BC

Mineral Development Agreement

1895 - 1995 100 YEARS OF GEOLOGICAL SURVEYING

GEOLOGICAL SURVEY BRANCH

OPEN FILE 1995-9

PRELIMINARY GEOLOGY OF THE QUATSINO - CAPE SCOTT AREA, NORTHERN VANCOUVER ISLAND

NTS 92L/12W & 102I/8,9

J. L. HAMMACK, G. T. NIXON, G. J. PAYIE
L. D. SNYDER, J. W. HAGGART, N. W. D. MASSEY,
AND D. J. BARRON

(SHEET 1 OF 2)

SCALE 1 : 50 000

Metres 1000 0 1 2 3 4 Kilometres

INTRUSIVE ROCKS

EARLY TO MIDDLE JURASSIC

ISLAND PLUTONIC SUITE; MT. BRANDES PORPHYRY

Jt — *MT. BRANDES PORPHYRY: PINK WEATHERING FELDSPAR AND HORNBLENDE PORPHYRY. ALSO INCLUDES IRREGULAR DIORITE DIKES (dj).*

LAYERED ROCKS

TERTIARY

FELSIC VOLCANIC ROCKS

Tv — *APHANITIC RHYOLITE FLOWS, DIKES AND PLUG.*

UPPER CRETACEOUS

BLUMBERG FORMATION

KBsn — *MASSIVE TO THINLY BEDDED LITHIC TO ARKOSIC WACKE WITH MINOR PEBBLE TO COBBLE CONGLOMERATE.*

KBcg — *MASSIVE, CONGLOMERATE WITH MINOR LENSES OF COARSE-GRAINED LITHIC WACKE.*

LOWER CRETACEOUS

LONGARM FORMATION EQUIVALENTS (HAUTERIVIAN–BARREMIAN)

lKL — *THINLY BEDDED TO MASSIVE SANDSTONE, SILTSTONE, MUDSTONE AND PEBBLE CONGLOMERATE AND MINOR COAL. LOCALLY FOSSILIFEROUS.*

LOWER TO MIDDLE JURASSIC

BONANZA GROUP

JB — *SUBMARINE TO SUBAERIAL INTERCALATED BASALTIC TO RHYOLITIC LAVAS, PYROCLASTIC AND MINOR EPICLASTIC ROCKS LOCALLY SUBDIVIDED ACCORDING TO COMPOSITION, LITHOLOGY AND TEXTURE (SEE TABLE OF ABBREVIATIONS AND NOMENCLATURE AT RIGHT).*

lJS — *SANDSTONE, SILTSTONE, LIMESTONE AND MINOR CONGLOMERATE, TYPICALLY TUFFACEOUS AND LOCALLY FOSSILIFEROUS. MINOR INTERBEDDED MAFIC TO INTERMEDIATE TUFFS AND AMYGDALOIDAL FLOWS WHICH ARE LOCALLY PILLOWED. LAHARIC BRECCIAS CONTAINING SEDIMENTARY AND VOLCANIC CLASTS ARE LOCALLY COMMON.*

UPPER TRIASSIC

VANCOUVER GROUP

SUTTON LIMESTONE

uTS — *THINLY TO THICKLY BEDDED PALE GREY LIME MUDSTONE, LOCALLY FOSSILIFEROUS.*

PARSON BAY FORMATION

uTPB — *THIN TO MEDIUM BEDDED ARGILLACEOUS LIME MUDSTONE, CALCAREOUS SHALE, SILTSTONE AND MINOR SANDSTONE.*

QUATSINO FORMATION

uTQ — *THINLY BEDDED TO MASSIVE LIME MUDSTONE, CHERT NODULES COMMON LOCALLY. RARE OOLITIC BEDS. LOCALLY FOSSILIFEROUS.*

KARMUTSEN FORMATION

uTK — *APHANITIC TO COARSELY PLAGIOCLASE–PHYRIC, COMMONLY AMYGDALOIDAL, SUBAERIAL BASALTIC LAVA FLOWS. MINOR PILLOW BASALT, PILLOW BRECCIA AND HYALOCLASTITE.*

uTKls — *MASSIVE LIGHT TO MEDIUM GREY LIME MUDSTONE INTERCALATED WITH KARMUTSEN BASALT.*

TABLE OF ABBREVIATIONS AND NOMENCLATURE[1] FOR THE BONANZA GROUP

JBx[2]D — where **x** is composition, **I**, lithology, and **D**, other descriptors listed below

lJB — where undivided

Composition:
- **m** mafic (basaltic)
- **i** intermediate (andesitic)
- **f** felsic (rhyolitic–rhyodacitic–dacitic)

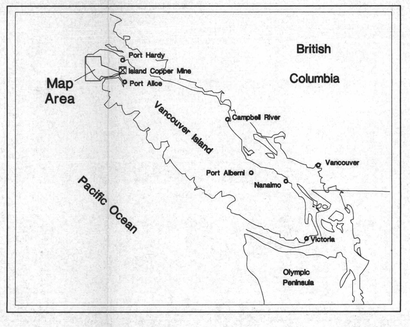
A compositional range is hyphenated (e.g. **m–i**, mafic to intermediate) and the predominant composition, if known, is in bold type (i.e. mafic); predominantly bimodal sequences are indicated by compound abbreviations (e.g. **mf**; where felsic rocks predominate) where mafic and felsic rocks occur in subequal proportions, or **maf** where relative abundances are not known).

