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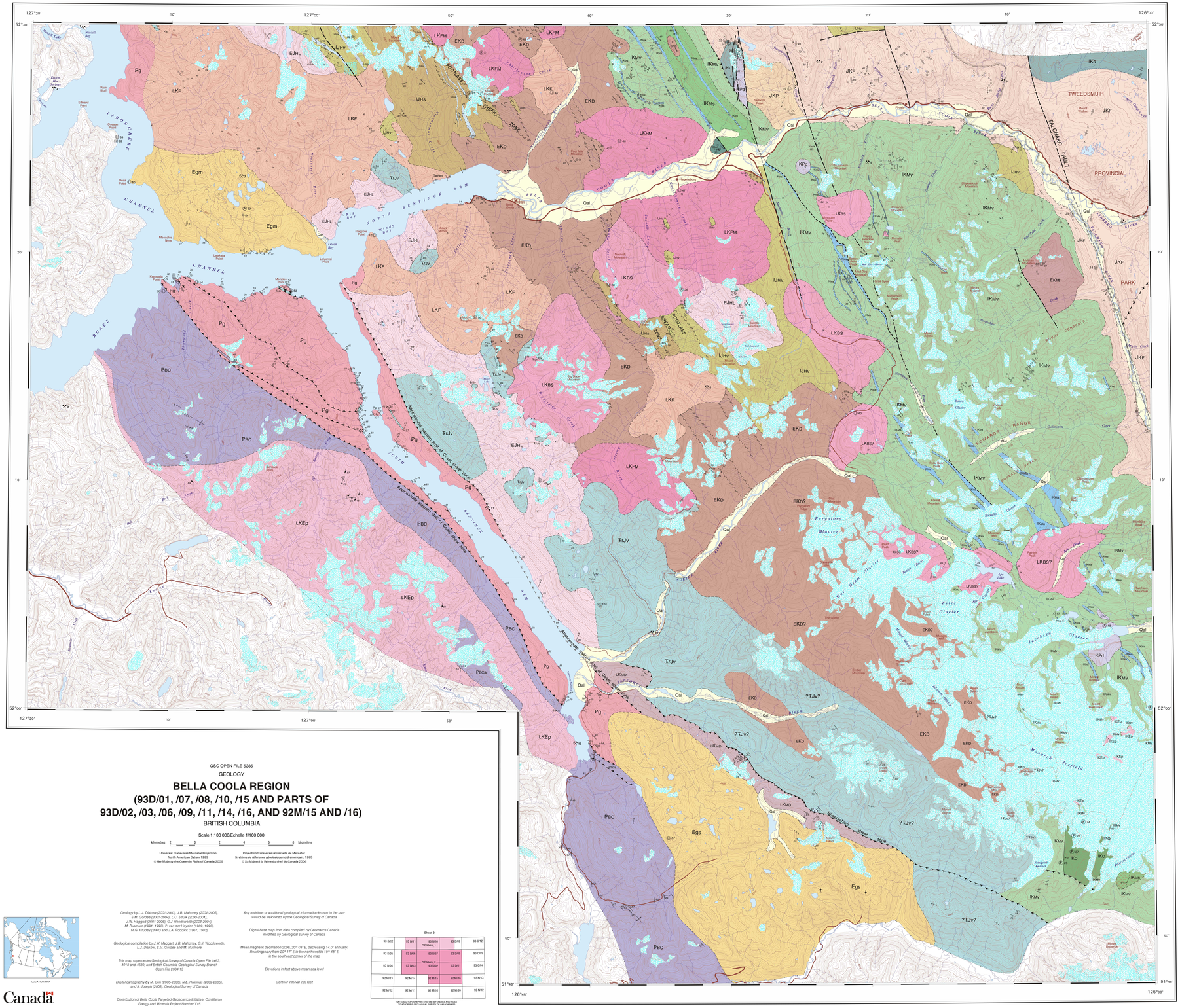
GEOLOGICAL SURVEY OF CANADA / COMMISSION GÉOLOGIQUE DU CANADA

BRITISH COLUMBIA
Ministry of Energy, Mines and Petroleum Resources



GSC OPEN FILE 5385

GEOLOGY

BELLA COOLA REGION
(93D/01, /07, /08, /10, /15 AND PARTS OF 93D/02, /03, /06, /09, /11, /14, /16, AND 92M/15 AND /16)

