

YUKON DIGITAL SURFICIAL GEOLOGY COMPILATION
DIGITAL RELEASE 1
APRIL 8, 2014

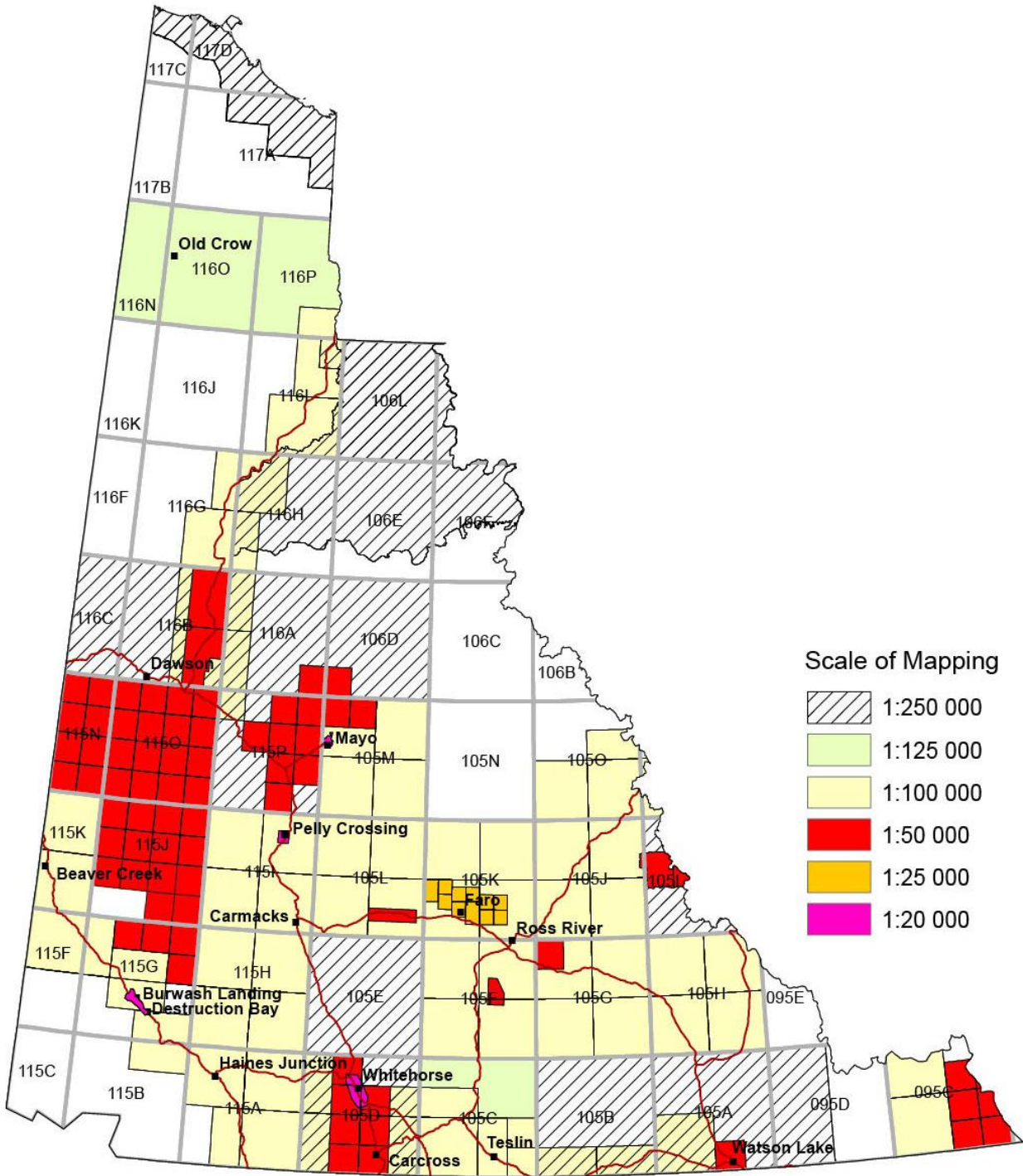


TABLE OF CONTENTS

1.	INTRODUCTION	2
2.	SUMMARY OF DATA COMPILATION PROCESS	4
2.1.	DATA CAPTURE	4
2.2.	ATTRIBUTE STANDARDIZATION	4
2.3.	FINAL COMPILATION.....	4
3.	YUKON TERRAIN CLASSIFICATION SYSTEM	5
3.1.	YUKON MODIFICATIONS TO THE BC TERRAIN CLASSIFICATION SYSTEM.....	6
4.	PRODUCTS	8
4.1.	GIS DATA.....	8
4.1.1.	<i>SURFICIAL POLYGONS</i>	9
4.1.2.	<i>SURFICIAL LINES</i>	9
4.1.3.	<i>SURFICIAL POINTS</i>	9
4.1.4.	<i>STRATIGRAPHIC SECTIONS</i>	10
4.1.5.	<i>TILL GEOCHEMISTRY</i>	10
4.1.6.	<i>SURFICIAL GEOLOGY MAP INDEX</i>	10
4.2.	STANDARDIZED SYMBOLOGY	11
5.	LIMITATIONS.....	12
6.	CONTACT INFORMATION	12
7.	ACKNOWLEDGEMENTS.....	12
8.	SUGGESTED CITATION	13
9.	ORIGINAL SURFICIAL GEOLOGY SOURCE MAPS	13

1. INTRODUCTION

175 surficial geology maps have been compiled by the Yukon Geological Survey (YGS) into a standardized GIS format. The maps provide approximately 80% coverage of the territory at scales ranging between 1:250,000 and 1:20,000 (Figure 1), with some overlap between scales.

Source maps were originally produced by a variety of agencies, including: the Geological Survey of Canada (GSC) (112), Yukon Geological Survey (48), Yukon Government (12), universities (2) and the City of Whitehorse (1). 22 of these maps were previously unpublished. A complete list of map sources included in the compilation is found at the end of this document.

While all original feature descriptions have been preserved in the compilation, they have also been converted to standardized values, following the Yukon terrain classification system (based on the British Columbia terrain classification system with minor modifications; see section below).

