

LOG NO: 1021	RD.
ACTION:	
FILE NO: 87-649-16289	

7/88

ASSESSMENT REPORT ON 7/88
 GEOLOGICAL MAPPING, ROCK AND SILT SAMPLING
 OF THE

HALL GROUP
 (Orn 1-4 claims)

Victoria, Nanaimo Mining Div., British Columbia
 NTS 92B/13W 48°55'N LAT., 123°54'W LONG.
 18" for 53'12"

AVONDALE RESOURCES INC.

October 14, 1987
 T. NEALE, B.Sc.

Owner/Operator: E. Hayes

SUB-RECORDER
 RECEIVED
 OCT 15 1987
 M.R. # \$.....
 VANCOUVER, B.C.

GEOLOGICAL BRANCH
 ASSESSMENT REPORT

16,289

FILMED



SUMMARY

Assessment work for 1987 on the Hall Group, consisting of reconnaissance geological mapping and rock and silt sampling, carried out in June 1986 and July 1987, has been completed.

The Hall Group is underlain by Sicker Group rocks in the south and by Island Intrusions dioritic rocks in the north. A magnetite ± hornblende-rich border phase at least 125 m wide of the Island Intrusions at their contact with the Sicker rocks contains Au-Ag-Cu mineralized quartz veining up to 30 cm wide. Results from grab sampling range up to 340 ppb Au with up to 8.5 ppm Ag and 18,617 ppm Cu. Myra Formation rocks occurring in the southwestern corner of the property have returned results of up to 4.66% Zn, 0.13% Cu, and 0.50% Pb with anomalous Au and Ag values over narrow widths in numerous diamond drill holes on the adjacent Abermin Corp. Lara property. Two rock samples and one silt sample from the area of Mount Hall mapped as Sediment-Sill Unit rocks returned weakly anomalous Au values.

Phase I exploration of the Hall Group is recommended to consist of detailed and reconnaissance geological mapping and rock sampling, soil geochemistry, and magnetometer/VLF-EM surveys at an estimated cost of \$60,000. Phase II detailed geological and geophysical exploration is recommended at an estimated cost of \$100,000, contingent upon favourable Phase I results.



TABLE OF CONTENTS

	Page
SUMMARY	(i)
1.0 INTRODUCTION	2
2.0 PROPERTY LOCATION, ACCESS, TITLE	3
3.0 PREVIOUS WORK	5
4.0 REGIONAL GEOLOGY	6
4.1 Sicker Group	6
4.2 Vancouver Group	11
4.3 Westcoast Complex	12
4.4 Bonanza Group	13
4.5 Island Intrusions	13
4.6 Nanaimo Group	13
4.7 Structure	14
4.8 Economic Setting	15
5.0 1986 - 87 EXPLORATION PROGRAM	19
5.1 Property Geology	19
5.2 Mineralization and Lithogeochemistry	21
5.3 Whole Rock	23
5.4 Silt Sampling	23
6.0 RECOMMENDED WORK PROGRAM	24
6.1 Plan	24
6.2 Budget	25
6.3 Schedule	25
7.0 CONCLUSIONS	27
8.0 RECOMMENDATIONS	28
CERTIFICATE - T. Neale, B.Sc.	30
REFERENCES	31

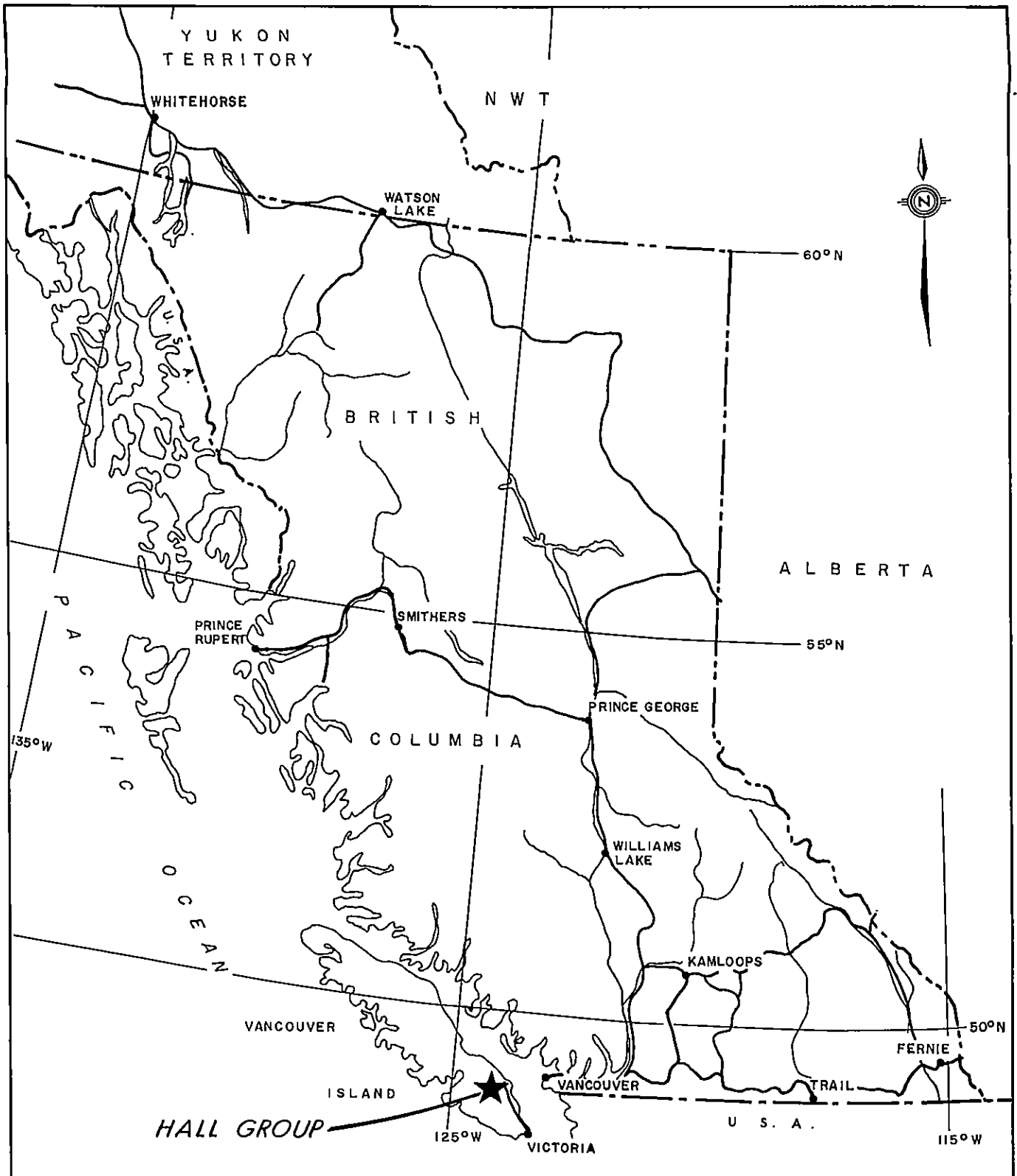



List of Appendices

- Appendix I - List of Personnel and Statement of Expenditures
- Appendix II - Rock Sample Descriptions and Lithochemical Results
- Appendix III - Certificates of Analysis
- Appendix IV - Conversion Factors for Metric Units
- Appendix V - Drawing No. 5

List of Illustrations

		Page
Figure 1	- General Location Map	1
Figure 2	- Claim Map	4
Figure 3	- Regional Geology Map	7
Figure 4	- Mineral Occurrences Location Map	16
Drawing No. 5	- Property Plan, Geology, and Sampling - Hall Group	Appendix V (In Pocket)
Table I	Phase I Project Schedule - Hall Group	26



AVONDALE RESOURCES INC.	
GENERAL LOCATION MAP	
HALL GROUP	
NANAIMO MINING DIVISION	
Project No. V 191	By: T. N.
Scale: 1 : 8 000 000	Drawn: J. S.
Drawing No FIG. 1	Date: OCTOBER 1987
 MPH Consulting Limited	



2.0 PROPERTY LOCATION, ACCESS, TITLE

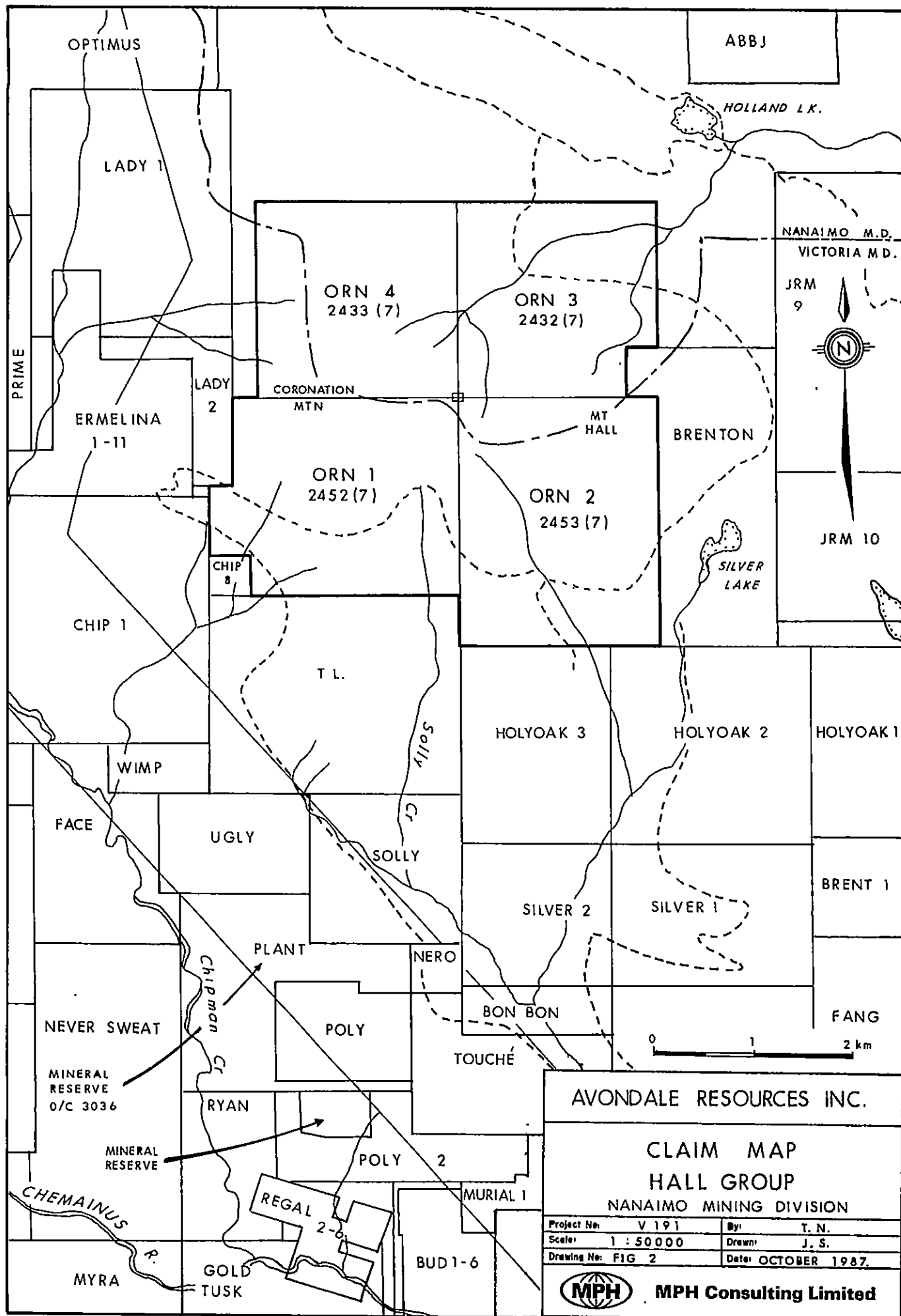
The Hall Group is located 8 km southwest of Ladysmith on NTS mapsheet 92B/13, centred at about 48°55'N latitude, 123°54'W longitude in the Nanaimo Mining Division of British Columbia (Figure 1).