Epiclastic*	Pyroclastic	Other**
Lithology:		
br breccia	**pbr** pyroclastic breccia	**f** lava (includes flow breccias)
cg conglomerate	**l–br** tuff–breccia	**pl** pillows
sm sandstone	**lt** lapilli tuff	**pbr** pillow breccia
sl siltstone	**t** tuff	
sh shale		
ls limestone		
sls silty limestone		
Descriptors:		
Prefixes:		
v volcanic[1]	**w** welded	**h** hyaloclastite
t tuffaceous[2]		
l laharic		
c calcareous		
d debris flow		
Suffixes:		
	v vitric	**C** carbonized wood
	x crystal	**F** fossiliferous
	l lithic	**A** aphanatic/fine-grained
		P porphyritic (<5mm)[3]
		Y amygdaloidal
		S laminar flowage structures[4]

† usage of Cass and Wright (1988) *volcanic and/or nonvolcanic constituents
** includes autoclastic and quench–fragmented products
‡ pyroclastic or epiclastic (non–genetic) [2]mixed epiclastic/pyroclastic (tuffites)
[3] maximum phenocryst size [4]includes flow folds

MAP SYMBOLS

- Geological contact (defined, approximate, inferred)
- Unconformity
- Fault (defined, approximate, inferred, thrust)
- Limit of Mapping
- Bedding (facing known; inclined, vertical, overturned)
- Bedding (facing unknown; inclined, vertical, welding in tuff)
- Primary flowage structures in volcanic rocks (inclined, vertical)
- Primary flowage structures in plutonic rocks (inclined, vertical)
- Stylolite
- Dike (inclined, vertical, mafic, felsic, Tertiary)
- Minor fault (inclined vertical, with plunge and trend of slickenside striations)
- Plunge and trend of minor fold axes ('M', 'S', 'Z', vergence unknown)
- Macrofossil locality (see sheet 2 for reference)
- Radiolarian locality (see sheet 2 for reference)
- Minfile ocurrence (see sheet 2 for reference) 080
- Regional Geochemical Survey stream sediment sample site
- Outcrop (control)



