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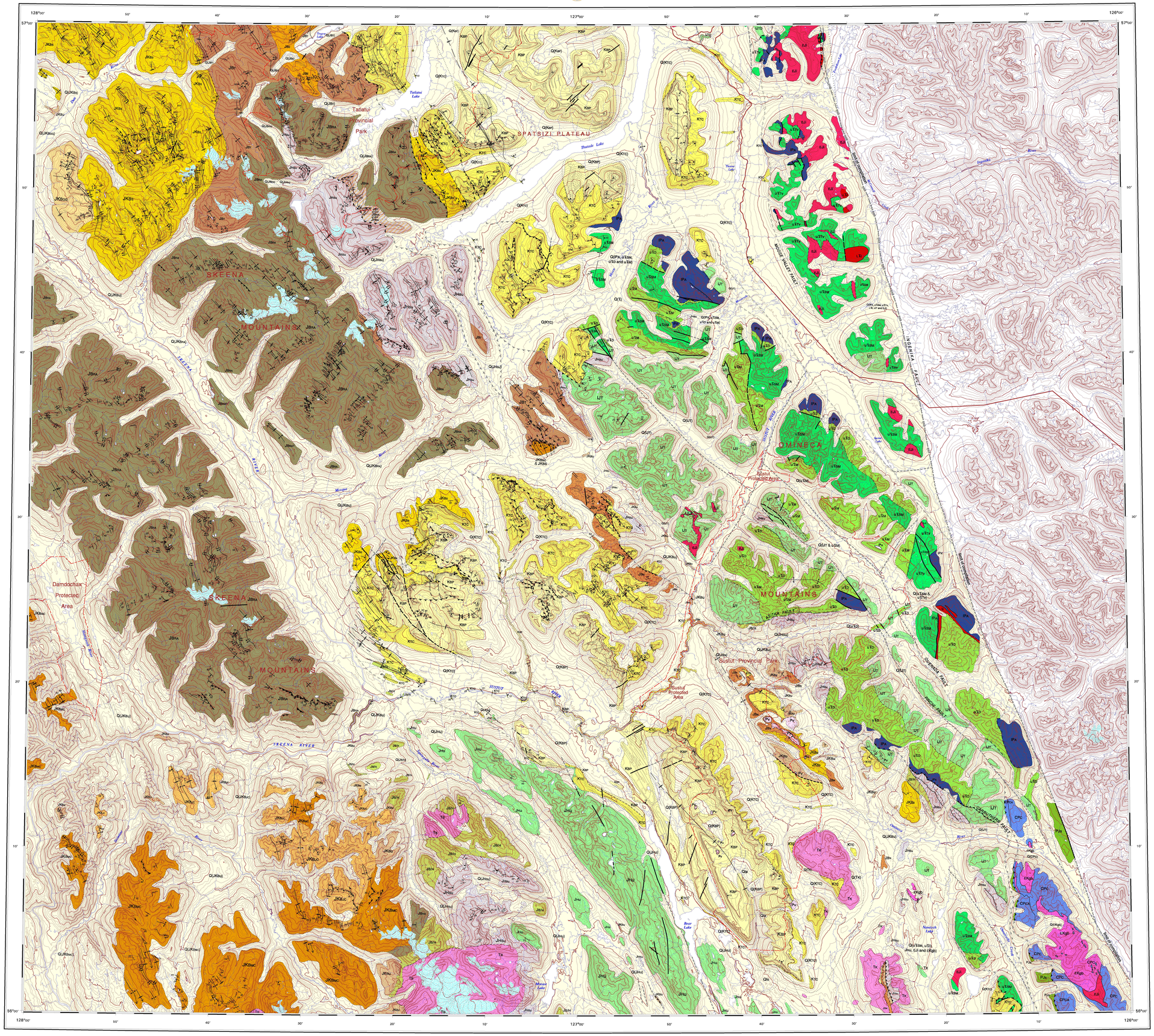