Access to the property is via the Holland Lake road, which turns off from Highway 1 just north of Ladysmith. The first 1.3 km is a good paved road through the outskirts of Ladysmith, the next 15 km to the north edge of the Hall property is a very rough, minimally maintained gravel and dirt road. A further 7 km along a steadily deteriorating road, the southeast corner of the property is reached. Access to the southwest corner of the claims is from Duncan, up MacMillan Bloedel's Chemainus River road to the Lara property access road, 15.6 km west of Duncan. A distance of 9.7 km up the Lara property road system, the Hall Group is reached, and the road suddenly becomes totally unmaintained. Several old logging roads exist in the NE, NW, SE, and SW corners of the Hall property, but they are all completely undriveable, and indeed, in the case of the SW road, virtually unwalkable (due to extremely thick willow growth on the road). All things considered, the best access to the Hall Group is by helicopter.

The Hall Group comprises 4 claims totalling 72 units, as summarized below (Figure 2):

Claim	Record No.	Units	Anniversary Date	Year Recorded
Orn 1	2452(7)	20	July 17, 1988	1986
Orn 2	2453(7)	20	July 17, 1988	1986
Orn 3	2432(7)	16	July 17, 1988	1986
Orn 4	2433(7)	16	July 17, 1988	1986

The claims were grouped as the Hall Group by Notice to Group dated July 17, 1987. Ownership of the claims was transferred from E. Hayes to Avondale Resources Inc. by Bill of Sale dated October 14, 1987.





3.0 PREVIOUS WORK

Geological mapping in the Duncan to Lake Cowichan area has been carried out by government geologists including J.T. Fyles (1955) and J.E. Muller (1977, 1980a, 1980b). N.W. Massey (1987) has recently conducted regional mapping and compiled previous mapping in the Lake Cowichan area to the southwest of the Hall Group and will be mapping the area of the Duncan mapsheet, which includes the Hall Group, in 1988.

No previous geological exploration work is known to have been carried out on the ground covered by the Hall Group.

4.0 REGIONAL GEOLOGY

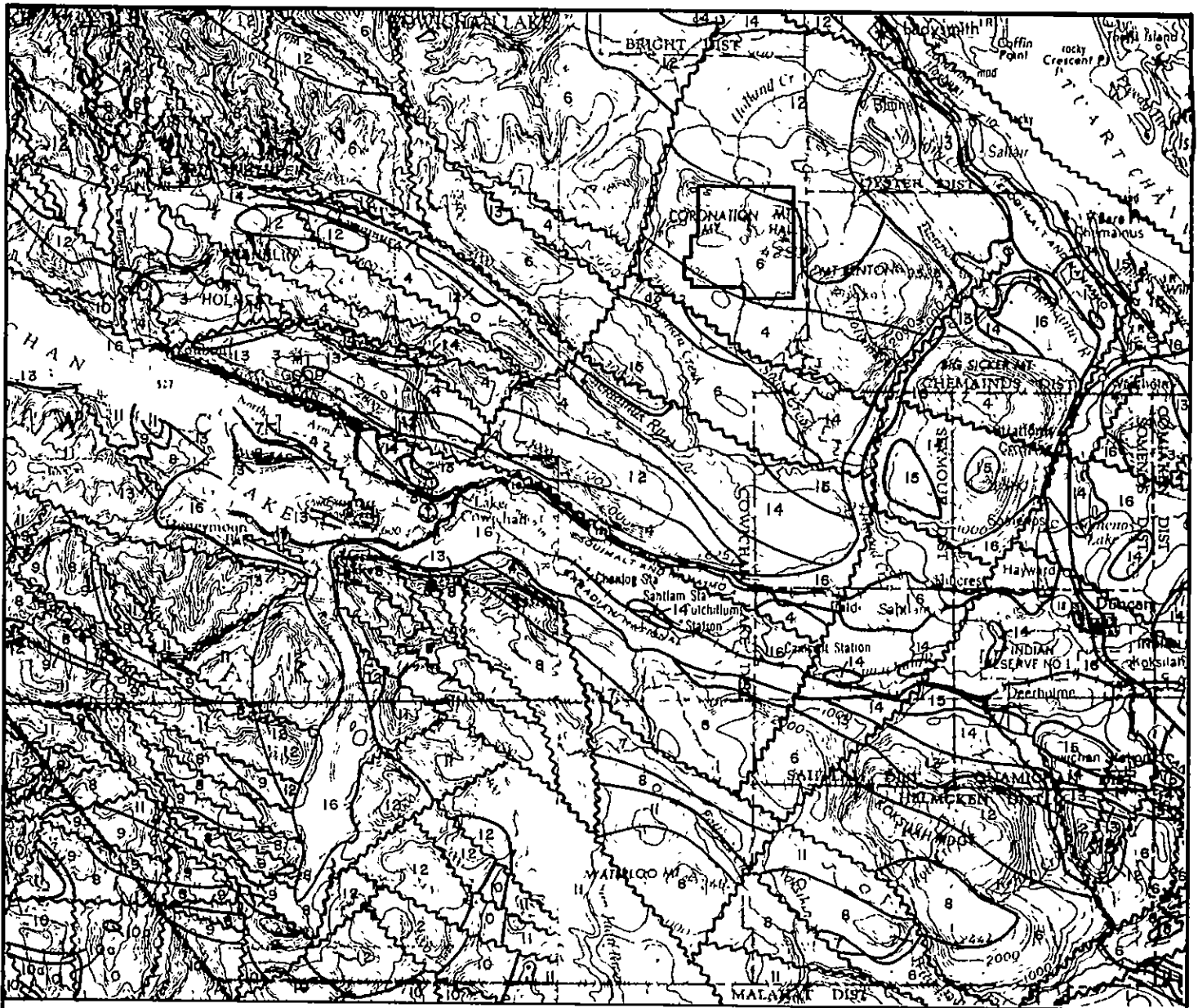
The Duncan - north Cowichan Lake area is underlain by a west-northwest trending belt of Paleozoic Sicker Group rocks, Triassic Karmutsen Formation basalts and Cretaceous Nanaimo group sediments. The area south of Cowichan Lake is underlain by the Karmutsen Formation, the Jurassic Quatsino Formation, and Bonanza Group volcanics. Jurassic Island Intrusions occur in both areas (Figure 3). Recent government geological mapping has been carried out over the Cowichan Lake area by a number of geologists and compiled with previous work by J.T. Fyles, A. Sutherland Brown and P. Cowley (Massey, 1987).

4.1 Sicker Group

Muller (1980a) proposed the following subdivision of the Sicker Group from oldest to youngest: Nitinat Formation, Myra Formation, Sediment-Sill Unit, and Buttle Lake Formation.

In the Lake Cowichan area, distinctive lithologic units within the Sicker Group have been mapped by Massey (1987), who draws on Sutherland Brown's (1986) units. The Nitinat Formation and McLaughlin Ridge Formation are within the Youbou Subgroup, and the Cameron River Formation and Mount Mark Formation are within the Buttle Lake Subgroup. The table below summarizes the correlation between Massey's units and those of Muller.

SICKER GROUP	Upper Silurian to Lower Permian
Buttle Lake Subgroup (after Massey, 1987)	(after Muller, 1980a)
Mount Mark Formation	Buttle Lake Formation
Cameron River Formation	Sediment-Sill Unit and/or Myra Formation
Youbou Subgroup	
McLaughlin Ridge Formation	Myra Formation and/or Nitinat Formation
Nitinat Formation	Nitinat Formation



QUATERNARY

16 Glacial and alluvial deposits.

UPPER CRETACEOUS

Nanaimo Group

15 Extension-Protection Fm sandstone, conglomerate, minor siltstone, shale, coal

14 Haslam Fm shale, siltstone, minor sandstone

13 Comox Fm sandstone, conglomerate, minor siltstone, shale, coal.

JURASSIC

Lower to Middle Jurassic

12 Island intrusions - granodiorite, quartz diorite

Lower Jurassic

11 Bonanza Group - basaltic to rhyolitic tuff, breccia, flows, sills, and dykes; minor argillite, greywacke.

UPPER PALEOZOIC AND ? OR TRIASSIC AND JURASSIC

10 Westcoast Complex - quartz diorite, diorite, tonalite, amphibolite, agmatite; minor metavolcanic and metasedimentary rocks 10a recrystallized limestone, skarn.

TRIASSIC

Middle ? and Upper Triassic

Vancouver Group

9 Quatsino Fm limestone

8 Karmutsen Fm pillow basalt, breccia, tuff, minor flows.

PALEOZOIC

Sicker Group

PENNSYLVANIAN AND PERMIAN

7 Buttle Lake Fm limestone, chert, greywacke, argillite.

PENNSYLVANIAN AND MISSISSIPPIAN

6 Sediment - Silt Unit argillite, greywacke, chert, diabase sills

LOWER DEVONIAN AND OLDER

5 Saltspring intrusions meta-granodiorite, meta-quartz porphyry, quartz-sericite schist

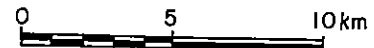
4 Myra Fm well bedded felsic tuff and breccia, argillite, rhyodacite in flows and sills, minor basic tuff, quartz-sericite schist, phyllite, massive sulphides

3 Nitina? Fm pillow lava and breccia of augite (uralite) porphyry, basic tuff, minor chlorite-actinolite schist.

LOWER PALEOZOIC (OR YOUNGER ?)