MINFILE OCCURRENCES

Minfile No.	Name	Commodity	UTM Zone 9	NTS Map	Capsule Geology	Bibliography
092L 080	SEAL (Showing)	Cu	575442E 5609004N	092L12W	On the south shore of Holberg Inlet approximately 4.8 kilometres east of Holberg, native copper is found on the old Seal group as minute flakes associated with quartz, calcite and prehnite in an altered, chloritized amygdaloidal basalt of the Karmutsen (?) Formation. The greatest width of mineralization is reported to be 61 centimetres.	GSC ANN RPT 1886; GSC P 69-1A, 72-44, *74-8, 79-30; GSC BULL 242; GSC MAP 1552A, 4-1974; GSC OF 9, 170, 463, 722; EMR MP CORPFILE (Holberg Mines Limited); CJES 18 (p. 1) Jan. 1983; EMPR AR 1921-237; EMPR GEM 1970-254, 1972-306; EMPR ASS RPT 3771; EMPR PF (Morgan, D.R., (1970): Geological Report on the 300 Claim Property of Holberg Mines Ltd., refer to 092L 247 - HOL).
092L 093	QUATSINO SOUND (Showing)	Coal	582190E 5595945N	092L12W	Coal is present interbedded with shale and sandstone within the Cretaceous Blumberg Formation. At Huknish Lagoon one band of coal 0.3 metres thick is interbedded with shale and shale/coal bands. In an adjacent area 0.9 metres of shale and coal were encountered. The coal bearing horizon extends laterally to the Koprino Harbour area.	GSC MEM 69; EMPR COAL ASS RPT 203, 204, 205, 207, 208; GSC P 70-53, 74-8 ;GSC MAP 4-1974, 1552A.
092L 247	HOL (Showing)	Cu	576425E 5607200N	092L12W	On the Hol 3 claim (or Assessment Report 3771), porphyritic amygdaloidal basalt of the Karmutsen Formation is intruded by an augite bearing basic dyke. The dyke may have been a feeder of the volcanics. Epidote, zeolite, prehnite, quartz and calcite amygdules are present, resulting from low grade regional metamorphism. Copper occurs within the intrusive as bornite and chalcopyrite. Near the contact with the volcanics are zones containing sulphides and hematite. Native copper, bornite, azurite and malachite are found in fractures and joints in the volcanics.	EMPR GEM 1970-254, 1972-306; EMPR ASS RPT *1770, *3771; EMPR PF (Morgan, D.R., (1970): Geological Report on the 300 Claim Property of Holberg Mines Ltd.); GSC ANN RPT 1886 GSC P 69-1A, 72-44, *74-8, 79-30; GSC BULL 242 GSC MAP *4-1974, 1552A; GSC OF 9, 170, 463, 722; GSC SUM RPT *1929A, p. 138; EMR MP CORPFILE (Holberg Mines Limited); CJES 18 (p. 1), 20 (p. 1), Jan. 1983; Carson, D.J.T., (1968): Metallogenic Study of Vancouver Island with emphasis on the Relationship of Plutonic Rocks to Mineral Deposits, Ph.D. Thesis, Carleton University, Ottawa.
092L 267	FOX (Deposit)	Ls	575390E 5607910N	092L12W	This occurrence is situated 6 kilometres east of the head of Holberg Inlet on its south shore. Three masses of Quatsino Formation limestone are exposed in the central portion of a 1.8 kilometre wide rectangular fault block that extends southeastward from the shore of Holberg Inlet for 2.5 kilometres. The westernmost deposit outcrops over a 1.8 by 1.3 kilometre area (190 hectares). The mass is underlain by chloritic, amygdaloidal basalt of the Upper Triassic Karmutsen Formation. Variably amygdaloidal Karmutsen Formation basalts crop out around the east, west and south sides of the deposit. The western deposit is comprised of fine grained, white to dark grey limestone that is commonly cut by calcite veinlets. Minor sulphides are present. An analysis of various grab samples contained 54.33 per cent CaO, 1.19 per cent MgO, 0.51 per cent SiO2, 0.20 per cent Al2O3, 0.14 per cent Fe2O3, 0.011 per cent phosphorus, 0.01 per cent sulphur and 43.40 per cent ignition loss (E.M.P.R. Assessment Report 5413, p. 17). Reserves in the western deposit are estimated at 236 million tonnes of limestone over a minimum thickness of 46 metres. (E.M.P.R. Assessment Report 5666, p. 16) World Cement Industries Inc. carried out 1529 metres of diamond drilling accompanied by some mapping and sampling between 1971 and 1980. The limestone was to be used to supply a cement plant that the company proposed to construct at Nanaimo with a capacity to manufacture 900,000 tonnes of cement a year.	EMPR GEM 1970-254, 1974-218; EMPR EXPL 1975-200, 1976-205; EMPR ASS RPT 4908, *5413, 5414, 5666, *6053, 6951, 8073; GSC ANN RPT 1886; GSC P 69-1A, 72-44, *74-8; GSC BULL 242; GSC MAP *4-1974, 1552A; GSC OF 9, 170, 463, 722; EMPR PF (1976 Prospectus, Holberg Mines Ltd.); CJES 18, p. 1, 20, p. 1, Jan. 1983; Lockie, D.A. (1957): A Petrographic Analysis of Some Limestones of Southwestern British Columbia, University of British Columbia unpub. B.A. Thesis, pp. 22,23.
102I 006	AIRD (Showing)	Cu	555625E 5621175N	102I09E	The area is underlain by Karmutsen Formation basalt which is in fault contact with the Quatsino Formation limestone and Bonanza Group volcanics. This northwest striking contact lies about 1.0 kilometre to the west of the Aird occurrence (Geological Survey of Canada Map 4-1974). Disseminated pyrite and chalcopyrite occur in a silicified zone within interbedded argillite, amygdaloidal andesite and basalt flows of the Karmutsen Formation. The mineralized zone strikes east-west and is located in the northeast corner of the Aird 1 claim.	EMPR GEM 1969-200, 1970-254; EMPR ASS RPT *1909; GSC P 67-1A, 69-1A, 70-1A, 72-44, 74-8, 79-30; GSC MAP 4-1974; GSC OF 9, 170, 463; GSC BULL 242.
102I 007	WILLIAM LAKE (Showing)	Cu	556948E 5620262N	102I09E	The William Lake occurrence is underlain by Karmutsen Formation volcanics. The rocks strike northwest and dip to the southwest. Chalcopyrite and bornite occur as fracture fillings in dark coloured amygdaloidal andesite. Minor native copper and malachite are also reported.	EMPR AR 1968-96; EMPR GEM 1969-200, 1970-254,258; EMPR ASS RPT 1847, *2383; GSC P 67-1A, 69-1A, 70-1A, 72-44, 74-8, 79-30; GSC MAP 4-1974; GSC OF 9, 170, 463; GSC BULL 242.
