| MAP UNIT | NAME | MATERIAL | THICKNESS | TOPOGRAPHY | DRAINAGE PATTERN | GROUND ICE | COMMENTS |
|---|---|---|---|---|---|---|---|
| fO | Organic fenland | Peat, typically woody sedge peat | 2–3 m | Flat to gently sloping, in part with reticulate network of low ridges (50 cm high). Slope: 0–2° | No organized drainage; water at surface throughout summer months | Commonly unfrozen to > 2 m; little data available on segregated ice content at greater depths | Poor drainage, plus high compressibility and low strength of the material make it unsuitable for any type of construction |
| pO, pO-k | Organic peatland | Peat, typically sedge and woody sedge overlain by sphagnum peat; commonly treeless or with scattered black spruce; lichens commonly constitute 50% or more of surface vegetation, resulting in high albedo | 2–4 m | Flat to very gently sloping, typically with numerous shallow steep–sided (2–3 m) depressions occupied by lakes, ponds, and bogs (pO-k) | Depressions interconnected by seepage channels | Commonly up to 20%, locally up to 60%, segregated ice within peat; typically 30–100 cm, locally up to 3 m total thickness segregated ice in mineral soil immediately below peat. Peat in wet depressions commonly thawed to > 1 m | Subsidence of up to 1 m common and subsidence up to 2 m possible when vegetation is removed, alteration of permanently frozen peat plateaus and thawed depressions and water bodies presents serious problems in construction of roads, pipelines, etc.; material highly compressible when thawed |
| Ap | Alluvial plain | Medium coarse sand, locally gravelly coarse sand at point bar deposits, overlain by silt and fine grained sand of overbank deposits. Streams in mountainous areas commonly have a braided channel system and lack overbank deposits | 3–5 m | Floodplain and low bordering terraces, commonly with meander scrolls. Floodplain of mountainous areas interrupted by shallow braided channels. Slope 0–3°. Relief to 1 m | No integrated drainage system; impeded by meander scroll ridges where present | Permafrost absent in unvegetated part of floodplain; elsewhere 10–25% segregated ice by volume as thin (1 mm–2 cm) seams. Cement ice only in coarse sand and gravel | Subject to periodic flooding; silt and sand of overbank deposits may be underlain by gravel, but extraction of the gravel may produce serious deleterious changes in the stream course or downstream changes in stream regimen |
| Ap-k | Thermokarst alluvial floodplain | Fine grained sand and silt | 3–5 m | Floodplain, in part with meander scars and numerous channels and thermokarst ponds. Relief to 5 m | Seepage to ponds and lakes then by connecting channels to trunk streams | 20–50% or more segregated ice by volume | Thermokarst processes active around pond margins; widespread occurrence of ice wedges, which upon removal of vegetation will melt and produce a polygonal network of depressions |
| At | Alluvial terrace | Sand and silt; may be underlain by gravel | 2–5 m | Flat to gently sloping, in part with meander scrolls, channels, and thermokarst ponds | No integrated drainage system; poorly to moderately well drained | No data; ice content probably low to moderate | Mapped only along Mackenzie and Hume rivers. Constitutes a potential source of aggregate |
| Af | Alluvial fans and fan aprons | Within Mackenzie Mountains mainly gravel, locally within lenses of mudflow deposits; in remaining area, mainly silt and fine grained sand, commonly with organic layers, but some fans consist mainly of gravel | | Discrete simple fans or fan aprons; gravelly fans in mountainous areas have slopes to 10°, fine grained fans typically have slopes of 1–4° | One or more shifting streams usually present; downslope seepage in poorly defined runnels | No data. Ice content probably medium to high in fine grained fans; cement ice only in gravelly fans or permafrost may be absent | Fans subject to sudden and damaging shifts of streams; generally unsuitable for construction. Gravelly fans in mountainous areas constitute readily available source of aggregate |