2 Colquitz gneiss quartz-feldspar gneiss

1 Wark gneiss massive and gneissic metadiorite, metagabbro, amphibolite



AVONDALE RESOURCES INC.

REGIONAL GEOLOGY MAP

HALL GROUP

NANAIMO MINING DIVISION

Project No. V 191	By: T. N.
Scale: 1 : 250 000	Drawn: J. S.
Drawing No: FIG. 3	Date: OCTOBER 1987



MPH Consulting Limited

The following description of Sicker Group lithologies is based on Muller's (1980a) work, as Massey's work is not yet completed.

The **Nitinat Formation** (Unit 3) consists predominantly of mafic volcanic rocks, most commonly flow-breccias, or agglomerates including some massive flows, and rare pillow basalts. Locally, medium-grained, generally massive basaltic tuff is interbedded with the flows. The flow-breccia is composed of fragments of basalt up to 30 cm in length containing phenocrysts of uralitized pyroxene as well as amygdules, both from 1 mm to more than 1 cm in size, in a matrix of finer grained, similar basalt(?). Thin sections show pale green amphibole (uralite) is replacing clinopyroxene. Uralitized gabbroic to dioritic rocks underlie and intrude the volcanics and are believed to represent feeder dykes, sills, and magma chambers to the volcanics. The Nitinat Formation may be distinguished from the similar Karmutsen Formation by the abundance of uralite phenocrysts, a usual lack of pillow basalts, lack of dallasite alteration between pillows (characteristic of the Karmutsen) locally pervasive foliation, and lower greenschist or higher metamorphic grade.

The **Myra Formation** (Unit 4) (mapped as McLaughlin Ridge and/or Cameron River Formations by Massey) overlies the Nitinat Formation, possibly with minor unconformity. In the Nitinat-Cameron River area the Myra Formation is made up of a lower massive to widely banded basaltic tuff and breccia unit, a middle thinly banded albite-trachyte tuff and argillite unit, and an upper thick bedded, medium-grained albite-trachyte tuff and breccia unit. In the lower unit, crudely layered mottled maroon and green volcanoclastic greywacke, grit, and breccia are succeeded by beds of massive, medium-grained dark tuff up to 20 m thick interlayered with thin bands of alternating light and dark, fine-grained tuff with local fine to coarse breccias containing fragments of Nitinat Formation volcanics. The middle unit comprises a sequence of thinly interbedded, light feldspathic tuff (albite trachyte or keratophyre composition) and dark marine

argillite which has the appearance of a graded greywacke-argillite turbidite sequence. In the upper part of the middle unit, sections of thickly bedded to massive black argillite occur. The upper unit contains fine and coarse crystal tuffs in layers up to 10 m thick with local rip-up clasts and slabs of argillite up to 1 m in length as well as synsedimentary breccias of light coloured volcanic and chert fragments in a matrix of black argillite.

Mapping by Fyles (1955) in the area north of Cowichan Lake located a thick sequence of mainly massive green volcanics (Nitinat Formation), overlain by a "marker" unit consisting of a sequence of thin-bedded, cherty tuffs with several metres of coarse breccia containing fragments of amygdaloidal volcanics between it and the Nitinat Formation. Overlying the marker unit are grey to black feldspathic tuffs and argillaceous sediments and minor breccias. Muller (1980a) considers the marker unit to correspond to the lower unit of the Myra Formation, while the overlying unit of tuffs and sediments is correlated with the middle unit "and probably contains the upper...unit as well."

In the Mount Sicker area, the Myra Formation is more pervasively deformed and consists of well bedded, mainly felsic tuff and breccia interbedded with black argillite and some greywacke. The rocks have been converted to quartz-chlorite-sericite schist in steep and overturned isoclinal folds. Breccia fragments are commonly epidotized. The "Tye Quartz Porphyry" is a porphyritic rhyolite containing quartz eyes to 5 mm that occurs partly as cross cutting sills and partly as flows(?) within the Myra Formation. Tye Quartz Porphyry is related to the Saltspring Intrusions.

The type locality of the Myra Formation is Myra Creek, at the south end of Buttle Lake, about 160 km northwest of Duncan.



Volcaniclastic rocks consisting dominantly of rhyodacitic or rhyolitic tuff, lapilli tuff, breccia, and some quartz porphyry and minor mafic flows and argillite (Upper Myra Formation) are host to Westmin Resources Ltd.'s Myra, Lynx, Price, and H-W massive sulphide (Cu-Zn-Pb-Au-Ag-Cd) deposits.

Muller (1980a) estimated the thickness of the Nitinat Formation at about 2000 m and that of the Myra Formation at 750 to 1000 m. Fyles' (1955) work indicates a thickness of at least 1500 m for the Nitinat Formation, and at least 1000 m for the Myra Formation in the Cowichan Lake area. Both the Nitinat and Myra Formations were dated as Devonian and/or older by Muller (1980a).

The **Sediment-Sill Unit** (Unit 6) (Massey's Cameron River Formation) is transitional between the Myra and Buttle Lake Formations. The upper and lower contacts are poorly defined. Thin bedded, turbidite-like, much silicified or cherty massive argillite and siltstone are interlayered with diabaseic sills. The sediments show conspicuous dark and light banding on joint surfaces. The sills consist of a fine-grained greenish black matrix containing feldspar phenocrysts up to more than 1 cm, commonly clustered in rosettes up to a few centimetres in diameter, producing a very distinctive "flower porphyry" appearance. Subophitic texture may also be visible. The sediments are dated as Mississippian in age whereas the sills are believed to represent feeders to the Triassic Karmutsen volcanics.

The **Buttle Lake Formation** (Unit 7) (Massey's Mount Mark Formation) consists of a basal green and maroon tuff and/or breccia overlain by coarse-grained crinoidal and calcarenitic limestone, fine-grained limestone with chert nodules and some dolomitic limestone. Lesser amounts of argillite, siltstone, greywacke, or chert are present.

In the area southeast of Cowichan Lake, the Buttle Lake Formation consists of laminated, calcareous grey siltstone and black argillite containing lenses of coarse-grained calcarenite, minor massive beds of crinoidal limestone about 1 m thick, and lenses and nodules of chert. The section was described by an earlier worker as mainly interbedded chert and limestone (Yole in Muller, 1980a).

The Buttle Lake Formation is up to 466 m thick (approximately 300 m thick southeast of Cowichan Lake). The age of the formation, based on fossil evidence, appears to be Middle Pennsylvanian, but may be as young as Early Permian (Muller, 1980a). This has been confirmed by recent dating work by Brandon and others (1986), including isotopic as well as conodont ages, which indicate that rocks of the Buttle Lake Formation are early Middle Pennsylvanian through Early Permian in age.

4.2 Vancouver Group

The **Karmutsen Formation** (Unit 8) volcanic rocks unconformably to paraconformably overlies the Buttle Lake Formation limestone to form the base of the Vancouver Group. They are the thickest and most widespread rocks on Vancouver Island. The formation consists mainly of dark grey to black, or dark green, tholeiitic pillow basalt, massive basalt, and pillow breccia. Flows are commonly aphanitic feldspar porphyritic, and amygdaloidal. Pillow lavas generally occur toward the base of the section.

Conglomerate containing clasts of Sicker Group rocks and jasperoid tuff form basal sections in the Nitinat-Horne Lake area to the northwest. Karmutsen Formation rocks are generally relatively undeformed compared to Sicker Group rocks and are dated Upper Triassic and older.



Massive to thick bedded limestone of the **Quatsino Formation** (Unit 9) is widespread in the area south of Cowichan Lake. The limestone is black to dark grey and fine-grained to micro-crystalline. Coarse-grained marble occurs in the vicinity of intrusive rocks. The majority of known economic skarn deposits on Vancouver Island are hosted by Quatsino limestone. Thin-bedded limestone also occurs within the formation. Fossils indicate an age of Upper Triassic (Muller and Carson, 1969).

The **Parsons Bay Formation** overlies Quatsino limestone, or locally, Karmutsen volcanics. It is composed of interbedded calcareous black argillite, calcareous greywacke and sandy to shaly limestone. It is included within the Quatsino Formation within the report map area. The Quatsino and Parsons Bay Formations are considered to represent near and offshore basin facies, respectively, in the quiescent Karmutsen rift archipelago (Muller, 1981).

4.3 Westcoast Complex

The **Westcoast Complex** (Unit 10) comprises a variety of plutonic and metamorphic mafic crystalline rocks, including amphibolite, diorite, and quartz diorite with homogeneous, agmatitic or gneissic textures. Dioritic or agmatitic bodies underlying or intruding the Nitinat Formation are included. Metamorphosed Karmutsen Formation and/or Sicker Group rocks grade locally into the complex and are believed to be its protolith, having been migmatized in Early Jurassic time. The mobilized granitoid portion of the complex is believed to be the source of the Island Intrusions and, indirectly, the Bonanza Group volcanics (Muller, 1981, 1982). Small bodies of recrystallized limestone found within the complex are believed to be derived mainly from the Quatsino Formation, and to a lesser extent from the Buttle Lake Formation.

4.4 Bonanza Group

Bonanza Group (Unit 11) stratigraphy varies considerably in a horizontal and lateral sense as it represents parts of several different eruptive centres of a volcanic arc. Basaltic, rhyolitic, and lesser andesitic and dacitic lava, tuff, and breccia intercalated beds and sequences of marine argillite and greywacke make up the Bonanza Group. In the area south of Cowichan Lake, the volcanics are described as dark brown, maroon, and yellow grey massive tuff, volcanic breccia, and massive or plagiophyric flows (Muller, 1982). Bonanza Group volcanics are considered to be Early Jurassic extrusive equivalents of the Island Intrusions.

4.5 Island Intrusions

Exposures of **Island Intrusions** (Unit 12) consisting mainly of quartz diorite and lesser biotite-hornblende granodiorite occur throughout the area and are assigned an age of Middle to Upper Jurassic. Intrusive contacts with Sicker and Bonanza Group volcanic rocks are characterized by transitional zones of gneissic rocks and migmatite although contacts with Karmutsen Formation volcanic rocks are sharp and well defined. Skarn zones are reported at the contact of Island Intrusion rocks with Quatsino Formation limestone and less commonly with Buttle Lake Formation limestone.