STRATIFIED ROCKS

CENOZOIC

QUATERNARY — PLEISTOCENE AND RECENT

Q — *Glacial till, alluvium, colluvium; unit designators in parentheses are the interred underlying bedrock units; includes substantial areas covered by vegetation; Qls: landslide deposit.*

TERTIARY — PLIOCENE

Pv — *Mafic (basalt andésite andesite) flows, dykes, and small plugs; columnar jointed, hickpar phenoxyds.*

MESOZOIC

CRETACEOUS — UPPER LOWER AND UPPER CRETACEOUS — BUSTUT GROUP — CAMPANIAN AND MAASTRICHTIAN

KBP — *BROTHERS PEAK FORMATION: sandstone, siltstone, conglomerate, and tuff; sandstone and siltstone are cream- and grey-weathering; tuff is cream-weathering; conglomerate in laterally continuous sheets is most common near base.*

APTIAN OR ALBIAN TO CAMPANIAN

KTC — *TANGO CREEK FORMATION: volcaniclastic sandstone, siltstone, mudstone, and minor quartz grit and pebble conglomerate; sandstone is grey- and green-weathering, occurring as laterally continuous sheets and as lenses; siltstone and mudstone are grey-, black-, and maroon-weathering.*

JURASSIC AND CRETACEOUS — UPPER JURASSIC AND LOWER CRETACEOUS — BOWSER LAKE GROUP

JKBu — *Undivided Bowser Lake Group.*

JKBsg — *GRONINGHOG-GUNANOO'T ASSEMBLAGE (deltaic assemblage): sandstone, siltstone, and carbonaceous and calcareous mudstone, with minor conglomerate and coal, locally arranged in fining-upward cycles; sandstone is lithic- to medium-grained with planar bedding and planar tabular crossbedding; large proportion of sandstone is thin- and thick-bedded, medium-grained, recessive drab green- or brown-weathering wacke; resistant and light grey-weathering arenite is less common and forms discontinuous sheets and lenses; finer grained strata are thinly bedded and locally include densely packed plant fossils; conglomerate sheets and lenses, which constitute 10% of the unit, are light grey-weathering, with large-scale crossbedding; plant fossils common and include in situ trees; marine fossils rare.*

JKBuc — *JENKINS CREEK ASSEMBLAGE (nonmarine assemblage): mudstone, siltstone, fine-grained sandstone, medium-grained sandstone, and rare conglomerate and coal, locally arranged in fining-upward cycles; sandstone is green- or green-brown-weathering, and occurs as laterally continuous sheets, discontinuous sheets, and lenses; lenses are planar and trough crossbedded; fossil plants abundant, including in situ roots, and plants with delicate structure; marine fossils absent.*

JKBs — *SKELHORNE ASSEMBLAGE (deltaic assemblage): thinly intermixed and varicoloured siltstone, sandstone, and conglomerate (with or without coal), commonly arranged in coarsening- and thickening-upward cycles; common features of sandstone are parallel bedding, crossbedding, ripples, burrows, bivalve coquina, and brown-, green-, and grey-weathering; conglomerate is rusty- and grey-weathering, but constitutes a lower proportion (15–30%) of the unit than in the Eaglenest assemblage; conglomerate units, up to 50 m thick, cap cycles up to 75 m thick, and tops locally have megaripples; plant and marine fossils are common, and trace fossils including Skolithos and Diplocraterion are present, as are tree fragments several metres long.*

JKBec — *MUSKABOO CREEK ASSEMBLAGE (shelf assemblage): sandstone, siltstone, and conglomerate; primary lithofacies is sandstone, forming laterally continuous thin- to thick-bedded sheets; less common are siltstone interbedded with sandstone, and lenses of conglomerate; sandstone is green-, brown-, and grey-weathering, thin- to thick-bedded, and locally arranged in coarsening-upward cycles; includes burrows, bivalve coquina, and other marine fossils, common ripple marks and crossbedding, and local hummocky cross-stratification; conglomerate increases in proportion and thickness upsection.*

