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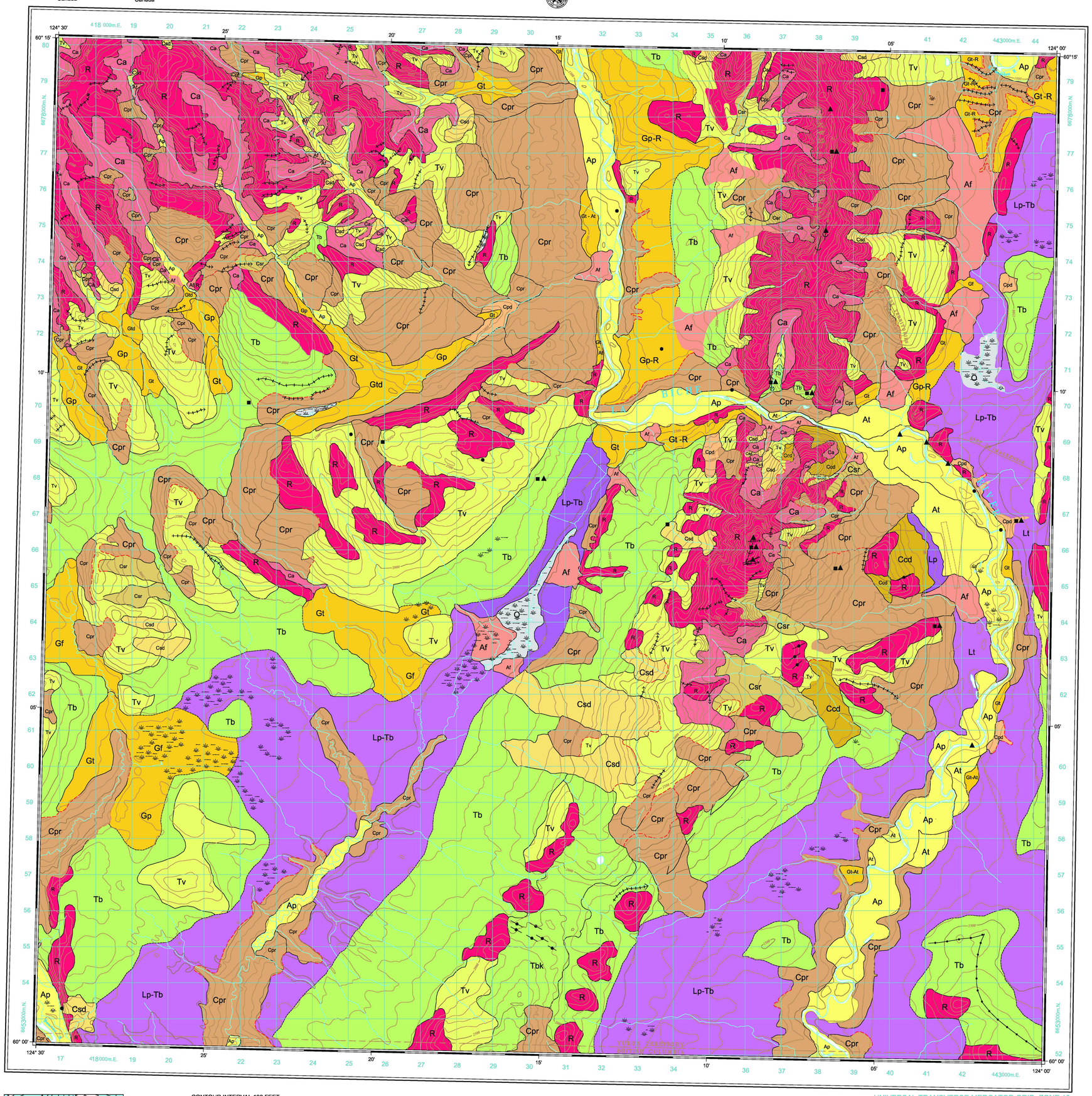
GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA



UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 10

LEGEND

QUATERNARY SURFICIAL DEPOSITS

POST LAST GLACIATION

NONGLACIAL ENVIRONMENTS

O — ***ORGANIC DEPOSITS:*** *organic matter; >1 m thick; formed by the accumulation of vegetation in poorly drained depressions (swamps and bogs); usually forms flat terrain*

COLLUVIAL DEPOSITS: *block accumulations and mass wasting debris, 1-50 m thick*

Ca — *Talus (scree): accumulations of blocks; commonly exceeding 2 m in diameter; as much as 50 m thick; forming aprons and fans below cliffs*

