BRITISH COLUMBIA
Ministry of Energy, Mines
and Petroleum Resources
Mining and Minerals Division

British Columbia Geological Survey

Geology of British Columbia

Geoscience Map 2005- 3

NORTH SHEET

Compiled by: N.W.D. Massey, D.G. MacIntyre, P.J. Desjardins and R.T. Cooney
Cartography by: Clover Point Cartographics Ltd.

Scale 1:1,000,000

0 25 50 75 100
Kilometres

Fault Lines:			
Fault		Roads, paved	
Extension Fault		Roads, unpaved	
Normal Fault		Lakes	
Thrust Fault		Rivers	
		Glaciers, Icefields	

Projection: BC Albers, NAD 83

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SOUTH SHEET

Compiled by: N.W.D. Massey, D.G. MacIntyre, P.J. Desjardins and R.T. Cooney
Cartography by: Clover Point Cartographics Ltd.

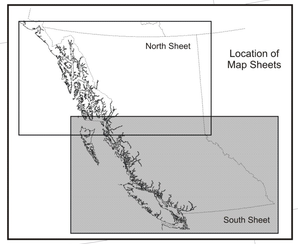
Scale 1:1,000,000

0 25 50 75 100
Kilometres

Fault Lines:
- Fault
- Extension Fault
- Normal Fault
- Thrust Fault

- Roads, paved
- Roads, unpaved
- Lakes
- Rivers
- Glaciers, Icefields

Projection: BC Albers, NAD 83



DIXON ENTRANCE
QUEEN CHARLOTTE ISLANDS
HECATE STRAIT
QUEEN CHARLOTTE SOUND
PACIFIC OCEAN
QUEEN CHARLOTTE STRAIT
STRAIT OF GEORGIA
JUAN DE FUCA STRAIT
Vancouver
Victoria

B.C. Geological Survey

Geology of British Columbia: Geological Legend

Geoscience Map 2005 - 3

BRITISH COLUMBIA
Ministry of Energy, Mines and Petroleum Resources
Mining and Minerals Division

BRITISH COLUMBIA GEOLOGICAL SURVEY

Volcanic and Sedimentary Rocks

CENOZOIC

Neogene to Quaternary

Qal — **Quaternary cover:** Alluvium, glaciofluvial gravels and sand, till. *(Note: the extensive Quaternary deposits of the Rocky Mountain foothills and the Peace River area have been omitted as they would completely cover and obscure the bedrock geology.)*

Qv — **Quaternary volcanics including Blue Lake Volcanics, Lambly Creek Basalt, Lake Island and Big Raven Formations:** Basalt, olivine basalt, unconsolidated ash, scoria, agglomerate and breccia.

LTQT — **Tuya Formation:** Alkali olivine basalt, tuff, agglomerate, minor trachyte and rhyolite tuff and flows.

LTQMl — **Maitland Volcanics:** Basalt breccia, vesicular basalt, volcanogenic sediments and pillow lava.

LTQGb — **Garibaldi Group and unnamed equivalents:** Olivine basalt flows, basaltic andesite flows and pyroclastic cones, rhyolite, dacite and andesite flows and domes; polymictic breccias and pyroclastics; gravel and sand.

LTQEz — **Mount Edziza Complex:** Aphyric trachyte and olivine, plagioclase and augite- phyric alkali olivine basalt, trachybasalt and hawaiite lava flows, domes and pyroclastic breccia and ash flows; includes some fluvial gravel and glacial deposits.

LTQAn — **Anahim Volcanics, Bella Bella Formation and equivalents:** Basalt, andesite, trachyte and rhyolite flows; basalt, andesite and dacite breccia, tuff, minor greywacke, slate and conglomerate.

LTCh — **Chilcotin Group:** Vesicular, columnar jointed basalt, olivine basalt; minor andesite, rhyolite breccia, obsidian, tuff, breccia, conglomerate, sandstone, siltstone, shale and diatomite.

LTQLv — **Level Mountain Group:** Alkali olivine basalt, minor trachyte and rhyolite; aphyric and olivine, plagioclase and augite- phyric, fine- grained basalt flows, in part columnar- jointed, locally vesicular or amygdaloidal; may include massive, fine- grained diabase sills.

LTAb — **Alert Bay Volcanics:** Basaltic to dacitic lava, tuff, breccia, conglomerate.

LTv — **Unnamed Neogene volcanics:** Olivine basalt necks, breccia and pillow flows, conglomerate.

Mv — **Miocene volcanics including Skagit and Coquihalla Formations:** Basalt and andesite flows; related breccia and tuff; minor dacite and rhyolite, conglomerate and siltstone.

Oligocene to Pliocene

PFr — **Poorly consolidated Tertiary sediments (includes the Fraser Bend and Australian Creek Formations):** Poorly consolidated to unconsolidated conglomerate, sandstone and mudstone; minor diatomite, lignite, basalt.

PMf — **Masset Formation:** Dominantly aphyric, mafic to felsic lava flows and pyroclastic rocks, locally epiclastic interbeds.

PSf — **Skonun Formation:** Sandstone, conglomerate, siltstone, mudstone, shale, coal, mostly covered by Pleistocene till.

Paleogene

ETs — **Paleogene sediments including Chuckanut, Kitsilano, Slatechuk, Tanzilla Canyon, Kishehn and Sophie Mountain Formations:** Conglomerate, sandstone, siltstone, shale, marl, minor coal; minor tuffs and tuffaceous siltstone; basalt.

ETv — **Unnamed Paleogene volcanics:** Rhyolite, chalcedonic rhyolite. breccia, tuff.

ETvQ — **Paleogene volcanics of the Queen Charlotte Islands including the Ramsay Island volcanic sequence:** Intercalated mafic to felsic lava flows and pyroclastic rocks; epiclastic sandstone and conglomerate; thickly- stratified volcanic debris flows.

P — **Point Grey Eruptives:** Basalt sills, dikes and flows, minor pyroclastics.

