

Map Base Information
1:50 000 topographic base produced from TRIM 1:20 000 scale topographic database supplied by LandData B.C. North American Datum (NAD) 83. Universal Transverse Mercator Projection, UTM Zone 9. Approximate mean magnetic declination (2004) between magnetic north and grid north is 22°52' east, decreasing about 17' annually. Elevations in metres above sea level.

Acknowledgments
This map is the result of an initial field season of a two-year bedrock mapping program in the Toodoggone River area. This program is funded through the Federal-Provincial Targeted Geoscience Initiative (I) and a partnership with five mining companies - Stealth Minerals Ltd, Finlay Minerals Ltd, Northern Exploration Ltd, Bishay Resources Inc. and Sable Resources Ltd. These companies are thanked for access to confidential information and for their generous support. Phu Van Bui provided excellent assistance in the field. Harriet Jarrow, through the University of Victoria Cooperative Education Program, completed map cartography.

Supplementary Datasets
(2004, in prep):
Airborne Magnetic and Gamma Ray Spectrometric and Total Field Magnetic Survey, Parts of Toodoggone River (NTS 94E/2, 6, 7, 10 and 11) and McConnell Creek (NTS 94D/15) areas, B.C. Ministry of Energy and Mines, Open File 2004-8.
Jackman, W. (1997). British Columbia Regional Geochemical Survey NTS 94E-Toodoggone River, Stream Sediment and Water Geochemical Data. B.C. Ministry of Employment and Investment, BC RGS 46.
Jackman, W. (1997). British Columbia Regional Geochemical Survey NTS 94D-McConnell Creek, Stream Sediment and Water Geochemical Data. B.C. Ministry of Employment and Investment, BC RGS 45.
(1999). Aeromagnetic Residual Total Field Survey of Toodoggone River (NTS 94E) and Ware (NTS 94F). Geological Survey of Canada, Open File 3495, 8 sheets at 1:100 000 scale.



**Geological Survey and Development Branch
OPEN FILE MAP 2004-4**

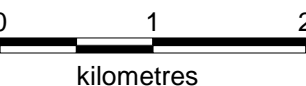


**GEOLOGY OF THE SAMUEL BLACK RANGE BETWEEN THE FINLAY RIVER AND THE
TOODOGGONE RIVER, TOODOGGONE RIVER MAP AREA, NORTH-CENTRAL BRITISH COLUMBIA
PARTS OF NTS 94E/2,6 and 7**

Contribution to the Toodoggone Targeted Geoscience Initiative II - Mining Company Partnership

Geology by: Larry J. Diakow
Geochronology by: Richard Friedman, The University of British Columbia

Scale 1:50 000



LAYERED ROCKS

LOWER JURASSIC

HAZELTON GROUP

H₁ Toodoggone formation

Unmapped bedded volcanic and minor sedimentary rocks.

H_{1c} Conglomerate, sandstone and siltstone; green to maroon, clasts in conglomerate resemble hornblende andesite flows of unit HTM; thin succession locally unconformable on unit HTS.

H_{1m} Basalt and basaltic andesite silt or flow(?); purple, dark green, crowded plagioclase porphyritic texture, locally contains augite megacrysts up to 1.3cm long.

Saunders member

H_{1s} Dacite ash-flow tuff; grey-green, typically contains brotombolite and biotite, variably welded, distinctive flattened vitriclasts in more densely welded zones.

Metsanan member

H_{1m} Andesite lava flows; grey-green to light purple, 15-25% plagioclase between 2 and 5mm long; chloritized hornblende prisms, trace quantities of biotite and quartz phenocrysts.

Duncan member

H_{1d} Lapilli tuffs with volcanoclastic-epidolite interbeds; greenish with oxidized reddish sections, pyroclasts commonly consist of reddish brown andesite porphyries mixed with plagioclase and up to 2% biotite and quartz crystal fragments; minor bedded sandstone, siltstone, maroon mudstone and rare conglomerate.

H_{1d1} Intrafoliation conglomerate locally marking the base of the Toodoggone formation; rounded pebbles to boulders dominated by "crowded" fine-grained hornblende andesite porphyry, crudely layered thick beds with subordinate sandstone and siltstone interbeds. A solitary conglomerate locality contains clasts of megacrystic basalt porphyry (unit Tv) and granitic rock.

UPPER TRIASSIC

TAKLA GROUP

T_v Basalt flows; dark green, characterized by augite and plagioclase phenocrysts, minor basaltic lapilli tuff; scarce megacrystic plagioclase porphyry basalt flows containing plagioclase laths up to 2 cm long (distinctive flow member found locally near the top to the volcanic succession).