BRITISH COLUMBIA

Scale 1:100 000/Échelle 1/100 000

kilometres 2 0 2 4 6 8 kilomètres

Universal Transverse Mercator Projection
North American Datum 1983

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1983

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Geology by L.J. Diakow (2001-2003), J.B. Mahoney (2001-2005), S.M. Gordee (2001-2004), L.C. Struik (2000-2001), J.M. Haggart (2001-2005), G.J. Woodsworth (2001-2004), M. Rusmore (1991, 1992), P. van der Heyden (1989, 1990), M.G. Hrudey (2001) and J.A. Roddick (1967, 1992)

Geological compilation by J.M. Haggart, J.B. Mahoney, G.J. Woodsworth, L.J. Diakow, S.M. Gordee and M. Rusmore

This map supersedes Geological Survey of Canada Open File 1463, 4018 and 4639, and British Columbia Geological Survey Branch Open File 2004-13

Digital cartography by M. Ceh (2005-2006), N.L. Hastings (2002-2005), and J. Joseph (2003), Geological Survey of Canada

Contribution of Bella Coola Targeted Geoscience Initiative, Cordilleran Energy and Minerals Project Number 115

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Digital base map from data compiled by Geomatics Canada modified by Geological Survey of Canada

Mean magnetic declination 2006, 20° 03' E, decreasing 14.0' annually. Readings vary from 20° 17' E in the northwest to 19° 48' E in the southeast corner of the map.

Elevations in feet above mean sea level

Contour interval 200 feet

Sheet 2

93 D/12	93 D/11	93 D/10 OF5385, 1	93 D/09	93 D/12
93 D/05	93 D/06	93 D/07	93 D/08	93 D/05
93 D/04	93 D/03	OF5385, 2 — 93 D/02	93 D/01	93 D/04
92 M/13	92 M/14	92 M/15	92 M/16	92 M/13
92 M/12	92 M/11	92 M/10	92 M/09	92 M/12

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADJOINING GEOLOGICAL SURVEY OF CANADA MAPS

Canada

LEGEND

Coloured boxes indicate units that appear on this map

STRATIFIED ROCKS

QUATERNARY

Qal — *Alluvium, colluvium, till*

PALEOGENE
EOCENE

OOTSA LAKE GROUP (UPb ca. 53 Ma)

Er — *Megacrystic potassium feldspar-quartz-biotite-phyric flow dome(?) and as pyroclasts admixed with basalt and andesite lava fragments in crudely layered tuff breccia; small solitary exposure north of Sea Lion Peak*

LOWER CRETACEOUS
ALBIAN

OBSTREPEROUS RIDGE SEDIMENTARY UNIT

IKO — *Silty shale and mudstone, siltstone, minor fine-grained sandstone, commonly fossiliferous; locally with grit to pebble conglomerate at the base; equivalent to Taylor Creek Group and Sneena Group, in part*

APTIAN-ALBIAN

SALLOONT ASSEMBLAGE (UPb ca. 110-112 Ma minimum)

IKs — *Volcanic rocks predominate in lower parts of sections; basalt and lesser andesite lava flows with interflow breccia; amygdaloidal and plagioclase-phyric lavas containing pyroxene and scarce hornblende phenocrysts; thick sections form cliffs with a stepped, diffusely bedded appearance; focal welded rhyolite ash-flow tuff near the top of the subaerial succession at Tzeetsyutul Peak changes laterally to submarine volcanic facies in the section north of Saltzomt Peak where thick hyaloclastite and amygdaloidal flows pass upward into a mixed volcanic-sedimentary section dominated by fine- to coarse-grained, cross-stratified calcareous feldspathic sandstone and pebble conglomerate containing significant felsic volcanic detritus, and black siltstone to mudstone with minor interspersed welded ignimbrite, lapilli tuff and tuff breccia; rare gray-black laminated limestone locally, irregularly interlayered with basalt flows; the uncontormable lower contact with older layered rocks and Jurassic and Cretaceous plutons is marked locally by a granitoid cobble to boulder conglomerate or a red isolated conglomerate-sandstone sequence dominated by fine-grained andesite porphyry cobbles and boulders*

