



MAP UNIT*	NAME	MATERIAL	TYPICAL THICKNESS (m)	LANDFORM	GENERAL COMMENTS	
FO	ORGANIC DEPOSITS	Fen, locally includes marsh, swamp, and shallow water classes of Tanocul (1960)	Mainly humic woody sedge peat; commonly underlain by woody organic silt	0.4-1.5	Flat to gently sloping except for low hummocks and ridges	Occurrence of permafrost sporadic, in general more prevalent with increasing elevation; in some areas mapped as FO, organic accumulation is less than 0.4 m and hence does not meet the thickness criterion for organic deposits and hence should be considered as an organic soil horizon
Ap, Apk	ALLUVIAL DEPOSITS	Alluvial plain, thermokarst alluvial plain	Alluvial plains of larger streams typically have 1 to 3 m of silt overlying gravel; small streams have various thicknesses of silt, sand and gravel. Thermokarst alluvial plain (Apk) bordering Norderoski River in Map 23-1987 may be underlain by glaciolacustrine silt and clay	5-10	Flat to gently irregular; floodplains of larger streams commonly have distinct meander scrolls and oxbow lakes; thermokarst alluvial plains have irregular thermokarst ponds and depressions 2 to 3 m below the alluvial plain surface	Flooding common to infrequent; permafrost absent beneath active channels of permanent streams but common elsewhere; permafrost occurs throughout thermokarst alluvial plains except beneath ponds and wet depressions; with segregated ground ice to 50% by volume
Apf	ALLUVIAL DEPOSITS	Alluvial plain and alluvial terrace, undivided	As for Ap	5-10	Flat to gently irregular	Flooding common to infrequent on floodplains; rare on bordering terrace; permafrost common
At	ALLUVIAL DEPOSITS	Alluvial fan or fan apron	Mainly gravel and coarse sand in steeply sloping fans, sand and silt with organic layers in gently sloping fans	2-20	Gently to steeply sloping fans occur where high gradient tributary streams meet lower gradient trunk streams; fan aprons are formed by coalescence of small fans associated with intermittent streams and hills	Streams on fans are subject to sudden and damaging changes in course (avulsions); fans comprising mainly gravel and coarse sand may be permafrost-free or, if permafrost-free, are thaw-stable; fans comprising mainly silt are typically permafrost-free; the silt may be ice-rich and unstable when thawed
As	ALLUVIAL DEPOSITS	Alluvial complex, combinations of Ap, Apf, and At	Silt, sand, gravel	2-20	Various	See Ap, Apf, At, as applicable
Lp, Lpk	GLACIOLACUSTRINE DEPOSITS	Glaciolacustrine plain	Silt, clay, locally may be covered by 1 m or more of organic silt, peat, or peat	2-20	Generally flat but commonly with 25% or more of area occupied by thermokarst ponds or depressions 1 to 4 m below the general surface (Lpk)	Permafrost present throughout except beneath thermokarst ponds; 15 to 90% segregated ice by volume; highly unstable when thawed
Lb, Lbg	GLACIOLACUSTRINE DEPOSITS	Glaciolacustrine blanket, gullied glaciolacustrine blanket	As for Lp	2-5	Gently to moderately sloping, commonly blanketing lower slopes of valleys and wedging out upslope	Mostly permafrost-free; limited data suggest that content of segregated ice is typically low, but high ice contents are possible; highly susceptible to erosion
Lv	GLACIOLACUSTRINE DEPOSITS	Glaciolacustrine veneer	As for Lp	0-2	Thin layer conforming to surface of subjacent unit (commonly Mb)	Permafrost common; ice content variable
