Note: This map accompanies the YGS Open File 2023-1 report, which should be referred to for a complete description of the mapping methodology and definitions of polygon label codes.

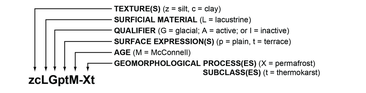
This map serves as a general guide to surficial materials only, as it is primarily based on remote interpretation with limited field verification, and significant variation may occur within a polygon. Geotechnical field investigations such as test pitting and/or drilling would be required to fully characterize surficial materials prior to site specific activities.

SURFICIAL MATERIALS

Surficial material polygon map units were classified using the Terrain Classification System for British Columbia (Howes and Kenk, 1997) with minor modifications developed for Yukon Geological Survey's mapping standards to include a wider variety of permafrost features and age classifications.

A sample polygon map label or terrain unit is shown below. Surficial material forms the core of the polygon map labels and is represented by the first single upper case letter in each terrain unit. Up to 3 textural codes are written in lower case to the left of each surficial material (listed in order of decreasing dominance), and up to 3 surface expression codes are written in lower case to the right. An upper case activity qualifier (A = active; I = inactive) may be shown immediately following the surficial material. Alternatively, the glacial qualifier "G " may be written immediately following the surficial material to indicate materials that were deposited in close proximity to glaciers. Age is indicated by an upper case letter that follows the surface expression but precedes any geomorphological process modifiers. Up to 3 geomorphological processes (upper case letters) and subclasses (lower case letters) always follow a dash ("-") symbol. Detailed definitions for the polygon map label codes are provided in subsequent sections.

Up to 4 terrain units may be combined in a complex polygon map label if they could not be differentiated at the scale of mapping. Each terrain unit is separated by a delimiter that either indicates relative proportions between the components (".", "/", "//") or stratigraphic relationships ("\").



TEXTURE	
Specific clastic textures	
a	blocks (>256 mm, angular)
b	boulders (>256 mm, rounded)
k	cobble (64-256 mm, rounded)
p	pebbles (2-64 mm, rounded)
s	sand (0.062 - 2 mm)
z	silt (0.003 - 0.062 mm)
c	clay (<0.002 mm)
Grouped clastic textures	
d	mixed fragments (>2 mm, rounded and angular)
x	angular fragments (>2 mm, mix of r & a)
g	gravel (>2 mm, rounded, mix of b, k, p)
r	rubble (2-256 mm, angular particles)
m	mud (mix of silt and clay)
y	shells (shells or shell fragments)
n	salt (evaporite crystals)
Organic terms	
e	fibric organic (poorly decomposed)
u	mesic organic (intermediate decomposition)

SURFICIAL MATERIAL	
A	Anthropogenic
C	Colluvium
E	Eolian
F	Fluvial
FA	Active Floodplain
FG	Glaciofluvial
H	Water body
L	Lacustrine
LG	Glaciolacustrine
M	Morainal (till)
O	Organic
R	Bedrock

SURFACE EXPRESSION	
a	apron
b	blanket (>1m thick)
d	depression(s)
f	fan(s)
h	hummock(s)
l	delta
m	rolling
p	plain
r	ridge(s)
t	terrace(s)
u	undulating
v	veneer (0.1 - 1 m thick)
w	mantle of variable thickness

GEOMORPHOLOGICAL PROCESS	
Erosional processes	
b	rockfall
d	debris flow
f	debris fall
t	debris torrent
Slow or rapid mass movement (follows -F, -L or -R)	
e	earthflow
m	slump – in bedrock
u	slump – in surficial material
x	slump – earthflow
s	debris slide
r	rockslide
PERMAFROST PROCESS SUBCLASSES (follows -X)	
f	thaw flow slides
p	permafrost mounds (lithalsa, palsa, peat plateau)
t	thermokarst subsidence
HYDROLOGICAL PROCESS SUBCLASSES (follows -U)	
b	beaver dams