?VALANGINIAN, HAUTERIVIAN-BARREMIAN

MONARCH ASSEMBLAGE

IKMv — *Dominantly volcanic rocks; olive green amygdaloidal basaltic andesite and basalt with rare columnar jointing, forming massive step-like cliffs; associated andesitic breccia and tuff breccia, locally intercalated with thinly bedded siltstone, black argillite to slate and pebble conglomerate; complexly interfingered with IKMs; unconformably overlies lithologically similar rocks of probable Jurassic age and Jurassic and Cretaceous plutons*

IKMs — *Dominantly sedimentary rocks including feldspathic sandstone and siltstone, black argillite to slate with grit and pebble to cobble conglomerate; subordinate basaltic andesite lava flows and flow breccias*

IKMa — *Laterally continuous beds of black argillite, locally with thinly-bedded siltstone and sandstone and pebble conglomerate*

JURASSIC TO ?CRETACEOUS

JKm — *Mainly orthogneisses and migmatitic gneisses of amphibolite grade; may include metamorphosed plutonic rocks: EJHL, JKF, EKD*

BATHONIAN TO ?CALLOVIAN

HAZELTON GROUP

NOOSGULCH ASSEMBLAGE (UPb ca. 163-165 Ma)

mJNl — *Feldspathic sandstone and pebble conglomerate locally interstratified with rhyolite flows and welded ash-flow tuffs; black-white, thickly laminated tuffaceous mudstone in lower part of section; this shallow-marine succession in part overlies and is temporally equivalent with nearby subaerial rhyolitic lapilli tuff and aphanitic lava flows, minor ash-flow tuffs and porphyritic andesite lava flows; host succession for the Nilty VMS prospect*

TOARCIAN TO BAJOCIAN

SMITHERS FORMATION

lmJS — *Feldspathic sandstone, grit and pebble conglomerate, locally thick cobble and boulder conglomerate; interspersed fine-grained felsic tuff, locally significant welded rhyolite ignimbrite, minor dacite and rhyolite flows; felsic volcanic events are time-stratigraphic with the Nanika member of the Smithers Formation in Whitesail Lake map area*

?PLIENSBACHIAN TO TOARCIAN

IJhv — *Basalt and andesite lava flows, dark green, aphanitic to medium-grained porphyries; rare planar-cross-stratified grey limestone containing crudely layered scoriaceous basalt clasts, interlayered with flow breccia; volumetrically minor cobble conglomerate and sandstone; maroon and green dacitic to rhyolitic lapilli and finer tuffs (ca. 191 Ma) form prominent stratified units within massive mafic lava flows west of the East Saloomtha River; west of the Crag Creek fault a presumably correlative succession includes substantial sedimentary rocks (IJhs) interlayered with amygdaloidal and porphyritic basalt flows with locally thick hyaloclastites and rare pillowed lavas*

IJhs — *Dominantly sedimentary strata; feldspathic sandstone, locally turbidific; black argillite, locally with thin cross-stratified calcareous sandstone to sandy limestone; granule to cobble conglomerate; lapilli tuff and ash-flow tuff; lesser basaltic andesite, basalt flows and breccia; complexly interfingered with IJhv*

IJha — *Laterally continuous beds of black argillite, locally with thinly-bedded siltstone and sandstone and pebble to cobble conglomerate; marine fossils present locally as poorly-preserved moulds*

?LOWER JURASSIC

Jhvp — *Undifferentiated aphanitic basaltic flows that appear recrystallized and grade imperceptibly into fine-grained diorite rocks; dark green with ubiquitous chlorite-epidote alteration; locally cut by northwest-trending pink plagioclase porphyry and granodiorite dykes presumed to be related to larger intrusions of the Firvale suite*

??TRIASSIC TO ?LOWER JURASSIC

?TrJv — *Undifferentiated basaltic and andesitic metavolcanic and volcaniclastic rocks; rare calc-silicate rock, marble, conglomerate; intruded locally by the Howe Lake suite; may include Cretaceous strata south of Nolack River*

PALEOZOIC?