4.6 Nanaimo Group

Upper Cretaceous Nanaimo Group sedimentary rocks occur throughout the area, unconformably overlying Paleozoic Sicker Group rocks. Extensive exposures occur in the Chemainus and Cowichan River valleys. The formations present comprise the basal portions of the Nanaimo Group.

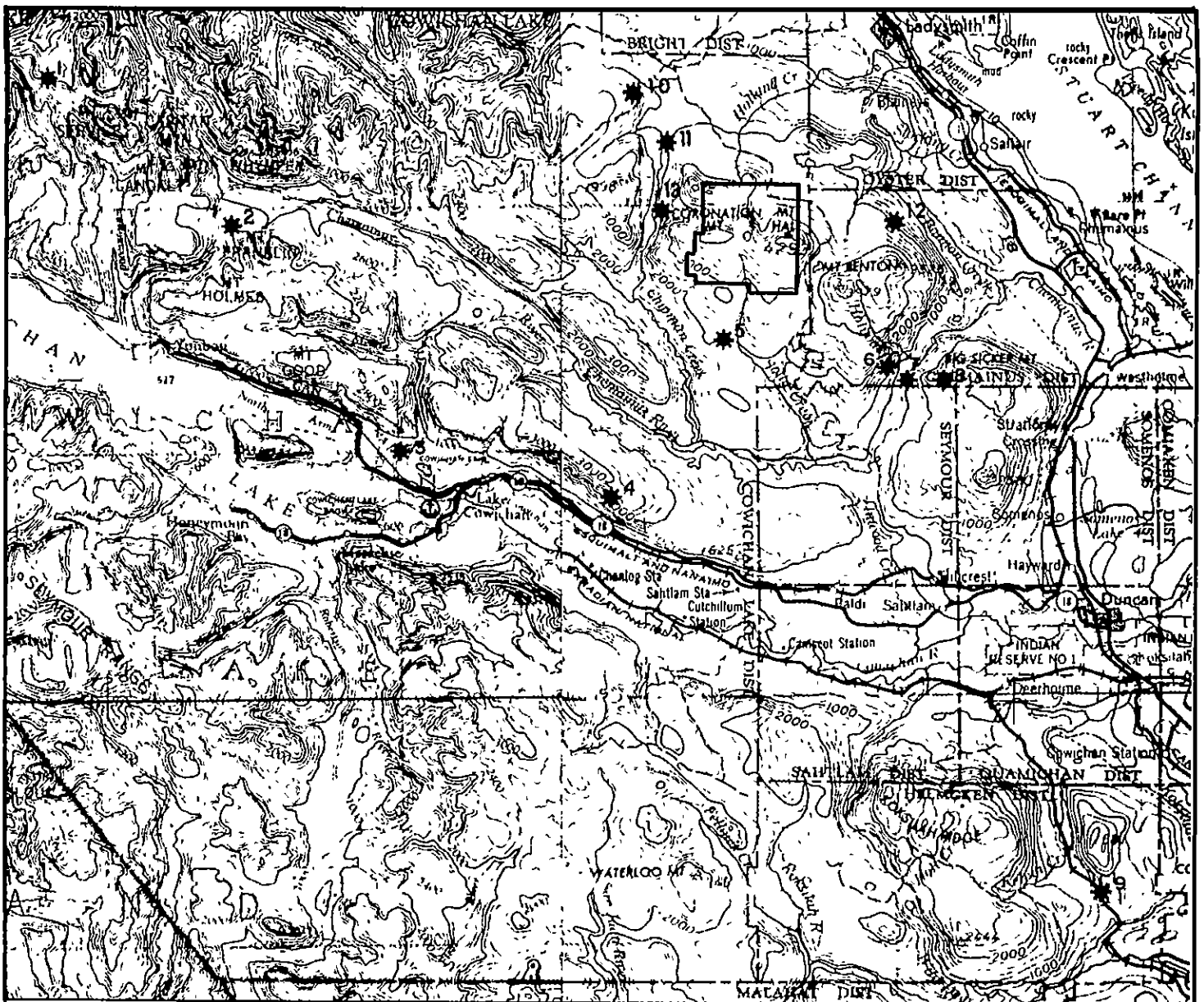
also suggests Jurassic folding. Buttle Lake Formation limestones are relatively undeformed in some places, although in others, as in the Chemainus River Canyon, they are highly deformed, along with other Sicker Group rocks (Brandon and others, 1986). Vancouver Group units are not as intensely folded; gentle monoclinial and domal structures have been mapped. Karmutsen Formation volcanic rocks, however, locally conform to the attitude of underlying Myra and Buttle Lake Formations (Muller, 1980a).

Some early Mesozoic faulting occurred in the area prior to emplacement of Island Intrusions. Middle to Upper Jurassic intrusive activity (Island Intrusions) occurred along northwesterly trends.

Extensive west-northwest trending faulting occurred during the Tertiary and is best illustrated by large displacements of Nanaimo Group sediments in some areas, such as the north side of the Chemainus River valley, placing Sicker Group rocks above the Nanaimo Group rocks. These faults have been traced for up to 100 km. Such structures may represent large scale underthrusting from the southwest, in a regime of long-term semi-continual northeast-southwest compression. Nanaimo Group sediments are tilted up to at least 60° from paleohorizontal where they are overlying folded Sicker Group rocks with angular unconformity such as on the south side of the Chemainus River Valley. Minor late northeasterly trending tear-faults and block faults offset northwest-trending faults in the Cowichan Valley and Saltspring Island areas.

4.8 Economic Setting (Figure 4)

The Hall Group is partially underlain by rocks of the Sicker Group, a well-known host for various types of mineralization. The Coronation deposit and the Twin J Mine, 2 km south and 8 km southeast, respectively, of the Hall Group are volcanogenic



GOLD OCCURRENCES

- 1. Amore
- 2. Comego
- 3. Meade Ck.
- 5. Coronation

OTHER OCCURRENCES

- 4. Hill 60
- 12. Lady A, Lady C

BASE METAL OCCURRENCES, DEPOSITS

- 6. Pauper
- 7. Copper Canyon
- 8. Twin J
- 9. King Solomon
- 10. Coronation
- 11. V V
- 13. Fly



AVONDALE RESOURCES INC.

MINERAL OCCURRENCES
LOCATION MAP
HALL GROUP

Project No: V 191	By: T. N.
Scale: 1: 250 000	Drawn: J. S.
Drawing No: FIG. 4	Date: OCTOBER 1987.



MPH Consulting Limited



flows and tuffs. A pyrite-pyrrhotite-chalcopyrite skarn breccia intersected in a drillhole assayed 0.117% Cu, 0.03 g/t Au, 3.08 g/t Ag over 1.68 m.

The Coronation showing is a large (10-18 m wide) pyrite-chalcopyrite-pyrrhotite-bearing quartz vein hosted by the Jurassic Island Intrusions granodiorite 5 km northwest of the Hall Group. The only reported sample from the vein ran nil Au, nil Ag (1985).



5.0 1986-87 EXPLORATION PROGRAM

The exploration carried out included rock and silt sampling in July 1986 and geological mapping and rock and silt sampling in July 1987. A total of 58 rock grab samples and 2 silt samples was collected. Geological mapping was carried out at 1:10,000 scale over about 6 km², mainly in the four corners of the property.

5.1 Property Geology

The Hall Group is underlain by rocks of the Paleozoic Sicker Group and Jurassic Island Intrusions (Drawing No. 5).

The southwesternmost corner of the property is underlain by Myra Formation rocks including quartz-sericite schist (metamorphosed welded rhyolite tuff?), sericite schist, and dacite to rhyodacite tuffs (Unit 2). Outcrop is extremely scarce in this area of the property, even along roads. The majority of the rocks are strongly foliated with a northwesterly strike and steep to sub-vertical dips.

Muller (1980b) has mapped a broad sequence of Sediment-Sill Unit rocks (Unit 4) overlying the Myra Formation to the northeast. In the southwestern part of the property, only one outcrop was observed within the area mapped as Sediment-Sill Unit. This was an outcrop of medium-grained massive andesite (gabbro?). In the Mount Hall area Sediment-Sill Unit rocks include fine-grained, often purplish dacite tuff, black chert, cherty tuff, and black cherty argillite and occasional thin layers of gabbroic rock. The chert and cherty argillite are well banded, striking northwest and dipping gently southwest, while all other rock types are massive with no discernable layering. The presence of intermediate pyroclastics in this sequence indicates that these rocks may belong to the Myra Formation rather than the Sediment-Sill Unit.



In the southeast and northwest corners of the property gabbroic rocks (Unit 4a) are exposed. These rocks appear to be part of a major gabbroic sill extending across the entire property and up to 800 m or more in width. The rocks from the southeast corner are fine- to medium-grained, generally massive, dark green gabbros. Locally coarse hornblende-rich (± magnetite) zones occur, an indication that Island Intrusions rocks likely occur at a fairly shallow depth below surface. In the northwest corner, the rocks are medium- to coarse-grained, generally feldspar porphyritic, gabbros. The feldspar phenocrysts occur as rosettes up to 2 cm in diameter making up as much as 20% of the rock. Locally, magnetite occurs in quantities up to 5%. The feldspar "flowers" are diagnostic of the Sediment-Sill Unit sills, which are believed to represent feeders to the Triassic Karmutsen Formation.

The northern area of the Hall property is underlain by Island Intrusions diorite to quartz diorite (Unit 9). At their contact with the Sicker Group rocks a hybrid magnetite-rich border phase up to at least 125 m wide is developed (Unit 9a). The only area that the border phase rock was observed in outcrop is on the northwestern slopes of Mount Hall, but float located on the northern slopes of Mount Hall and in the northwest corner of the property indicates that the border phase is present, at least locally, along much of the intrusive contact. On Mount Hall, the border phase consists of coarse-grained diorite to hornblendite with up to 50% magnetite. The magnetite occurs as irregular masses up to 5 mm in size or as rectangular to elongate lath-like grains up to 50 mm long by 2-5 mm wide. Hornblendite consists of altered diorite with up to 60% or more coarse hornblende laths 8-10 mm long. The border phase rocks are locally cut by numerous quartz veins up to about 25 cm wide, some of which are mineralized with pyrite, chalcopyrite, and/or magnetite. A shear zone exposed in the NE road offsets the border phase rocks approximately 200 m.