JURASSIC — UPPER MIDDLE TO UPPER JURASSIC — BOWSER LAKE GROUP

JBn — *NETALZUL FORMATION: feldspar-hornblende-porphyritic andesite flow, breccia, and tuff; intercalated volcaniclastic sedimentary rocks, including volcanic debris-flow conglomerate.*

JBe — *EAGLENEST ASSEMBLAGE (deltaic assemblage): conglomerate, sandstone, siltstone, mudstone, and coal, arranged in coarsening- and fining-upward cycles of mudstone to pebble or cobble conglomerate; prominently rusty-weathering; 30 to 80% conglomerate; sheets of conglomerate, up to 50 m thick, include planar beds, tabular planar cross-stratification and trough cross-stratification, with sets locally up to tens of metres thick; sandstone is green-, brown-, and grey-weathering, and has planar cross-stratification and hummocky cross-stratification; sparse marine fossils, but abundant plant fossils, including silicified tree fragments.*

JBt — *TODAGIN ASSEMBLAGE (slope assemblage): siltstone, fine-grained sandstone, and conglomerate; mainly laminated siltstone and/or fine-grained sandstone, which is dark grey- to black-weathering and includes thin, orange-weathering claystone beds and synsedimentary faults and folds; chert-pebble conglomerate occurs as lenses; marine fossils. Locally contains sections characteristic of Jtbu not separated at this scale of mapping.*

JBRa — *RITCHIE ALGER ASSEMBLAGE (submarine fan assemblage): sandstone, siltstone, and rare conglomerate; approximately equal proportions of sheet-like intervals, up to 50 m thick, dominated either by siltstone, shale and very-fine grained sandstone, or by medium-grained sandstone; siltstone and/or fine-grained sandstone is dark grey- and black-weathering; sandstone is medium- and light grey-weathering; abundant turbidite features (e.g. Bouma cycles, flame structures, flute-and-groove casts); conglomerate includes debris-flow deposits; marine fossils. Locally contains sections characteristic of Jtbr not separated at this scale of mapping.*

JBH — *Undivided Bowser Lake Group and upper Hazelton Group clastic rocks.*

JBu, JBn, JBe — *Undivided JBu, JBn, and JBe.*

LOWER AND LOWER MIDDLE JURASSIC — HAZELTON GROUP

JHu — *Undivided volcanic and intercalated clastic rock of the Hazelton Group; includes subaerial and marine mafic volcanic rocks and epiclastic rocks; felsic volcanic rocks include sills, dykes, welded and nonwelded ignimbrite, airfall tuff breccia, epiclastic and bioclastic rocks, includes volcanic debris flow conglomerate, breccia, conglomerate, siltstone, shale, and limestone.*

JHsu — *Undivided clastic rocks of Spatsizi, Smithers, and Nilkitkwa formations and related volcanic rocks; dominated by siltstone and shale, including siliceous well bedded tuffaceous(?) siltstone, limy siltstone, calcareous to siliceous organic shale, calcareous to siliceous siltstone, fine-grained sandstone; minor constituents are mudstone, limestone, conglomerate, coarse grained arkose, basalt, and rhyolite.*

LOWER JURASSIC — HAZELTON GROUP

LJT — *TELKWA FORMATION: calcalkaline basalt, andesite, dacite and rhyolite flow, breccia, tuff, volcanic debris-flow conglomerate, conglomerate, sandstone, and siltstone.*

LJTD — *TODOGGONE FORMATION: subaerial andesitic to dacitic tuff; sandstone and siltstone.*

TRIASSIC — UPPER TRIASSIC — TAKLA GROUP

uTTv — *Augite- and coarse bladed feldspar-phyric mafic lava flows, aphanitic basalt, minor conglomerate, sandstone, mudstone, and limestone.*

uTSM — *SAVAGE MOUNTAIN FORMATION: augite porphyry basalt flow, breccia, pillow basalt, tuff and interbedded bladed feldspar porphyry.*

uTM — *MOOSEVALE FORMATION: andesitic and basaltic volcanic conglomerate, breccia, sandstone, tuff, and argillite.*

uTD — *DEWAR FORMATION: tuff, sandstone, argillite, minor limestone and breccia.*