Gp, Gpc, Gps	GLACIOLACUSTRINE DEPOSITS	Glaciolacustrine plain, channelled glaciolacustrine plain (McConnell age, Reid age)	Gravel, sand, typically with 15 to 30 cm-thick veneer of silt on deposits of McConnell age, Reid age	5-30	Flat to very gently sloping, commonly with shallow anastomosing channels Gp-c	Permafrost not common, but where present, deposits are mostly thaw-stable; constitute main source of aggregate for construction purposes; good drainage and soil stability make the units suitable for location of most types of facilities
Gt, Gtr	GLACIOLACUSTRINE DEPOSITS	Glaciolacustrine terrace (McConnell age, Reid age)	Gravel, sand	2-20	As for Gp, but in terrace position adjacent to a major stream	Areas of Gt, Gtr are preferred for aerodrome or other installations requiring large areas of well drained stable terrain; generally high permeability permits use of septic disposal systems
Gk, Gkr	GLACIOLACUSTRINE DEPOSITS	Hummocky or ridged glaciolacustrine deposits	Gravel, sand	5-30	Hummocky (including kames) or ridged (including eskers and esker complexes)	
Gf, Gfr	GLACIOLACUSTRINE DEPOSITS	Glaciolacustrine delta, glaciolacustrine fan	Gravel, sand	2-30	Glaciolacustrine deltas have typical delta form with flat top and steep outer slope; glaciolacustrine fans have characteristic fan form, with moderate slope	
Gx, Gxr	GLACIOLACUSTRINE DEPOSITS	Glaciolacustrine complex, combinations of Gp, Gt, Gk, Gf, Gtr (McConnell age, Reid age)	Gravel, sand	2-30	Various; includes areas that would be classed as Gp or Gt except for presence of kettles	
Md	GLACIAL DEPOSITS	Drumlinoid or tilted flat plain	Glacial till consisting of pebbles, cobbles, and boulders in a clayey silt to silty sand matrix, typically with a veneer of silt up to 50 cm thick; up to 2 m silt and/or organic deposits common between drumlins or in troughs of flutings	2-50	Tilt plain with individual drumlins and/or distinct glacial fluting	Permafrost sporadic; commonly drumlin crests and elevated parts of flutings are permafrost-free or have a thick active layer, whereas associated silt and/or organic deposits are likely to be permafrost-free and may be ice-rich; construction of linear facilities such as roads would be much easier parallel to rather than across the grain of the topography
Mvd	GLACIAL DEPOSITS	Drumlinoid moraine veneer	Glacial till consisting of pebbles, cobbles, and boulders in a clayey silt to silty sand matrix, may have veneer of silt up to 50 cm thick	0-2	Tilt veneer over bedrock, with drumlinoid or crag-and-tail topography	As for Mv (below)
Mb, Mb-c, Mb-g, Mb-gx, Mb-gxk, Mb-gxr	GLACIAL DEPOSITS	Moraine blanket, channelled moraine blanket, gullied moraine blanket (McConnell age, Reid age)	As for Md except that veneer of silt may be lacking	2-10	Gently to moderately sloping, conforming broadly to topography of subjacent bedrock	Permafrost sporadic; common on northerly facing slopes, less common on southerly facing slopes. Suitable for conventional cut-and-fill road construction where permafrost is lacking
M, Mb-c	GLACIAL DEPOSITS	Moraine-coluvial blanket	Till and colluvium	2-10	As for Mb	
Mb-cv	GLACIAL DEPOSITS	Moraine veneer, channelled moraine veneer	As for Mb; bedrock common in channels in Mb-c	0-2	As for Mb	Permafrost sporadic; engineering capabilities and limitations determined in large part by the lithology and topography of the subjacent bedrock
M, Mb-cv	GLACIAL DEPOSITS	Moraine-coluvial veneer	Till and colluvium	0-2	As for Mb	