| Ax | Alluvial complex: includes Ap and Af undivided | Same as for Ap and Af | | Same as for Ap and Af | Same as for Ap and Af | Same as for Ap and Af | Same as for Ap and Af |
| Cv | Colluvial veneer | Rock detritus and surficial deposits transported by gravity | < 2 m | Veneer conforms to bedrock topography; occurs mainly along valley walls and scarps. Slopes 15–42° | Generally freely drained. No organized drainage; generally moderately well drained | No data | Active transportation of material by rock fall, creep, and slumping; active layer detachment slides common, especially following forest fires |
| Cb | Colluvial blanket | Rock detritus and surficial deposits transported by gravity | > 3 m | Blanket conforms generally to bedrock topography | Generally freely drained. No organized drainage; generally well drained | In other map areas the unit is known to have large irregular ice bodies | Potential slope instability limits any kind of construction. Occurs only as part of Cx unit |
| Ca | Sheetwash deposits | Mostly organic silt and sand | 1–2 m | Occurs as veneer or blanket on gently sloping (5–10°) scarps and valley sides developed on glacial lacustrine sediments or soft bedrock. Slope 1–30°. Relief to 90 m | No integrated drainage system; poorly to moderately well drained | No data; material suggests that moderate to high ice content is likely | The probability of high ice content makes this unit unreliable for construction. Occurs in restricted areas only |
| Cz | Slide, slump | Most commonly developed on shale, sandstone, and dolomite of Proterozoic Tsezotene Formation, and on shale of Hare Indian and Imperial formations. Usually too small to be mapped as a unit, they are indicated with a symbol | | Commonly stepped rotational slumps, spoon–shaped slump walls; highly irregular in the case of rockslides; undulated in the case of gentle mass movement | No organized drainage; poorly to moderately well drained | No data, but because of poor drainage, high ice content likely | Slumping occurs as retrogressive-thaw flow slides in glacial lacustrine sediments; and as rotational slumping in shale, sandstone, and dolomite of Proterozoic Tsezotene Formation; and shale of Paleozoic Hare Indian Formation |
| Ct | Cryoplanation terrace | Colluvium derived from mass wasting of local bedrock | 1–3 m | Terraces up to 750 m long and 450 m wide, typically occurring as steps on mountain slopes; "treads" have slopes of 1–5°; intervening "risers" have slopes of 20–30° | Downslope seepage in shallow subparallel runnels | Ice content probably low to medium; subjacent bedrock typically free of segregated ice | Restricted to high elevations in unglaciated Mackenzie Mountains. (Individual cryoplanation terraces shown by symbol) |
| Cy | Pediment | Typically 1–2 m of silty gravel or colluvium derived from local bedrock overlain by a discontinuous veneer of silt | 2–3 m | Gently sloping surface (0–8 ?extending from valley axis to base of steep mountain slope in valleys within the Canyon Ranges | Subparallel runnels; moderately well drained | Commonly 10–25 % segregated ice as thin (1 mm–2 cm) seams in silt cover; cement ice only in silty gravel; subjacent bedrock typically free of segregated ice | Restricted to high elevations in the Canyon Ranges of the Mackenzie Mountains |
| Cx | Slope complex (Cv, Cb, Ca, Cz, and At; may include two or more units undivided) | Deposits derived from entire range of surficial material plus bedrock detritus transported by gravity, sheetwash, and intermittent or permanent streams | 0–5 m | Occurs as veneer or blanket on gently to steeply sloping scarps and valley sides. Slope 1–30°. Relief to 90 m | No organized drainage; poorly to moderately well drained | No data; ice content probably highly variable depending on texture and thickness of material forming the unit | Potential slope instability presents major problems for any kind of construction |