T_s Sandstone and siltstone; dark olive green, dominated by augite and plagioclase grains; minor bedded sections within the lava flows.

MID-PENNSYLVANIAN TO LOWER PERMIAN

ASITKA GROUP

A_s Limestone; off white, light grey weathering, recrystallized, massive to thickly bedded; occur as isolated roof pendants resting on the Duncan pluton.

A_s Dacitic lapilli tuff; grey-green, green to dark purple, aphanitic greyish white fragments, rare accretionary lapilli tuff, minor flows exhibit faint laminae; occur as thermally altered pendants on and adjacent to the Duncan pluton.

INTRUSIVE ROCKS

EARLY JURASSIC

BLACK LAKE SUITE

BL_g Granodiorite, light pink, medium to coarse grained, ineoigneugular, subhedral plagioclase and intercrystalline potassium feldspar and quartz; 15-20% combined mafics with modal hornblende exceeding biotite. Small to medium sized stocks.

BL_m Monzonite, light to dark orange, medium to coarse-grained porphyritic texture, subhedral plagioclase and groundmass potassium feldspar, chloritized hornblende and biotite up to 15%, trace to 1% quartz phenocrysts. Typically as dikes up to 5 metres wide and less commonly as sills and small stocks.

Symbols

Limit of mapping

Geological contact (defined, approximate, inferred)

Unconformity (defined, inferred)

Normal fault (ball on down dropped side; defined, inferred)

Reverse fault (defined, inferred)

Wrench fault (defined, inferred)

Dike

Field station location

Bedding

Regional Geochemistry Survey site (RGS)

MINFILE occurrence and reference number

Age determination site

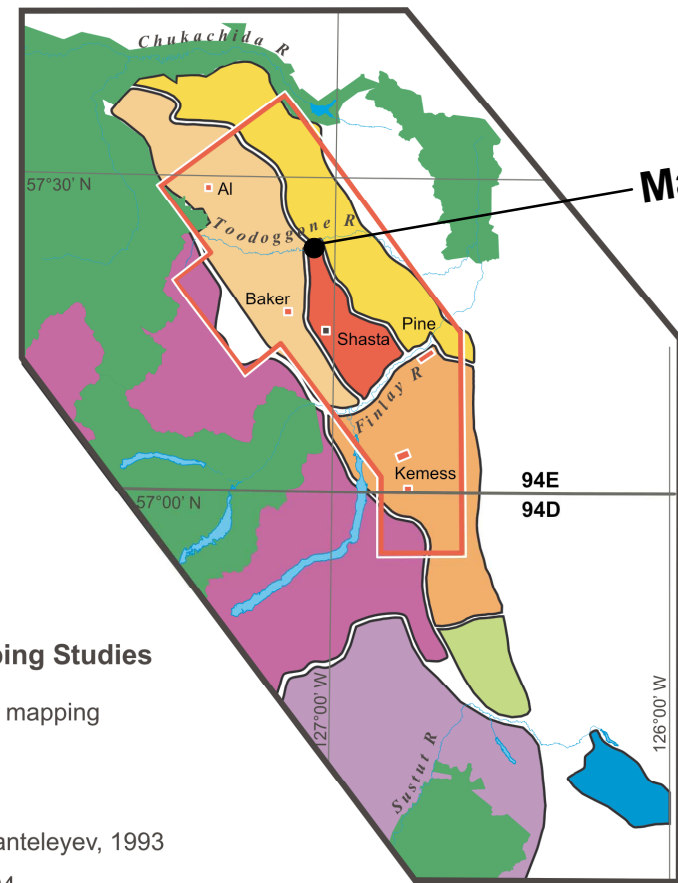
Au/Ag

U/Pb

Landslide

Road (all weather, seasonal)

