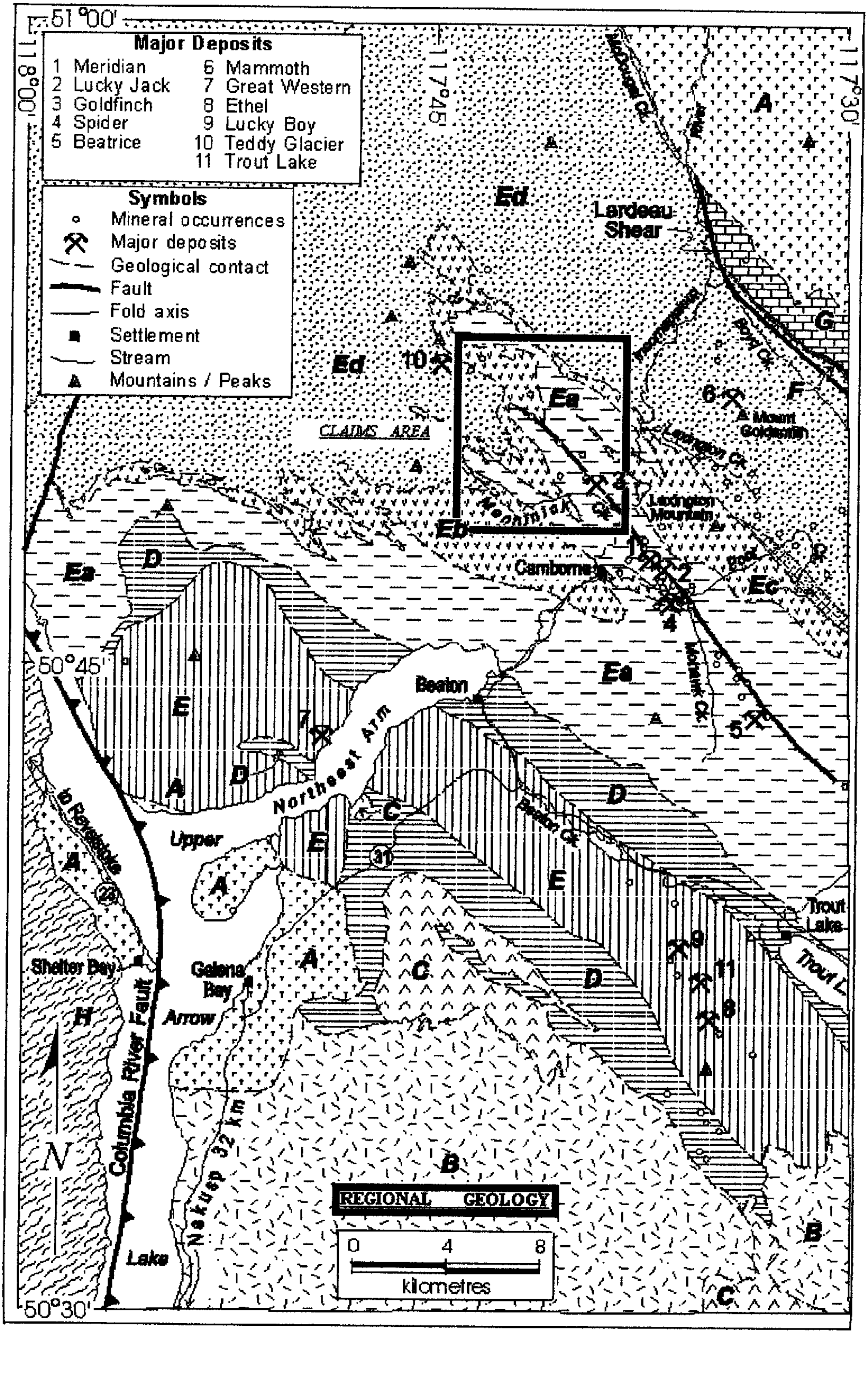
This report is organized to first familiarize the reader with regional and local geology, then introduces Alteration, Regional Geology, Geology And Structure, and Sable Dike Alteration respectively. The Area Description section next characterizes geographically divided Areas within the claims, describing the access, grade, extent and ore-body potential of each. Geology and structure of each Area is mentioned but the reader is asked to refer to Geology And Structure for detailed description. Likewise, description of alteration is not focused on, other than informing the reader of its presence and any pertinent variation. The reasoning for this is, the alteration sequence and subsequent relation to potential ore-bodies are described fully in Sable Dike Alteration. Each Area description does include a list of assayed sample numbers (bulk analysis by XRF), which the reader may refer to in the Appendix. Finally, the Conclusions section summarizes the potential of the claim property in each Area, and as a whole, and it gives potential tonneages, and recommends Areas that should be the focus of future investigation.

LOCATION AND ACCESS

Described elsewhere.

MINERAL TENURES AND OWNERSHIP

Described elsewhere.


51°00'
118°00'
117°45'
117°30'
Major Deposits
1 Meridian
2 Lucky Jack
3 Goldfinch
4 Spider
5 Beatrice
6 Mammoth
7 Great Western
8 Ethel
9 Lucky Boy
10 Teddy Glacier
11 Trout Lake
Symbols
Mineral occurrences
Major deposits
Geological contact
Fault
Fold axis
Settlement
Stream
Mountains / Peaks
Lardeau Shear
CLAIMS AREA
Mount Goldsmith
Lexington Mountain
Camborne
Beaton
Northeast Arm
Upper
Arrow
Lake
Shelter Bay
Galena Bay
Columbia River Fault
Nakusp 32 km
Trout Lake
50°45'
50°30'
REGIONAL GEOLOGY
0 4 8
kilometres

LEGEND

Cretaceous

A — Galena Bay and Battle Range granodiorite, quartz monzonite, alaskite.

Jurassic

B — Kuskanax batholith, monzonite, syenite

Permian to Triassic

C — Kaslo Group, metavolcanics

D — Milford Group, marble, metaconglomerate and sandstone

Lower Paleozoic

E — Lardeau Group

- Ea — Broadview Formation, phyllite, limestone
- Eb — Jowett Formation, metavolcanics
- Ec — Sharon Creek Formation, siliceous phyllite
- Ed — Index Formation, phyllite, greenstone

F — Badshot limestone

Hadrynian (Windermere)

G — Hamill Group, quartzite, limestone

Precambrian

H — Shuswap - Monashee, crystalline gneiss complex

LEGEND FOR THE REGIONAL GEOLOGY

REGIONAL GEOLOGIC SETTING

The Beaton map area is located between the Windermere-Purcell Anticlinorium to the east and the Shuswap-Monashee Gneiss to the west and Northwest. Rock types in the Beaton area range from granitoids to gneiss, to metamorphosed sediments and volcanics. Granitoids are the youngest rocks in the area, Jurassic to Cretaceous, and are felsic to intermediate in composition. Sedimentary and metamorphosed sediments and volcanics range in age from Early Paleozoic to Triassic and are the most common in the region. The oldest rock in the area, the Monashee gneiss, is Precambrian in age and is exposed just west of Upper Arrow Lake. These units belong to the Kootenay Arc assemblage, a 400 km arcuate belt extending from Washington into the claim area and beyond to Revelstoke.

Extensive folding and faulting exists in the area. Faults and mineralized fissures are listric, extending down to the Monashee Detachment at depth. B.N.Church [B.C. Ministry Of Mines] identifies the Createaceous batholith to the southwest of Beaton as a potential source of fluid for the mineralized fissures northeast of Beaton. Folds in the area have hinge lines trending northwest-southeast with shallow plunges. Tight isoclinal folds predominate in the often complex, composite folding. These structures are the result of compressive tectonic events during the middle and early Mesozoic. The strike of faults and the axial planes of folds in the region are along a northwest - southeast trend.

The mineral claims lie on members of the Lardeau Group, which is Lower Paleozoic in age and consists of formations of metamorphosed sediments and volcanics. From oldest to youngest the formations are Index, Sharon Creek, Jowett, and Broadview, of which the Index, Jowett and Broadview occur in the mineral claims and will be described in the next section. The Sharon Creek member does not outcrop in the claim area.

GEOLOGY AND STRUCTURE

The Sable Dike Claim Area is composed of folded and faulted, low-grade metamorphic rocks with well defined, structurally controlled, zones of alteration. The three major lithologic formations, the Broadview, Jowett and Index Formations, are deformed by regional isoclinal folds and meter to kilometer-scale faults. These formations have undergone syn-tectonic dynamothermal metamorphism and syn- to post-tectonic metasomatic alteration, resulting in a complexly inter-zoned and deformed geologic package. General geology and structure will be discussed here and metasomatic alteration in the Sable Dike section.