| Ld | Glacial lacustrine plain | Glacial lacustrine silt and clay, minor sand; discontinuous organic cover | 2–15 + m | Flat to gently sloping. Relief to 3 m | Subsurface seepage through fen-filled depressions; poorly drained | Commonly 10 to 25% segregated ice as thin (1 mm–2 cm) seams in upper 1–3 m; segregated ice as reticulate network to 50% by volume, or thick tabular bodies of nearly pure ice at greater depth | Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gullying even on gentle slopes, following removal of vegetation. It also appears in construction with Mp along Keele River |
| Ld-k | Glacial lacustrine thermokarst plain | Glacial lacustrine silt and clay minor sand; discontinuous organic cover | 2–15 + m | Flat to gently sloping, numerous thermokarst lakes and ponds. Slope 0–5°. Relief to 6 m | Seepage centripetal to ponds and lakes, intermittent seepage along fen-filled depressions between ponds and lakes; poorly drained | Commonly 10 to 25% segregated ice as thin (1 mm–2 cm) seams in upper 1–3 m; segregated ice as reticulate network to 50% by volume, or thick tabular bodies of nearly pure ice at greater depth | Thermokarst processes active around pond margin; active layer detachment slides, followed by development of retrogressive-thaw flow slides (Cv) common on slopes developed on this unit especially following fire or other disturbance of vegetation |
| Lb | Glacial lacustrine blanket | Glacial lacustrine silt and clay, minor sand; discontinuous organic cover | 2–8 m | Flat to moderately sloping conforming to subjacent deposits, typically Mb, Mv, Mm | No integrated drainage system; poorly drained | Commonly 10 to 25% segregated ice as thin (1 mm–2 cm) seams in upper 1–3 m; segregated ice as reticulate network to 50% by volume, or thick tabular bodies of nearly pure ice at greater depth | Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gullying even on gentle slopes, following removal of vegetation. |
| Lv | Glacial lacustrine veneer | Glacial lacustrine silt and clay, minor sand; discontinuous organic cover | < 2 m | Flat to moderately sloping conforming to subjacent deposits, typically Mb, Mv, and Mm | No integrated drainage system; poorly drained | Commonly 10 to 25% segregated ice as thin (1 mm–2 cm) seams | Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gullying even on gentle slopes, following removal of vegetation. Usually occur combined with Lb |
| Lx | Glaciofluvial–lacustrine complex | Sand and silt; may overlie glacial lacustrine silt and clay | 3–20 m | Gently irregular topography. Slope 0–5° | Generally moderately well drained | Low to medium ice content; higher ice content (as for Lp, Lp-k) in underlying glacial lacustrine silt and clay, if present | Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gullying even on gentle slopes, following removal of vegetation |
| Lx-k | Thermokarst glaciofluvial–lacustrine complex | Sand and silt; may overlie glacial lacustrine silt and clay | 3–20 m | Flat to gently sloping. Numerous shallow thermokarst lakes and ponds. Slope 0–5° | Drainage by seepage along channels connecting thermokarst ponds | Low to medium ice content; higher ice content (as for Lp, Lp-k) in underlying glacial lacustrine silt and clay, if present | Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gullying even on gentle slopes, following removal of vegetation. Occurs only along Mackenzie River |
| Gp, Gt | Glaciofluvial plain, terrace | Gravel, sand locally with veneer of eolian silt or sand; silt and/or peat may occur as filling in channels (Gp-c) | 2–30 m | Flat to gently sloping. Commonly retains shallow braided channels in case of Gp-c. Slope 0–2° | Drainage mainly subsurface, locally with seepage along channels; well drained except for channels | Very low ice content, but when ice present consists of cement ice only | Offers good construction sites; major source of aggregate where the material is gravel rather than sand. Where the unit grades into units Lx, Lx-k, the surface deposit is typically sand rather than gravel and may be underlain by ice-rich silt |