Mb, Mb-cv, Mb-g, Mb-gx, Mb-gxk, Mb-gxr	GLACIAL DEPOSITS	Hummocky moraine, ridged moraine (McConnell age, Reid age)	Glacial till consisting of pebbles, cobbles, and boulders in a silty sand matrix	2-50	Hummocks and ridges with slopes to 30° and related to 20 m (occasionally 60 m) superimposed on flat to moderately sloping surfaces. Locally, ridges included in Mb are leaves of large moulins formed during early retreat stage of McConnell Glaciation by slope failures where lateral moraines formed embankments on steep slopes	Few data available on distribution of permafrost; negative cover suggests general absence of permafrost on flat to moderately sloping surfaces. Locally, ridges included in Mb are leaves of large moulins formed during early retreat stage of McConnell Glaciation by slope failures where lateral moraines formed embankments on steep slopes
Mb, Mb-cv, Mb-g, Mb-gx, Mb-gxk, Mb-gxr	GLACIAL DEPOSITS	Moraine complex, combinations of Mb, Mb-cv, Mb-g, Mb-gx, Mb-gxk, Mb-gxr (McConnell age, Reid age)	As for Mb, up to 2 m silt and/or organic deposits common in depressions	5-50	Broad hummocks 10-30 m high and 100 to 300 m across; slopes to 12°	No data on distribution of permafrost or prevalence of ground ice; probably similar to Md, Mb
Mb, Mb-cv, Mb-g, Mb-gx, Mb-gxk, Mb-gxr	GLACIAL DEPOSITS	Rolling moraine (McConnell age, Reid age)	As for Mb, up to 2 m silt and/or organic deposits common in depressions	5-50	Broad hummocks 10-30 m high and 100 to 300 m across; slopes to 12°	No data on distribution of permafrost or prevalence of ground ice; probably similar to Md, Mb
Cb	COLLUVIAL DEPOSITS	Colluvial blanket	Any of the deposits described above, plus bedrock detritus, modified and/or intermixed as a result of downslope movement of material; texture ranges from coarse blocky bedrock detritus of mountain tops to clayey or silty diamictic of some lower slopes; locally includes talus and/or moulton deposits, on many slopes there is a downslope transition from material that has been moved by gravity (Cb) to material that has been transported by water. Extensive slopes have therefore been designated as CbW or CbV	2-5	Gently to moderately sloping, conforming broadly to the topography of subjacent deposits, irregular features, including small suffocation lobes, sorted polygons, and talusmora are conspicuous and widespread above treeline (1280 to 1370 m, 4200 to 4550 ft.)	Permafrost sporadic, widespread on northerly facing slopes and on high plateau and mountain surfaces; other properties variable, depending on constituent materials
C, Mb	COLLUVIAL DEPOSITS	Colluvial-moraine blanket	Colluvium and till	2-5	As for Cb	
Cv	COLLUVIAL DEPOSITS	Colluvial veneer	As for Cb	0-2	Gently to highly irregular, conforming to topography of subjacent material (usually bedrock)	As for Cb; engineering properties and limitations determined in large part by the character of subjacent material (usually bedrock)
C, Mb	COLLUVIAL DEPOSITS	Colluvial-moraine veneer	Colluvium and till	0-2	As for Cv	
Cz	COLLUVIAL DEPOSITS	Rockslides	Blocky bedrock detritus	10-50	Hummocky	The few occurrences in the area are associated with bedrock slopes that are locally oversteeped by glacial erosion or deep incision of ice marginal channels
R, R-c	ROCK	Bedrock, channelled bedrock	Rock, see text Figure 2 for distribution of major rock types	Various	Various	Permafrost sporadic; ground ice low to completely lacking