MASS MOVEMENT PROCESS SUBCLASSES (follows -F, -L or -R)	
"	initiation zone
Slow mass movement (follows -F)	
c	soil creep
g	rock creep
k	tension cracks
p	lateral spread in bedrock
j	lateral spread in surficial material
Rapid mass movement (follows -R)	
b	rockfall
d	debris flow
f	debris fall
t	debris torrent
Slow or rapid mass movement (follows -F, -L or -R)	
e	earthflow
m	slump – in bedrock
u	slump – in surficial material
x	slump – earthflow
s	debris slide
r	rockslide

COMPOSITE SYMBOL DELIMITERS	
.	terrain unit(s) on either side of the symbol are of approximately equal proportion.
/	terrain unit(s) before symbol is more extensive than the following one(s). (Also denotes partial/discontinuous cover if located at front of label.)
//	terrain unit(s) before symbol is much more extensive than the following one(s).
\	terrain unit(s) before the symbol stratigraphically overlies the following one(s).

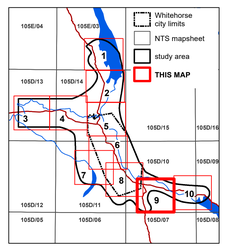
SYMBOLS

GEOLOGICAL BOUNDARIES:
- defined
- approximate
- assumed
- limit of mapping

GEOLOGICAL FEATURES:
- berm or dyke
- cross section profile, ERT transect
- cross section profile, unclassified
- escarpment, unclassified
- gravel pit
- gully
- esker, direction known
- lineament
- meltwater channel, minor, direction known
- meltwater channel, minor, direction unknown
- meltwater channel, major
- meltwater channel, major, flow direction
- moraine ridge
- sand dunes
- shoreline (Holocene)
- glacial lake shoreline
- streamlined landform
- water track

LANDSLIDES:
- old
- recent
- direction of movement
- headwall scarp

- ground observation site
- stratigraphic section
- gravel pit, active or recently active
- gravel pit, historical
- open pit mine
- drill hole
- water well (from Yukon water well registry; overburden depth in m)
- spring
- kame
- kettle
- permafrost mound
- thermokarst depression
- sand dune, cliff-top
- landslide, active layer detachment
- landslide, debris flow
- landslide, retrogressive thaw slump
- landslide, unclassified
- stream
- highway
- major road
- local road
- other road
- Whitehorse city limits
- legal survey parcel
- First Nation Settlement Land



N

ONE THOUSAND METRE GRID
Universal Transverse Mercator Projection
North American Datum 1983
Zone 8

Background image: 2007 orthophoto

1:50 000 scale topographic base data produced by CENTRE FOR TOPOGRAPHIC INFORMATION, NATURAL RESOURCES CANADA

SCALE 1:15 000

0 1

kilometres

REFERENCES

Howes, D.E. and Kenk, E., 1997. Terrain classification system for British Columbia, Version 2. B.C. Ministry of Environment and BC Ministry of Crown Lands, Victoria, BC.

RECOMMENDED CITATION

Lipovsky, P.S., 2023. Surficial geology of the greater Whitehorse area, Sheet 9 (1:15 000 scale). In: Surficial geology and geohazards of the greater Whitehorse area, Yukon Geological Survey, Open File 2023-1, 67 pages plus appendices.

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

Paper copies of this map may be obtained from Yukon Geological Survey, Energy, Mines and Resources, Government of Yukon, Room 102 - 300 Main St., Whitehorse, Yukon, Y1A 2B5. E-mail: geology@yukon.ca.

A digital PDF file of this map may be downloaded free of charge from the Yukon Geological Survey website: https://yukon.ca/en/science-and-natural-resources/geology.

Yukon Geological Survey
Energy, Mines and Resources
Government of Yukon

Open File 2023-1
Sheet 9

Surficial geology of the greater Whitehorse area

by

Panya S. Lipovsky

Yukon