| Gv | Glaciofluvial plain veneer | Gravel, sand locally with veneer of eolian silt or sand; silt and/or peat may occur as filling in channels (Gp-c) | < 3 m | Flat to gently sloping. Commonly retains shallow braided channels in areas designated Gp-c. Slope 0–2° | Drainage mainly subsurface, locally with seepage along channels; well drained except for channels | Very low ice content, but when ice present consists of cement ice only | Offers good construction sites; major source of aggregate where the material is gravel rather than sand. Occurs only along meltwater channel deposited by Kelly Lake phase |
| Gh, Gr | Hummocky, ridged glaciofluvial deposits (includes esker complexes) | Gravel, sand | 2–20 m | Hummocks and ridges. Slope 5–15°. Relief to 25 m | Drainage mainly subsurface. Hummocks and ridges well drained; intervening depressions may be poorly drained | Very low ice content | Major source of aggregate where the material is gravel rather than sand. Occurs only as part of Gx |
| Gx | Glaciofluvial complex (Gh, Gr, and Gp, undivided) | Gravel and sand | 2–20 m | Flat to highly irregular. Slope 0–15°. Relief to 25 m | Same as for Gh, Gr, Gp | Very low ice content | Major source of aggregate where the material is gravel rather than sand |
| Mp | Moraine plain | Till: diamicton with a silty clay matrix containing minor sand | 3–20 m | Flat to gently sloping. Slope 0–5° | Downslope seepage in shallow subparallel runnels. Generally poorly to moderately well drained | Commonly 10–25% segregated ice as thin (1 mm–2 cm) irregular discontinuous seams in upper 2–3 m; thicker (10 cm to > 3 m) ice lenses may occur at depth | Potential subsidence on removal of vegetation typically less than 1 m. Possible high ice content in organic deposits within the unit. Because drainage is by numerous runnels, roads, or berms normal to slope direction, requires numerous culverts to avoid impoundment of surface water |
| Mpv | Moraine plain, thin till cover | Till: diamicton with a silty clay matrix containing minor sand | 1–3 m | Flat to gently sloping; conforms to underlying bedrock topography. Slope 0–5° | Downslope seepage in subparallel runnels; poorly to moderately well drained, but locally well drained where subjacent bedrock is sandstone or limestone | Commonly 10–25% segregated ice as thin (1 mm–2 cm) irregular discontinuous seams. Subjacent bedrock typically free of visible ice | Offers fairly good to good construction sites; subjacent shale and siltstone bedrock is suitable for common fill in highway, airstrip, or pad construction |
| Mv | Till veneer | Till: diamicton with a silty clay matrix and minor sand in plains and plateau areas, but stonier and with a silty sand matrix in mountains | < 2 m | Gently to steeply sloping veneer conforms to the underlying bedrock topography. Slope 8–15° | Downslope seepage in subparallel runnels; poorly to moderately well drained, but locally well drained where subjacent bedrock is sandstone or limestone | Commonly 10–25% segregated ice as thin (1 mm–2 cm) irregular discontinuous seams. Subjacent bedrock typically free of visible ice | Offers fairly good to good construction sites where slope is not limiting; subjacent shale and siltstone bedrock is suitable for common fill in highway, airstrip, or pad construction |
| Mb | Till blanket | Till: diamicton with a silty clay matrix and minor sand in plains and plateau areas, but stonier and with a silty sand matrix in mountains | 3–6 m | Gentle to steeper slopes. Slope 5–15° | Downslope seepage in shallow subparallel runnels; generally poorly to moderately well drained | Commonly 10–25% segregated ice as thin (1 mm–2 cm) irregular discontinuous seams in upper 2–3 m. Thicker (10 cm to > 3 m) ice lenses may occur at depth | Potential subsidence on removal of vegetation typically less than 1 m; potential for creep of active layer. Because drainage is by runnels, roads, and berms normal to the slope direction, requires numerous culverts to avoid impoundment of surficial water |