MAP UNITS

The claim area encloses portions of the previously mentioned Lower Paleozoic Lardeau Group. Two units dominate the claim area: the Broadview and the older, underlying Jowett Formations. The Index Formation, which underlies the Jowett Formation, is mentioned or mapped only as a bounding unit, and has no apparent relation to the presence of ore rocks.

The Broadview Formation is a meta-sediment unit composed of grey-green, gritty quartz wacke or subarkosic wacke with grey to black or green slate or phyllite interbeds (Fyles and Eastwood, 1962). Limey and dark argillaceous interbeds were also mapped as part of the Broadview Sediments.

The Jowett Formation is a meta-volcanic unit composed of volcanic breccia and pillow lavas (Fyles and Eastwood, 1962). In the claim area this unit is altered to chloritic phyllite with minor zones of massive chloritic rock.

The southeastern half of the claim area is dominated by the Broadview Formation, the northwestern half by the Jowett Formation. The Jowett-Broadview contact is conformable and intercalated. In the area NE of the WindFlower Mine, lenticular bodies of Jowett Formation as gritty, chloritic phyllite are present, probably as pyroclastic deposits or possibly the result of shear faulting of the underlying volcanics.

Rock unit location and texture is controlled by the tectonic deformation mentioned in Regional Geology. This deformation is indicated in the claim area by fold and fault structures: the Finkle Creek Syncline - Silver Cup Anticline folds and the Cup Creek Fault, as well as derived metamorphic textures.

FOLDS

At the regional scale, the Finkle Creek - Silver Cup folds are clearly visible, outlined by the Broadview-Jowett contact. Tightening of these southwest verging, isoclinal folds was accomodated by formation of axial-planar cleavage. This cleavage texture is easily identified in 95% of the rocks underlying the claim area as a planar foliation. This foliation is characterized by oriented micaceous minerals and compositional banding. Average strike and dip is 310°, and 60° NE. Formation of this cleavage likely occurred at sub - to lower greenschist facies during dynamothermal metamorphism. Thin folded, transposed and stretched quartz veins indicate shearing along this cleavage, mixing fragments of different lithology . Shear sense indicators, standing alone, are not conclusive, but in conjunction with previous work (Church, 1998). Weak crenulation of this micaceous foliation indicates southeast plunging hinge lines of the large anticline - syncline pair average 15-20° plunge at a bearing of 140°.

A smaller scale, fault bounded, southeast plunging anticline in the north-central section of the claim area was mapped generally by the GSC and more specifically by Mike Jerema. The presence of this structure was confirmed as a probable interlimb minor fold and has direct implication to the results of this study, which will be discussed in the section on Sable Creek Alteration.

FAULTS

The Cup Creek Fault is the only major, previously recognized fault transecting the MagAlloy claim area. This fault is described by Fyles and Eastwood, (1962) as a normal fault related with regional tectonics. Church (1998) included the Cup Creek Fault as one of many related to formation of the Selkirk Fan structure and modeled it as a southwest-vergent thrust fault and one of numerous mineralizing fluid pathways. This later work is accepted as the most likely scenario.

The Cup Creek Fault has been previously mapped (GSC Open-File 432, 1976) as terminating to the southwest of the Ballpark at its intersection with Jerema's previously mentioned southeast-plunging anticline. Results of fieldwork indicate that this is not the case and that the structure continues, changing nature and expression at its intersection with the Jowett Volcanics.

The fault outcrops in the southeastern, Broadview Sediment portion of the claim area as a thick, up to 50m wide, quartz-rich shear zone oriented parallel to axial-planar cleavage. Along trend, before being covered by Quaternary Sediments, the fault shifts to the north in an en echelon fashion, still as quartz-rich shear zones. To the northwest of this en echelon shift is where the fault is believed to intersect the Jowett Volcanics and consequently change nature.

Mapping along strike of the recognized fault has characterized a zone of alteration, the Sable Creek Dike, trending in a very similar manner to the fault. Numerous indications of southwest-vergent thrust faulting have been located with the alteration zone. Continued mapping of the alteration indicates continuity to the lower southeast slopes of Mt. McKinnon.

Based on continuity of orientation, indications of shear and the presence of Sable Creek Alteration, it is hypothesized that the Cup Creek Fault continues as an altered, ductile shear from its intersection with Jerema's interlimb fold, across the Jowett Formation to Mt. McKinnon and perhaps beyond.
The importance and relevance to project goals are probable continuity to the northwest and southeast of Sable Creek Alteration based on believed continuity of large-scale structures.

SABLE "DIKE" ALTERATION

Introduction

The Sable "Dike" Magnesite is the result of hydrothermal metasomatism of mafic volcanic rocks to Mg-rich-carbonate in and around lithologic contacts and a major northwest trending fault zone transecting the claim area. Church models the presence of precious metals and metasomatism as the result of alteration by ascending juvenile fluid along large fault zones, including the Cup Creek Fault.
Alteration resulting in minor fuchsitic carbonate zones elsewhere in the region has been reported by Dr. H.C. Gunning (G.S.C. Memoir 161). Sites include the Silver Cup mine, Multiplex mine, Golden Bullock mine, Morning Star claims on Silvercup Mountain, and Eva and adjoining properties. None of these mines are currently operational. All lie along or in close proximity to the Cup Creek Fault System. The Sable Creek Claim Area is the only known occurrence of this alteration with significant extent.

Description Of Alteration

Location of alteration zones is controlled by the presence of fluid conduits. Two types of conduits are found in the Sable Creek Claim Area: faults and lithologic contacts. The main fault transecting the claim area is the Cup Creek Fault. Alteration may occur along the entire length of this fault, but is exposed in the proposed northwest, ductile extension described in Geology And Structure. The Broadview-Jowett Formations contact is the second conduit for altering fluids.

These types of structures allow for large volumes of CO2-rich fluid to ascend and diffuse into the bounding volcanic wall rocks, which are subsequently altered to the carbonate ore rock. Sediments in the wall rocks may be very locally altered but do not account for a large percentage of the re-crystallized rock. In many instances quartz veins up to 50cm thick may indicate the location of a pathway as at the Broadview-Jowett contact (possibly a fault contact) along the southwest limb of Jerema's plunging anticline. More commonly, these pathways are indicated by the presence of thin, less than 20cm wide, discontinuous, brittle fractures or ductile sheared quartz veins.

The result of this diffusion-type alteration is a transitional sequence away from the main conduit characterized by decreasing amounts of alteration until unaltered, green phyllite protolith is

encountered. This alteration sequence was carefully studied by Dr. H.C. Gunning and published in 1929 by the Geological Survey of Canada as a chapter in Memoir 161. Dr. Gunning described the alteration along the Sable "Dike" (an older and technically incorrect name for the structure):
" ...the Sable Dike is a rusty weathering, grey, carbonate rock, generally coarse grained, and containing many flakes of green chromium mica....On Agnes Creek the middle part of the dike consists of grains about one-eighth inch in diameter of grey carbonate with many flakes of green mica....Towards the eastern side...the rock becomes finer in grain size until it assumes a massive, exceedingly fine-grained greenish appearance....The above relations clearly indicate that the carbonate rock of the Sable Dike has formed by alteration of intrusive greenstone....The fact remains that greenstones and chloritic rock have been extensively altered by ascending juvenile solutions, intimately connected with mineralizing solutions to form a carbonate rock."
The greenstone and chloritic rock referred to are equivalent to the Jowett Volcanic unit. In general, Gunning's description of the alteration is valid everywhere it is seen in the Sable Creek Claim area; current work provides a more detailed description and relates stages in the transition to potential use as an ore rock.

The general transition zones, beginning with unaltered, green, chloritic phyllite (Jowett Volcanic) and increasing in alteration are:
Green Phyllite Zone -> Rusty Banded Green Phyllite Zone -> Rusty Spotted Phyllite Zone -> Fuchsitic Carbonate Zone.

This alteration sequence describes a metamorphic gradation and as such has no sharp-line contacts. Zone division is based on large textural variation within which variation also occurs. The following is a textural description of each zone:

<u>Green Phyllite Zone</u>: unaltered rock. Green, chloritic phyllite. It is composed chiefly of foliated, microcrystalline to very fine-grained, green chlorite (with possible serpentine) and a small percentage of very fine grained feldspar and/or quartz. Foliation is often calcareous, possibly a distal product of the alteration zone. Oxides and/or sulphides, predominantly as spinel minerals and pyrite respectively, are sporadically present up to 1%.
The Green Phyllite Zone has local zones of variation, but as the proposed protolith these do not take on any significance. Generally, the Green Phyllite Zone is easily recognizable.