The compilation consists of 15 Geographic Information System (GIS) datasets and supporting documents, all of which are available for download by searching for “surficial compilation” on the [YGS integrated data system \(YGSIDS\)](#) or by accessing the [Yukon Digital Surficial Geology Data webpage](#). Territory-wide point, line and polygon GIS datasets are available in ESRI geodatabase (v10), shapefile and Google Earth (kmz) formats for each of 4 common map scales (1:20-25,000; 1:50,000; 1:100-125,000 and 1:250,000). Three additional datasets capture till geochemistry analytical results, stratigraphic section descriptions, and a surficial geology map index.

Polygon attributes captured include: surficial material, texture, age, surface expression and geomorphological processes.

Line features captured include: surficial geological contacts; glacial limits; glacial landforms such as cirques, arêtes, eskers, meltwater channels and moraines; and non-glacial landforms such as faults, lineaments, landslides, and escarpments.

Point features captured include: field station, fossil and sample locations; glacial landforms such as erratics, kames, kettles, drumlins and flutings; permafrost features such as pingos, palsas, patterned ground and thermokarst depressions; and other non-glacial landforms such as landslides and tors.

These data are a valuable resource for a variety of land-use applications in the territory, including: mineral and placer exploration, geotechnical engineering, infrastructure planning, granular resource assessments, permafrost modeling, agricultural assessments, forest management and biophysical or ecological land classification.