PERMIAN TO TRIASSIC — SITUKA GROUP (CACHE CREEK TERRANE)

PJs — *Metapelite and metavolcanics; arc volcanic rocks.*

PALEOZOIC

PERMIAN — LOWER PERMIAN — ASITKA GROUP

lPA — *Argillite, chert, basalt, tuffaceous and argillaceous carbonate and calcareous tuff, sericite and chlorite phyllite, greenstone amphibolite.*

CARBONIFEROUS AND PERMIAN (may include UPPER TRIASSIC) — CACHE CREEK GROUP (CACHE CREEK TERRANE)

CPC — *Phyllite, chert, marble, greenstone, and amphibolite; CPUA: alpine ultramafics, includes serpentinite, serpentinized peridotite.*

INTRUSIVE ROCKS

CENOZOIC

TERTIARY — EOCENE

TK — *KASTBERG INTRUSIONS: quartz monzonite and feldate.*

TB — *BABINE PLUTONIC SUITE: granodiorite, quartz monzodiorite, monzodiorite.*

MESOZOIC

CRETACEOUS — EARLY CRETACEOUS

EKgb — *AXELGOLD GABBRO: layered gabbro.*

JURASSIC — EARLY JURASSIC

EJl — *BLACK LAKE INTRUSIVE SUITE: biotite-hornblende-bearing stocks and plutons; monzogranite, quartz monzonite, and granodiorite.*

TRIASSIC — LATE TRIASSIC

LTJ — *Pyroxene diorite and undivided alaskan-type ultramafic intrusions.*

Geological contact (defined, approximate, assumed or extrapolated under Quaternary)

Trace of individual beds from ground observation and air/photo interpretation

Fault, sense of displacement unknown (defined, approximate, assumed)

Fault, normal (ornament on down thrown side; defined, approximate, assumed)

Fault, extrapolated under Quaternary (unknown displacement, normal)

Fault, thrust (teeth on hanging wall; defined, approximate, assumed)

Fault, reverse (assumed)

Fault, extrapolated under Quaternary (thrust, reverse)

Fault, strike-slip dextral (defined, extrapolated under Quaternary)

Anticline (trace of axial surface: defined upright or inclined; defined overturned); arrow on line indicates direction of plunge

Syncline (trace of axial surface: defined upright or inclined; defined overturned); arrow on line indicates direction of plunge

Anticline, syncline (trace of axial surface assumed or extrapolated under Quaternary)

Open, inclined syncline, trace of axial surface (defined, extrapolated under Quaternary); long arrow points in direction of dip of axial surface

Conglomerate

Bedding (upright, top unknown, vertical, horizontal, overturned)

Cleavage (inclined)

Lint of Mapping

Road, trail

Railway grade

Provincial park and protected area boundary

Glacier

DESCRIPTIVE NOTES

This map is a compilation of the geology of McConnell Creek map area west of the Ingenika Fault. It is a product of the project "Integrated Petroleum Resource Potential and Geoscience Studies of the Bowser and Sustut Basins", and is intended to display the geology of the Bowser and Sustut basins, and the units and structures of the stratigraphic basement of the basins. The area is underlain by Paleozoic to Early Jurassic volcanic arc rocks of Stikinia, Paleozoic to Jurassic rocks of the Cache Creek Terrane, and Middle Jurassic to Cretaceous sedimentary rocks of the Bowser Lake basins, Early Tertiary intrusive rocks, and minor Late Tertiary volcanic rocks. The distribution of units of Stikinia in the southeast is after the 1:250,000 scale map of Richards (1976), with refinement to contacts drawn from archived base maps of Richards (1976) and Gabrielse (1991). Elsewhere, the distribution of units is compiled from unpublished data of the 1:50,000 scale maps of Legun (2001), and Gabrielse (2001). Distribution of units and structural details of the Bowser and Sustut basins are from 1:50,000 scale maps by Evenchick et al. (2007a,b,c,d,e,f), McMechan et al. (2007), and unpublished data of the authors; previous mapping of the Sustut Basin by Eisbacher (1974), published at 1:250,000 scale, was incorporated.