5.2 Mineralization and Lithogeochemistry

A total of 58 rock samples was collected from the Hall Group. All samples were analyzed for Au by AA at Rossbacher Lab, Burnaby, B.C. and by 30-element ICP by Chemex Labs, North Vancouver, B.C. (23 samples) and Acme Analytical Labs, Vancouver, B.C. (35 samples). Rock sample descriptions and selected lithogeochemical results are included in Appendix II, while full analytical results are included in Appendix III. Rock sample locations are shown on Drawing No. 5.

The main mineralized zone discovered to date on the Hall Group occurs in the Unit 9a border phase of the Island Intrusions rocks. Quartz veining up to 30 cm wide containing variable amounts of pyrite, chalcopyrite, and magnetite (up to 15%, 5%, and 15%, respectively) occurs sporadically within the border phase rocks over a strike distance of about 800 m. Anomalous values in Au, Ag, and Cu have been returned from grab samples of these veins as summarized below:

Sample No.	Au (ppb)	Ag (ppm)	Cu (ppm)
7107 (float)	140	5.8	1.50%
7108	180	2.0	3881
7109	150	5.6	1.16%
7110	90	1.0	1436
7111	340	5.2	8649
7114	40	1.2	1157
17723 (float)	120	8.5	18,617
17724	280	6.3	769

Some weakly anomalous values in Mo (12-39 ppm) and Zn (152-230 ppm) have also been returned from these veins.

Anomalous Au values have also been obtained from several samples of the border phase unit without (apparent) associated quartz veining. Unit 9a rocks locally contain up to 3% disseminated pyrite although usually pyrite content is trace or less. Sample 7117 returned 40 ppb Au, while sample 17711 ran 130 ppb Au.



5.3 Whole Rock

Three rock samples were submitted to Rossbacher Lab for whole rock analysis. Results are included in Appendix III. All 3 are of Unit 4a gabbro. The analyses all fall approximately within the range of gabbro analyses. Sample 17730 has high CaO and MgO contents, indicating that the plagioclase present is likely anorthite and that the pyroxene is likely enstatite.

5.4 Silt Sampling

Two silt samples were collected and subsequently analyzed for Au by AA and by 30-element ICP. Results are included in Appendix III; locations are shown on Drawing No. 5. Sample 1152 returned 10 ppb Au and sample S-1 returned 311 ppm Cr. No other anomalous results were obtained. The weak Au anomaly in sample 1152 is of interest in that the sample was collected from an area believed to be underlain by Unit 4 rocks, which have returned weak Au anomalies from rock samples further to the west.



6.0 PROPOSED WORK PROGRAM

6.1 Plan

Phase I exploration of the Hall Group is designed to follow up the anomalous results of the 1986-87 exploration and to complete reconnaissance-scale geological coverage of the entire property.

Detailed geological mapping and rock sampling is to be carried out in the area of the Island Intrusions/Sicker Group contact, where auriferous quartz veins are known to occur. Mapping and sampling will be used to locate and trace the contact and associated border phase rocks to the west of the known zone on Mount Hall. Two test lines of soil geochemical sampling, magnetometer, and VLF-EM will be established over the known zone to determine whether these methods can provide useful information about the location and/or magnitude of the gold mineralization.

Geological mapping and rock sampling will also be carried out over the areas of the property which have not yet been covered. Of particular interest is the area of Sediment-Sill(?) Unit rocks on Mount Hall which have yielded two anomalous Au results from rock samples and one from a silt sample. In addition to searching for further gold values, it is necessary to determine whether these rocks belong to the Sediment-Sill Unit or the Myra Formation.

The lack of outcrop on the southern slopes of Coronation Mountain prevents the location of the Sediment-Sill Unit/Myra Formation contact from being located with any precision. Due to the occurrence of significant mineralization within the Myra rocks on the adjacent Lara property, the southwest corner of the Hall Group will be explored with a geochemical/geophysical grid supplemented by geological mapping and sampling of any available outcrops in the area. A baseline running parallel to the hillside will be established, with grid lines totalling about 12 line km at 100 m



intervals at right angles to the baseline. Soil samples and magnetometer and VLF-EM readings will be taken at 25 m intervals along all grid lines.

Phase II exploration, contingent upon favourable Phase I results, will consist of detailed geophysical surveying and geological mapping/sampling with the aim of locating specific targets for followup diamond drilling. Provision has been made for the extension and/or establishment of additional soil sampling/magnetometer/VLF-EM grid(s) should they be necessary.

6.2 Budget

Phase I	
Personnel	\$26,125
Truck Rental	2,200
Equipment Rental	1,695
Room and Board	3,105
Helicopter	1,650
Miscellaneous (including topographic base map)	3,200
Analyses	9,745
Report Costs	1,505
Management Fees	2,940
Contingency	<u>7,825</u>
Total, say	<u>\$60,000</u>
Phase II	
Linecutting	\$ 22,500
IP Surveying	32,000
Geochemical/Geophysical grid extension(s)	10,500
Detailed Mapping and Sampling	10,000
Consulting, Reporting	12,000
Contingency	<u>13,000</u>
Total, say	<u>\$100,000</u>

6.3 Schedule

Phase I fieldwork is estimated to require 3 weeks to complete with a further 3 weeks for completion of sample analyses and report writing (Table I). Phase II is estimated to require about 2 months for completion, depending on its scope.



Week	1	2	3	4	5	6
Mobilization						
Geology, Prospecting						
Soil Sampling						
Magnetometer, VLF-EM						
Analyses						
Consulting/ Supervision						
Demobilization						
Report						

TABLE I

PHASE I PROJECT SCHEDULE

HALL GROUP



8.0 RECOMMENDATIONS

1. It is recommended that detailed geological mapping and rock sampling be carried out along the contact of Island Intrusions rocks with Sicker Group rocks to explore for additional Au-Ag-Cu mineralization such as that discovered on the northwest side of Mount Hall.
2. Two test lines of soil sampling and magnetometer/VLF-EM readings are recommended to be carried out over the zone of Au-Ag-Cu mineralized border phase rocks to determine whether or not these methods can supply useful information in locating and/or delineating this type of mineralized zone.
3. It is recommended that soil sampling, magnetometer and VLF-EM surveys, and geological mapping and sampling of any available outcrops be carried out on a grid established in the southwestern corner of the property over the Myra Formation rocks to determine whether they host mineralization similar to that on the adjacent Abermin Corp. Lara property.
4. It is recommended that the Sediment-Sill(?) Unit rocks on Mount Hall be investigated with geological mapping and rock sampling with the aims of locating gold mineralization as indicated by samples 17716, 17718, and 1152 and to determine whether the rocks belong to the Sediment-Sill Unit or Myra Formation.
5. Additional reconnaissance geological mapping and rock sampling is recommended to be carried out over the areas of the Hall Group which have not yet been explored.
6. The work described above is recommended as Phase I exploration of the Hall Group at an estimated cost of \$60,000.



7. Contingent upon favourable Phase I results, Phase II detailed geological and geophysical work is recommended at an estimated cost of \$100,000.

Respectfully submitted,
MPH CONSULTING LIMITED

A handwritten signature in cursive script, appearing to read 'T. Neale'.

T. Neale, B.Sc.

Vancouver, B.C.
October 14, 1987



CERTIFICATE

I, T. Neale, do hereby certify:

1. That I am a graduate in geology of the University of British Columbia (B.Sc. 1978).
2. That I have practised as a geologist in mineral exploration for nine years.
3. That the opinions, conclusions and recommendations contained herein are based on field work carried out on the Hall Group in June 1986 and July 1987 by myself and other MPH personnel.
4. That I own no direct, indirect, or contingent interests in the subject property, or shares or securities of Avondale Resources Inc. or associated companies.

A handwritten signature in cursive script, appearing to read "T. Neale", is positioned above the printed name.

T. Neale, B.Sc.

Vancouver, B.C.

October 14, 1987

REFERENCES

- Brandon, M.T. Orchard, J.J., Parrish, R.R., Sutherland Brown, A., and Yorath, C.J. 1986. Fossil ages and isotopic dates from the Paleozoic Sicker Group and associated intrusive rocks, Vancouver Island, British Columbia. In Current Research, Part A, Geological Survey of Canada, Paper 86-1A, pp. 683-696.
- Fyles, J.T. 1955. Geology of the Cowichan Lake Area, Vancouver Island, British Columbia. BCDM Bulletin 37.
- Massey, N.W. 1987. Geology of the Cowichan Lake Area, NTS 92C/16, Province of British Columbia. Ministry of Energy, Mines and Petroleum Resources, Open File 1987/2.
- Muller, J.E. and Carson, D.J.T. 1969. Geology and mineral deposits of Alberni Map Area, British Columbia (92F). Geological Survey of Canada, Paper 68-50.
- Muller, J.E. 1977. Geology of Vancouver Island (West Half). Geological Survey of Canada, Open File 463.
- Muller, J.E. 1980a. The Paleozoic Sicker Group of Vancouver Island, British Columbia. Geological Survey of Canada, Paper 79-30.
- Muller, J.E. 1980b. Geology, Victoria Map Area, Vancouver Island and Gulf Islands, British Columbia. Geological Survey of Canada, Open File Map 701.
- Muller, J.E. 1981. Insular and Pacific Belts; GAC-MAC-CGU, Annual Meeting, 1981, Calgary. Field Guides to Geology and Mineral Deposits, pp. 316-334.
- Muller, J.E. 1982. Geology of Nitinat Lake Map Area, British Columbia. Geological Survey of Canada, Open File 821.



Neale, T. 1984. Compilation of Mineral Occurrences of the Sicker Group, Vancouver Island, British Columbia, for MPH Consulting Limited.

Sutherland Brown, A. 1986. Sicker Group in the Northwest Cowichan Uplift. Geological Survey of Canada, Open File 1272.

Walker, R.R. 1983. Ore Deposits at the Myra Falls Minesite. Western Miner, May 1983, pp.22-25.



Appendix I

**List of Personnel and
Statement of Expenditures**



LIST OF PERSONNEL AND STATEMENT OF EXPENDITURES

The following expenses were incurred on the Hall Group of mineral claims as defined in this report (Orn 1-4 claims) for the purposes of mineral exploration between the dates of June 21, 1986 and July 15, 1987.