ECr — **Carmine Mountain Volcanics:** Dacite and rhyolite flows, ash and lapilli tuff, andesite flows, lesser basalt flows.

EEn — **Endako Group:** Andesite, basalt, minor dacite: flows, breccia and tuff, vesicular, amygdaloidal, locally hyaloclastic, minor picritic basalt and rhyolite; conglomerate, sandstone, shale, lignite.

EOo — **Ootsa Lake Group (including Newman Formation) and unnamed equivalents:** Rhyolite, dacite, trachyte flows; related tuff and breccia; andesite and basalt; minor conglomerate, grit, greywacke and tuffaceous shale.

ECa — **Carmanah Group:** Siltstone, shale, sandstone, pebble to boulder conglomerate; molluscan faunas common.

EKm — **Kamloops Group:** Sandstone, conglomerate, shale, argillite, coal; basalt, andesite, dacite, trachyte, rhyolite, related tuffs and breccias.

EPe — **Penticton Group and unnamed equivalents:** Trachyte, phonolite, trachyandesite, andesite, pyroxene andesite, tuff and breccia; volcanic sandstones and siltstones, shale and conglomerate.

EPr — **Princeton Group:** Sandstone, conglomerate, argillite, coal; mafic to intermediate volcanics, minor black chert.

ESo — **Sloko Group:** Basal conglomerate, coarse sandstone to siltstone, locally carbonaceous; andesite to rhyolite flows, pyroclastics and derived epiclastics, minor basalt.

EHp — **Hart Peak Volcanics:** Rusty- weathering trachyte and rhyolite flows, pyroclastic flows, pyroclastic rocks, and related intrusions.

PEAm — **Possible Amphitheater Group equivalents:** Heterolithic to monolithic conglomerate and breccia, carbonate conglomerate; shale, siltstone, sandstone, wacke, minor coal.

PEFl — **Flores Volcanics:** Subaerial andesite to rhyolite welded tuff, ash- flow tuff, tuff breccia, dacite to rhyolite sills, minor basalt dikes.

PEMc — **Metchosin Igneous Complex - Metchosin Formation:** Basaltic pillowed flows, hyaloclastite breccia, tuff, massive basalt, rare limestone; subaerial amygdaloidal basalt flows, minor breccia.

MESOZOIC

Cretaceous to Tertiary

uKTS — **Sifton and Usilika Formations. Bowron River Coal Beds and Reynolds Creek Succession:** Pebble to boulder conglomerate, sandstone, siltstone, shale, minor coal.

KSu — **Sustut Group and unnamed equivalents:** Sandstone, siltstone, mudstone, chert and quartz- pebble conglomerate, felsic ash- tuff, minor coal.

KTSs — **Slollicum Schist:** Mainly greenschist- grade mafic to intermediate volcanics, phyllite, minor volcanic and carbonate- clast supported conglomerate.

Triassic to Cretaceous

ŦKPa — **Pacific Rim Complex:** Mudstone- rich melange; pillow lava, tuff and chert; green, aphanitic volcanic breccia and massive flows, small diorite intrusions, grey limestone lenses.

Jurassic to Cretaceous

JKCy — **Cayoosh Assemblage and Noel Mountain East Succession:** Volcaniclastic sandstone, siltstone, shale and argillite; lesser amounts of pebble to cobble conglomerate, limy sandstone, limestone, tuff, greenstone, quartzite and fragmental metavolcanic rocks; micaceous quartzite, biotite- hornblende schist, garnet and staurolite schist, phyllite.

JKKF — **Kootenay Group and Fernie Formation:** Shale, sandstone; limestone, phosphatic and sideritic shales.

JKLe — **Leech River Complex:** Slate, phyllite, quartz- biotite schist, quartz- feldspar- garnet- biotite schist, metagreywacke, meta- arkose; metabasalt, metarhyolite, chlorite schist, ribbon chert, cherty argillite.

JKGv — **Gravina Assemblage:** Marine argillite and greywacke, and interbedded andesitic to basaltic volcanic and volcaniclastic rocks, metamorphosed to amphibolite grade.

mJKBo — **Bowser Lake Group:** Heterolithic conglomerate, sandstone, siltstone, mudstone, shale, feldspathic wacke, minor coal; minor basalt and andesite flow, breccia and tuff, dacitic lava flows, lapilli tuff.

JKKy — **Kyuquot Group:** Siltstone, shale, greywacke, calcareous grit and conglomerate.

JKDz — **Dezadeash Group:** Argillite, greywacke, coarse lithic and feldspathic sandstone, conglomerate and minor tuffaceous layers; sparsely feldspar- phyric pillow basalt and foliated sills of gabbro and quartz diorite.

uJKMn — **Minnes Group (includes some undifferentiated Bullhead Group):** Sandstone, quartzite, siltstone, shale, conglomerate, minor coal.

uJKRe — **Relay Mountain Group, Thunder Lake Sequence and unnamed equivalents:** Shale, siltstone, phyllite, semischist, sandstone, calcareous, sandstone, arkose, coquina, conglomerate; minor andesitic breccia and tuff, tuffaceous sandstone and silty limestone.

Cretaceous

KFs — **Fort St. John Group, may include some Smokey Group units:** Shale, sideritic shale, silty mudstone, siltstone, sandstone, concretionary shale; minor coal, conglomerate, glauconitic sandstone and siltstone.

KJa — **Jackass Mountain Group; Fish Lake Creek Succession; and unnamed equivalents:** Sandstone, arkose, siltstone, argillite, black shale, pebble to boulder conglomerate; andesite and tuffaceous sandstone; minor rhyolite, tuff.

KPs — **Pasayten Group:** Chert- grain sandstone, argillite, arkose, conglomerate; minor red beds and tuff.

KQc — **Queen Charlotte Group (includes White Point Beds):** Sandstone; siltstone, mudstone and shale, locally with calcareous concretions, pebble sandstone and conglomerate, minor coal; feldspar- phyric andesite lava flows and pyroclastic rocks.