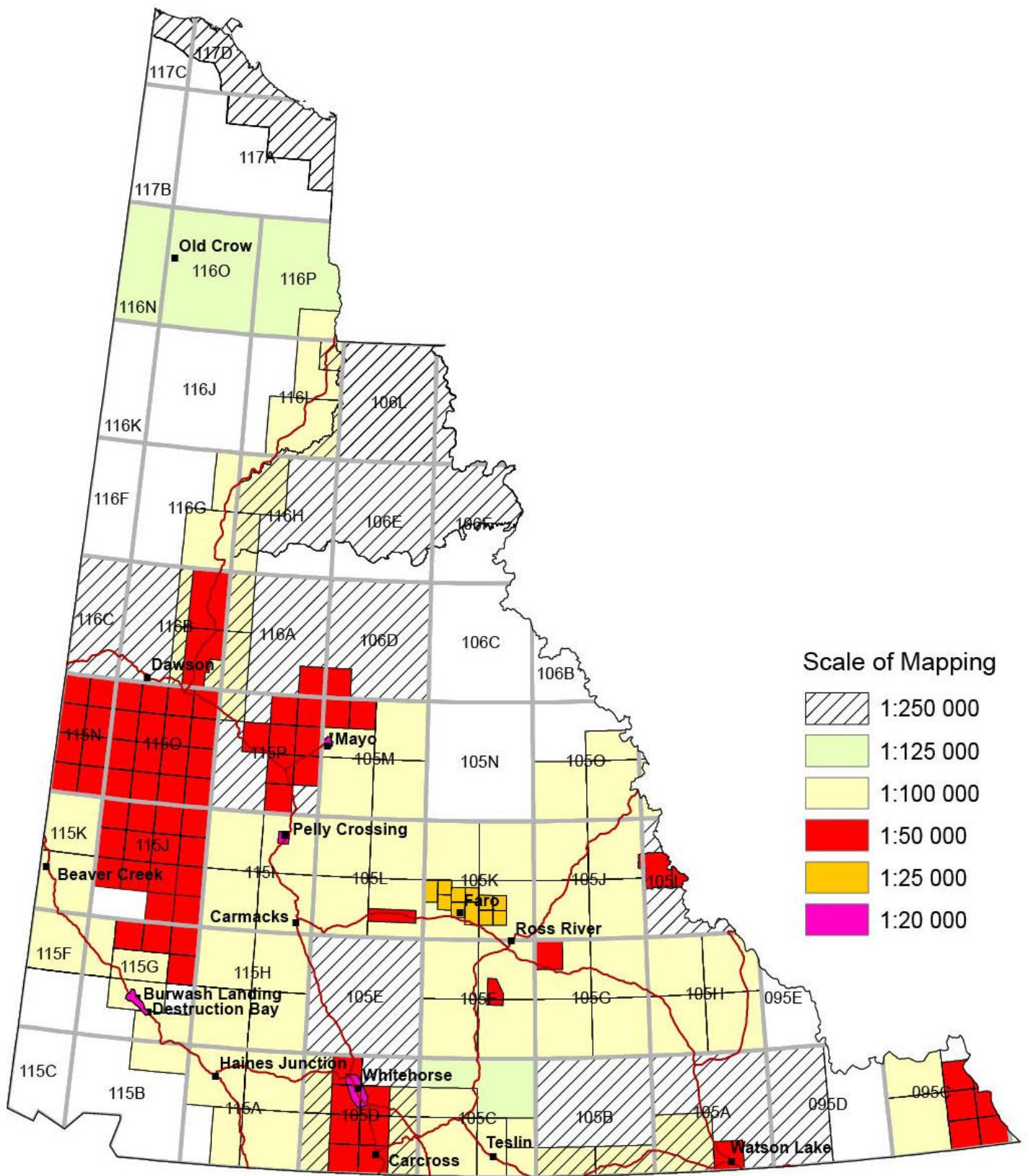


Figure 1. [Yukon surficial geology map index](#), showing 175 maps included in digital compilation. Note that many map footprints of differing scales overlap each other.

2. SUMMARY OF DATA COMPILATION PROCESS

2.1. DATA CAPTURE

The initial stage of data capture involved providing detailed instructions to a variety of GIS contractors who captured both spatial and non-spatial data as described below. Rigorous quality control measures, multiple rounds of revisions and topology checks were used at all stages of the data capture process to ensure accuracy.