<u>Rusty Banded Green Phyllite Zone:</u> 1st stage of alteration. Foliated, carbonate-banded, green phyllite. This rock is characterized by alternating bands of rusty weathered, dolomitic composition and dark green to grey, micaceous composition. Rusty weathering bands, composing up to 50% of the rock, are quartz- carbonate with possible minor amounts of microcrystalline feldspar. Fe-stain from weathering carbonates (and to a lesser degree, quartz), which may compose up to 25% of the band in this phase, gives the bands a rusty color. Less than 1cm wide quartz blebs or stringers compose 50-60% of the band. Remainder is white, microcrystalline mineral (feldspar?). Thin calcite coatings are generally found on the green, micaceous foliations. Pyrite may be present from trace amounts to 1%.
Variation in this zone encompasses different percentages of rusty, carbonaceous bands. The percentage of rusty bands increases with higher alteration and consequently, in the direction of the next zone.

<u>Rusty Spotted Phyllite Zone:</u> 2nd stage of alteration. Foliated rusty-carbonaceous metasomatite. This is a typically light colored rock with disseminated fine-grained to coarse-grained carbonate

spots. Spots are Fe-stained and often coated with limonite. Micaceous foliation has a light, silvery-grey color, occasionally dark, with no green protolith. Trace fuchsite grains may occur on the foliation. Carbonate spot grain size generally increases towards the line of maximum alteration and composes from 15-35% of the whole rock composition. The white matrix of the spotted zones often contains very fine-grained, annealing carbonate grains. The matrix of the spotty zones is a microcrystalline, white to grayish mineral (possible feldspar) with quartz blebs, stringers and microcrystalline intergrowths. Quartz composes up to 50% of these spotty zones. Sporadic pyrite may occur up to 2%.
Variation in this zone is high. Spot growth may increase then suddenly decrease over a range of 10 cm, only to increase again. Highly micaceous lenses may occur up to 10's of meters in length and/or width. Increasing alteration and proximity to the isograd separating this zone from the next is indicated by the trace presence of fuchsite alteration on micaceous foliation. Non-fuchsitic coarse-grained carbonate schist-like rocks are not uncommon close to the boundary between this zone and the fuchsitic carbonate zone.

Fuchsitic Carbonate Zone: 3rd stage of alteration. Foliated to massive, non-fuchsitic to fuchsitic, carbonate metasomatite. Fuchsite is present from 0-10% of the rock. In foliated type it composes 95-100% of the foliation; in massive type it is a non-oriented, microcrystalline intergrowth with carbonate. Fine-grain to coarse-grain carbonate composes up to 50% of the whole rock, ranging from white to reddish-brown, depending on the Fe-oxidation and occurs as non-oriented porphyroblasts, often overprinting all rock fabric in massive type to intergrown with fuchsitic foliation,. Quartz is visibly present as blebs, stringers or veins and microcrystalline growths totaling up to 30%. Sulphides, predominantly pyrite and occasionally chalcopyrite and galena, are present up to 1%. Quartz veins often have up to 25% siderite associated with their margins.
The most noticeable textural variation is the strength of foliation, which may vary considerably over a few meters. Massive, homogenous fuchsitic carbonate has been discovered in areas, specifically the Agnes Creek area, that must be indicative of very high alteration. All original fabric in this rock is gone. 20m to either side, green phyllite is again present. The presence of coarse-grained carbonate with Fe staining is not uncommon. These carbonate grains may grow to 1 cm diameter and compose a significant percentage of the whole rock.
Minor zones of talcose carbonate have been encountered in the Fuchsitic Carbonate Zone. Chemical analysis indicates some of the highest MgO percentages.

Talc-Carbonate Zone: 4th and final (?) stage of alteration. Talc-magnesite (?) schist to siderite/ankerite-talc schist. Fine-grained to coarse-grained carbonate varying from whitish-grey to rusty brown composes up to 50% of rock. Fine-grained to coarse-grained, apple green to black talc composes up to 50%. Quartz is present predominantly as microcrystalline intergrowths up to 25% and often associated with zones of fuchsitic alteration.

In general the transition from green phyllite to fuchsitic carbonate involves a noticeable increase in the percentage of carbonate spots with simultaneous decrease in percentage of green foliation. Gradation into the Fuschitic Carbonate Zone usually takes place over a transitional zone up to 30m wide. Fuchsite appears initially as trace amounts in the spotty phyllite, increasing with increasing carbonate grain size. Metasomatic carbonitization becomes the primary alteration associated with increasing fuchsite. Generally, the rock becomes increasingly massive and the carbonate crystals become coarser and lighter colored. Fuchsite dominates foliation at a similar point to the presence of abundant fine-grain to coarse-grain carbonate.

Variation in textural maturation occurs over the entire claim area. Horses of less altered material are often encountered in higher grade zones. Talc-carbonate zones, up to 200m in length are encountered unexpectedly. Occasionally, later stages of alteration, namely fuchsitic carbonate, are not present to any significant extent. It is also possible to cross highly altered zones, indicated by the high percentage of carbonate, that do not contain any fuchsite.

As the primary goal of fieldwork was the mapping and characterization of the Fuchsitic Carbonate Zones, these were the areas of focused study. Petrologic and analytical testing methods used in characterization included thin section analysis, X-ray diffraction and X-ray fluorescence.

XRF analysis of numerous fuchsitic and transitional samples indicate general decreases in Fe_2O_3, CaO and Al_2O_3 with increasing MgO and LOI as alteration increases. Following are the bulk compositions of 32 fuchsitic carbonate samples.

The fuchsitic carbonate samples are representative from the Windflower to the tip of Ball Park South areas.
Bulk analysis and subsequent conclusion on the presence of magnesite based on high MgO and LOI (assuming a high CO_2/H_2O ratio), has been supported by thin section analysis and X-ray diffraction. Thin sections show an obviously large percentage of carbonate within micaceous foliation and quartz blebs. X-ray diffraction by Cominco Exploration Labs on the same samples verified carbonate composition as magnesite as well as its relative abundance.

Documentation in the field and laboratory supports the transitional nature of Sable Creek Alteration. Highest MgO in carbonate minerals is found in the highly altered Fuchsitic Carbonate Zone. This zone is proposed to delineate a brittle/ductile fault - fluid conduit. Due to the transitional nature of the alteration, further testing and field observation should be done to determine the exact cutoff line for any economic ore body.