102I 008	AAA 48 (Showing)	Cu	566101E 5617436N	102I09E	The area is underlain by Karmutsen Formation volcanics which have undergone regional zeolite facies metamorphism. The volcanics trend northwest and consist mainly of massive, green to purple, amygdaloidal basalt. On the AAA 48 claim, small fracture systems in the volcanics infilled with quartz, host minor disseminated bornite and malachite.	EMPR GEM 1969-201, 1970-254; EMPR ASS RPT *1865; GSC P 67-1A, 69-1A, 70-1A, 72-44, 74-8, 79-30; GSC MAP 4-1974; GSC OF 9, 170, 463; GSC BULL 242.
102I 009	AAA 6 (Showing)	Cu	568076E 5616380N	102I09E	The area is underlain by Karmutsen Formation volcanics which have undergone regional zeolite facies metamorphism. On the AAA 6 claim, bornite and malachite are disseminated within narrow quartz-filled fractures in massive green to purple, amygdaloidal basalt. Similar mineraliation occurs about 2.7 kilometres south-southeast on the AAA 48 claim (102I 008).	EMPR GEM 1969-201, 1970-254; EMPR ASS RPT *1865; GSC P 67-1A, 69-1A, 70-1A, 72-44, 74-8, 79-30; GSC MAP 4-1974; GSC OF 9, 170, 463; GSC BULL 242.
102I 010	MILLINGTON (Showing)	Cu, Ag, Au	567641E 5612049N	102I09E	The area of the Millington occurrence is underlain by amygdaloidal basalts of the Karmutsen Formation. The main occurrence, located on Crackerjack Creek, consists of lenses of massive bornite up to 1.2 metres in width. Disseminations of bornite with minor chalcopyrite and chalcocite occur within amygdules of the basalts. Bornite also occurs as fracture fillings in the volcanics. Mineralization has been traced over 70 metres vertically. A sample from a dump near the adit entrance at elevation 116 metres, assayed trace gold, 5.6 grams per tonne silver and 2.1 per cent copper. A selected sample from the open cut at the Number One adit, at elevation of 149 metres, assayed trace gold, 56.2 grams per tonne silver and 21.0 per cent copper (Minister of Mines Annual Report 1919, page 206). A "vein of similar mineralogy" (Minister of Mines Annual Report 1927) occurs 150 metres west of the old workings.	EMPR AR 1918-221,268, *1919-205, 1922-232, 1923-251, 1924-229, 1926-304, 1927-346, 1928-374, 1929-377, 1930-295, 1962-96, 1963-128, 1964-154, *1965-228, 1966-65, 1967-69; EMPR GEM 1969-201, 1970-254; EMPR ASS RPT 497, 1765; EMPR PF (092L080-Seal, 092L247-Hol); EMR MP CORPFILE (Holberg Mines Ltd., Cominco Ltd.); GSC SUM RPT 1918B (p. 36), *1929A (p. 139); GSC P 67-1A, 69-1A, 70-1A, 72-44, 74-8, 79-30; GSC MAP 4-1974; GSC OF 9, 170, 463; GSC BULL 242.
102I 011	KAINS (Showing)	Cu	568023E 5590121N	102I08E	The occurrence consists of disseminated pyrite and small lenses of chalcopyrite associated with a shear zone within Bonanza Group andesites. Mineralization has been traced over 60 metres. The andesites are strongly chloritized and are cut by a quartz diorite dyke, 1.5 to 2.0 metres in width, which strikes northeast, parallel to the mineralized shear zone.	EMPR AR 1969-206; EMPR GEM 1970-254; EMPR ASS RPT *1957; GSC P 67-1A, 69-1A, 70-1A, 72-44, 74-8, 79-30; GSC MAP 4-1974; GSC OF 9, 170, 463; GSC BULL 242
102I 012	REALGAR (Showing)	Hg, As, Gs	564806E 5611086N	102I09E	The Realgar occurrence is located at waterline on the east side of San Josef River, and is exposed only at low water. Locally, Quatsino Formation limestone is cut by a feldspar porphyry dyke of unknown (Tertiary?) age. Within about 4 metres of the dyke the limestone is cut by irregular veins comprised of fine-grained chloritic skarn that range up to 10 centimetres in width. Cinnabar and realgar are abundant as thin veinlets and as fracture coatings in the limestone, and as accessory minerals in the skarned veins. Orpiment occurs as coatings on the oxidized mercury-arsenic minerals. Traces of amethyst occur in veinlets. Arsenopyrite and pyrite occur as disseminations in the limestone near the dyke and within thin, vuggy quartz-calcite veinlets cutting both the limestone and the dyke. High mercury values with coincident arsenic and molybdenite values are reported in soils over a wide area centered on the showing.	EMPR GEM 1970-254; EMPR PF (P. Wilton, 1988, Property Visit Report); GSC P 67-1A, 69-1A, 70-1A, 72-44, 74-8, 79-30; GSC OF 9, 170, 463; GSC BULL 242; GSC MAP 4-1974 GCNL #91, 1988.
102I 013	SOUTH KNOB (Showing)	Pl	568244E 5618544N	102I09E	The area is underlain by Bonanza Group volcanics. Locally, pyrophyllite-bearing silicified breccia has been interpreted as a volcanic centre (Geology, Exploration and Mining 1974, page 217). Additional centres are found to the southeast (refer to 092L 078 - Hep; 092L 185 - Hushamu; 092L 200 - Red Dog; 092L 308 - Pemberton). The pyrophyllite is thought to be formed as a product of hydrothermal alteration during low grade regional metamorphism (Open File 1988-19). Other volcanic centres are reported to contain zeolites.	EMPR GEM 1970-254, 1974-216,230; EMPR OF 1988-19; GSC P 67-1A, 69-1A; 70-1A; 72-44, 74-8, 79-30; GSC OF 9, 170, 463; GSC BULL 242; GSC MAP 4-1974.
102I 014	BERG 87 (Showing)	Mo	569365E 5622730N	102I09E	The area is underlain by Bonanza Group andesite to rhyodacite volcanics which have been intruded by diorite of the Jurassic Island Plutonic Suite. The volcanics strike northwest and dip to the southwest. Pyrite-clay-silica alteration zone extend the length of the volcanic belt. Locally, on the Berg 87,91 and B2 claims, pyrite and molybdenite are disseminated within strongly altered and silicified Bonanza Group volcanics (possibly rhyolite).	EMPR GEM 1970-254, 1971-324; EMPR ASS RPT *1771, 2189, 2834, 4872, 5391; GSC AR 1886; GSC P 69-1A, 72-44, *74-8, 79-30; GSC BULL 242; GSC MAP *4-1974; GSC OF 9, 170, 463; Carson, D.J.T., (1968): Metallogenic Study of Vancouver Island with Emphasis on the Relationship of Plutonic Rocks to Mineral Deposits, Ph.D. Thesis CJES 18, p. 1; 20, p. 1, Jan., 1983.