Descriptions and interpretations of Bowser and Sustut basin rocks relevant to this map may be found in Eisbacher (1974), Evenchick et al. (2003), Evenchick and Thorkelson (2005), and McMechan (in press). The broader map context of the Bowser Basin is given in Evenchick et al. (2007), Legun (2001), and Legun (2002); details of the Bowser Basin distributions of sub-map units, and additional descriptions of map units, information on fossils collected from Bowser and Sustut basin strata up to 1992 is given in Evenchick et al. (2001).

Lithofacies assemblages of the Bowser Lake Group interfinger laterally and vertically with the result that near their mapped boundaries they contain components of neighbouring assemblages (Evenchick and Thorkelson, 2005). The lower Bowser Lake Group appears to be in gradational contact with clastic rocks of the upper Hazelton Group (Evenchick et al., 2003). Where this boundary is also structurally complicated the two units are grouped into the unit JKBu. Rocks of the Hazelton Group (Jhu, Jhsu, LJT, LJTD, uTTv, uTSM, uTM, uTD) are intermixed with Bowser Lake Group in places it was found to be lithologically similar to upper Hazelton Group clastic rocks, and in other places most similar to Bowser Lake Group. Explanations of all other units may be found in the references cited in the paragraph above. Contacts between units of the Bowser Lake Group are difficult to map because of lithofacies interfingering and similar clastic rocks, Bowser Lake Group, and Sustut Group. In areas where the structural geometry is well displayed, axial surfaces of folds, thrust faults, and bedding traces outlining folds are presented to illustrate the structural geometry and to show the distribution of rock units. In areas where the structural geometry is complex and poorly understood, only structural details are shown. The eastern limit of the Sustut Group is bounded by steep faults (Richards, 1976) which may be either reverse or normal faults. They are shown conservatively as reverse faults based on the distribution of Sustut Group rocks east of Thurne Lake, the possible continuity of the Moose Valley Fault with thrust faults near the northern map boundary, and the abundance of contractional structures in the region.

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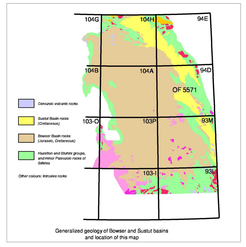

Generalized geology of Bowser and Sustut basins and location of this map

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Geology by C.A. Evenchick (1992, 2003, 2006), P.S. Mustard (2003, 2006), M.E. McMechan (2003, 2006), F. Ferri (2003), S. Porter (1992), T. Hadlari (2003), and G. Jakobs (1992)

Digital geological cartography by C.L. Wagner, Data Dissemination Division (GSC)

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

GEOLOGICAL SURVEY OF CANADA OPEN FILE 5571
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GEOLOGY

McCONNELL CREEK

BRITISH COLUMBIA

Scale 1:125 000/Échelle 1/125 000

kilomètres 2 0 2 4 6 8 10 kilomètres

Universal Transverse Mercator Projection
North American Datum 1927

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1927

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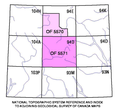
Digital base map from data compiled by Geomatics Canada, converted to NAD27 by GSD
Some glacier boundaries modified or removed based on aerial photograph interpretation

Mean magnetic declination 2002, 21°41'E, decreasing 18.8' annually

Elevations in metres above mean sea level

Contour interval 40 metres



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

Recommended citation:
Evenchick, C.A., Mustard, P.S., McMechan, M., Ferri, F., Porter, S., Hadlari, T., and Jakobs, G.
2007: Geology, McConnell Creek, British Columbia; Geological Survey of Canada, Open File 5571; BC Ministry of Energy, Mines and Petroleum Resources, Petroleum Geology Open File 2007-10, scale 1:125 000.

Canada — British Columbia Ministry of Energy and Mines, Resource Development and Geoscience Branch, www.gov.bc.ca