KSq — **Silverquick Formation:** Pebble to cobble conglomerate containing clasts of chert, volcanic rock and sandstone; lesser amounts of sandstone, siltstone, shale, volcanic breccia and volcanic conglomerate.

KTc — **Taylor Creek Group and unnamed equivalents:** Sandstone, chert- rich sandstone, siltstone and shale; polymict pebble conglomerate; calcareous sandstone and shale; intermediate to felsic volcanic flows, tuff and crystal tuffs; volcanic breccia and conglomerate.

KVz — **Valdez Group and possible equivalents:** Deep marine argillite- greywacke flysch, minor massive and pillow basalt, breccia and tuff; contorted graphitic siltstone with intercalated intermediate ash, lapilli tuff and chert.

uKv — **Unnamed Cretaceous volcanics:** Andesitic to dacitic breccias, tuffs and flows.

Upper Cretaceous

uKAl — **Alberta Group:** Siltstone, sandstone.

uKD — **Dunvegan Formation:** Massive conglomerate, fine to coarse- grained sandstone, carbonaceous shale.

uKKs — **Kasalka Group unnamed equivalents:** Hornblende- feldspar porphyritic andesite to basalt flows and related pyroclastics, breccias and epiclastic beds, lesser dacite, rhyodacite, basaltic andesite, quartz porphyry; sandstone, conglomerate.

uKNa — **Nanaimo Group:** Boulder, cobble and pebble conglomerate, coarse to fine sandstone, siltstone, shale, coal.

uKPo — **Powell Creek Formation:** Andesitic volcanic breccia, lapilli tuff and ash tuff; mafic to intermediate volcanic flows; volcanic sandstone and conglomerate, siltstone and shale.

uKSy — **Smokey Group and Kotaneelee Formation:** Sandstone, carbonaceous shale, calcareous shale, calcareous sandstone, minor conglomerate.

uKWa — **Wapiti Formation:** Conglomerate, fine to coarse grained sandstone; carbonaceous shale and coal.

Lower Cretaceous

lKWt — **Windy Table Complex:** Andesite, basalt, flow- banded rhyolite, volcanic conglomerate.

lKBu — **Bullhead Group:** Sandstone, conglomerate, shale, coal.

lKGa — **Gambier Group; Monarch Volcanics, Ottarasko Formation; and equivalents including the Cerulean Lake Unit:** Conglomerate, sandstone, shale, argillite, minor limestone; basaltic andesite to rhyolite flows, crystal and lapilli tuff, tuffaceous sandstone, volcanic conglomerate and breccia; schist, graphitic schist.

lKSb — **Spences Bridge Group and unnamed equivalents:** Andesite and dacite flows and breccias; minor basalt and rhyolite; chert and volcanic- clast conglomerates; sandstone, siltstone and mudstone.

lKSk — **Skeena Group:** Feldspathic and volcanic sandstone, siltstone, shale, mudstone, chert- pebble conglomerate, minor coal; augite- plagiolcase phyric alkaline basalt to basaltic andesite, plagioclase phyric andesite to dacite; aphyric basalt, green to maroon mafic lapilli tuff, volcanic breccia, rhyolite to dacite flows.

lKTB — **Blairmore Group:** Sandstone, siltstone; tuffs.

Jurassic

JHl — **Harrison Lake, Billhook Creek, Kent and Camp Cove Formations; equivalents in the southern Coast Complex including the Whistler Pendant:** Intermediate to mafic flows and pyroclastics, minor felsics; conglomerate, sandstone and argillite, minor carbonate.

Middle Jurassic

mJMo — **Moresby Group:** Concretionary sandstone; siltstone; conglomerate; minor agglomerate; black shale.

mJYk — **Yakoun Group:** Agglomerate; flow breccias; sandstone; conglomerate; minor shale.

Lower to Middle Jurassic

lmJAh — **Ashcroft Formation and unnamed equivalents:** Argillite, siltstone, sandstone, conglomerate; minor limestone.

lmJHz — **Hazelton Group; Griffith Creek and Hotnarko Volcanics:** Calcalkaline basalt to rhyolite pyroclastics and flows, derived volcaniclastic conglomerate, breccia, sandstone, siltstone, shale, minor limestone and marl.

lmJLa — **Laberge Group:** Conglomerate, diamictite, wacke, argillite, shale, calcareous sandstone, chert- pebble conglomerate, minor limestone; andesitic breccia and tuff.

lmJLd — **Ladner Group; Last Creek, Huckleberry Mountain and Spider Peak Formations; and unnamed equivalents:** Sandstone, arkose, siltstone, argillite, slate, conglomerate, andesitic flows, mafic and intermediate volcanic breccia, tuff, minor limestone.

lmJMa — **Maude Group:** Shale; fine to medium grained sandstone; minor calcareous shale.

lmJSp — **Spatsizi Group and Abou Formation:** Siliceous, well bedded, tuffaceous siltstone, siltstone, calcareous siltstone, tuff; calcareous to siliceous siltstone, limestone, concretionary shale.

JBi — **Bowen Island Group:** Tuffaceous sandstone, tuffaceous siltstone, argillite, graphitic siltstone with minor interbedded carbonate, lapilli tuff, andesite flows and sills.

Lower Jurassic

lJBn — **Bonanza Group:** Massive amygdaloidal and pillowed basalt to andesite flows, dacite to rhyolite massive or laminated lava, green and maroon tuff, feldspar crystal tuff, breccia; tuffaceous sandstone, argillite, pebble conglomerate and minor limestone and calcareous siltstone.

lJCl — **Chuchi Lake Succession:** Pebbly grit, polymictic conglomerate containing abundant volcanic clasts, sandstone, siltstone, dark grey shale, lesser cherty dust tuff; maroon and green, porphyritic latite, trachyte and andesite, augite, olivine basalt flows and breccia, lapilli tuff.

lJRs — **Rossland Group:** Mafic volcanics, argillite, siltstone.

lJTd — **Toodoggone Volcanics:** Andesite, dacite, trachyandesite lava flows, tuffs, crystal tuffs, breccias and epiclastics; fine pyroxene- basalt flows and tuffs, cogenetic sills and dikes.

lJTw — **Twin Creek Succession and equivalents:** Heterolithic lapilli tuff, plagioclase- augite and plagioclase, quartz porphyritic flows and agglomerate/tuff breccia; arkose, greywacke, sandstone, siltstone, minor conglomerate and coal.