Here follow some typical analyses

SABLE DIKE ANALYSES -- In percent													
Sample	SiO2	Al2O3	Fe2O3	FeO	CaO	MgO	K2O	Na2O	LOI	TiO2	MnO	P2O5	Cr2O3
119017	23.80.	0.71	7.64		0.93	35.68	0.04	0.05	29.64	0.01	0.19	0.01	0.60.
Dan 6205	29.98	0.72	5.86		1.00.	27.97	0.21	0.01	33.06	0.03	0.1	0.01	0.26
Dan 6208	37.63	0.95	5.44		0.55	27.62	0.03	0.01	26.54	0.02	0.06	0.01	0.32
Dan 6201	29.58	0.84	6.72		2.64	26.80.	0.18	0.11	33.24	0.04	0.11	0.01	0.24
119015	26.87	1.87	7.17		2.36	26.39	0.42	0.12	33.33	0.1	0.12	0.07	0.39
119022	32.99	0.73	6.81		3.03	24.81	0.05	0.01	31.66	0.03	0.12	0.01	0.15
Bl.Pk.grn.	34.33	1.29	6.85		1.79	24.53	0.05	0.01	29.96	0.02	0.11	0.01	0.31
119031	26.36	5.57	9.5		0.95	23.69	0.6	0.57	30.13	1.13	0.1	0.18	0.17
119021	24.11	6.84	10.26		2.65	23.52	1.46	0.01	28.96	1.22	0.16	0.12	0.17
Dan 6207	27.97	2.42	7.18		4.61	23.58	0.56	0.01	31.94	0.59	0.16	0.16	0.12
119004	20.62	3.84	7.54		10.94	23.46	0.02	0.01	32.57	0.07	0.1	0.03	0.18
Bl.Pk.grey	34.10.	1.11	7.09		4.65	23.15	0.06	0.01	28.7	0.04	0.13	0.03	0.33
Gunning	28.55	5.08	0.96	8.61	2.72	22.85	0.69	0.34	28.89	0.60.	0.13	0.07	0.14
Fusc. Dol.	21.96	2.74	8.30.		7.95	22.11	0.62	0.05	34.09	0.33	0.18	0.06	0.19
119025	35.05	5.42	8.06		3.46	22.10.	0.03	0.01	23.23	1.54	0.11	0.26	0.09
119020	34.39	6.17	8.36		0.46	22.09	1.18	0.01	26.30.	1.08	0.06	0.20.	0.23
119012	36.51	6.28	9.94		0.72	21.51	0.05	0.11	22.93	0.78	0.12	0.06	0.21
Scott	39.13	6.30.	6.26		1.21	21.39	1.30.	0.06	23.03	0.27	0.06	0.12	0.40.
119018	26.06	2.75	7.34		9.32	20.76	0.59	0.03	31.77	0.14	0.21	0.01	0.25
119030	41.64	1.16	5.19		2.84	20.73	0.28	0.01	27.21	0.01	0.07	0.01	0.26
Dan 6204	32.51	2.00.	4.42		7.26	20.69	0.50.	0.01	30.70.	0.88	0.07	0.07	0.19
Dan 6203	20.39	1.79	6.89		12.75	20.37	0.51	0.01	35.56	0.06	0.24	0.01	0.39
119024	32.22	8.64	12.1		2.38	20.24	0.06	0.06	20.02	2.81	0.12	0.62	0.06
Dan 6206	30.71	1.31	4.07		11.25	20.18	0.04	0.01	31.16	0.06	0.12	0.01	0.21
Menhinick	30.88	3.95	12.13		1.57	20.11	0.97	0.09	29.02	0.76	0.12	0.09	0.20.
119019	31.25	3.17	7.08		6.80.	19.74	0.70.	0.01	30.14	0.28	0.19	0.03	0.20.
119016	31.25	4.53	6.58		9.73	19.18	0.05	0.01	26.12	0.87	0.19	0.56	0.18
119032	30.23	0.86	4.12		11.83	19.05	0.13	0.01	32.43	0.07	0.1	0.01	0.14
MineDump	37.16	5.16	8.68		1.50.	18.80.	0.89	0.35	25.55	0.59	0.10.	0.06	0.25
Mn.D. Ken	19.81	3.51	8.74		12.63	18.69	0.83	0.01	34.26	0.51	0.18	0.06	0.16
119026	30.27	1.12	5.60.		11.61	18.46	0.10.	0.01	32.18	0.04	0.17	0.01	0.16
119002	42.86	0.78	5.73		5.07	18.43	0.03	0.01	26.03	0.01	0.06	0.01	0.23

Area Divisions

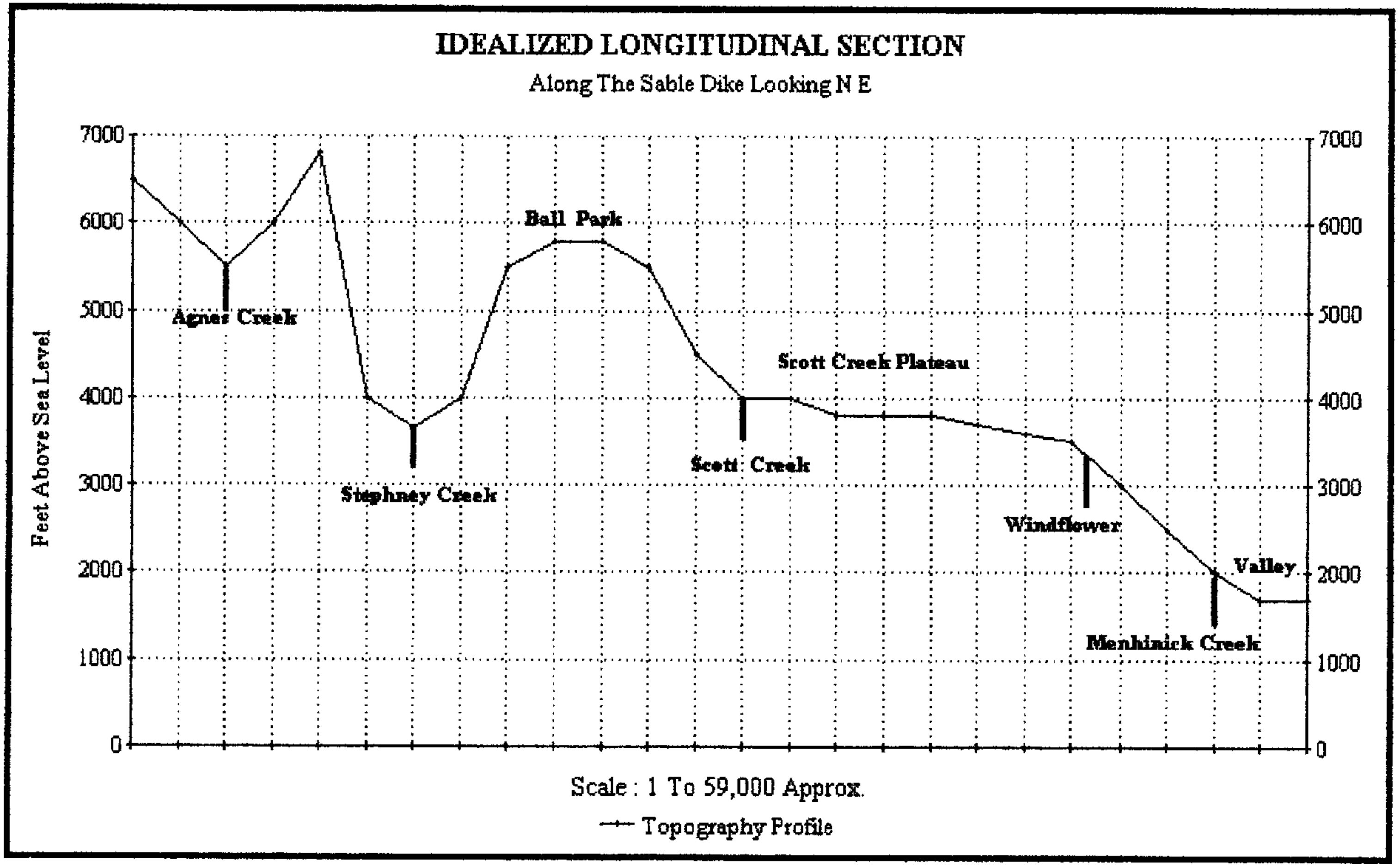
The following section covers the extent of Fuchsitic Carbonate Zones throughout the claim area, which has been divided into four geographic areas:

Menhinick Creek / Windflower Mine	(MCWM);
Scott Creek Plateau	(SCP);
Ball Park south	(BPS);
Ball Park	(BP);
Ball Park to Agnes Creek	(BPAC).

Each area will be individually described including access and terrain, significant geology and structure, extent of fuchsitic carbonate, reference to assayed samples and conclusions on ore body potential.

Menhinick Creek / Windflower mine

The most southeast portion of the claims area, this zone extends from the Incomappleux_River northwest for two kilometers to the Windflower mine at an elevation of 1040 meters. Terrain is


IDEALIZED LONGITUDINAL SECTION
Along The Sable Dike Looking N E
Feet Above Sea Level
7000
6000
5000
4000
3000
2000
1000
0
Agnes Creek
Stephney Creek
Ball Park
Scott Creek
Scott Creek Plateau
Windflower
Menhinick Creek
Valley
Scale : 1 To 59,000 Approx.
Topography Profile

generally steep along Menhinick Creek and the lower parts of this zone but becomes more subdued closer to Windflower mine. Access can be gained either from Fish River Forestry Road or Scott Creek Road, the latter going to the middle and higher elevations of the zone.

Faulting and alteration of the dark phyllites (Broadview Sediments) and green phyllites (Jowett Volcanics) are extensive within the central part of this zone. The primary alteration zone, located to the southwest of the mine, is approximately 300m thick with rock types varying from rusty spotted and banded phyllites to lesser amounts of banded and foliated carbonates with minor zones of massive carbonates. Some shear has been accommodated in this zone as layers are folded and quartz carbonate veins are locally common. The notheast-bounding unit is a siliceous shear zone; to the southwest there is black phyllite (Broadview). This alteration zone is believed to be the product of silicification and minor amounts of carbonitization of Broadview Sediments.