BURKE CHANNEL ASSEMBLAGE

PBC — *Undifferentiated quartzite, semi-pelitic and pelitic schist; minor gneiss and marble; lesser mafic and felsic volcanic rocks and rare conglomerate; tightly folded and metamorphosed to amphibolite facies. PBca: amphibolite gneiss with minor biotite schist layers; PBcb: mainly metasedimentary rocks with minor amphibolite*

INTRUSIVE ROCKS

PALEOGENE
EOCENE

Eg — *Post-tectonic plutons (UPb 52-56 Ma, Ar/Ar 52-53 Ma) that cut all ductile fabrics; generally felsic to intermediate in composition; equigranular to potassium feldspar-megacrystic; unfoliated except locally near the margins but with weak magmatic layering present locally; Nooskulla pluton (Egkn): hornblende-biotite tonalite and granodiorite; Mesachie pluton (Egtk): two-mica granite to biotite granodiorite; Sheemahant pluton (Egsh): granodiorite, granite and tonalite*

Pg — *Undifferentiated tonalite, quartz diorite, diorite, granitic orthogneiss; fabric weakly strained to mylonitic; within Coast shear zone and especially along South Bentinck Arm may include fault slices of* PBc, TrJv; *and other older granitoid rocks*

CRETACEOUS TO PALEOGENE

KPd — *Undifferentiated dioritic plutons; hornblende diorite to biotite-hornblende tonalite; lesser quartz monzodiorite; pyroxene present locally; fine- to coarse-grained, generally equigranular; unfoliated to weakly foliated*

?LATE CRETACEOUS TO ?EOCENE

LKEp — *Undifferentiated granitic plutons: hornblende-biotite granodiorite to granite, fine- to medium-grained, equigranular*

LATE CRETACEOUS TO PALEOCENE

FOUR MILE PLUTONIC SUITE (UPb ca. 67-73 Ma)

LKFM — *Muscovite-biotite granite, coarse-grained, equigranular; locally contains garnet, pink potassium feldspar megacrysts, aplite dykes with pegmatitic segregations bearing garnet and muscovite; unfoliated except possibly at margins; forms prominent exposures characterized by 'onion-skin' exfoliation joints*

LATE CRETACEOUS

FOUGNER PLUTONIC SUITE (UPb ca. 67-68 Ma)

LKF — *Hornblende-biotite-cpyroxene-quartz diorite to granodiorite with conspicuous sphene; medium- to coarse-grained, equigranular to locally inequigranular with potassium feldspar megacrysts, homogeneous; distinct salt-and-pepper fresh appearance*

BIG SNOW PLUTONIC SUITE (UPb ca. 79-85 Ma)

LKBS — *Biotite monzogranite, biotite-chrombiende tonalite to granodiorite, coarse-grained, equigranular; inclusions rare*

MOUNT DAUNT PLUTON (UPb ca. 91 Ma)

LKMD — *Biotite-hornblende tonalite with mylonitic to protomylonitic fabric*

EARLY CRETACEOUS

MELKAN PLUTON (UPb ca. 110 Ma)

EKM — *Biotite-hornblende tonalite and lesser quartz diorite, unfoliated; weak to strong epidote and chlorite alteration; cut by numerous mafic dykes; lithologically similar to JKF*

DESIRE PLUTONIC SUITE (UPb ca. 118-124 Ma)

EKD — *Fine- to medium-grained hornblende diorite to quartz diorite and medium- to coarse-grained biotite-hornblende tonalite, equigranular; abundant screens and rendzitts of metavolcanic rock and amphibolite; displays magmatic and tectonic foliation; similar in field aspects to EJHL*

JURASSIC TO CRETACEOUS

JKP — *Undifferentiated granodiorite, diorite, and hornblende-biotite tonalite*

FIRVALE PLUTONIC SUITE (UPb ca. 131-140, 148-164 Ma)

JKF — *Hornblende-biotite granodiorite and quartz diorite, medium- to coarse-grained, equigranular; light pink-green colour due to incipient chlorite alteration; cut by northerly-trending mafic dykes in swarms and spaced bodies; incorporates Stick Pass plutonic suite from earlier published maps*

MIDDLE JURASSIC

TRAPPER PEAK PLUTON (UPb ca. 170 Ma)

MJTP — *Hornblende granite to lesser biotite-hornblende granite, medium- to coarse-grained, equigranular to inequigranular; distinct light purple to medium pink potassium feldspar oikocrysts enclose quartz, hornblende and plagioclase; saussuritized plagioclase imparts light green colour; cut locally by epidote veins and numerous hornblende andesite, basalt, and rhyolite dykes*