Triassic to Jurassic

ŦJYr — **Ymir Group:** Argillite, siltstone, limestone.

uŦJCu — **Cultus Formation:** Argillite, sandstone, siltstone, minor carbonate.

uŦJKn — **Kunga Group:** Shale; calcareous shale; massive limestone; fine grained sandstone; rare chert and local peperite.

uŦJNc — **Nicola Group:** Undifferentiated mafic to felsic flows and volcaniclastic rocks, including augite- phyric flows, tuffs and breccias; feldspathic sandstone and siltstone, argillite, shale, polymict conglomerate; minor limestone and calcareous siltstone.

ŦJTk — **Takla Group (may include deformed Asitka Group); Tezzaron Sequence; and unnamed equivalents:** Augite- phyric and aphyric basalt breccia, agglomerate, tuff, pillowed and massive flows; mafic to felsic tuff, ash tuff, lapilli tuff, breccia and conglomerate; tuffaceous argillite and siltite, greywacke, conglomerate, sandstone, siltstone and chert; phyllite, phyllitic schist; limestone, minor skarn.

Triassic

ŦBk — **Brooklyn Formation:** Sharpstone conglomerate, limestone, argillite and minor volcanics.

ŦJS — **Spray River Group; Halfway, Liard, Charlie Lake, Baldonnel, Pardonet, Ludington, Toad and Grayling Formations; unnamed equivalents:** Limestone, dolomite, carbonaceous- argillaceous limestone, calcareous and dolomitic siltstone, calcareous sandstone; shale, sandstone, orthoquartzite, minor gypsum.

ŦSl — **Slocan Group:** Carbonate, argillite, slate, phyllite, minor volcanic breccia, tuff and conglomerate.

Upper Triassic

uŦCd — **Cadwallader Group; Grouse Creek Siltstone and equivalents:** Sandstone, calcarenite, siltstone, shale, polymict conglomerate, pebbly mudstone, limestone- greenstone breccia, micritic limestone, coquina; pillowed to massive greenstone, mafic volcanic breccia, mafic tuff, minor rhyolite breccia and tuff.

uŦS — **Stuhini Group; Mosley and Mount Moore Formations, and unnamed equivalents:** Mafic to intermediate lapilli tuff, ash, breccia and tuffite; massive, aphyric or plagioclase and augite- phyric flows and sills; felsic tuff ; tuffaceous siltstone, wacke, argillite, polymict conglomerate, limestone, shale; graphitic shale, rare black chert, ribbon chert.

uŦTa — **Tats Group:** Black calcareous siltstone, argillaceous limestone, basaltic sills; massive and pillowed basalt flows and sills, basalt agglomerate, minor tuff and chert.

uŦTy — **Tyaughton Group:** Conglomerate, conglomeratic sandstone and sandstone; limestone and limestone conglomerate; siltstone, calcareous sandstone and coquina.

uŦVe — **Nikolai Greenstone, Chitistone and McCarthy Formations:** Aphyric pillow basalts, interpillow micrite; shallow intra- supratidal platform and sabkha facies limestones and evaporites; impure cherty and shaley limestone, chert spiculite.

Middle to Upper Triassic

muŦVa — **Vancouver Group and equivalents:** Basalt pillowed flows, pillow breccia, hyaloclastite tuff and breccia, massive amygdaloidal flows, minor tuffs, interflow sediment and limestone lenses; grey to black, micritic and stylolitic limestone, calcareous siltstone, minor oolitic and bioclastic limestone, garnet- epidote- diopside skarn; thinly bedded black argillite, siltstone and shale, calcareous argillite, grey and black limestone, shaly limestone, coralline limestone, minor tuffaceous sandstone, grit and breccia.

PALEOZOIC TO MESOZOIC

ⱣMCs — **Cogburn Schist:** Schist, meta- chert, pelite, amphibolite, marble, ultramafic rock.

ⱣMGm — **Gamsby Complex:** Schistose and mylonitic felsic and mafic flows, tuff, volcanogenic sediments, amphibolite, leucogneiss, tonalitic to granodioritic orthogneiss, minor marble and skarn.

Permian to Jurassic

PJHz — **Hozameen Complex:** Chert, pelite, mafic volcanics, minor limestone, gabbro and ultramafic rock.

PJKu — **Kutcho Formation, Sitlika Assemblage and possible equivalents:** Basaltic to rhyolitic schist, greenstone, pillowed metabasalt, heterolithic breccia; slate, phyllite; banded siltstone, sandstone and conglomerate; minor limestone, marble, chert and green chloritic phyllite.

Mississippian to Jurassic

CJBr — **Bridge River Complex:** Undivided ribbon chert, argillite, phyllite, quartz phyllite and pillowed to massive greenstone, with lesser amounts of limestone, gabbro, diabase, serpentinite, sandstone and pebble; conglomerate metamorphic equivalents; variably deformed granodiorite and orthogneiss; blueschist; locally includes minor amounts of Cayoosh Assemblage and Taylor Creek Group rocks.

CŦKl — **Klinkit Group:** Quartz- rich clastics and argillite; commonly phyllitic or hornfelsed, conglomerate; limestone, cherty carbonate, calcsilicate, marble; green tuff, lapilli tuff and lesser flows.

MJCc — **Cache Creek Complex and equivalents:** Greenstone, amphibolite, mafic pillow lavas, volcanic breccia, agglomerate, tuff, rare felsic flows and tuffs; phyllite, siliceous phyllite, metachert, ribbon chert, chlorite schist, sandstone; micritic to clastic limestone, argillite, marble, dolomite; minor serpentinite and mafic intrusions.