Personnel:

T. Neale, B.Sc.		
10 days @ \$350	\$3500.00	
T. Hayes, Field Technician		
1 day @ \$250	250.00	
J. Zackodnik, Field Assistant		
1 day @ \$150	150.00	
H. Chaudet, Field Assistant		
1 day @ \$150	150.00	
J. Lang, Field Assistant		
5 days @ \$150	750.00	
T.G. Hawkins, P.Geol.		
4 hrs @ \$80	<u>320.00</u>	
		\$5120.00

Disbursements:

Food and Accommodation	585.00	
Transportation	117.44	
Equipment rental (truck)	450.00	
Miscellaneous	1.02	
Report Costs	718.80	
Analyses		
23 rocks (Au, ICP) @ \$11.95	274.85	
35 rocks (Au, ICP) @ \$14.00	490.00	
1 silt (Au, ICP) @ \$11.95	11.95	
1 silt (Au, ICP) @ \$12.95	12.95	
3 rocks (Au) @ \$ 4.75	14.25	
3 rocks (whole rock) @ \$20.00	60.00	

Administration Fees	<u>201.18</u>	
---------------------	---------------	--

2937.44

Total		<u><u>\$8057.44</u></u>
-------	--	-------------------------



Appendix II

**Rock Sample Descriptions and
Lithogeochemical Results**



Rock Sample Descriptions and Lithochemical Results

Sample No.	Description	Au (ppb)	Other (ppm)
1151	Dacite tuff - medium grey, fine-grained, 1-2% disseminated pyrite; weakly magnetic.	5	440 Ba, 3380 P
1153	Silicified tuff(?) - light to dark grey, fine-grained; contains ovoid rusty boxwork patches to 2 x 5 cm and <1% disseminated pyrite.	40	
1901	Dacite tuff - purplish brown, fine-grained, trace disseminated pyrite. Cut by pale green alteration zone 1 cm wide.	5	
1902	Dacite tuff - medium grey, fine-grained, weathers rusty, contains disseminations and globs of pyrite <1%.	10	590 Ba, 3800 P, 118 Sr
1903	Cherty siltstone - dark green, some rust, disseminated pyrite to about 1%.	5	730 Ba, 3580 P
1904	Gabbro - coarse-grained, 50% feldspar, 35% hornblende, 15% magnetite. No sulphides noted.	5	
7101	Dacite tuff - dark grey, fine-grained, occasional clasts to 2 mm; contains <1% pyrrhotite in clots to 2 mm across. Float.	5	270 Ba
7102	Siltstone - medium grey-green, fine-grained, fairly hard; contains 3-5% disseminated pyrite and 2-3% stringer pyrite. Weathers very rusty.	5	
7103	Magnetite-hornblende diorite - 20% feldspar, 35% magnetite, 45% hornblende; minor pyrite occurs as fracture coatings.	5	
7104	Magnetite-rich diorite - 35% feldspar, 45% mafics, 15% magnetite; also contains 3-7% pyrite as thin discontinuous fracture fillings + quartz and disseminations.	5	
7105	Magnetite-rich diorite - fairly coarse-grained, 35-40% feldspar, 40-45% mafics, 15-25% magnetite; pyritic fractures <1%; zone of epidote alteration 2 cm wide with 1-2% pyrite disseminated in cubic blebs to 1 mm at edge of altered zone.	5	
7106	Magnetite-bearing diorite - contains 60% fine- to coarse-grained hornblende, 35% feldspar, up to 5% magnetite, trace to 1% disseminated fine pyrite.	5	



Sample No.	Description	Au (ppb)	Other (ppm)
7107	Quartz vein - milky white; contains 2% chalcopyrite in irregular masses to 2 x 5 mm and 1-2% pyrite. Sample contains about 20% irregular inclusions of fine-grained dark green-brown altered wall rock. Minor malachite stain on weathered surface. Float.	140	5.8 Ag, 2.0 Cd, 1.50% Cu, 230 Zn, 39 Mo
7108	Quartz vein - milky white; contains 3-5% pyrite in irregular masses to 2 x 4 mm and trace chalcopyrite. Sample includes dark grey, nonmagnetic wall rock (50% of sample) with <1% disseminated pyrite.	180	2.0 Ag, 3881 Cu, 317 V, 120 Zn
7109	Quartz vein - milky greyish white; contains 3-5% chalcopyrite and minor pyrite in irregular masses to 8 x 10 mm. 30 cm wide, 4.6 m long.	150	5.6 Ag, 152 Cr, 1.16% Cu, 140 Zn, 18 Mo
7110	Gabbro - wall rock of 7109 vein. Moderately coarse-grained, dark green; contains trace disseminated and 2-3% stringer pyrite. Weathers rusty.	90	1.0 Ag, 100 Co, 1436 Cu, 50 W
7111	Gabbro(?) - extremely altered; contains 5-10% quartz globules, lenses, etc. to 5 mm across and 10-15% pyrite disseminations and streaks.	340	5.2 Ag, 8649 Cu, 379 V, 170 Zn, 11 Mo
7112	Quartz diorite - contains 20% hornblende laths to 1 x 6 mm and 5% finely disseminated pyrite.	5	523 Cu
7113	Massive pyrite - from a cross fracture.	30	1124 Cu
7114	Highly altered diorite(?) - wall rock of 7115 quartz vein; medium brownish green, kaolinitized, very abundant goethitic and limonitic stain throughout; contains 2-3% disseminated fine-grained pyrite.	40	1.2 Ag, 1157 Cu
7115	Quartz vein - milky white; strongly fractured in 2 directions, moderate amount of rust stain on fracture surfaces; <1% pyrite in stringer-like seams <1 mm wide. 15 cm wide.	5	170 Cr
7116	Gabbro - dark green, coarse-grained, trace to 1% disseminated pyrite in globs to 3 mm across.	5	
7117	Magnetite-rich diorite - dark green, coarse-grained; 15% magnetite, 60% mafics, 25% feldspar; contains trace to 1% disseminated pyrite.	40	768 Cu



Sample No.	Description	Au (ppb)	Other (ppm)
17701	Quartz(?) diorite - contains up to 35% coarse-grained magnetite, trace associated pyrite; abundant pyrite on fracture surfaces.	5	504 Cu, 14 La
17702	Magnetite-rich diorite - 25-30% pyrite on fracture surfaces; quartz-pyrite veinlet 2 mm wide; 15-20% feldspar, 35-50% mafics, 30-50% irregular masses magnetite to 5 mm in size.	20	
17703	Magnetite-rich diorite - 15-25% feldspar, 2-5% quartz, 40-50% mafics, 20-43% magnetite; only minor pyrite on fractures.	5	
1704	Dacite tuff - fine-grained, medium grey; contains 15-25% quartz "eyes" to 1 mm, and 75-85% flattened, stretched tuff fragments. Strong foliation gives welded tuff appearance. Locally, up to 5% rusty cavities present. No sulphides noted.	5	116 Zn, 85 Ni, 1432 Mn
17705	Dacite tuff - fine-grained, medium green-grey, moderately foliated (welded tuff appearance). Contains 35-40% round quartz eyes, up to 10% irregular layers, lenses, pockets of rusty weathered material. No sulphides noted.	5	128 Zn, 82 Ni, 1772 Mn, 222 Cr
17706	Tuff(?) - fine-grained, dark greenish grey, extremely foliated with abundant (25-30%) purple hematitic wisps parallel foliation; outcrop weathers purple. No sulphides noted.	5	
17707	Dacite tuff - massive, very slightly foliated; at least 35-40% quartz grains in very fine-grained medium grey-green matrix; locally bright green, as if epidotized. No sulphides noted.	5	83 Sr
17708	Quartz-sericite schist - very pale green-grey; contains 10-15% quartz in matrix of sericitized, squashed, flattened, elongated clasts(?) (protolith welded rhyolite tuff?). No sulphides noted. Float.	5	
17709	Sericite schist - very very pale grey to white, very little if any quartz, strongly foliated with 3% streaks of black (sulphides?) to 1 mm thick by 15 mm long and abundant rusty cavities to 2 mm by 5 mm and rusty stringerlets cutting foliation at low angle. Rusty material totals about 10%.	5	11 La



Sample No.	Description	Au (ppb)	Other (ppm)
17710	Dacite tuff - fairly massive, trace disseminated pyrite. Float.	5	1179 Mn
17711	Magnetite-rich diorite - fairly coarse-grained, dark green to black; 30-40% feldspar, 40-50% mafics (hornblende), 10-30% magnetite in elongate lath-like grains to 5 cm long by 2-3 mm wide. 1-2% pyrite as abundant fracture coatings and 1 thin (1 mm) discontinuous pyrite stringer with minor associated disseminated pyrite.	130	
17712	Magnetite-rich diorite - quite coarse-grained, dark green to black, 2-3% disseminated pyrite; magnetite is more rectangular than 17711 (about 8 mm by 2-5 mm).	5	
17713	Magnetite-rich diorite - only 10-15% magnetite; cut by quartz vein with abundant pyrite in lensoidal pockets to 2 cm long by up to 5 mm wide. Diorite contains <1% disseminated pyrite and 1 speck chalcopyrite 2 mm by 1 mm. Sample is 15% quartz vein. Float.	5	
17714	Magnetite-rich diorite - 55-60% hornblende in coarse laths to 8-10 mm long, 25-30% feldspar, 10-20% magnetite, trace disseminated pyrite; cut by <1 mm discontinuous pyrite stringer.	5	26 Pb, 0.7 Ag
17715	Dacite tuff - fine-grained, medium grey, hard; 10-15% greenish white specks (feldspar crystals?), 3-5% pyrite disseminated in cubes <1 mm, occasional quartz grains to 1 mm; very weakly magnetic.	5	132 Sr
17716	Quartz vein - stained pale rusty colour, contains "stringers" of pyrite cubes <1 mm with associated magnetite; wall rock is silicified (dacite tuff?) with up to 15% disseminated pyrite + magnetite. Sample is 80% quartz vein. Float.	10	28 Mo, 1241 Cu
17717	Dacite tuff(?) - very fine-grained, medium grey to green-grey, hard; cut by several parallel pyrite stringers to 1 mm wide and contains 2-4% pyrite disseminated in clumps up to 4 mm across. Weathers very rusty.	5	322 Ba
17718	Dacite tuff(?) - very fine-grained, medium grey, heavy and dense; up to 8% disseminated pyrite in fine (<1 mm) cubes and aggregates to 2 cm by 3-4 mm; minor (<1%) stringer pyrite also. Weathers rusty.	40	