Ccd — *Debris creep deposits: unconsolidated material; accumulations (<1-10 m thick) at base of slopes and upslope of retaining walls and other structures; more prevalent on steep slopes, creep can occur on slopes <5°; surface morphology includes ribbed or lobate forms; evidence of creep includes downslope-tilted tree trunks, hydro poles and other structures*

Csr — *Rock slide deposits: chaotic landscape of irregular and stacked bedrock blocks; prominent in areas of steeply dipping, poorly-indurated sandstone and shale-rich beds in the Mattson and Fantasque formations*

Csd — *Debris slide deposits: accumulations of unconsolidated material; internal structure of material is not maintained; where sufficient moisture is present, the slide may become a flow producing characteristic levees along its lateral margins and a spatulate form at the base of slope*

Cpr — *Bedrock slump deposits: large rotational blocks in bedrock, shallow to 10's of metres thick; internal structure of material may be retained; often traceable upslope to active scarps; where sufficient moisture is present the slump may produce a flow at its base, forming a characteristic spatulate form; prominent in areas of steeply dipping, poorly-indurated sandstone and shale-rich beds in the Mattson and Fantasque formations; associated with the largest mass movements in the region*

Cpd — *Debris slump deposits: unconsolidated material; generally smaller blocks or more localized masses, but may include larger masses (>10 m thick) where associated with thick till, glaciolacustrine or glaciofluvial deposits; internal structure of material may be retained; often traceable upslope to active scarps; where sufficient moisture is present the slump may become a flow, producing characteristic levees along its lateral margins and a spatulate form at the base of slope*

ALLUVIAL DEPOSITS: *gravel, sand, and organic detritus >1 m thick*

A — *Fluvial deposits: well sorted gravel and sand with detrital organic beds, including concentrations of logs, >1 m thick;* **Ap,** *floodplains and meantling valley floors, forming meander scars and point bars;* **At,** *terraces along valley wall sides*

Af — *Alluvial fan: poorly sorted gravel and sand with organic detritus and buried soils; fans are commonly crossed by debris flow channels and levees and subject to shifting stream courses; >1 m thick*

POSTGLACIAL OR LATE WISCONSINAN

PROGLACIAL AND GLACIAL ENVIRONMENTS

L — ***GLACIOLACUSTRINE DEPOSITS:*** *coarse to fine sand, silt and clay, with gravel debris flow layers and dropstones; deposited in glacier-dammed lakes; level topography; Lp, thin discontinous veneer, <1 m thick; Lt, forming terraces, often deeply dissected by postglacial erosion where thick*

G — ***GLACIOFLUVIAL DEPOSITS:*** *gravel, sand, minor sandy diamict, usually >1 m thick; deposited by meltwater beside, at, or in front of glacier margins;* Gd, *braided outwash deltas;* Gdt, *delta terraces;* Gf, *fans;* Gp, *outwash plains and mantling valley floors;* Gt, *level outwash terraces*

TILL: *nonsorted diamict deposited directly by glacial ice; matrix is sandy to clayey and contains striated clasts of various lithologies*

Tb — *Till blanket: > 2 m thick; forming undulating topography that obscures underlying bedrock structure;* Tbk, *distinctly kettled*

Tv — *Till veneer: < 2 m thick and discontinuous; surface mimics underlying bedrock structure*

PRE-QUATERNARY BEDROCK

R — *Sedimentary bedrock, undifferentiated. The Mount Martin Anticline forms the southern extension of the Kotaneelee Range and is composed of moderate to steeply dipping (25-74°) limestone, shale and siltstone of the Lower Carboniferous Mattson Formation and Permian Fantasque and Tika formations. East of this central ridge, moderate to shallow-dipping (20-7°) shale, siltstone and sandstone of the Triassic Toad-Grayling Formation to the Lower Cretaceous Scatter Formation. The northwestern quadrant of the map incorporates the southern extension of the La Biche Range, and is similarly comprised of moderate to shallow dipping (41-6°) Mattson, Fantasque and Toad-Grayling formation strata.*

NOTE: *In areas where the surficial cover forms a complex mosaic, the area is coloured according to the predominant unit and labelled with hyphenated letters in descending order of cover*

MAP SYMBOLS

- *Geological boundary (defined, gradational)*
- *Scarp*
- *Road*
- *Hydro line*
- *Airstrip*
- *Pipeline*
- *Building*
- *Organic deposits (swamp or bog)*
- *Moraine*
- *Striae (glacial flow direction known, unknown)*
- *Fluting or drumlinoid ridge parallel to ice flow (direction of flow known, unknown)*
- *Till fabric (glacial flow direction known)*
- *Proglacial meltwater channel (direction of flow known)*
- *Lateral meltwater channel (barb points upslope and down flow)*
- *Observation*
- *Drift geochemistry sample site*
- *Canadian Shield erratic*