Ordovician to Triassic

DŦW — **Unnamed units, possibly of Wrangellian affinity:** Argillite, calcareous argillite, cherty argillite, chert; intermediate epiclastic and/or lapilli to ash tuff and tuffite.

OŦA — **Unnamed Ordovician to Triassic volcanic and sedimentary rocks (Alexander terrane) within the Coast Complex:** Siltstone, mudstone, shale, limestone, marble, mafic and felsic volcanics, quartzite and conglomerate; often metamorphosed to slate, phyllite, schist, marble, gneiss, amphibolite and greenstone.

OŦAp — **Apex Mountain Complex; Shoemaker and Independence Formations:** Argillite, chert, greenstone, breccia, mafic intrusions, limestone and ultramafic rocks.

PALEOZOIC

ⱣBl — **Black Stuart Group:** Chert, limestone, dolostone and derived conglomerate and breccia; black shale, argillite, cherty argillite, quartzite, siltite and slate; some pillow basalt, schistose calcareous basaltic tuff and volcaniclstics.

ⱣBs — **Big Salmon Complex, including the Teslin Tectonic Zone:** Quartzite, phyllite, biotite- muscovite schist, marble, limestone, dolomite; chert; greenstone, andesite and basalt tuffite, tuff , wacke, rhyolite; quartz- albite- mica gneiss, albite- actinolite schist, quartz- chlorite- epidote- albite gneiss, meta- chert, calc- silicate schist, hornfels.

ⱣDe — **Unnamed volcanics and sediments (Descon tectonic assemblage):** Brown to white- weathering marble, calcareous metawacke and argillite, minor conglomerate and chert; metabasalt, minor tuff breccia.

ⱣDr — **Dorsey Complex (includes Rapid River Tectonite):** Green magnetite- phyllite, chlorite schist, mafic schist, quartz- sericite schist, metachert, quartzite, limestone, quartz- plagioclase grit, quartz- feldspar schist, phyllite, pelitic schist, amphibolite, siliceous and gneissic tectonite.

lⱣId — **Mount Ida Assemblage:** Calcareous black phyllite, graphitic phyllite, dark grey limestone, argillaceous and phyllitic limestone; greenstone, chlorite phyllite; schistose epidote- actinolite- quartz and garnet- epidote skarn, quartzite, micaceous quartzite and calcareous quartzite, lesser amounts of chloritic schist and sericite- quarz shist; minor amphibolite, marble, conglomerate and serpentinite.

Silurian to Permian

SPs — **Unnamed Silurian to Permian sedimentary and minor volcanic rocks of Alexander terrane.:** Limestone, crinoidal limestone, interbedded limestone and argillite; argillite, chert and siliceous argillite, quartzite; metagreywacke; basalt flows, mafic to intermediate lapilli tuff and agglomerate.

Devonian to Permian

DPHa — **Harper Ranch Group, Barslow Assemblage and Chapperon Group (may include some Nicola Group strata):** Argillite, cherty argillite, slate, phyllite, siltstone, volcanic and chert- grain sandstone; chert- pebble conglomerate; volcaniclastic rocks of mafic to felsic composition; minor carbonate.

DPHq — **Nizi Formation and unnamed equivalents:** Limestone, cherty limestone, greywacke, minor conglomerate, maroon shale, siltstone; mafic to felsic volcanics, pillow basalt; black and green chert, argillite, schist, quartzite metaconglomerate.

DPAs — **Asitka Group:** Massive, grey, bioclastic limestone; argillaceous, thin bedded, recrystallized limestone with chert nodules; slate, slaty siltstone and chert: sericite and chlorite phyllite and schist; metagabbro, basalt, rhyolite, tuff; minor serpentinite and listwanite.

DPBc — **Big Creek Group:** Basalt breccia, tuff and pillows; dacitic and rhyolite tuff; shale, argillite, slate, calcareous argillite, limestone, tuffaceous argillite, sandstone, wacke.

DPCw — **Chilliwack Group:** Undifferentiated pelite, sandstone, minor conglomerate, mafic and felsic volcanics; Permian and Pennsylvanian carbonate.

DPFe — **Fennell Assemblage:** Bedded chert, cherty argillite, diabase, gabbro, diorite and pillowed to massive metabasalt; lesser amounts of sandstone, siltstone, slate, phyllite, conglomerate and quartz- feldspar porphyry rhyolite; minor amounts of limestone.

DPSt — **Stikine Assemblage:** Maroon and green tuff, lapilli tuff, volcanic conglomerate, wacke; pyroxene- phyric agglomerate, breccia, pillowed and massive basalt flows, andesite, minor rhyolite and gabbro; siltstone, sandstone and lesser chert; limestone, bioclastic limestone, calcarenite; foliated metamorphosed equivalents.

DPSm — **Slide Mountain Complex and Antler Formation:** Massive and pillowed basalt, breccia, tuff, diabase, minor diorite, gabbro and serpentinite; chert, argillite, lithic sandstone, limestone, dacitic tuff and agglomerate, black argillite, quartz- chert sandstone, varicoloured chert, rhodonite, calcarenite, phyllite, chlorite schist.

Carboniferous to Permian

CPAn — **Knob Hill Group:** Ribbon chert, argillite and thin limestone bands.

CPAa — **Anarchist Schist:** Chlorite schist, greenstone, chert; minor ultramafic rock.

CPAc — **Chapperon Group:** Metamorphosed siliceous and calcareous argillites; greenschists of volcanic and sedimentary origin; minor serpentinized ultramafic rocks.

CPKa — **Kaslo Group:** Mafic volcanics

CPNi — **Nina Creek Group:** Cherty argillite, chert, argillite, massive and pillowed basalt, volcanic breccia, gabbro, siltstone, wacke, dacite.

CPRk — **Rocky Mountain Group:** Dolomitic siltstone; sandy dolomite; orthoquartzite and limestone.

CPSd — **Stoddart Group, Fantasque and Kindle Formations:** Limestone, dolomite, conglomerate, bedded chert, quartz sandstone, calcareous sandstone, siltstone, shale, locally phosphatic; dark grey chert.