MACROFOSSIL COLLECTIONS

MAP NO.	FIELD NO.	GSC NO.	UTM ZONE 9 EASTING	UTM ZONE 9 NORTHING	FAUNA	UNIT	AGE ASSIGNMENT
1	94GPA23-5	C211367	565057	5619114	*Inoceramus colonicus* Anderson	lKL	Hauterivian
2	94GPA23-3	C211366	564882	5618831	*Inoceramus colonicus* Anderson	lKL	Hauterivian
3	94GPA23-7	C211370	564404	5618813	*Inoceramus* prisms, large bivalve fragments, *possibly Inoceramus colonicus* Anderson, bivalves indeterminate, ammonite fragment (heteromorph?), *Propeamussium*? sp.	lKL	Upper Jurassic through Cretaceous, possibly Hauterivian
4	94GPA23-2	C211365	564848	5618757	*Inoceramus colonicus* Anderson	lKL	Hauterivian
5	94JHA23-9-2	C167744	554809	5617598	Shell fragments	uTQ	Indeterminate
6	94GPA20-17	C211362	558429	5615919	Shell fragments	lJS	Indeterminate
7	94JHA7-3	C211372	572591	5609600	?*Monotis* sp.	uTP	?Upper Norian
8	94JHA5-9	C167735	573238	5609482	*Monotis subcircularis* Gabb	uTP	Upper Norian, Cordilleranus Zone
9	94JHA5-8	C167734	573717	5609259	*Halobia* sp. indeterminate	uTP	Upper Triassic
10	94JHA15-4	C167739	572945	5606450	*Halobia* sp. indeterminate	uTP	Upper Triassic
11	94LSN13-8	C167748	572941	5606400	*Halobia* sp. indeterminate	uTP	Upper Triassic
12	94GNX3-4	C211377	581046	5604810	*Monotis alaskana* Smith	uTP	Upper Norian, Cordilleranus Zone
13	94JHA22-3	C167743	552748	5604483	*Buchia* cf. *pacifica* Jeletzky or *crassicollis* (Keyserling)	lKL?	probably middle to late Valanginian
14	94JHA12-1	C167738	578915	5603926	*Monotis alaskana* Smith	uTP	Upper Norian, Cordilleranus Zone
15	94JHA8-6	C167736	579991	5603841	*Monotis subcircularis* Gabb	uTP	Upper Norian, Cordilleranus Zone
16	94JHA8-7	C167737	579648	5603810	*Halobia* cf. *alaskana* Smith	uTP	Lower Norian
17	94GPA16-2	C211356	566245	5600404	*Buchia*? sp. (possibly *Buchia pacifica* Jeletzky), Rhynchonelliform brachiopods	lKL?	likely Valanginian
18	94JHA21-3	C167741	573714	5599243	*Inoceramus colonicus* Anderson	lKL?	Hauterivian
19	94GPA25-1	C211369	561970	5598850	*Buchia* sp. cf. *crassicollis* (Keyserling)	lKL	Valanginian, possibly late
20	94LSN8-3	C211351	574406	5598734	*Buchia* sp. cf. *pacifica* Jeletzky	lKL	probably middle Valanginian
21	94LSN8-6	C211352	573538	5598579	*Buchia* sp. (robust form)	lKL	possibly Berriasian to Valanginian
22	94GPA25-2	C211368	562113	5598579	*Buchia* sp. cf. *pacifica* Jeletzky	lKL	probably Valanginian, middle
23	94LSN9-8	C211353	572814	5597463	*Buchia*? sp. (robust form), Bivalves, indeterminate	lKL	possibly Berriasian to Valanginian
24	94GNX12-1	C211374	570415	5596909	*Buchia* sp. cf. *crassicollis* (Keyserling)	lKL	probably late Valanginian
25	94JHA19-11	C167740	577896	5596806	Bivalves, indeterminate	JB?	?Lower to Middle Jurassic
26	94GNX19-15	C211382	598300	5596050	*Monotis subcircularis* Gabb	uTP	Upper Norian, Cordilleranus Zone
27	94GNX14-9	C211375	564453	5594955	*Buchia crassicollis* (Keyserling), *Dichotomites quatsinoensis* (Whiteaves)	lKL	late Valanginian

Fossil identifications: E.T. Tozer (Triassic) and J. W. Haggart (Cretaceous), Geological Survey of Canada, Vancouver

1895 - 1995

100 YEARS OF GEOLOGICAL SURVEYING

Mineral Development Agreement

Geological Survey Branch

OPEN FILE 1995-9

PRELIMINARY GEOLOGY OF THE QUATSINO - CAPE SCOTT AREA, NORTHERN VANCOUVER ISLAND

NTS 92L/12W & 102I/8,9

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(SHEET 2 OF 2)

STREAM SEDIMENT GEOCHEMISTRY*: a subset of the entire 92L/102I database
QUATSINO AND CAPE SCOTT MAP AREAS (92L/12W AND 102I/8 & 9)