NOTE: *Mass Wasting* *is the collective term given to the range of processes and resultant landforms that relate to the gravitational downslope movement of rock and/or unconsolidated material without the direct conveyance by water, air or ice. Water and ice are, however, often key components in initiating and perpetuating mass wasting by reducing the strength of materials and in their plastic and fluid behaviour.*

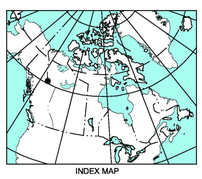
Different types of mass wasting are distinguished by the type of materials involved (e.g., bedrock, talus, till), the mode of deformation (e.g., creep, slide, slump, flow), speed of movement, morphology of the moving mass, and water content.

Creep is the slow (mm's to cm's per year), often imperceptible, downslope movement of soil, talus or other unconsolidated material. Creep occurs episodically in response to solutional weathering, seasonal wetting and drying, or freeze-thaw cycles and may include the plastic deformation of clay-rich soils. While more prevalent on steep slopes, creep can occur on slopes <5°. Evidence of creep is seen where tree trunks or structures (e.g., hydro poles) are tilted downslope, soil accumulates upslope of retaining walls, and cracks develop in the soil perpendicular to the slope. Creep is also responsible for the formation of gelifluction lobes, prominent, small-scale (metres in length, centimetres thick), periglacial landforms found along the upper reaches of local mountain ranges (but not included in the regional surficial geology mapping).

Slides are the rapid, downslope movement of bedrock or unconsolidated material. Failure occurs along bedding and/or fracture planes in bedrock, and along bedrock contacts, or structural and sedimentological boundaries within unconsolidated material. Slides can be initiated at shallow or considerable depths.

Slumps involve the rotational movement of bedrock and/or unconsolidated material along failure planes. Slumps may occur as individual blocks or amorphous masses (reflecting water content and structural integrity of the failing material). Slumps often extend progressively up-slope through time, and can be associated with active scarp or headwall retreat. Slumps can be initiated by failure along bedding, fracture, or sedimentological planes, by infiltration of surface water, through lateral incision and undercutting of slopes by streams, or excavation activities (e.g., road building, pipeline trenching). Slumps are prominent in areas of steeply dipping, poorly-indurated sandstone and shale-rich beds in the Mattson and Fantasque formations, and are associated with the largest mass movements in map area.

While different earth surface materials and geological settings are often strongly associated with various types of mass wasting, predicting their occurrence, magnitude and rate of deformation is often not possible. Some areas that are prone to mass wasting include regions of steeply dipping bedrock, poorly indurated and shale-rich bedrock, and along stream courses and meandering river channels. Human activities such as road building, pipeline trenching, logging and seismic exploration can also initiate mass wasting, particularly where they undercut slopes, or act to destabilize surficial materials.



INDEX MAP

CONTOUR INTERVAL 100 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1983
Transverse Mercator Projection

NATMAP CARTNAT
Canada's National Geoscience Mapping Program
Le Programme national de cartographie géoscientifique du Canada

OPEN FILE 4260

SURFICIAL GEOLOGY

MOUNT MARTIN

YUKON TERRITORY - NORTHWEST TERRITORIES - BRITISH COLUMBIA

Scale 1:50 000 Échelle 1/50 000

Kilometres 1 0 1 2 3 Kilomètres

Universal Transverse Mercator Projection

Projection transverse universelle de Mercator

OPEN FILE DOSSIER PUBLIC
4260
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2002

Open files are products that have not gone through the GSC formal publication process.

Les dossiers publics sont des produits qui n'ont pas été soumis au processus officiel de publication de la CGC.

95C/07 Brown Lake	95C/08 Babiche Mountain	95B/05 Fisherman Lake
95C/02 Mount Merrill	95C/01 Mount Martin	95B/04 Betalamea Lake
94N/15 Crow River	94N/16 Beaver River	94O/13 Sandy Creek

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE

Compilation by I. R. Smith based on fieldwork and studies of vertical air photographs 2000, 2001.
THIS MAP IS A PRODUCT OF THE CENTRAL FORELAND NATMAP PROJECT

Surficial geology from field work by I. R. Smith 2000, 2001.

Digital cartography by I. R. Smith

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

Base map at the same scale published by Surveys and Mapping Branch in 1971

Recommended citation:
Smith, I.R.
2002: Surficial geology, Mount Martin (95C/01), Yukon Territory - Northwest Territories - British Columbia. Geological Survey of Canada, Open File 4260, 1 map, scale 1:50 000.

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