| Md | Drumlinoid till plain | Till: diamicton with a silty clay matrix containing minor sand | 2–30 m | Moraine plain with individual drumlins, to fluted moraine plain. Slope 2–15° | Parallel seepage or streams in fluted moraine to trellis pattern or deranged drainage in moraine plain with drumlins | Commonly 10–25% segregated ice as thin (1 mm–2 cm) irregular discontinuous seams in upper 2–3 m. Thicker (10 cm to > 3 m) ice lenses at depth | Construction (e.g., roads) easier parallel to rather than normal to orientation of drumlins |
| Mm | Rolling moraine | Glacial till, typically with 5–20% pebble size and larger in a silty clay or clayey silt matrix in plains; typically bouldery till in mountains | Up to 20 m | Broad hummocks 10–20 m high. Slope 0–10° | Drainage centripetal to local depressions; elevated areas moderately well drained; intervening depressions generally poorly drained | Commonly 10–25% segregated ice as thin (1 mm–2 cm) irregular discontinuous seams in upper 2–3 m; irregularly distributed large masses of segregated ice common at greater depth | Summits of broad hummocks typically well drained; removal of vegetation may cause differential subsidence up to 3 m due to thawing of segregated ice masses |
| Mh | Hummocky moraine | Glacial till with 20–50% (locally 60%) pebble size and larger in clayey silt to silty sand matrix; locally includes small areas of gravel (gMh) | Up to 20 m | Individual or coalescent hummocks. Slope 0–20°;exceptionally 30°Relief 15–50 m | Hummocks well drained; intervening depressions may be poorly drained | Few data; ice content probably low | Crests of prominent hummocks are commonly well drained offering restricted good construction sites; ice content and potential for subsidence may be high in depressions |
| Mr | Ridged moraine | Glacial till with 20–50% (locally 60%) pebble size and larger in clayey silt to silty sand matrix in plains; typically bouldery till in mountains | 15 to 50 + m | Individual and compound straight to sinuous ridges; relief 15 to 60 m. Slope 0–20° | Ridge crests well drained; intervening depressions may be poorly drained | Few data; ice content probably low | Crests of prominent ridges are commonly well drained and offer restricted good construction sites |
| Mx | Moraine complex, includes Mh, Mr, Mm, undivided | Glacial till as in Mh, Mr, Mm | Up to 20 m | Same as for Mh, Mr, Mm | Same as for Mh, Mr, Mm | Same as for Mh, Mr, Mm | Same as for Mh, Mr, Mm |
| R | Bedrock | Cretaceous shale in plains, Cretaceous sandstone in Peel Plateau; rocks in mountainous area range from Upper Devonian shale of Imperial Formation, Lower Devonian dolomite of Bear Rock Formation to relatively weak shale, sandstone, and dolomite of Proterozoic Tsezotene Formation to mostly resistant quartzite of the Proterozoic Katherine Group. For reference, see Aitken and Cook (1974) | | Mainly prominent ridges, scarps, and hills developed on shale, sandstone, dolomite, and quartzite | Generally freely drained but with some poorly drained depressions | No data | As a dominant unit R occurs only in areas underlain by Devonian Bear Rock Formation. Karst sinkholes are abundant where Bear Rock Formation is near the surface. Shale of plains area can be rip-ripped to produce common fill but is unsuitable for road metal. Carbonate rocks and quartzites in the mountainous areas can be quarried to produce large blocks suitable for rip-rap or can be crushed to produce aggregate. Rock is near the surface in all areas of "v" units (e.g., Cv and Mv) and areas designated as combined map units with R as the second unit component (e.g., Cv- R and Mv- R) |