RGS NO.	UTM ZONE 9 Easting	UTM ZONE 9 Northing	AU1 ppb	AU2 ppb	AG ppm	CU ppm	PB ppm	ZN ppm	NI ppm	CO ppm	MO ppm	SN ppm	AS ppm	SB ppm	HG ppm	MN ppm	FE %	V ppm	CD ppm	BI ppm	CR ppm	W ppm	F ppm	U ppm	BA ppm
Detection Limits:			1	1	<0.1	<2	<2	<2	<2	<2	<1	<2	<1	<0.2	<5	<5	<0.02	<5	<0.1	<0.2	<5	<2	<40	<0.5	<20
Analytical Technique:			------NAA-----		---AAS---																	COLM	SIE	DNA	XRF
BONANZA GROUP:																									
90th percentile values:			38	38	0.1	70	8	145	83	28	2	1	22	0.8	700	1800	7.20	390	0.2	0.1	288	2	270	1.9	440
881009	544348	5618564	1	0	0.1	14	1	73	16	18	1	1	7.0	0.2	140	2000	5.00	250	0.1	0.1	48	1	170	1.4	530
881010	548179	5613051	2	40	0.1	30	1	98	27	17	1	1	10.0	0.1	510	940	4.90	250	0.1	0.1	120	2	160	2.5	430
881011	546464	5615264	1	0	0.1	30	4	230	27	24	1	1	11.0	0.2	180	1600	5.60	230	0.1	0.1	56	1	200	1.8	500
881012	546735	5615157	1	1	0.1	30	3	150	23	21	1	1	10.0	0.4	930	1600	5.30	275	0.1	0.1	72	1	190	1.9	480
881014	553132	5612296	37	1	0.1	20	1	55	18	12	1	1	6.0	0.1	120	590	4.00	315	0.1	0.1	120	1	160	1.2	440
881016	553324	5612562	1	0	0.1	18	1	57	18	15	1	1	5.0	0.1	250	800	5.20	350	0.1	0.1	116	1	160	1.1	360
881017	550475	5610797	1	0	0.1	26	1	68	23	16	1	1	5.0	0.4	230	680	4.70	265	0.1	0.1	104	1	180	1.6	420
881018	550475	5610797	1	0	0.1	26	3	69	25	14	1	1	7.0	0.4	160	670	4.60	250	0.1	0.1	104	1	140	1.6	410
881019	548430	5608600	1	0	0.1	25	1	84	23	16	1	1	9.0	0.2	110	770	5.90	310	0.1	0.1	92	1	170	1.2	360
881020	551694	5606073	1	0	0.1	40	1	88	29	22	1	1	9.0	0.6	240	1300	6.20	300	0.1	0.1	80	1	140	0.8	380
881044	550438	5614105	1	1	0.1	21	1	90	14	13	1	1	11.0	0.2	120	1000	4.90	200	0.1	0.1	56	1	280	1.9	500
881045	556092	5599927	1	0	0.1	11	1	58	14	9	1	1	9.0	0.1	150	600	4.30	310	0.1	0.1	76	1	150	1.8	300
881046	558600	5597000	1	0	0.1	22	5	87	27	14	1	1	11.0	0.4	240	920	4.80	185	0.1	0.1	80	1	150	1.2	320
881266	573572	5594350	1	1	0.1	30	1	101	19	14	1	1	11.0	1.2	810	1300	4.40	160	0.1	0.1	64	2	160	1.2	370
883004	570506	5601366	1	0	0.1	34	1	120	26	20	1	1	9.0	0.1	670	910	7.00	375	0.1	0.1	80	1	170	1.4	330
883005	564345	5597663	1	0	0.1	25	1	68	31	21	1	1	9.0	0.1	200	2600	4.00	220	0.1	0.1	120	1	170	0.8	420
883006	563442	5597068	1	0	0.1	23	1	94	23	20	1	1	10.0	0.1	710	2800	4.40	170	0.3	0.1	68	2	160	0.9	310
883007	561695	5605044	1	42	0.1	20	1	75	23	12	1	1	15.0	0.2	20000	1100	4.00	190	0.1	0.1	96	1	160	1.3	410
883008	558248	5602104	1	6	0.1	33	2	90	38	21	1	1	7.0	0.4	2100	1300	5.00	220	0.1	0.1	96	2	150	0.8	380
883009	564404	5602382	1	1	0.1	20	2	95	24	15	1	1	11.0	0.2	3200	1100	4.30	170	0.1	0.1	84	2	160	1.3	410
883010	557562	5604086	1	1	0.1	33	1	71	57	22	1	1	9.0	0.1	700	1000	4.30	220	0.1	0.1	152	2	150	0.6	410
883016	554689	5614459	6	0	0.1	36	1	70	35	19	1	1	15.0	1.0	580	870	5.40	340	0.1	0.1	164	1	340	2.6	340
883017	552258	5616867	1	17	0.1	22	1	55	22	12	1	1	6.0	0.1	1600	400	9.80	650	0.1	0.1	172	3	240	2.7	330
883024	565556	5608547	1	1	0.1	32	1	105	27	19	1	1	10.0	0.1	6200	980	4.80	310	0.1	0.1	120	1	210	1.3	330
883025	563824	5610454	1	0	0.1	32	1	94	20	19	1	1	9.0	0.1	110	1000	5.60	310	0.1	0.1	108	1	230	1.6	320
883026	567329	5602655	1	2	0.1	34	1	132	28	18	1	1	9.0	0.1	2800	800	6.30	960	0.1	0.1	258	1	220	1.2	720
883027	567329	5602655	56	1	0.1	39	1	142	30	20	1	1	9.0	0.1	130	900	6.30	475	0.1	0.1	136	2	220	1.2	360
883031	556947	5609078	1	0	0.1	16	13	115	14	30	1	1	10.0	0.1	210	6000	4.30	140	0.1	0.1	48	2	160	1.0	270
883032	556461	5606121	1	0	0.1	28	5	115	32	26	1	1	22.0	1.0	700	2400	5.10	200	0.1	0.1	80	2	170	1.0	340
883033	555537	5605956	1	0	0.1	25	4	95	33	21	1	1	10.0	0.2	200	1000	4.70	205	0.1	0.1	92	3	160	1.1	360
883033	582489	5597391	1	0	0.1	23	3	76	17	19	1	1	10.0	0.1	180	1000	4.50	190	0.1	0.1	52	1	140	1.5	420
883034	583959	5600205	2	0	0.1	26	2	68	12	15	1	1	7.0	0.1	120	940	5.00	250	0.1	0.1	64	1	220	1.0	360
883037	569618	5618121	59	83	0.1	110	4	52	12	12	8	1	11.0	0.1	100	520	4.60	270	0.1	0.2	60	1	300	1.3	440
883038	570549	5618436	280	378	0.1	198	4	68	15	19	12	1	14.0	0.1	110	520	8.30	400	0.1	0.5	68	2	320	1.5	340
883039	570514	5618675	8	0	0.1	33	6	75	14	16	1	1	12.0	0.1	100	570	7.60	530	0.1	0.1	84	1	290	1.8	470
883040	569628	5595467	1	0	0.1	24	1	98	32	21	1	1	12.0	0.2	390	1000	4.40	260	0.1	0.1	124	1	200	1.0	420
883040	582450	5604727	1	0	0.1	23	1	76	18	18	1	1	7.0	0.1	160	1600	4.70	220	0.1	0.1	88	1	180	1.1	460
883065	575351	5605419	1	0	0.1	25	2	70	20	17	1	1	6.0	0.1	220	1000	4.50	240	0.1	0.1	88	1	180	1.4	280
883090	575888	5593383	2	0	0.1	31	6	142	40	26	1	1	6.0	0.1	130	1400	5.40	295	0.1	0.1	120	1	150	0.8	270
883096	579522	5595179	1	0	0.1	19	4	86	21	17	1	1	9.0	0.2	350	1200	4.00	180	0.1	0.1	64	1	160	1.2	400
883289	573789	5608952	3	0	0.1	61	1	103	55	22	2	1	17.0	0.4	370	1400	5.00	260	0.3	0.1	152	1	290	2.7	300
883431	576780	5597739	1	0	0.1	32	4	146	36	26	1	1	5.0	0.1	280	1200	5.50	290	0.1	0.1	72	1	180	0.9	340
883432	574203	5600366	1	0	0.1	7	5	30	3	4	1	1	4.0	0.1	220	1000	0.60	20	0.4	0.1	12	1	80	6.9	180
883433	572907	5598522	1	0	0.1	7	5	30	4	8	1	1	4.0	0.2	130	1100	1.40	50	0.1	0.1	20	1	80	1.4	170
KARMUTSEN FORMATION																									
90th percentile values:			34	34	0.1	149	4	103	83	40	2	1	15	0.2	240	2000	7.00	550	0.1	0.1	288	1	180	1.6	340