Sample No.	Description	Au (ppb)	Other (ppm)
17719	Dacite tuff - medium-grained, purplish brown-grey; up to 30% quartz eyes to 1 mm in non-descript purple-brown mass of other material; 2-4% disseminated pyrite in <1 mm to 5 x 3 mm masses.	5	
17720	Dacite tuff - fine-grained, purple; 5% disseminated pyrite in cubes to 1 mm and 10% pyrite in masses to 15 x 5 mm within zones of heavily disseminated (85-90%) pyrite to 3 x 2 cm. Pyrite seems vaguely layered and weakly magnetic where <u>not</u> massive. Float.	5	21 Mo, 693 Cu, 15 Pb
17721	Magnetite-hornblende diorite - coarse-grained; 30% magnetite, 40% hornblende, 30% feldspar with up to 1% finely disseminated and stringer pyrite. Cut by quartz vein 1.5 cm thick with 5-10% pyrite, 10-15% magnetite. Sample is 20% quartz vein.	5	214 Mo, 677 Cu
17722	Magnetite-hornblende diorite - coarse-grained, contains 1% disseminated + stringer (to 2 mm) pyrite.	5	
17723	Quartz vein - white, contains minor pyrite, 3-5% chalcopyrite, and 4% black material (tarnished pyrite and/or chalcopyrite?). Float.	120	19 Mo, 18,617 Cu, 152 Zn, 8.5 Ag, 26 W
17724	Quartz vein - milky white, abundant rusty (goethitic) irregular cavities; fairly strongly fractured; contains trace chalcopyrite, minor (<<1%) pyrite. 25 cm wide.	280	12 Mo, 769 Cu, 6.3 Ag, 206 Cr
17725	Quartz vein - white, heavily fractured with abundant yellow-brown stain on fractures; contains 1% pyrite. 8 cm wide.	5	259 Cr
17726	Gabbro - fine- to medium-grained, rusty, 1-3% disseminated pyrite; cut by quartz vein 1 cm thick with abundant very fine-grained pyrite. Sample is 15% quartz vein. Float.	5	83 Ni
17727	Gabbro - fine- to medium-grained, very rusty, trace to 1% disseminated pyrite, minor quartz-epidote stringers.	5	17 Pb, 80 Ni
17728	Gabbro - medium-grained, 1-2% disseminated pyrite; cut by quartz vein <1 cm thick with abundant pyrite, magnetite. Sample is 30% quartz vein.	5	19 Mo, 510 Cu



Sample No.	Description	Au (ppb)	Other (ppm)
17729	Gabbro - dark grey-green to black, 30% rounded greenish feldspar phenocrysts to 3 mm, trace disseminated pyrite; cut by several quartz veins to 1 cm wide containing 5-10% disseminated pyrite cubes and associated magnetite. Sample is 15% quartz veins.	5	38 Mo, 91 Sr
17730	Gabbro - fine- to medium-grained, typical "vesicular" weathering surface. No sulphides noted.	5	80 Sr
17731	Gabbro - medium-grained; 50-60% feldspar, 40-50% mafics, 1% disseminated and stringer pyrite; cut by aplitic vein 1.5 cm wide with 1-2% pyrite cubes to 4 mm and by quartz-epidote veinlets to 2 mm wide with abundant pyrite.	5	
17732	Gabbro - medium-grained, pale greenish grey; cut by abundant quartz veins to 1.5 cm. No sulphides noted but moderate amount of rusty coatings present. Sample is 30% quartz veins.	5	
17733	Gabbro - medium-grained, dark green, occasional twinned feldspar crystals to 10 x 2 mm; 5% magnetite bodies to 8 x 2 mm, 45% mafics (pyroxene?), 50% feldspar. No sulphides noted.	5	
17734	Gabbro - fine- to medium-grained, black & white, rusty weathering, locally slightly magnetic; 30-40% mafics in irregular bodies, not crystals, 60-70% feldspar. Despite rust, no sulphides noted.	5	0.222% P
17735	Quartz vein - heavily fractured, heavily iron-stained, minor weathered pyrite in a cavity 10 x 4 mm. Some elongate linear "vugs" but no mineralization in them.	5	



Appendix III

Certificates of Analysis



ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
#2406-555 W. HASTINGS ST. (BOX 12092)
VANCOUVER B.C.

CERTIFICATE#: 87344
INVOICE#: 7805
DATE ENTERED: 87-07-30
FILE NAME: MPH87344
PAGE # : 1

PROJECT: V 191
TYPE OF ANALYSIS: GEOCHEMICAL

PRE FIX	SAMPLE NAME	PPB Au
A	17701	5
A	17702	20
A	17703	5
A	17704	5
A	17705	5
A	17706	5
A	17707	5
A	17708	5
A	17709	5
A	17710	5
A	17711	130
A	17712	5
A	17713	5
A	17714	5
A	17715	5
A	17716	10
A	17717	5
A	17718	40
A	17719	5
A	17720	5
A	17721	5
A	17722	5
A	17723	120
A	17724	280
A	17725	5
A	17726	5
A	17727	5
A	17728	5
A	17729	5
A	17730	5
A	17731	5
A	17732	5
A	17733	5
A	17734	5
A	17735	5
L	S-1	5

CERTIFIED BY :

RECEIVED JUL 30 1987



ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
#2406-555 W.HASTINGS ST. (BOX 12092)
VANCOUVER B.C.

CERTIFICATE#: 87344.A
INVOICE#: 7831
DATE ENTERED: 87-08-05
FILE NAME: MPH87344.A
PAGE # : 1

PROJECT: V 191
TYPE OF ANALYSIS: GEOCHEMICAL

PRE FIX	SAMPLE NAME	ORIG. PPB Au	RERUN PPB Au
A	17711	130	40
A	17723	120	190
A	17724	280	300

CERTIFIED BY :



ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
301-409 GRANVILLE STREET
VANCOUVER B.C.

CERTIFICATE#: 86183.A
INVOICE#: 6469
DATE ENTERED: 86-07-11
FILE NAME: MPH86183.A
PAGE # : 1

PROJECT: V 191
TYPE OF ANALYSIS: ASSAY

PRE FIX	SAMPLE NAME	% Cu
T	7107	1.50
T	7109	1.16

CERTIFIED BY :



Chemex Labs Ltd.

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J2C1
Telephone: (604) 984-0221
Telex: 043-52597

Analytical Chemists • Geochemists • Registered Assayers

LABORATORY OF ANALYTICAL CHEMISTRY

TO: ROSSBACHER LABORATORY LIMITED
2000 SOUTH SPRINGER AVENUE
SURREY, B.C.
V3E 2N1

CLIENT: AS14402-C01-A
INVOICE #: 1214402
DATE: 3-JUL-76
P.O. #: NONE
V.I.G.T.

Semi quantitative multi element ICP analysis.
Aqua-Regia digestion of 0.5 gm of
material followed by ICP analysis. Since this
digestion is incomplete for many minerals,
values reported for Al, Sb, Ba, Be, Ca, Cr,
Ga, La, Mg, K, Na, Sr, Ti, W and Y can
only be considered as semi-quantitative.

COMMENTS:
REF: PETER ROSSBACHER

Sample Description	Al	Ag	As	B	Bi	Ca	Co	Cu	Fe	Ge	Hf	Mo	Nb	P	Pb	Sb	Se	Si	Ti	V	W	Zn	
7101	0.99	0.2	<10	270	<0.5	<2	74	276	4.08	<10	0.25	240	17	360	2	<10	6	0.11	<10	<10	93	<10	30
7102	1.48	0.2	10	220	<0.5	<2	69	196	4.57	<10	0.64	413	2	530	<2	<10	8	0.20	<10	<10	107	<10	40
7103	1.01	0.2	10	20	<0.5	<2	34	268	5.20	10	0.09	405	1	1450	2	<10	1	0.24	<10	<10	208	<10	50
7104	1.77	0.2	10	40	<0.5	<2	42	297	5.64	10	0.15	231	4	760	2	<10	29	0.15	<10	<10	148	<10	50
7105	1.72	0.2	10	10	<0.5	<2	33	288	5.91	10	0.33	449	4	1220	2	<10	12	0.22	<10	<10	166	<10	50
7106	1.18	0.2	<10	10	<0.5	<2	21	437	4.48	<10	0.07	315	1	950	<2	<10	5	0.30	<10	<10	225	<10	30
7107	0.99	5.8	10	20	<0.5	<2	119	9999	4.22	<10	0.09	13	300	2	<10	1	0.11	<10	<10	104	<10	230	
7108	3.15	2.0	10	120	<0.5	<2	37	3881	10.00	10	1.06	422	4	1050	<2	<10	3	0.20	<10	<10	317	<10	120
7109	3.39	5.6	10	<10	<0.5	<2	152	9999	2.65	<10	<0.01	40	19	90	2	<10	1	0.31	<10	<10	9	<10	140
7110	2.04	1.0	10	70	<0.5	<2	67	1435	10.16	10	0.94	372	1	630	<2	<10	2	0.29	<10	<10	197	50	76
7111	1.75	5.2	10	70	<0.5	<2	45	5649	10.55	10	0.96	279	11	790	<2	<10	1	0.31	<10	<10	379	<10	170
7112	1.76	0.2	<10	20	<0.5	<2	45	523	6.28	10	0.03	276	1	1850	<2	<10	16	0.20	<10	<10	80	<10	50
7113	3.00	0.2	<10	30	<0.5	<2	21	1124	22.23	20	0.01	429	2	970	<2	<10	4	0.26	<10	<10	93	<10	90
7114	2.92	1.2	20	40	<0.5	<2	22	1157	11.47	10	0.11	289	1	1460	<2	<10	2	0.12	<10	<10	201	<10	70
7115	3.08	3.2	10	10	<0.5	<2	270	23	1.22	10	<0.01	49	1	20	2	<10	1	0.21	<10	<10	5	<10	10
7116	1.41	0.2	10	40	<0.5	<2	23	341	4.62	10	0.10	252	1	820	<2	<10	23	0.25	<10	<10	274	<10	50
7117	3.79	0.2	10	20	<0.5	<2	20	768	6.48	10	0.36	324	1	1820	<2	<10	5	0.22	<10	<10	142	<10	60
1901	0.86	0.2	10	80	<0.5	<2	53	46	1.73	<10	0.09	588	2	1190	4	<10	9	0.12	<10	<10	43	<10	30
1902	1.20	3.2	10	590	<0.5	<2	36	42	2.25	10	0.34	400	1	3400	4	<10	13	0.23	<10	<10	47	<10	50
1903	1.40	3.2	10	700	<0.5	<2	52	56	2.92	10	0.27	464	1	3580	4	<10	5	0.16	<10	<10	46	<10	40
1904	3.25	3.2	10	50	<0.5	<2	24	72	1.18	10	0.13	208	1	1400	2	<10	3	0.22	<10	<10	174	<10	30
1151	1.50	0.2	<10	400	<0.5	<2	18	163	4.98	10	0.59	432	3	4380	6	<10	8	0.22	<10	<10	102	<10	30
1152	1.61	0.2	10	80	<0.5	<2	34	30	4.95	<10	0.15	336	1	670	8	<10	7	0.26	<10	<10	149	<10	30
1153	0.25	0.2	<10	<10	<0.5	<2	4	291	2.25	<10	<0.01	113	3	550	<2	<10	4	0.12	<10	<10	57	<10	<10