Canada

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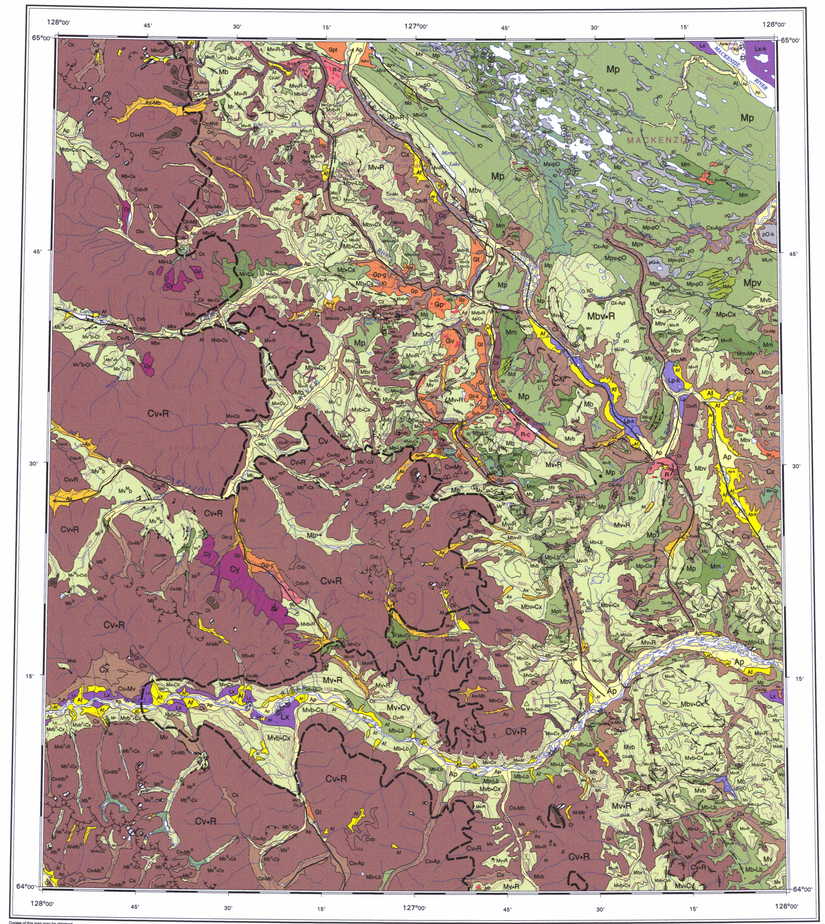


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LOCATION MAP

Published 2002

MAP 1988A

SURFICIAL GEOLOGY

# CARCAJOU CANYON

NORTHWEST TERRITORIES

Scale 1:250 000/Échelle 1/250 000

kilometres 5 0 5 10 15 20 kilometres

Universal Transverse Mercator Projection
North American Datum 1983

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

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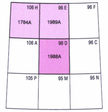



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADJOINING GEOLOGICAL SURVEY OF CANADA MAPS

## LEGEND

* Dominant map unit not present in this map (may occur as subordinate part of the map)

QUATERNARY

HOLOCENE

fO, pO, pO-k, pO-c, fpO — **ORGANIC DEPOSITS:** *peat and muck; occurs as flat to gently sloping plains*

fO – *fenland, consisting of woody sedge peat, 2–3 m thick*; pO – *peatland, sphagnum peat generally underlain by sedge and woody sedge peat, 2–4 m thick*; pO-k – *peatland containing thermokarst depressions*; pO – *peatland and fenland undivided*; *peatland dominant*; fpO – *peatland and fenland undivided, fenland dominant*.

Ap, Ap-k, At, At-k — **ALLUVIAL DEPOSITS:** *sand, silt, and minor gravel in association with modern drainage regime*

Ap – *floodplain sediments, coarse sand and gravel with silt and fine sand occurring as channel and overbank floodplain sediments, 3–5 m thick*; Ap-k – *contains thermokarst depressions*; At – *sand and silt, in places underlain by gravel; occurs as terraces, 2–5 m thick*; At-k – *sand and silt, occurring as terraces containing thermokarst depressions*