CPLy — **Lay Range Assemblage, Evans Creek Limestone:** Massive and pillowed basalt, chert, fine to medium- grained gabbro and rare serpentinite; crystal and lapilli tuff, siliceous tuff, volcanic sandstone, minor agglomerate, siltstone, siliceous argillite, limestone, quartz sandstone, minor conglomerate.

CPBt — **Buttle Lake Group:** Ribbon chert, cherty tuff, graphitic argillite, thinly bedded intercalated sandstone- siltstone- argillite, volcanic sandstone and conglomerate, massive crinoidal limestone, interbedded argillite and crinoidal limestone, pillowed basalt flows, olistostromal melange. May include significant volumes of Mount Hall Gabbro sills.

CMK — **Attwood Group, Milford and Mount Roberts Formations:** Argillite, sandstone, limestone, quartzite; minor sharpstone conglomerate, greenstone.

ⱣPSc — **Station Creek Formation:** Oceanic arc volcanics and sediments dominated by tuff, breccia and siliceous argillite with sparse andesitic flows.

Devonian to Mississippian

DMEa — **Earn Group:** Argillite, slate, shale, locally carbonaceous and pyritic; chert, cherty mudstone; chert arenite and pebble conglomerate, polymicitic conglomerate; limestone; nodular and bedded barite +/- sulphides.

DMB — **Besa River Formation:** Black, siliceous shale, calcareous siltstone, minor dolomite, limestone, sandstone and pebble conglomerate, barite.

DMBe — **Banff and Exshaw Formations:** Carbonate, black shale, brown calcareous shale.

Mississippian

MRu — **Rundle Group; Prophet and Flett Formations; unnanmed equivalents:** Dolomite, limestone, crinoidal and skeletal limestone, cherty limestone, calcareous mudstone, spiculite, chert, argillite, siltstone, rare amygdaloidal basalt.

MMt — **Mattson Formation:** Fine, and medium grained quartzose sandstone, sandy shale.

MRc — **Ram Creek Group:** Greenstone, chlorite- actinolite phyllite, quartz- sericite schist, marble, ribbon chert, tonalite, diorite, gabbro.

MSw — **Swift River Group and possible equivalents:** Chert, argillite, phyllite, greywacke, quartz- plagioclase grit, meta- tuff, limestone, quartzite; minor conglomerate, volcanics and diorite.

Cambrian to Devonian

ꞒDER — **Razorback and Echo Lake Groups:** Thinly layered and interbedded argillaceous limestone and dolomite, shale and slate; dolomite, sandy dolomite, sandstone to quartzite, massive to poorly bedded limestone and dolomite; equivalent to the Kechika and Road River Groups and the Tapioca Sandstone of the Sandpile Group.

ꞒDLr — **Lardeau Group:** Limestone, marble, phyllite, micaceous schist, grit, quartzite, greenstone.

Ordovician to Devonian

ODRo — **Road River Group (may include some undifferentiated Earn Group):** Shale, slate, siltstone, chert, minor coarse clastics, limestone, dolomite, rare tuffs.

ODSMR — **Sandpile, McDame, Ramhorn and Otter Lakes Groups:** Dolostone, dolomitic sandstone, limestone, shaly dolostone, carbonate breccia, minor calcareous siltstone, shale, quartzite, alkaline volcanics.

Silurian to Devonian

SDs — **Silurian to Devonian strata of the Rockies including Cedared, Burnais, Harrogate, Mount Forster, Muncho- McConnell, Wokkpash, Stone, Dunedin, Nonda, Pine Point Formations and Tapioca Sandstone:** Dolomite, limestone, silty limestone and dolostone, sandstone, quartzite, argillite, shale, siltstone, chert, greenstone, minor gypsum.

Devonian

DFa — **Fairholme Group, Flume, Mount Hawk, Palliser, Pendrix Formations and unnamed equivalents:** Argillaceous limestone, nodular limestone, calcareous shale, dolomite; shale, siltstone, orthoquartzite.

DSi — **Sicker Group:** Pillowed and massive basalt flows, monolithic basalt breccia and pillow breccia; pyroxene- feldspar phyric agglomerate, breccia, lapilli tuff, massive and pillowed flows, felsic tuffs and crystal tuffs, dacite, rhyolite; massive tuffite, laminated tuff, polymictic breccia; chert, jasper and magnetite- hematite- chert iron formation.

DEc — **Unnamed sediments and volcanics of the Ecstall Belt:** Quartzite, with lesser biotite hornblende gneiss, mica schist, black phyllite to meta- argillite, semi- pelitic to pelitic schist, well foliated: mafic and intermediate metavolcanics, locally pyritic, strongly foliated, fine grained amphibolite +/- chlorite schist.

Ordovician to Silurian

OSs — **Unnamed Ordovician to Silurian sedimentary and minor volcanic rocks of Alexander terrane:** Siltstone, mudstone, slate, phyllite, chert, massive and well- bedded limestone, minor conglomerate; pillow basalt, tuffs, diabase sills.

Cambrian to Ordovician

ꞒOKe — **Kechika Group; may include some undifferentiated Road River Group, Skoki Formation or Gog Group:** Limestone, argillaceous limestone, pale calcareous slate, phyllitic limestone, calcareous phyllite, pyritic and carbonaceous slate and shale; minor conglomerate, sandstone, greenstone and green tuff.

ꞒOs — **Cambrian to Ordovician strata of the Rockies: includes McKay Group, Monkman Quartzite, Active, Chushina, Mount Wilson, Skoki, Tipperary, Glenogle, Survey Peak, Beaverfoot, Arctomys, Waterfowl, Cathedral, Tanglefoot, Elko, Gordon, Chancellor, Eldon, Flathead, Gull Lake, Jubilee, Lyell, Sullivan, Lynx, Mistaya, Bison Creek, Nelway, Ottertail, Pika, Snake, Indian, Stephen, Mount White and Tsar Creek Formations, Kinbasket unit and several unnamed units.:** Limestone, dolomite, shale, calacareous shale, slate, sandstone, red beds, quartzite, minor conglomerate and chert.

uꞒOvb — **Unnamed Cambrian to Ordovician volcanics of Alexander terrane:** Pillow basalt, greenstone.