The bounding quartz-rich shear zone (the Cup Creek Fault) is about 50m thick and strikes at approximately 315°. In this area, the shear zone is linear with no en echelon style offsetting. Quartz veining and folding is common in this unit and indicates southwest-vergent thrusting. Green phyllite "horses" have been incorporated into the shear zone along the northeast contact and show slight alteration along their margins.

Long narrow lenses of green phyllite (Jowett), outcrop within the dark phyllite northeast of the alteration zone. They are several hundred meters long and up to 200m thick. The lenses may be the result of original inter-layering of Jowett and Broadview units, and/or due to folding and shearing events that have occurred since original deposition. Contacts between green phyllite and enclosing units are often calcareous with traces of fuchsite.

The primary occurrences of fuchsitic carbonate are immediately northeast of Windflower mine, and between the two most northeast tributaries to Menhinick Creek at an elevation of about 900m. The occurrence immediately northeast of Windflower mine is bounded by green phyllite to the northeast and silicified shear rocks to the southwest. Thickness is between 5 and 10 meters while length is in the order of 150 meters.

Fuchsitic carbonate found between the tributaries to Menhinick creek is contained within altered sediments. Thickness of the carbonate is 15-20 meters and strike length seen in outcrop is 50 meters. It is believed the actual length is not significantly longer than this as outcrop.

Samples were collected and assayed from cores left in good condition at the Windflower mine site. The drill logs for the core are available at the Chamber of Mines so that accurate cross-sections could be constructed. Confirmation of logs was carried out at the core shack at Windflower mine.

The drilling, all done in the area of Windflower mine, revealed important information on the fuchsitic carbonate occurrences in this area. Thickness was usually less then 10 meters, but occasionally reached more than 40 meters. Lengths were short, carbonate units often could not be correlated between cores 10 meters apart. Drill intersections with the fuchsitic carbonate were usually greater than 50 meters depth and often greater than 100 meters. This does not mean that fuchsitic carbonate is not nearer the surface however, since drilling was intended to intersect the main quartz zones, which the carbonate is associated with, at depth.

The carbonate seen in core was almost always grey, very fine crystalline with foliation defined by a few percent fuchsite. Assays done on these rocks show significant variation in chemistry. Samples returning the highest magnesium concentrations are all fine to medium crystalline. Rocks with lower concentrations of magnesium are very fine grain and slightly darker in colour. A majority of these samples are believed to represent alteration of Broadview Sediments or minor lenses of Jowett Volcanics.

ORE BODY POTENTIAL

Considering the thickness, length, and lenticular nature of magnesium carbonate occurrences in this zone, ore potential is not as high here as in other areas within the claim group even though very good magnesium ore is found. This could be owing to the reasonable assumption that Broadview sediments have low concentrations of magnesium, and so could not contribute to significant mangesite formation as the more mafic Jowett volcanics have. It is possible that the few occurences of magnesium carbonate have migrated up faults and fractures from the underlying Jowett formation.

Scott Creek Plateau

This unit brackets an approximately 2.5 square kilometer area immediately to the northwest of the Menhinick Creek/Windflower Mine area. Elevation increases from 1040m at the Mine to an average of 1250m along the southwesterly trending Scott Creek Road. Terrain is generally flat except in the northeast corner where Scott Creek deeply cuts glacial till. Access is via Scott Creek Road, which runs close to the northeast boundary and along the northwest boundary of the area. Exposure is generally good in large clearcuts covering a significant portion of the area and along numerous ridges and Scott Creek.

Faulting and minor alteration dominate this predominantly sedimentary area. The Cup Creek Fault, continuing along strike from the Menhinick Creek/Windflower Area is the major structure. The significant difference is that the 50-200m wide, quartz-rich shear zone/fault takes on an en echelon pattern, stepping in two stages approximately 400m to the north, perpendicular to its northwesterly strike.

Alteration in close proximity to the fault is predominantly silicification of sediments. Lenses of green phyllite, measuring up to 800+ m in length by 100m wide, occur along, or close to the northeastern margin of the offset shear zones. Fuschitic carbonate alteration in these green phyllite lenses is minor.

The largest fuchsitic carbonate alteration zone occurs in the central, en echelon, shear zone. An approximately 100m x 30m outcrop of fine-grained carbonaceous alteration with trace fuchsite (equivalent to Rusty Spotted Phyllite) cores the shear zone. This is probably the result of intermediate alteration of a horse of volcanic rock. Minimal alteration of the large volcanic lenses in close proximity to the fault zone is hypothesized to be the result of blockage of fluids by the quartz-rich fault itself.

ORE BODY POTENTIAL.

Based on the exposure of fuchsitic alteration in this area, ore potential is not believed to be high. Potential for an accessible subsurface occurrence in the northern-most section of the area is higher based on the presence of a southeast plunging, altered structure outcropping immediately to the northwest. This antiformal structure plunges 15-20° at a bearing of 140° from its exposure in the Ball Park south area. This structure trends across the Scott Creek Plateau Area at depth and may constitute an easily accessed ore body. Extent and grade of this structure are discussed in the next section

Ball Park South

Located in the central part of the mapped area, this zone can be accessed either by walking up from Scott Creek road or by driving and walking the Leadstar road. Terrain is gentle continuing up to the Ball Park area. Mapping of this area was carried out from a base camp at the Windflower mine.

Structures occurring in this area include the northern extension of the Cup Creek fault and the anticline mapped by **Jerema**. As all these structures have been discussed previously, only important points are mentioned here. Detailed geology maps of the Ballpark are included in this report as Figures 1 and 2.

Multiple zones in this area have abundant magnesium carbonate. They include the contact between the Jowett and Broadview units, most notably the hinge zone of the anticline, and the fault zone continuing through the middle of the Ballpark.

The hinge zone is a thick crescent shaped occurrence with a long "tail" trailing off to the northwest for hundreds of meters. The main body is 70 to 100 meters thick and 350 meters long.

Extent of the this crescent shaped zone is not exactly known, but if the structure is the hinge zone of an anticline, which the authors believe, the magnesium carbonate zone will be plunging to the southeast at an angle of 15° to 22° just below the surface down to, and perhaps beyond, Scott Creek road. Extent is in the order of 0.6 miles.

Rocks in the hinge zone are fuchsitic medium and fine crystalline carbonates with quartz veining generally a few percent of the rock. In places 50 cm and thicker quartz veins are seen. Folding and fracturing of rock along the margins of the magnesium carbonate is common. It is probable that two different shear zones come together at this hinge.

The main fault zone, trending along the southeast limb of the anticline, through green phyllites is a zone of intense metasomatism. Magnesium carbonates are thick in this area and continue for a considerable distance to the Ball Park area.

ORE BODY POTENTIAL

Based on grab-sample analyses, mapped extent and continuity of local structures, the anticline zone and northeast limb show high potential for significant ore body extent. The northeast limb trends along strike to the Ball Park and probably constitutes a long, thin (<50m), continuous ore body. The flat terrain combined with the presence of an access road would simplify future work.