\*The most commonly occurring units are shown above; for others, refer to Explanation of Map Unit Designations; coloured legend blocks indicate primary map units that appear on this map

EXPLANATION OF MAP UNIT DESIGNATIONS			
<b>SIMPLE MAP UNITS</b>			
A simple map unit designation consists of a generic symbol (upper case letter) followed by one or more morphologic descriptors (lower case letters). The range of material texture to be accepted within a map unit is indicated under "MATERIAL". Where the texture of the material is known more specifically, it is indicated by one or more textural prefixes (lower case letter).			
<b>MIXED UNITS</b>			
Two types of mixed units are used:			
a. Combinations of the form "GxMb" indicate that two distinct types of deposit are distinguishable within the boundaries of the unit, but cannot be differentiated because of map scale. The first named deposit type occupies more than 50% of the delineated area, the second named less than 50% but more than 10%. Deposit types that constitute less than 10% of the delineated area are ignored.			
b. Combinations of the form "M, Cv, M, C, L" etc., indicate that two or more distinct genetic classes of deposit are known to occur or suspected to occur within a delineated area; the respective classes of deposit lack distinctive landforms that would permit differentiation by alpha interpretation, and differentiation on the ground has been undertaken. The order in which the respective classes are listed indicates the likely relative prevalence by area of each class within the delineated area.			
<b>GLACIOLOGICAL AGE OF DEPOSITS</b>			
Glacial and glaciolacustrine deposits of Reid age are distinguished by a superscript "R" as in Mb <sup>R</sup> Cb <sup>R</sup> . Map unit designators for glacial, glaciolacustrine, and glaciolacustrine deposits of McConnell age lack the superscript. Colluvial, alluvial, and organic deposits have not been differentiated on the basis of age.			
<b>TEXTURAL PREFIXES</b>			
f - fen c - clay s - sand g - gravel	<b>GENETIC CATEGORIES</b> O - Organic deposits A - Alluvial deposits C - Colluvial deposits G - Glaciolacustrine deposits M - Moraine deposits R - Bedrock	<b>MORPHOLOGIC PREFIXES</b> b - Blanket (generally 2m thick) e - Eskered f - Fan h - Hummocky i - Interstream m - Mound r - Ridge v - Veneer (generally 2m thick) w - Veneer (combinations of moraines) x - Complex (combinations of moraines)	<b>EXTRINSICAL PREFIXES</b> c - Channelled e - Gullied l - Lined in the form Gx, Mb-g
<b>REMARKS</b>			
*fen is, strictly speaking, a textural term but a wetland class as defined by Tanocul (1960).			

SYMBOLS	
Geological boundary (defined, approximate)	.....
Glacial limit (defined, approximate)	.....
Reid Glaciation	R
Uncorrelated	.....
McConnell Glaciation	.....
Cryoplanation terrace	.....
Crque	.....
Moraine ridge	.....
Drumlin, drumlinoid ridge, glacial fluting	.....
Direction of ice movement inferred from form	.....
Direction of ice movement unknown	.....
Esker	.....
Meltwater channel	.....
Glacial lake shoreline	.....
Rock glacier	.....
Pingo, open-system, closed-system	.....
Ground observation (terraces found, not found)	.....

Copies of this map may be obtained from the Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8, 3003-33rd Street, N.W., Calgary, Alberta T2L 2A7, 100 West Pender Street, Vancouver, B.C. V6B 1R8

Geology by O.L. Hughes, 1966, 1967, 1979, based mainly on airphoto interpretation with limited ground checking

Thematic information on this map is in part reproduced directly from author's copy

Geological cartography by the Geological Survey of Canada

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

MAP 20-1987  
SURFICIAL GEOLOGY  
**LONG LAKE**  
YUKON TERRITORY

Scale 1:100 000 - Échelle 1/100 000

Kilometres 0 2 4 6 8 Kilomètres

Base map assembled by the Geological Survey of Canada from maps published at 1:50 000 scale by the Surveys and Mapping Branch, in 1961

Copies of the topographical editions covering this map area may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, Ontario, K1A 0E9

Map magnetic declination 1988, 29°11' East, decreasing 16.0' annually. Readings vary from 28°43' E in the SW corner to 29°26' E in the NE corner of the map

Universal Transverse Mercator Projection  
© Crown copyrights reserved

Projection transversale universelle de Mercator  
© Droits de la Couronne réservés

Elevations in feet above mean sea level

115H13	115H14	115H15	115H16
22-1987	21-1987	21-1987	21-1987
115H6	115H6	115H7	115H8
21-1987	20-1987	20-1987	20-1987
115H4	115H3	115H2	115H1

Printed by the Cartographic Information and Distribution Centre, Published 1989



Geological Survey of Canada / Commission Géologique du Canada

Recommended citation:  
Hughes, O.L., 1989. Surficial geology, Long Lake, Yukon Territory. Geological Survey of Canada, Map 20-1987, scale 1:100 000

DEC 12 1989

MAP LIBRARY / CARTOTHEQUE

20-1987