881013	555781	5620851	1	0	0.1	34	1	52	23	14	1	1	9.0	0.6	930	440	6.50	560	0.1	0.1	152	2	130	2.4	300
881024	566400	5614904	3	0	0.1	67	1	82	41	22	1	1	4.0	0.1	120	770	6.00	480	0.1	0.1	198	1	180	0.9	300
881025	567093	5614567	5	0	0.1	85	1	104	42	29	1	1	7.0	0.1	300	1900	6.00	345	0.1	0.1	164	1	170	0.9	220
881026	567239	5614959	122	617	0.1	81	5	114	20	20	6	1	9.0	0.1	230	820	11.40	660	0.1	0.1	116	1	250	1.6	430
883019	562646	5618657	4	0	0.1	62	1	100	34	35	1	1	7.0	0.1	150	2300	4.30	345	0.1	0.1	116	1	130	0.7	220
883020	563537	5618466	3	3	0.1	108	1	100	50	33	1	1	9.0	1.0	4800	1400	7.30	450	0.1	0.1	168	1	150	0.6	180
883034	564332	5618580	3	0	0.1	60	1	131	35	22	1	1	9.0	0.4	170	1300	7.30	530	0.3	0.1	124	1	190	1.4	460
883158	596847	5603665	80	2	0.1	49	1	55	70	21	1	1	6.0	0.1	460	920	5.80	430	0.1	0.1	260	1	130	1.5	230
883292	580105	5607040	2	1	0.1	33	1	64	30	15	1	1	40.0	4.0	320	690	3.70	210	0.2	0.5	100	1	500	3.5	300
PARSON BAY FORMATION																									
90th percentile values:			32	32	0.1	80	6	242	44	30	4	1	65	1.6	520	1700	7.60	360	0.6	0.2	160	2	310	3.0	420
883018	559572	5613841	2	0	0.1	33	1	95	35	23	1	1	7.0	0.1	110	1200	4.40	280	0.1	0.1	160	1	170	1.1	350
883022	569697	5607755	4	0	0.1	32	1	69	26	19	1	1	10.0	0.1	120	770	5.70	350	0.1	0.1	170	1	180	1.9	360
883029	558987	5612991	2	0	0.1	37	4	88	31	22	1	1	14.0	0.1	320	1100	4.70	260	0.1	0.1	128	2	240	2.2	300
883036	585779	5603775	5	0	0.1	31	1	44	20	13	1	1	5.0	0.1	60	520	3.30	270	0.1	0.1	100	1	230	1.1	420
883064	576547	5603970	32	1	0.1	32	2	78	18	16	1	1	9.0	0.2	120	960	5.00	240	0.1	0.1	72	1	220	1.3	300
883295	587267	5603960	1	0	0.1	34	1	77	20	16	1	1	6.0	0.2	100	860	4.80	195	0.1	0.1	76	1	300	1.6	380
883296	588764	5604483	2	0	0.1	28	1	71	18	14	1	1	12.0	0.2	70	590	5.00	260	0.1	0.1	80	1	170	1.8	490
QUATSINO FORMATION																									
90th percentile values:			34	34	0.1	118	7	146	64	32	3	1	27	0.8	270	1300	7.30	430	0.6	0.1	238	1	400	3.6	560
881015	554311	5620278	1	0	0.1	19	1	77	19	16	1	1	6.0	0.1	420	1100	4.10	260	0.1	0.1	120	1	200	2.3	380
883023	568141	5609211	1	0	0.1	32	1	73	30	20	1	1	11.0	0.1	190	930	5.00	290	0.1	0.1	170	1	230	2.5	340
883028	562731	5614386	4	0	0.1	100	1	100	42	29	1	1	7.0	0.1	160	1000	7.30	530	0.1	0.1	148	1	140	0.7	220
883063	580350	5605002	1	0	0.1	29	3	75	20	13	1	1	9.0	0.4	120	780	4.90	285	0.1	0.1	80	1	290	2.4	350
883066	573553	5606423	2	5	0.1	33	2	66	25	17	1	1	10.0	0.1	120	840	5.00	260	0.1	0.1	104	1	250	1.9	300
883067	571696	5608186	2	0	0.1	38	2	70	34	19	1	1	11.0	0.2	190	920	5.00	290	0.1	0.1	124	1	250	1.6	280
883068	570899	5610140	2	0	0.1	94	1	79	120	36	1	1	10.0	0.3	18000	930	6.40	430	0.1	0.1	360	2	180	0.9	130
883150	602228	5599239	1	0	0.1	22	1	40	16	9	2	1	9.0	0.4	130	830	2.60	210	0.1	0.1	112	1	180	1.8	160
883151	602155	5597666	1	0	0.1	21	1	56	19	15	1	1	14.0	1.0	200	610	4.40	245	0.1	0.1	100	1	300	2.2	330
883290	575830	5608816	2	0	0.1	138	1	88	148	42	1	1	4.0	0.1	270	1900	6.00	305	0.1	0.1	380	1	40	0.4	140
883294	585471	5605531	1	0	0.1	27	1	75	22	12	1	1	5.0	0.2	90	610	3.60	200	0.1	0.1	76	1	230	2.2	520
883297	593370	5603991	1	0	0.1	36	1	73	26	17	1	1	22.0	0.4	110	760	4.40	200	0.1	0.1	88	1	220	2.6	400
LONGARM FORMATION																									
Summary statistics not calculated																									
881027	565167	5620746	21	0	0.1	15	3	85	17	12	1	1	11.0	0.4	140	900	4.60	195	0.1	0.1	64	1	170	1.8	440
881028	565230	5620972	7	0	0.1	22	6	96	13	16	1	1	15.0	0.2	80	1300	5.50	275	0.1	0.1	60	1	160	1.7	450
883002	569189	5598082	3	0	0.1	17	1	58	13	8	1	1	7.0	0.1	130	570	3.80	180	0.1	0.1	48	1	140	1.8	430
BLUMBERG FORMATION																									
Summary statistics not calculated																									
881267	591320	5602115	1	0	0.1	22	1	58	19	13	1	1	7.0	0.1	80	540	6.00	450	0.1	0.1	140	1	130	1.6	430
881268	591530	5602223	1	0	0.1	30	1	75	20	17	1	1	11.0	0.2	60	620	6.90	460	0.1	0.1	120	1	150	1.6	460
883031	582058	5596023	4	1	0.1	20	3	65	10	13	1	1	9.0	0.2	110	610	4.30	260	0.1	0.1	64	1	150	1.5	500
883032	581472	5596548	1	0	0.1	22	2	60	14	14	1	1	11.0	0.2	210	610	4.80	270	0.1	0.1	64	1	190	1.6	440
883035	584218	5600345	1	0	0.1	16	1	58	12	11	1	1	5.0	0.1	240	1200	3.90	200	0.1	0.1	60	1	160	1.6	420
883097	586397	5594606	2	0	0.1	19	3	78	13	18	1	1	7.0	0.1	90	2200	4.10	155	0.1	0.1	52	1	160	1.3	410
883099	590300	5596426	18	4	0.1	21	3	56	14	12	1	1	7.0	0.1	90	700	3.80	165	0.1	0.1	60	1	150	1.4	420
883100	589876	5596335	1	0	0.1	17	3	50	9	9	2	1	10.0	0.2	90	530	3.40	160	0.1	0.1	52	1	150	1.3	410
883142	593777	5597967	2	0	0.1	23	1	55	14	11	1	1	6.0	0.1	70	580	4.70	290	0.1	0.1	88	1	140	1.3	420
883003	570150	5600113	1	0	0.1	20	1	95	23	15	1	1	7.0	0.1	130	950	4.30	200	0.1	0.1	52	1	130	1.1	380
883011	565014	5604089	1	0	0.1	44	2	120	43	26	1	1	14.0	0.1	70	950	5.90	310	0.1	0.1	84	2	160	1.2	380
883012	562661	5605333	1	0	0.1	33	3	122	18	12	1	1	15.0	0.1	120	860	5.20	210	0.1	0.1	60	1	170	2.5	340
883013	562661	5605333	1	0	0.1	33	4	122	17	11	1	1	20.0	0.1	110	840	5.20	195	0.1	0.1	56	1	170	5.5	310
883014	561409	5606851	1	0	0.1	20	2	108	15	10	1	1	10.0	0.1	90	820	4.80	205	0.1	0.1	60	1	140	3.2	400
883143	595686	5599194	1	0	0.1	24	3	60	12	10	1	1	6.0	0.1	70	580	5.00	270	0.1	0.1	64	1	150	1.4	380