Flooded land



Bedrock Mapping Studies

2004 proposed mapping

Diakow, 2004

Diakow, 2001

Diakow and Pantelejev, 1993

Schiarizza, 2004

Legun, 2001

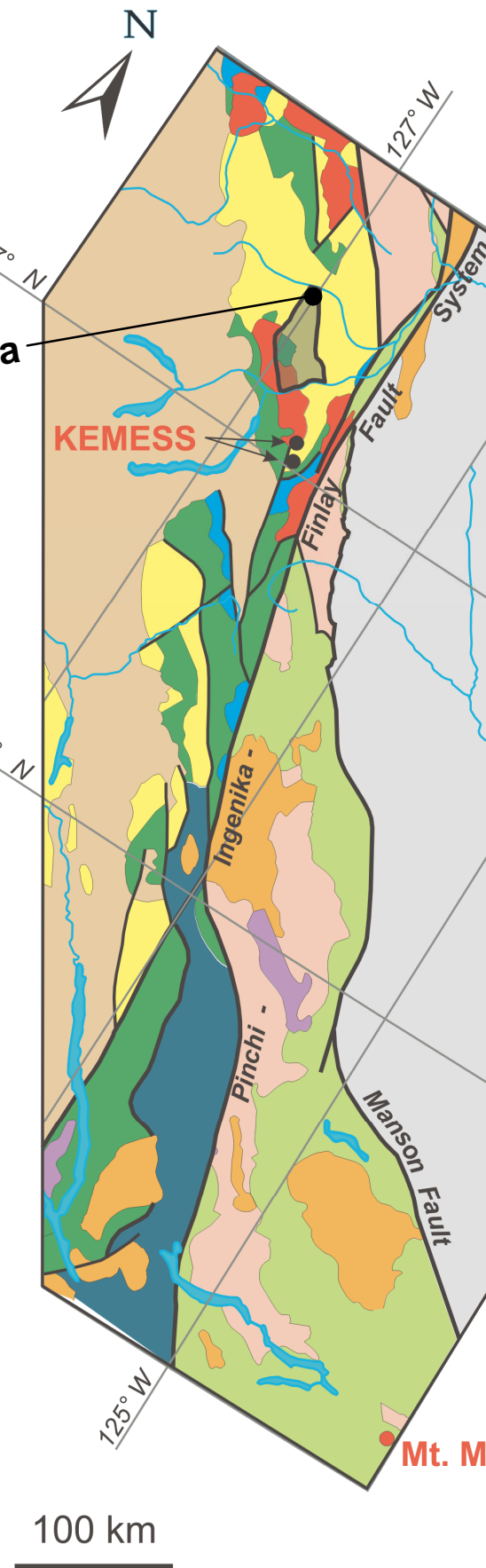
Monger, 1977

Eisbacher, 1974

Airborne Magnetic-Radiometric Survey

Major mineral deposit

Provincial Park



REGIONAL TECTONIC SETTING

Layered Rocks

Overlap Sedimentary Assemblages

Undivided Jurassic Bowser Lake & Late Cretaceous Sustut groups

Stikine Terrane - Island Arcs

Early Jurassic Hazelton Group

Late Triassic Stuhini Group

Carboniferous to Permian Asitka Group

Quesnel Terrane - Island Arcs

Late Triassic Takla Group

Cache Creek Terrane - Ocean Floor

Paleozoic to M. Jurassic Cache Creek Group

Cassiar Terrane - Ancestral Continent Margin

Proterozoic and younger strata

Intrusive Rocks

mid-Cretaceous

Middle Jurassic

Early Jurassic (Stikine Terrane)

Early Jurassic (Quesnel Terrane)

Au-Cu Porphyry Deposits

References

Diakow, L.J. (2001). Geology of the Southern Toodoggone River and Northern McConnell Creek Map Areas, North-central British Columbia (Parts of NTS 94E/2, 94D/15 and 16). B.C. Ministry of Energy and Mines, Geoscience Map 2001-1, 1:50 000 scale.
Diakow, L.J., Pantelejev, A. and Schreiner, T.G. (1993). Geology of the Early Jurassic Toodoggone Formation and Gold-Silver Deposits in the Toodoggone River Map Area, Northern British Columbia. B.C. Ministry of Energy, Mines and Petroleum Resources, Bulletin 96, 72 pages with maps at 1: 100 000 scale.
Eisbacher, G.H. (1974). Sedimentary History and Tectonic Evolution of the Sustut and Sifton Basins, North-central British Columbia. Geological Survey of Canada, Open File 483.
Gabrielse, H., Dodds, C.J., Mansy, J.L. and Eisbacher, G.H. (1977). Geology of Toodoggone River (94E) and Ware West-Half (94F). Geological Survey of Canada, Open File 483.
Legun, A. (2001). Geology of the Southern McConnell Range, North-central British Columbia (Parts of 94D/9, 10, 15 and 16). B.C. Ministry of Energy and Mines, Open File 2001-2.
Marsden, H. (1990). Stratigraphic, Structural and Tectonic Setting of the Shasta Au-Ag Deposit, North-central British Columbia; unpublished M.Sc. thesis, Carleton University, 223 pages.
Monger, J.W.H. (1977). The Triassic Takla Group in McConnell Creek Map Area, North-Central British Columbia, Geological Survey of Canada, Paper 76-29, 45 pages.

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