Ball Park

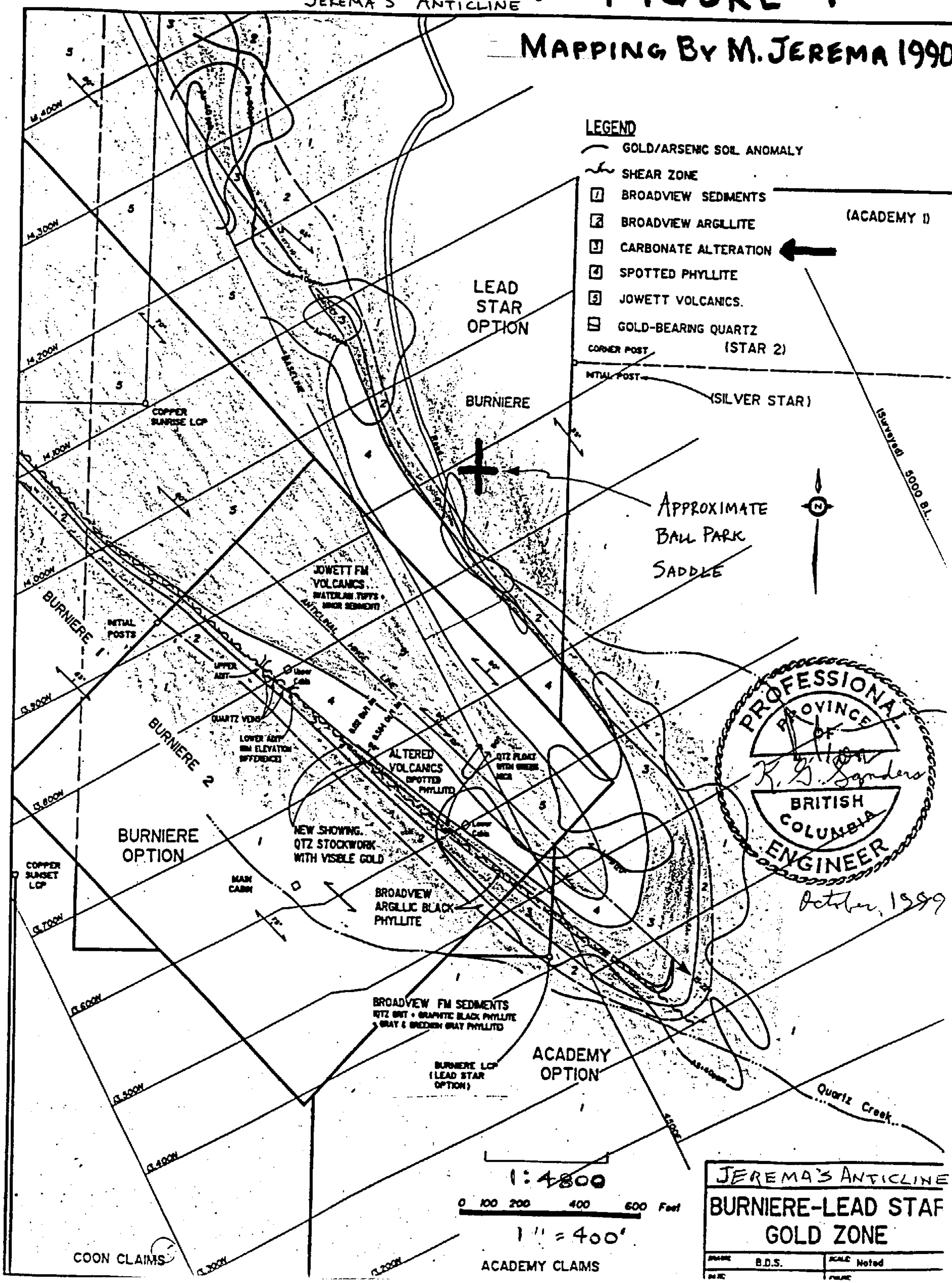
Located immediately to the northwest of the Ball Park South area, the Ball Park occupies a flat saddle dividing the Stephney and Scott Creek watersheds. Terrain is flat, but quickly becomes steep to the northwest, approaching Stephney Creek. Access is gained via the Lead Star Road, a dirt road in need of minor repair.

The predominant structure in this area is actually a combination of the northeast limb of **Jerema's** anticline and the Sable Dike. The Cup Creek Fault, which the Sable Dike trends along, intersects volcanics at the anticline hinge. Within 600m the fault cuts the fold, continuing along strike to Agnes Creek. Alteration through the Ball Park is evident along the entire length of this fault. Fault strike trends roughly northwest with a northeast dip of 60-70 degrees.

As Figure 2 shows, the thickness of the magnesium carbonate zone is over 100 meters in places. Depth is in the order of 500 meters, as fuchsitic carbonate is seen along Stephney Creek far below the ballpark. Strike length is hundreds of meters in this zone alone and continues for several hundred more meters to the northwest towards Stephney Creek. Fuchsitic carbonate is occasionally cored by talcose carbonate occurring as lenses averaging 10 meters thick. Rock types are generally grey to white fuchsitic carbonate with traces of siderite and light grey talcose carbonate. Assays on these rocks show both types are high in magnesium. Quartz veining is generally less than 5%.

Where thickness of the carbonate zone has been mapped near 10 meters (N700 on Mackie, Newman-Bennett map, 13900N on Jerema's), greater thickness is a possibility due to the fact outcrop is non-existent to the north east of this zone. Small amounts of phyllite seen in the outcrop leading Mackie and Newman-Bennett to map the zone as relatively thin are possibly "horses", much like ones seen at other faulted locations. The magnesium carbonate could

FIGURE 1



JEREMA'S ANTICLINE	
BURNIERE-LEAD STAR GOLD ZONE	
B.D.S.	SCALE Noted

BALL PARK BASELINE MAP

MACKIE & NEWMAN-BENNETT
1999

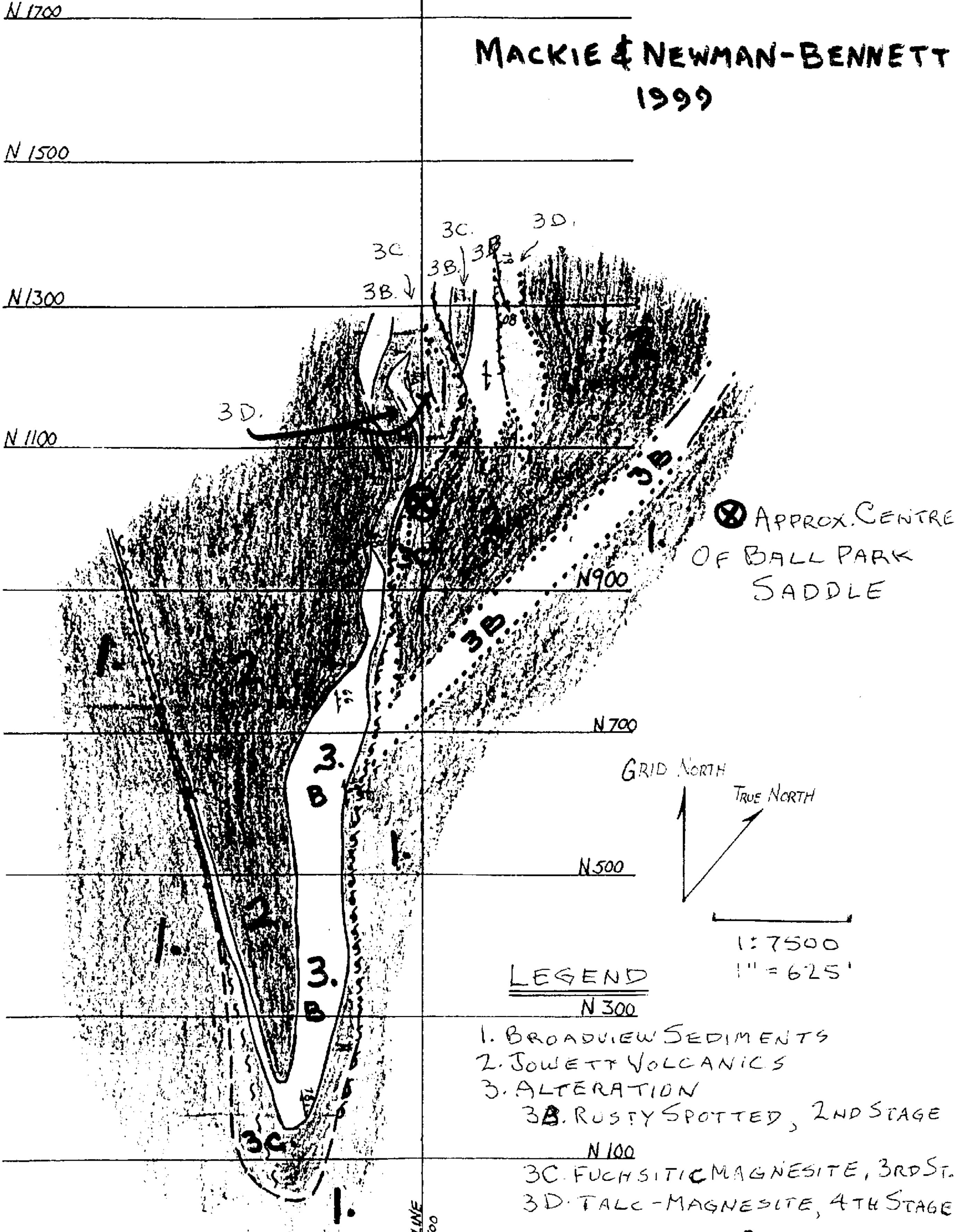


FIGURE 2.

conceivably be in the order of 100 meters wide as it is northwest and southeast of this central zone where outcrop is much more common.