Af — *Mainly silt, sand, and minor gravel with discontinuous layers of peat; occurs as fans and aprons; within Mackenzie Mountains comprises mainly gravel, locally with lenses of mudflow deposits*

Ax — *Complexes of Ap and At, undivided*

**COLLUVIAL AND SHEETWASH DEPOSITS:** *diamicton, rubble, and organic-rich silt and sand derived from bedrock and surficial materials by a variety of colluvial and sheetwash processes*

Cv, Cb, Ca — *Cv – veneer deposit that conforms to bedrock topography; <2 m thick*; Cb – *blanket deposit that conforms to bedrock topography; >3m thick*; Ca – *organic-rich silt and sand developed on glacial lacustrine sediments or soft bedrock, 1–2 m thick*

Cz — **Landslide deposits:** *rubble and/or diamicton occurring as stepped or fan-shaped deposits; formed by rotational slumping or retrogressive-thaw flow failure of glacial lacustrine sediments and/or shale*

Cx — *Complex consisting of two or more of Cv, Cb, Ca, Cz, and At, undivided*

PLEISTOCENE

Ld, Lp-k, *Ld, *Lp — **GLACIAL LACUSTRINE DEPOSITS:** *silt and clay with minor sand, in many places overlain by a discontinuous veneer of organic deposits and locally overlain by sand; sediments laid down in a glacial lake*

Ld – *thick sediments occurring as a flat to gently sloping plain, 2–15 m thick*; Lp-k – *lacustrine plain containing thermokarst depressions*; Lb – *blanket of lacustrine sediments occurring as gently to moderately sloping plain, 2–8 m thick*; Lx – *sand and less gravel occurring as shoreline depits, up to 10 m thick*

Lx, Lx-k — *Lx – lacustrine complex or transitional between glaciofluvial and lacustrine deposits, with upper 0–3 m consisting of sand; 3–20 m thick*; Lx-k – *lacustrine complex containing thermokarst depressions; 3–20 m thick*

**GLACIOFLUVIAL DEPOSITS:** *sand and gravel, locally with a veneer of eolian silt or sand; deposited as proglacial or ice contact sediments by glacial meltwater*

Gp, Gt, Gv — **Outwash deposits:** *Gp – flat to gently sloping plain, 2–30 m thick*; Gt – *underlying a terrace, 2–30 m thick*, Gv – *underlying a terrace, <3 m thick*

Gh, Gr — **Ice contact glaciofluvial deposits:** *Gh – hummocks, 2–20 m thick*; Gr – *ridges, 2–20 m thick*

Gx — **Glaciofluvial complex:** *glaciofluvial complex areas of Gp, Gh, and Gr, undivided*

**GLACIAL DEPOSITS:** *nonsorted silt, sand, and clay with some coarser clasts (till); till of mountainous areas has abundant pebbles, cobbles, and boulders in silty sand matrix; deposited by glacial ice and occurring in a variety of different landforms. Montane deposits are designated as follows: $M^1$ – Mountain River Glaciation (ca. 200 ka BP), $M^2$ –Gayna River Glaciation (ca. 22 ka BP), $M^3$ – unconrelated, $M^4$ – hybrid montane and Laurentide (ca. 22 ka BP)*

Mp, *Mpv — **Moraine plain:** *till occurring as: Mp – flat to gently sloping plain, 3–20 m thick, Mpv – variable area of thick and thin till, 1–3 m thick*

Mv, Mb — **Till veneer and till blanket:** *Mv – veneer of till with slopes conforming to underlying bedrock topography, <2 m thick; Mb – gently to moderately sloping plain controlled by bedrock, 3–6 m thick*

Md — **Drumlinoid and hilly plain:** *plain with individual drumlins or extensively fluted, 2–30 m thick*