EARLY JURASSIC

HOWE LAKE PLUTONIC SUITE (UPb ca. 182-190 Ma)

EJHL — *Fine- to coarse-grained pyroxene-hornblende diorite to quartz diorite and medium- to coarse-grained biotite-hornblende tonalite; abundant metavolcanic screens and mafic xenoliths, commonly metamorphosed to amphibole grade; widespread magmatic and tectonic foliation; may be subvolcanic to Hazelton Group strata*

TENAKO PLUTONIC SUITE

JT — *Compositionally and texturally heterogeneous assemblage of coarse-grained pyroxene-hornblende gabbro to medium- to coarse-grained hornblende diorite to quartz diorite; lesser hornblende granodiorite; locally contains abundant mafic and ultramafic xenoliths and metavolcanic screens ranging from a few centimetres to 10s of metres in length*

SYMBOLS

Geological contact (defined, approximate, assumed)
Fault, undifferentiated (defined, approximate, assumed)
Fault, normal, down dropped on side with balls (defined, approximate, assumed)
Fault, compressional, defined, approximate, assumed (teeth on upthrust side)
Strike slip fault, defined, approximate (shaded under Qal and water)
Shear zone
Discrete shear zone (inclined, vertical)
Antiform (defined and approximate)
Synform (defined and approximate)
Fold axis
Axial plane
Bedding (tops unknown inclined, tops known inclined, overturned, vertical)
Magmatic foliation and layering
Tectonic foliation (inclined, vertical; includes schistosity, gneissic foliation, cleavage, and may also include some magmatic foliations and foliations of unknown type)
Mylonitic foliation (inclined, vertical)
*Mineral lineation**
*Elongation lineation**
Lineation (undivided)
*Dyke (inclined, vertical)**
*Glacial striae**
Fossil locality with ID number (see Sheet 3)
Ar-Ar age determination locality with ID number (see Sheet 3)
K-Ar age determination locality with ID number (see Sheet 3)
U-Pb age determination locality with ID number (see Sheet 3)
Gossan
Landslide scarp
Field station location where not indicated by other symbol (foliation, etc.)
Limit of mapping
Park boundary
Road, hard surface (more than 2 lanes, 2 lanes, less than 2 lanes)
MINFILE occurrence with ID number

*data not collected consistently across map-area

MINFILE*

NUMBER	MINFILNO	NAME	STATUS	COMMODITIES	DEPTYPE
1	093D 032	NASCALL HOT SPRINGS	SHOW	HG	T02
2	093D 300	MALACHITE CLIFF	SHOW	CU, AG, MO	
3	093D 016	BURNY BRIDGE	SHOW	MO, PB, CU	
4	093D 031	EUGOTT HOT SPRINGS	SHOW	HG	T02
5	093D 018	BELLA COOLA VALLEY	SHOW	AB	M06
6	093D 019	SURE CORNER	SHOW	CU	
7	093D 011	BELLA COOLA	SHOW	CU, AU	
8	093D 022	SMITLEY CLY	SHOW	AU, AG, CU, MO	K05
9	093D 025	BLAZE	SHOW	MO, CU	
10	093D 030	TALLHEO HOT SPRINGS	SHOW	HG	T02
11	093D 027	BENTINCK ARM	SHOW	GT	
12	093D 013	SMITLEY RIVER	SHOW	AU, AG, CU, PB, ZN	
13	092M 077	AA 1-22	PROS	GT, CU	P04

Data from British Columbia Geological Survey Branch MINFILE Mineral Inventory
STATUS abbreviations: SHOW = Showing; PROS = Prospect
COMMODITY abbreviations: AB = Asbestos, AG = Silver, AU = Gold, CU = Copper, GT = Graphite, HG = Hotspring, MO = Molybdenum, PB = Lead, ZN = Zinc
DEPTYP abbreviations: K05 = Cu-Au-Ag quartz veins, M06 = Ultramafic-hosted asbestos, P04 = Crystalline flake graphite, T02 = Geothermal spring

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DOSSIER PUBLIC
5385
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2006
SHEET 2 OF 3
FEUILLET 2 DE 3

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Sheet 2 of 3, Geology (South half)

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