ORE BODY POTENTIAL

This zone shows large amounts of high-grade magnesium ore rock and has potential to contain more based on structural relationships. Depths, widths, and thickness' are promising. Slopes are gentle in this area and a road already exists up to the site. Detailed chemistry of this area is not yet available, but grab samples indicate MgO up to 22%. For all these reasons, the authors believe this zone has a high potential for large quantities of magnesium ore rock.

BALL PARK TO AGNES CREEK

The BPAC area composes the northwestern-most 4 square kilometers of the claim area. Terrain is mountainous and rugged, elevations (amsl) varying from 1100m on Stephney Creek to 1700m on Agnes Creek to 2300m on the southeast slopes of Mt. McKinnon. Northeasterly flowing Agnes and Stephney Creeks incise mountain ranges creating a steeply sloped, northeast-southwest trending, 2100m elevation ridge with large rock exposures.

Access to the Agnes Creek portion of the BPAC area is possible via the old Teddy Glacier tote road from the confluence of Sable Creek and the Incomappleux River or from Scott Creek Road near the Windflower Mine. Both of these dirt roads have stream crossings in need of repair. The Stephney Creek portion is not accessible via road and must be accessed via helicopter from Revelstoke or Nakusp.

The Jowett Volcanic Formation composes 90% of this area, the other 10% being Broadview and Index Formations at northwesterly trending lithologic contacts. The Broadview and Index Formation rocks do not have any observable effect on the location of Fuchsitic Carbonate.

The primary structure in this area is continuation of Cup Creek Fault and related carbonate alteration, which transects the area along a northwest striking trend from the BP Area. The northwesterly striking, northeast dipping planar orientation of this structure is clearly visible, indicated by the surface exposure of alteration.

Fuchsitic Carbonate Zone alteration was mapped in numerous areas, where access was possible and exposure available. Penetrative alteration was found on southeast and northwest slopes above both Agnes and Stephney Creeks. The following are extent and samples from these areas. Sample suites are included for reference only. The final report will detail the results of chemical analyses not yet available

Southeast Stephney Creek: BSES, SES and SCFL sample suites. Width of entire alteration zone up to 100m. Exposed fuchsitic carbonate alteration, predominantly along the northeastern margin of the alteration zone, is up to 20+m wide and extends for at least 100m. A 1000 square meter boulder field at the toe of a talus slope originating from the alteration zone contains up to 15% fuchsitic carbonate boulders, the largest possibly weighing multiple tons. The SCFL samples are representative of this boulder field. Due to difficult traversing conditions, much of this area could not be accessed. It is the opinion of the authors that this alteration zone continues to the BP Area with a probable average of 30m of fuchsitic carbonate.

Northwest Stephney Creek: NWS and AC Pt. 0-16 sample suites. This includes outcrop from Stephney Creek to the peak of the ridge separating Stephney from Agnes Creek. A band of alteration, up to 100m wide, but averaging approximately 30m, trends along the northeast side of a mapped gully. This band of alteration is visible along its entire length, from Stephney Creek to the peak of the ridge. Fuchsitic carbonate occurs mainly along the northeast margin of the alteration zone with a probable average thickness of 15m. Difficulty of access due to steep terrain prohibited traverse of the entire structure.
Southeast Agnes Creek: AC-baseline sample suite. This area is dominated by a large fuchsitic carbonate altered ridge structure protruding from the surrounding hillside. This structure, which delineates the local zone of high alteration, measures approximately 30m in width and 120m in length. Extensive, pervasive fuchsitic carbonate alteration is exposed in a tunnel that has been bored through the center by early 20^{th} century prospectors. Samples 821 1021 A&B are representative of fuchsitic alteration exposed along the walls of this tunnel. Alteration is visible continuing up to the ridge separating Stephney from Agnes Creeks where it becomes the northwest Stephney Creek section. Average width for this section is probably 20-25m.

ORE BODY POTENTIAL
Nowhere is the depth potential more evident than in this section. This alone suggests a tremendous tonnage probability.

Economic Evaluation and Conclusions

Evaluation of the entire length of the Sable Dike structure in 5 contiguous, south to north sections, from Menhinick Creek to Agnes Creek indicates good potential for large extents of high, 20-26%, MgO ore bodies. Preliminary chemical analysis by XRD, XRF and petrographic methods offers support for the existence of these ore bodies. Analysis of regional and local structures indicates continuity of the primary controlling structure, the Cup Creek Fault, through the necessary protolith, the Jowett mafic volcanics.
The following is a summary of potential tonnages for individual areas.

Ball Park south:
Structure: dominated by a plunging anticline. Alteration occurs in a thick hinge zone and along the limbs.
Potential tonnage: 50 million.
Grade: rocks in this area include each of the transitional zones. Numerous exposures of coarse-grained fuchsitic carbonate were located. Variation in the fuchsitic carb zone and rusty spotted zone may be high. Grade is good to excellent, probably ranging from 20-22% MgO.

Ball Park:
Structure: dominated by the Sable Dike structure, which runs along the northeast limb of the Ball Park south anticline, until transecting the Jowett Volcanic Unit.
Potential tonnage: 70 million.
More than one half of this total is contained in a 300 ft thick x 1100 ft long zone immediately northwest of the Ball Park saddle.
Grade: rocks in this area comprise each of the transitional zones including talc-carbonate. Highly altered, massive fuchsitic carbonate rocks have been mapped and sampled along a significant

portion of this section of the structure. Variation occurs over the entire length. Grade is very good to excellent, probably ranging from 20-26% MgO.

Ball Park / Agnes:
Structure: dominated by the Sable Dike. This fault structure transects Jowett Volcanics along its entire strike length.
Potential tonnage: 100 million.
Grade: rocks vary through each of the transitional zones, with approximately 30% as fuchsitic carbonate. Zones of massive, very coarse-grained, fuchsitic carbonate were mapped. Grade is very good to excellent, probably ranging from 20-26% MgO.

Total tonnage for the entire claim area is at least 200 million tons.

Recommendations

It is the recommendation of the authors that future work focus on three points: petrographic study of transitional zones, trenching to verify processing feasability, and drilling to verify thicknesses and continuity.
Petrographic study should focus on the transitional zone in close proximity to the fuchsitic zone. It is the belief of the authors that this area may provide further ore. At this time, these rocks are not included in tonnage calculations.
Trenching should focus on one of two areas: immediately northwest of the Ball Park saddle in the mapped thick zone and on the northeast limb of **Jerema's** anticline where exposure is good and rock would be indicative of a large body.
Drilling should focus primarily on the same two zones. These zones show very high potential for good grade and extent. The close proximity of these two zones would not complicate any operation and the possibility of significantly thick material existing between the two bodies could be proven.

Respectfully submitted,

D.C.Mackie, B.Sc.

M.D.Newman-Bennett, B.Sc.

September 10,1999.

STATEMENT OF COSTS

The two geologists D.C.Mackie, BSc, and M.D.Newman-Bennett, BSc were retained on a contract basis for the geological mapping program and their rates were $150 per day for D.C.Mackie and $125 per day for M.D.Newman-Bennett.

11 days in July,1999 and 20 days in August,1999, each, are being applied for assessment credits being.........

D.C.Mackie	11 days in the second half of July, 1999 @ $150	=	$1650
M.D.Newman-Bennett	11 days in the second half of July, 1999 @ $125	=	$1375
D.C.Mackie	20 days in August, 1999 @ $150	=	$3000
M.D.Newman-Bennett	20 days in August, 1999 @ $125	=	$2500
		TOTAL	$8525

K.G.Sanders

K.G.Sanders, PEng

December 22, 1999

AUTHORS' CERTIFICATION AND QUALIFICATIONS

I Daniel C. Mackie residing in Coquitlam, B.C. certify as follows:

I am an honors graduate of the University of Massachusetts Department of Geosciences (Feb. '97). I am qualified to undertake this fieldwork and write this summary based on my education and two summer's experience mapping metamorphic rocks and related structures in the United States and Canada for the University of Massachusetts. The program that is the subject of this report was carried out in the field in June, July, and August, 1999.

D.C.Mackie, BSc

September 10, 1999.

I Mark David Newman-Bennett residing in Kelowna, B.C. certify as follows:

I qualify to be registered with the Association of Professional Engineers and Geoscientists of B.C. as a Geoscientist in Training in the field of geology and have practiced my profession as a geoscientist for two summer seasons. I graduated from Simon Fraser University in May of 1999 with a degree in Earth Science. I am a co-author of this report which is based on three months field work in the area.

FOR

M.D.Newman-Bennett, BSc

September 10, 1999.