Cambrian

ꞒAt — **Atan Group:** Orthoquartzite, siltstone, shale, sandstone; limestone; minor dolostone, phyllite and conglomerate.

mꞒr — **Unnamed Cambrian coarse clastics:** Diamictites, conglomerate, dolomite olistrostrome (glacio- marine), sandstone, minor limestone.

PROTEROZOIC TO PALEOZOIC

PⱣEg — **Eagle Bay Assemblage:** Quartzite, micaceous quartzite, siliceous phyllite, garnet- mica- quartz schist, greenstone, metavolcanic breccia and tuff, chloritic phyllite, chlorite schist; limestone, marble, calcsilicate gneiss; argillite, slate and conglomerate; paragneiss and orthogneiss.

PⱣSh — **Shuswap Assemblage:** Marble, diopsidic marble, calcsilicate gneiss, amphibolite, quartzite.

uPⱣSn — **Snowshoe Group:** Micaceous quartzite, quartzite, phyllite, slate and schist; lesser siltite, limestone and limestone or quartzite- clast conglomerate; minor amphibolite, metatuff, marble and diabase.

Upper Proterozoic to Cambrian

uPꞒMs — **Misinchinka Group (may include some undifferentiated Miette Group):** Phyllite, siltite, slate, diamictite, quartzite, feldspathic quartzite, minor iron formation; limestone, dolomite, sandy limestone and dolomite, minor argillite; quartz chlorite schist, chloritic phyllite, garnet- mica schist, calcereous sericite schist, amphibolite.

uPꞒC — **Cariboo Group:** Shale, siltstone, limestone, argillite, phyllite, schist, quartzite; minor feldspathic sandstone and conglomerate.

uPꞒEC — **Eager and Cranbrook Formations:** Shale, limestone, quartzite, argillite and magnesite.

uPꞒGo — **Gog and Boulder Creek Groups; Badshot (may include some undifferentiated Index Formation), Hota, Mohican, Marsh Adams and Mount Ganier Formations, and unnamed equivalents:** Limestone, siltstone, dolomite; quartzite, pebble conglomerate; alkalic to calc- alkalic basalt, andesite and dacite; mica schist, marble, amphibolite.

uPꞒHm — **Hamill Group, Donald and Laib Formations:** Marble, dolomite, limestone; phyllite, argillite, schist, quartzite.

PROTEROZOIC

Upper Proterozoic

uPHo — **Horsethief Creek Group:** Pelitic schist, phyllite, quartzite, quartzofeldspathic psammite, grit, conglomerate and amphibolite; marble and sandy marble.

uPHy — **Hyland Group (may include younger clastics):** Slates, phyllites, brown sandstone, siltstone, shale, quartz pebble grits, conglomerate, minor limestone.

uPIg — **Ingenika Group:** Quartzite, micaceous quartzite, pebble conglomerate, limestone, dolomite, oolitic and pisolitic limestone, shale, sandstone, wacke, sandy limestone, phyllite, schist, gneiss, chlorite- muscovite schist, slate, argillite, micaceous crystalline limestone, marble, calcsilicate rock, amphibolite.

uPKz — **Kaza Group:** Phyllite, greywacke, grit, argillite, schist and micaceous feldspathic quartzite; minor pebble conglomerate, amphibolite, limestone and marble.

uPMc — **Mica Creek Succession:** Pelitic schist, phyllite, quartzite, quartzofeldspathic psammite, grit, conglomerate and amphibolite.

uPMi — **Miette Group:** Grit, conglomerate, quartzite; phyllite, argillite, slate, pelitic schist, metasandstone; dolomite, marble and minor calcsilicate rock.

uPWd — **Windermere Supergroup:** Phyllite, quartzite, grit, conglomerate; greenstone.

Middle Proterozoic

mPMu — **Aida, Chischa, Gataga, George, Henry Creek, Tetsa, Tuchodi and Narchilla Formations:** Dolomitic mudstone, siltstone, sandstone, dolostone, limestone, quartzite, feldspathic quartzite, minor greenstone, conglomerate.

mPPu — **Purcell Supergroup:** Siltstone, wacke, argillite, quartzite, dolomite, basalt to andesite flows.

Intrusive Rocks

CENOZOIC

LT — **Late Tertiary:** diorite (dr), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm).

ET — **Early Tertiary:** diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), syenite (sy), tonalite (to), diabase (db), quartz porphyry (qp), feldspar porphyry (fp), orthogneiss (og), migmatite (mi) and undifferentiated intrusive rocks (g).

T — **Tertiary:** granite (gr) and feldspar porphyry (fp).

MESOZOIC

KT — **Cretaceous to Tertiary:** diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), syenite (sy), tonalite (to), quartz porphyry (qp), feldspar porphyry (fp), pegmatite (pe), orthogneiss (og), and undifferentiated intrusive rocks (g).

LK — **Late Cretaceous:** diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), syenite (sy), tonalite (to), quartz porphyry (qp), feldspar porphyry (fp), orthogneiss (og), and undifferentiated intrusive rocks (g).

mK — **Mid- Cretaceous:** diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), tonalite (to), quartz porphyry (qp) and orthogneiss (og).

EK — **Early Cretaceous:** diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), tonalite (to), quartz porphyry (qp), feldspar porphyry (fp), orthogneiss (og) and undifferentiated intrusive rocks (g).

K — **Cretaceous:** diorite (dr), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), syenite (sy), pegmatite (pe), orthogneiss (og), migmatite (mi) and undifferentiated intrusive rocks (g).

JT — **Jurassic to Tertiary:** granite (gr), quartz diorite (qd), quartz monzonite (qm), quartz porphyry (qp) and feldspar porphyry (fp).

JK — **Jurassic to Cretaceous:** diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), tonalite (to), quartz porphyry (qp), feldspar porphyry (fp), pegmatite (pe), orthogneiss (og), and undifferentiated intrusive rocks (g).