Mh, Mr, Mm — **Hummocky and ridged moraine:** *Generally coarse till (20–50% pebble size) in plains, typically bouldery till in mountains; Mh – individual and coalescent hummocks; locally contains hummocks of gravel; relief 15–50 m; up to 20 m thick; Mr – individual to compound, either straight or sinuous ridges 15 to 60 m high, 15–50+ m thick; Mm – broad hummocks or low hills with 10–20 m relief, <20 m thick*

Mx — **Moraine complex:** *largely hummocky, ridged, and hilly till undivided*

PRE-QUATERNARY

R — **BEDROCK:** *Cretaceous shale in plains; rocks of mountainous areas range from relatively weak shale, sandstone, and dolomite to resistant carbonates to highly resistant quartzite of Proterozoic to Late Devonian age*

UNCORRELATED

Cr — **Cryoplanation terrace deposits:** *colluvial rubble occurring as a 1–3 m thick mantle on a step or bench in a mountain slope*

Cy — **Pediment:** *bedrock rubble occurring on gently sloping surfaces that conforms to bedrock topography; 2–3 m*

PREFIXES, COMBINED MAP UNITS, AND MODIFYING PROCESSES

*Lower case prefixes are used to distinguish two types of organic deposits, fenland (fO) and peatland (pO)*

*Combined map units are used where, for reasons of scale, two intermingled units cannot be delineated individually. There are two different forms of combined unit designators: 1) Where the two units are from the same genetic group, the second upper case letter representing the genetic category of the subordinate unit is dropped (e.g., alluvial plain and terrace undifferentiated becomes Ap). In some cases, where the combined unit has characteristics different from the two individual units, the combined unit is described in the legend (e.g., Mp – thick and thin till). 2) Where the map unit designator is composed of different genetic categories, the dominant unit (>50%) is followed by a dot and then the second unit which makes up 20–50% of the map unit (e.g., Mp-Cr).*

*The organic units are shown as any other geological unit with colour where the organic deposits are dominant (e.g., fO-Mp, fpO-Mp) and without colour where the organic deposits make up the secondary unit (e.g., Mp-fO, Mp-fpO).*

*Three special designators are used to indicate the former or current activity of modifying processes: thermokarst activity (k), gullying (g), and channeling (c). These are added to the end of the map unit designator using a dash (e.g., Lp-k).*

Geological boundary (defined, approximate)

All-time limit of Laurentide Ice Sheet

Limit of Katherine Creek Phase

Limit of Kelly Lake Phase

Limit of Gayna River and Mountain River glaciations

Cirque (Mountain River Glaciation, Gayna River Glaciation)

Striated glacial erratic

Moraine ridge

Drumlin or drumlinoid ridge (sense of ice flow determined, not determined)

Esker

Kame field

Glacial meltwater channel (major, minor)

Glacial lake shoreline

Area of rock glaciers

Karst sinkhole

Cryoplanation terrace

Eolian veneer mainly of fine sand, dunes

Retrogressive-thaw flow slides (may include other forms of mass wasting)

Geology by A. Duk-Rodkin 1988, 1990

Digital cartography by J.D. Narraway, Earth Sciences Sector Information Division (ESS Info)

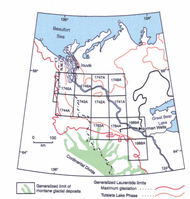
This map was produced from processes in conformance with the Cartographic Services Section Quality Management System, Ottawa, registered to the Quality System ISO 9001: 1994 standards

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 ESS Info

Mean magnetic declination 2002, 29°33'E, decreasing 24.7' annually. Readings vary from 28°11'E in the SW corner to 29°54'E in the NE corner of the map

Elevations in feet above mean sea level




## REFERENCES

**Aitken, J.D. and Cook, D.G.**
1974: Carcajou Canyon map area, District of Mackenzie; Geological Survey of Canada, Paper 74-13, Map 1390A, scale 1:250 000

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2002: Surficial geology, Carcajou Canyon, Northwest Territories; Geological Survey of Canada, Map 1988A, scale 1:250 000.

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