RECEIVED JUL 9 1976

Handwritten signature



ACME ANALYTICAL LABORATORIES 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1K6 PHONE 253-3158 DATA LINE 251-1011

GEOCHEMICAL ICP ANALYSIS

.500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG.C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR NH FE CA P LA CR MG BA TI B AND LIMITED FOR NA AND K. AU DETECTION LIMIT BY ICP IS 3 PPM. - SAMPLE TYPE: SOLUTION

191

DATE RECEIVED: JULY 29 1987 DATE REPORT MAILED: Aug 5/87 ASSAYER: D. Lopez DEAN TOYE, CERTIFIED B.C. ASSAYER ROSSBACHER LABORATORY PROJECT-CEFT#87344 File # 87-2812

Table with columns: SAMPLER, NO PPM, CU PPM, ZN PPM, AS PPM, U PPM, TH PPM, SR PPM, CD PPM, SB PPM, BI PPM, V PPM, CA PPM, P PPM, LA PPM, CR PPM, MG PPM, BA PPM, TI PPM, B PPM, AL PPM, HA PPM, K PPM, W PPM. Rows include samples AP 17701 through AP 17735 and L S-1 STD C.

RECEIVED AUG 4 1 1987



ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
#2406-555 W.HASTINGS ST. (BOX 12092)
VANCOUVER B.C.

CERTIFICATE#: 87351.C
INVOICE#: 7803
DATE ENTERED: 87-07-29
FILE NAME: MPH87351.C
PAGE # : 1 A

PROJECT: V 191
TYPE OF ANALYSIS: GEOCHEMICAL

PRE FIX	SAMPLE NAME	% SiO2	% Al2O3	% MgO	% Fe2O3	% CaO	% K2O	% Na2O	% TiO2	% MnO
A	17730	53.5	11.8	10.7	9.1	13.1	0.3	1.3	1.0	0.2
A	17733	51.5	17.2	5.2	8.4	10.2	0.7	3.1	1.3	0.1
A	17734	56.0	11.4	2.0	12.4	4.8	0.8	3.3	2.4	0.2

CERTIFIED BY :



ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
#2406-555 W.HASTINGS ST. (BOX 12092)
VANCOUVER B.C.

CERTIFICATE#: 87351.C
INVOICE#: 7803
DATE ENTERED: 87-07-29
FILE NAME: MPH87351.C
PAGE # : 1 B

PROJECT: V 191
TYPE OF ANALYSIS: GEOCHEMICAL

PRE FIX	SAMPLE NAME	% LOI	% TOTAL
A	17730	0.7	101.7
A	17733	1.6	99.3
A	17734	2.3	95.6

CERTIFIED BY :



Appendix IV

Conversion Factors for Metric Units



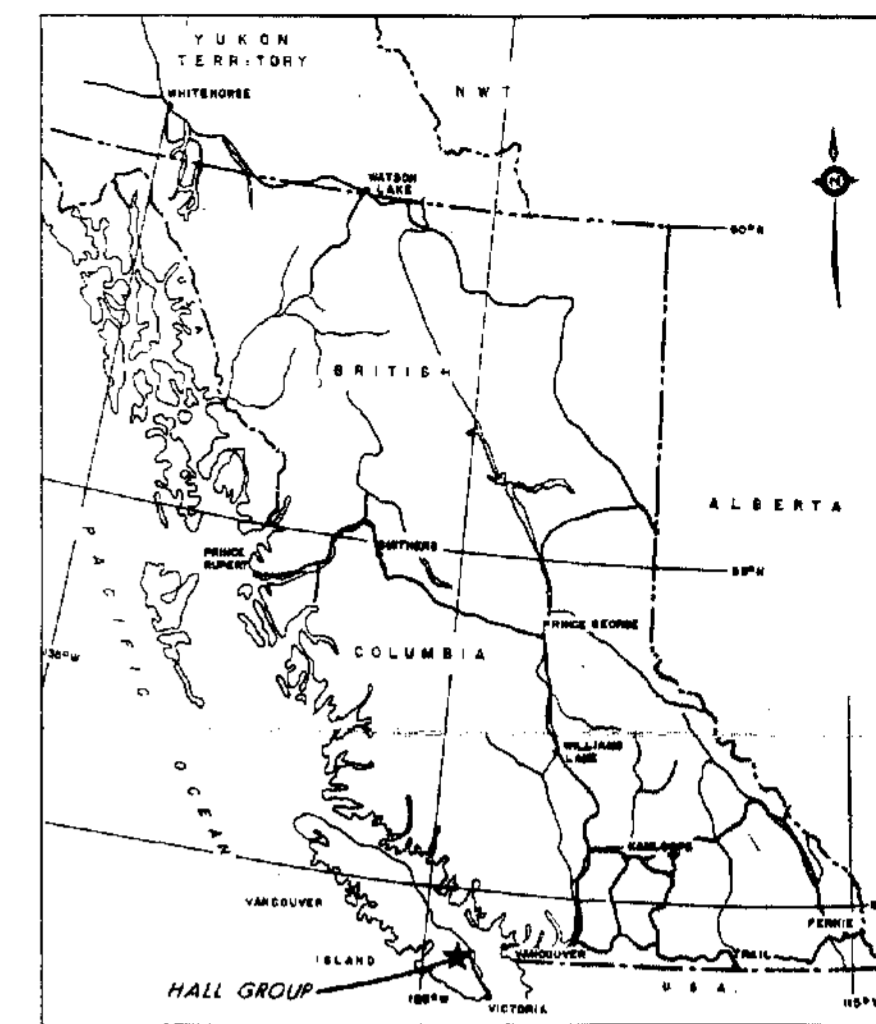
Metric Conversion Factors

1 inch	= 25.4 millimetres	(mm)
	or 2.54 centimetres	(cm)
1 cm	= 0.394 inch	
1 foot	= 0.3048 metre	(m)
1 m	= 3.281 feet	
1 mile	= 1.609 kilometres	(km)
1 km	= 0.621 miles	
1 acre	= 0.4047 hectares	(ha)
1 ha	= 2.471 acres	
1 ha	= 100 m x 100 m = 10,000 m ²	
1 km ²	= 100 ha	
1 troy ounce	= 31.103 grams	(g)
1 g	= 0.032 troy oz	
1 pound (lb)	= 0.454 kilogram	(kg)
1 kg	= 2.20 lb	
1 ton (2000 lb)	= 0.907 tonne (0.9072)	(t)
1 tonne	= 1.102 ton = 2205 lb	
1 troy ounce/ton (oz/T)	= 34.286 grams/tonne	(g/t)
1 g/t	= 0.0292 oz/ton	
1 g/t	= 1 part per million	(ppm)
1 ppm	= 1000 parts per billion	(ppb)
10,000 g/t	= 1%	





7107	140 ppb Au, 5.8 ppm Ag, 1.50% Cu
7108	180 ppb Au, 2.0 ppm Ag, 388 ppm Cu
7109	150 ppb Au, 5.6 ppm Ag, 116% Cu
7110	90 ppb Au, 1.0 ppm Ag, 1436 ppm Cu
7111	340 ppb Au, 5.2 ppm Ag, 8649 ppm Cu
7113	30 ppb Au, 1124 ppm Cu
7114	40 ppb Au, 1.2 ppm Ag, 1157 ppm Cu
7117	40 ppb Au
17711	130 ppb Au
17716	10 ppb Au, 124 ppm Cu
17718	40 ppb Au
17721	677 ppm Cu, 214 ppm Mo
17723	120 ppb Au, 85 ppm Ag, 18,617 ppm Cu
17724	280 ppb Au, 6.3 ppm Ag, 769 ppm Cu



GEOLOGY

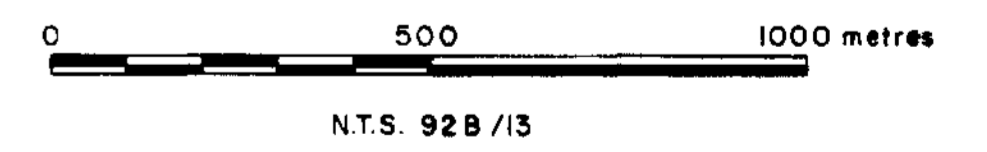
- UPPER CRETACEOUS
 - 10a COMOX FM - SANDSTONE, CONGLOMERATE
- LOWER TO MIDDLE JURASSIC
 - 9 ISLAND INTRUSIONS - DIORITE, QUARTZ DIORITE
 - 9a MAGNETITE + HORNBLENDE - RICH HYBRID BORDER PHASE OF ISLAND INTRUSIONS ROCKS
- SICKER GROUP PENNSYLVANIAN & MISSISSIPPIAN
 - 4 SEDIMENT - SILL UNIT - DACITE TUFF, CHERTY TUFF, CHERT, CHERTY ARGILLITE, MINOR GABBRO
 - 4a GABBROIC "SILL" OF SEDIMENT-SILL - LOCALLY GLOMEROPORPHYRITIC
- LOWER DEVONIAN & OLDER
 - 2 MYRA FM - QUARTZ - SERICITE SCHIST, SERICITE SCHIST

SYMBOLS

- TRVERSE
- - - - - PROPERTY BOUNDARY (dashed where overlapping previous claims)
- └┘ CLAIM LINE WITH LEGAL CORNER POST
- == ROAD
- - - - - STREAM
- ▬ BEDDING, FOLIATION
- △ SILT SAMPLE LOCATION
- x ROCK SAMPLE LOCATION
- OUTCROP
- ~ SHEAR, FAULT (FROM MULLER, 1980)
- GEOLOGICAL BOUNDARY, APPROX., FROM MULLER (1980), ASSUMED

GEOLOGICAL BRANCH ASSESSMENT REPORT

16,289



AVONDALE RESOURCES INC.

PROPERTY PLAN, GEOLOGY, and SAMPLING

HALL GROUP
NANAIMO MINING DIVISION, B.C.

Project No: V191	By: T.N.
Scale: 1:10,000	Drawn: T.N., dw
Drawing No: 5	Date: OCTOBER 1987

MPH Consulting Limited