ENGINEERS CERTIFICATE

The undersigned Kenneth George Sanders residing in White Rock, B.C. certifies as follows ------

I am a registered Professional Engineer in the Association of Professional Engineers in the Province of British Columbia and have practised my profession as a mining geologist for 50 years.
I am an engineering graduate of the University of Toronto [1949 – Mining Geology].
The geological mapping that is the subject of this report was carried out under my supervision during the months of June, July, and August, 1999.

K. G. Sanders

K.G.Sanders, PEng

December 22,1999

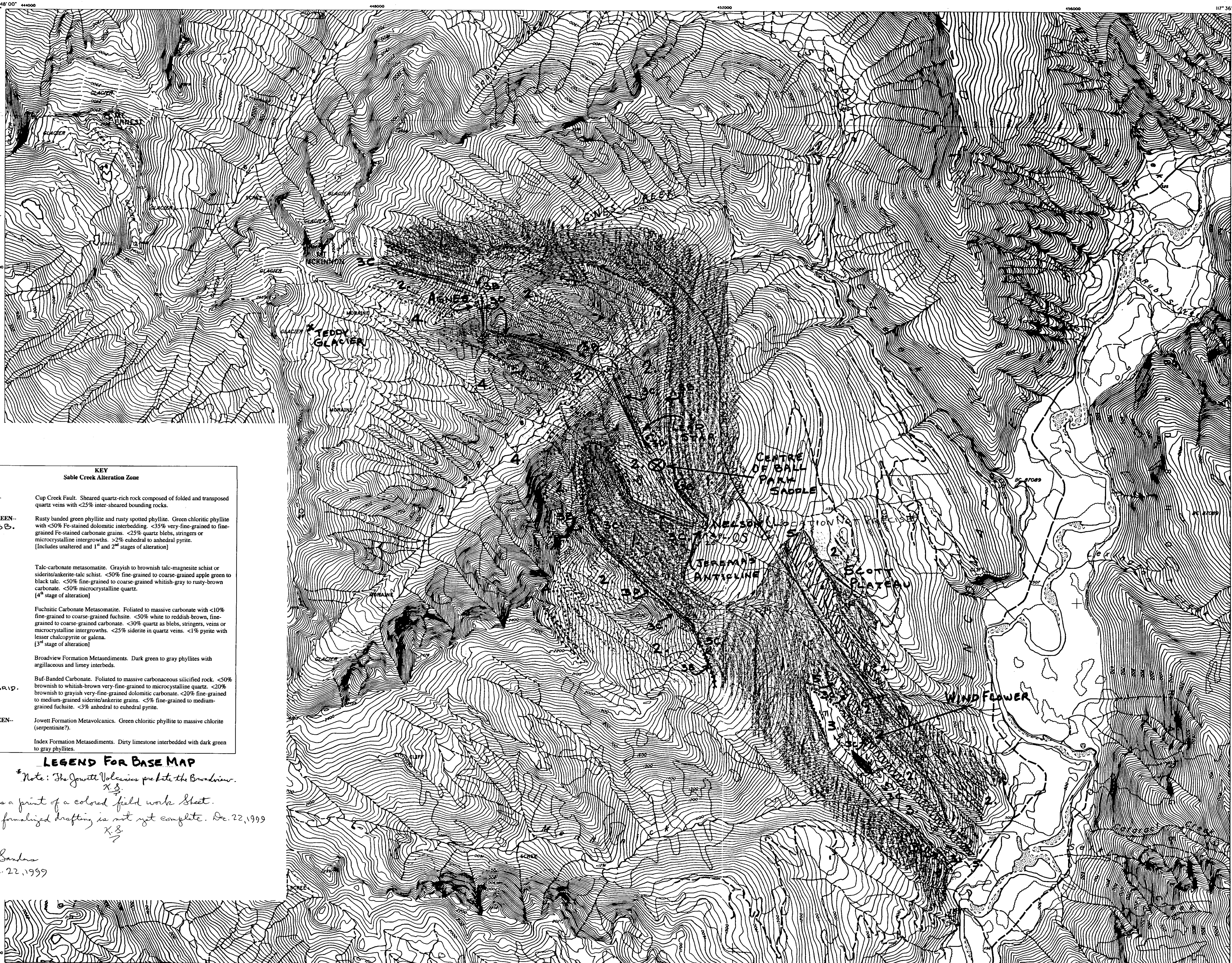
GEOLOGY PLAN.

BASE MAP

MACKIE & NEWMAN-BENNETT

1999

(PRELIMINARY)



KEY
Sable Creek Alteration Zone

YELLOW-- 5.	Cup Creek Fault. Sheared quartz-rich rock composed of folded and transposed quartz veins with <25% inter-sheared bounding rocks.
LIGHT GREEN-- 3A & 3B.	Rusty banded green phyllite and rusty spotted phyllite. Green chloritic phyllite with <50% Fe-stained dolomitic interbedding. <35% very-fine-grained to fine-grained Fe-stained carbonate grains. <25% quartz blebs, stringers or microcrystalline intergrowths. >2% euhedral to anhedral pyrite. [Includes unaltered and 1st and 2nd stages of alteration]
ORANGE-- 3D.	Talc-carbonate metasomatite. Grayish to brownish talc-magnesite schist or siderite/ankerite-talc schist. <50% fine-grained to coarse-grained apple green to black talc. <50% fine-grained to coarse-grained whitish-gray to rusty-brown carbonate. <50% microcrystalline quartz. [4th stage of alteration]
BLUE-- 3C.	Fuchsitic Carbonate Metasomatite. Foliated to massive carbonate with <10% fine-grained to coarse-grained fuchsite. <50% white to reddish-brown, fine-grained to coarse-grained carbonate. <30% quartz as blebs, stringers, veins or microcrystalline intergrowths. <25% siderite in quartz veins. <1% pyrite with lesser chalcopyrite or galena. [3rd stage of alteration]
BROWN-- 1.	Broadview Formation Metasediments. Dark green to gray phyllites with argillaceous and limey interbeds.
FLESH-- 3-HYBRID.	Buf-Banded Carbonate. Foliated to massive carbonaceous silicified rock. <50% brownish to whitish-brown very-fine-grained to microcystalline quartz. <20% brownish to grayish very-fine-grained dolomitic carbonate. <20% fine-grained to medium-grained siderite/ankerite grains. <5% fine-grained to medium-grained fuchsite. <3% anhedral to euhedral pyrite.
DARK GREEN-- 2.	Jowett Formation Metavolcanics. Green chloritic phyllite to massive chlorite (serpentinite?).
PURPLE-- 4.	Index Formation Metasediments. Dirty limestone interbedded with dark green to gray phyllites.

LEGEND FOR BASE MAP

*Note: The Jowett Volcanics predate the Broadview. K.S.

This is a print of a colored field work sheet. Final formalized drafting is not yet complete. Dec. 22, 1999 K.S.

K.S. Sanders
Dec. 22, 1999

LEGEND

Transportation

Landmark features

Drainage and related features

Relief features

Vegetation

Control data

Cadastral

For complete reference to symbols, see "Specifications and Guidelines for Digital Topographic and Cadastral Mapping at 1:20 000" published by the Ministry of Environment and Parks.

26,115

Notes

Digital data and additional copies of this map are available through MAPS-BC, Ministry of Environment and Parks, Victoria.

Errors and omissions should be brought to the attention of the Director, Surveys and Resource Mapping Branch, Ministry of Environment and Parks, Parliament Buildings, Victoria B.C. V8V 1X5

Approximate Mean Declination 1989 for Centre of Map Decreasing 8.7' Annually

Adjoining Sheet Index in the British Columbia Geographic System.

This map was produced in 1989, for the B.C. Ministry of Environment and Parks, under its Terrain Resource Information Management (TRIM) initiative, by Digital Mapping Group Ltd., from 1:70 000 scale aerial photography flown in September, 1987.

PROVINCE OF BRITISH COLUMBIA
Ministry of Crown Lands
Surveys and Resource Mapping Branch

Universal Transverse Mercator Projection
North American Datum - NAD83
UTM Zone 11

Land District:
Land Title Dist.:
Latest Plan No.: Date:

SCALE 1:20 000
METRES

Contours generated from Digital Elevation Model.
Contour interval 20 metres.
Elevations in metres above Mean Sea Level.

DIGITAL DATA AVAILABLE
PLANIMETRY ☒ CONTOUR ☒
CADASTRAL ☐ DEM ☒

82K.082 DIGITAL