J — **Jurassic:** diorite (dr), granodiorite (gd), quartz diorite (qd), quartz monzonite (qm), syenite (sy) and orthogneiss (og).

LJ — **Late Jurassic:** diorite (dr), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm) and tonalite (to).

MJ — **Middle Jurassic:** diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), syenite (sy), tonalite (to), quartz porphyry (qp), feldspar porphyry (fp), orthogneiss (og) and undifferentiated intrusive rocks (g).

MLJ — **Middle to Late Jurassic:** diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm) and orthogneiss (og).

EMJ — **Early to Middle Jurassic:** diorite (dr), granodiorite (gd), diabase (db) and feldspar porphyry (fp).

EJ — **Early Jurassic:** diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), syenite (sy), feldspar porphyry (fp), orthogneiss (og) and undifferentiated intrusive rocks (g).

ŦTdr — **Triassic to Tertiary:** diorite (dr), granodiorite (gd), quartz diorite (qd) and undifferentiated intrusive rocks (g).

ŦK — **Triassic to Cretaceous:** gabbro (gb) and granite (gr).

ŦJdg — **Triassic to Jurassic:** diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), quartz diorite (qd), quartz monzonite (qm), syenite (sy), tonalite (to), quartz porphyry (qp), feldspar porphyry (fp) and undifferentiated intrusive rocks (g).

Ŧ — **Triassic:** diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), quartz diorite (qd), quartz monzonite (qm) and orthogneiss (og).

Mesozoic: ultramafites (um) and serpentinites (us).

PALEOZOIC

PJ — **Permian to Jurassic:** diorite (dr), tonalite (to) and orthogneiss (og).

PŦ — **Permian to Triassic:** diorite (dr), gabbro (gb), granodiorite (gd), tonalite (to) and diabase (db).

P — **Permian:** diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz monzonite (qm), tonalite (to), diabase (db) and orthogneiss (og).

CŦ — **Carboniferous to Triassic:** diorite (dr) and gabbro (gb).

CP — **Carboniferous to Permian:** diorite (dr), gabbro (gb) and orthogneiss (og).

P — **Pennsylvanian:** quartz diorite (qd).

C — **Carboniferous:** diorite (dr).

M — **Mississippian:** diorite (dr), granite (gr), syenite (sy), tonalite (to) and undifferentiated intrusive rocks (g).

DP — **Devonian to Permian:** diorite (dr), gabbro (gb) and granodiorite (gd).

DC — **Devonian to Carboniferous:** granodiorite (gd), quartz diorite (qd), quartz monzonite (qm) and orthogneiss (og).

D — **Devonian:** diorite (dr), gabbro (gb), granodiorite (gd), quartz diorite (qd), quartz monzonite (qm), syenite (sy), orthogneiss (og) and undifferentiated intrusive rocks (g).

Ᵽ — **Paleozoic:** gabbro (gb, OTrgb), granodiorite (gd), granite (gr), quartz dionite (qd), syenite (Ssy) and orthogneiss (og, Oog).

Paleozoic: ultramafites (um) and serpentinites (us).

PROTEROZOIC

P — **Proterozoic:** diorite (dr), granodiorite (gd), and orthogneiss (og).

AGE UNKNOWN

? — **Age unknown or poorly constrained:** diorite (dr), gabbro (gb), granite (gr), quartz diorite (qd), quartz monzonite (qm), tonalite (to), orthogneiss (og) and undifferentiated intrusive rocks (g).

Metamorphic Rocks

MESOZOIC

Mesozoic (includes KT): greenschist to mid- amphibolite facies rocks (gs, ml, mm), calcsilicates (mc), paragneiss (pg), mylonite (my) and undifferentiated metamorphic rocks (m).

PALEOZOIC

Paleozoic (includes PJ): greenschist to lower- amphibolite facies rocks (gs, ml), paragneiss (pg) and undifferentiated metamorphic rocks (m).

PROTEROZOIC

Proterozoic: lower amphibolite facies rocks (ml), paragneiss (pg), mylonite (my) and undifferentiated metamorphic rocks (m).

AGE UNKNOWN

Age unknown or poorly constrained: greenschist to mid- amphibolite facies rocks (gs, ml, mm), calcsilicates (mc), paragneiss (pg) and undifferentiated metamorphic rocks (m).

Geoscience Map 2005-3 Geology of British Columbia

How to print or cut-and-paste selected areas out of the pdf files.

Using Adobe Acrobat Reader ® or Adobe Acrobat Professional ® allows the user of the pdf files to zoom into and select a small part of the map and then either print it directly or cut and paste it to another application such as MS Word, Corel Draw, etc. (Note that the selection is placed as an image and is not editable. If you want editable line work, you must either trace them from the image or use the original digital data available for download from http://www.em.gov.bc.ca/Mining/Geolsurv/Publications/catalog/bcgeolmap.htm)

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1. Open up the file.
2. Using the zoom tool , drag a box around the area of interest.
3. Select File > Print from the menu bar or press Ctrl + P or select the print icon
4. In the Print dialog box, go to the Print Range area and select the "Current View" button. Notice that the print preview panel now shows just the selected area (and the page has automatically adjusted to landscape mode to better march the screen view diemnsions).
5. In the Page Handling area, go to Page Scaling and select "Fit to paper" from the pull down menu. If don't do this, the selected area will print at the original map scale (ie 1:1,000,000).
6. Make sure you have the correct printer selected and then go ahead and press Done.

To cut and paste a selected area:

1. Open up the file.
2. Using the zoom tool , drag a box around the area of interest.
3. Select the snapshot tool
4. *Either* double click within the view to copy all of the screen view
5. *Or* drag a box to better define the area of interest.
6. Acrobat will automatically copy the map to the clipboard (close the message box if it opens up).
7. Open your second application (e.g. MS Word or Corel Draw) and paste in the image from the clipboard using Edit > Paste in the menu bar or Ctrl + V (for MS Windows systems).