Note: Highlighted values are in the 90th percentile for the sample population from map-areas 92L and 102I.
Abbreviations: NAA = Fire Assay - Neutron Activation; AAS = Atomic Absorption Spectroscopy , Ar & Sb analysed by Hydride Evolution AAS,
Hg analysed by Flameless AAS; COLM = Colorimetry; SIE = Specific Ion Electrode; DNA = Delayed Neutron Activation, XRF = Energy dispersive X-ray Fluorescence
* 1988 Regional Geochemical Survey, NTS 92L/102I - Alert Bay/Cape Scott, British Columbia Regional Geochemical Survey RGS-23 , GSC Open File 2040, 1:250 000 Map series.

RADIOLARIAN COLLECTIONS

Map No.	FIELD NO.	REFERENCE NO.	MAP NO.	UTM ZONE 9 EASTING	UTM ZONE 9 NORTHING	FAUNA	UNIT	AGE ASSIGNMENT
1	94GPA20-12	94-FC-PH-2-2	102I/09	557676	5616960	*Acaeniotyle* sp.	JB	Jurassic
2	94JHA30-1	94-FC-PH-6-1	102I/09	563889	5611793	*Acaeniotyle* sp., *Droltus* sp., *Gorgansium* sp., *Pantanellium* cf. *browni* Pessagno and Blome	lJS	Early Jurassic; Hettangian-Sinemurian
3	94JHA29-3	94-FC-PH-10-1	102I/09	569720	5611765	*Acaeniotyle* sp.	lJS	Jurassic
4	94JHA15-8	94-FC-PH-12-1	92L/12	571346	5609485	*Acaeniotyle* sp., *Thurstonia* sp.	lJS	Early Jurassic
5	94GPA17-2	94-FC-PH-9-1	102I/09	554460	5607617	*Acaeniotyle* sp., ? *Praeconocaryomma* sp., Early Jurassic-type nassellarian.	JB	Early Jurassic

Reference: Fabrice Cordey, formerly of the Geological Survey of Canada, Vancouver B.C.