Spatial data for each map were captured as point, line or polygon features inside a standardized ArcGIS geodatabase by:

- digitizing georeferenced scans of hard copy maps (79 maps); or
- importing older GIS vector formats such as AutoCAD drawings and ESRI shapefiles (96 maps).

Where applicable, directionality and rotation of specific line and point features were captured to allow the consistent application of direction-dependent or rotated symbology.

Non-spatial data were also captured, including: original terminology used for feature descriptions and polygon labels; all original legends, map surround descriptive notes and detailed stratigraphic section descriptions.

2.2. ATTRIBUTE STANDARDIZATION

Map unit and feature descriptions were converted to standardized terminology which was applied consistently for all maps across the territory. The geodatabase structure and overall mapping system used for the final compilation is based on the British Columbia terrain classification system (Howes & Kenk, 1997) with some minor modifications which are described below in the Yukon Terrain Classification System section.

The standardizing process involved extracting details from original legend descriptions (such as surficial material texture, relative ages and geomorphological processes) and adding these to point, line and polygon features to increase geodatabase detail and provide the ability for complex searches. Standardized polygon labels were then split into individual fields, providing the ability to search for specific terrain characteristics.

2.3. FINAL COMPILATION

Data were merged into four territory-wide sets of polygons, lines and points, each grouped by common scale as outlined below (for a total of 12 primary data layers):

- 1:250,000
- 1:100-125,000
- 1:50,000
- 1:20-25,000

Three additional (scale-independent) territory-wide layers were also created for:

- till geochemistry sample data
- stratigraphic sections descriptions
- surficial geology map index

3. YUKON TERRAIN CLASSIFICATION SYSTEM

We have adopted the British Columbia Terrain Classification System ([Howes & Kenk, 1997](#)) as a legend standard and database structure for surficial geology mapping in Yukon. This system was selected largely because of its flexibility, the existence of well documented digital capture standards, the ease with which specific surficial geology characteristics can be searched in a database, the potential to produce derivative maps for a variety of end-users, and to maintain a largely consistent map legend between Yukon and BC.

- To view the complete BC terrain classification system and code definitions/descriptions, please see the original reference published by Howes & Kenk (1997):

Howes, D.E. and Kenk, E., 1997. [Terrain classification system for British Columbia \(version 2\)](#). Province of British Columbia, Resource Inventory Branch, Ministry of Environment, Lands and Parks; Recreational Fisheries Branch, Ministry of Environment; and Surveys and Mapping Branch, Ministry of Crown Lands.

- A [simplified version of the Yukon terrain classification system](#) is outlined on page 7.
- Coding definitions and standardized point/line terminology are summarized in further detail in the following file: "[Yukon surficial geol codes.xls](#)".

3.1. YUKON MODIFICATIONS TO THE BC TERRAIN CLASSIFICATION SYSTEM

Some modifications to the BC classification system were made to accommodate additional landforms, processes and permafrost features common in Yukon. These changes are summarized below and in the following file: Yukon_terrain_classification_simplified_key.pdf

Ages:

- Surficial material age indicators were added to the polygon map unit labels (capital letter following surface expression)

Textures:

- In contrast to the BC terrain classification system, multiple textures are listed in order of decreasing dominance in the Yukon terrain classification system

Surface Expressions:

- slope steepness codes “j”, “a”, “k” and “s” were discarded
- “a” was changed to indicate “apron” because it is such a widespread surface expression in unglaciated regions
- “l” was added to indicate “delta”

Surficial Materials:

- “H” was added to indicate “water bodies”
- “S” was added to indicate perennial “snow patches”
- “U^G” is used to indicate “glacial drift”

Geomorphological Processes:

- “-L” in reference to “surface seepage” was discarded
- “-L” was changed to indicate “mass movements of undifferentiated velocity”
- “-T” was added to indicate “ice-contact” glacial processes

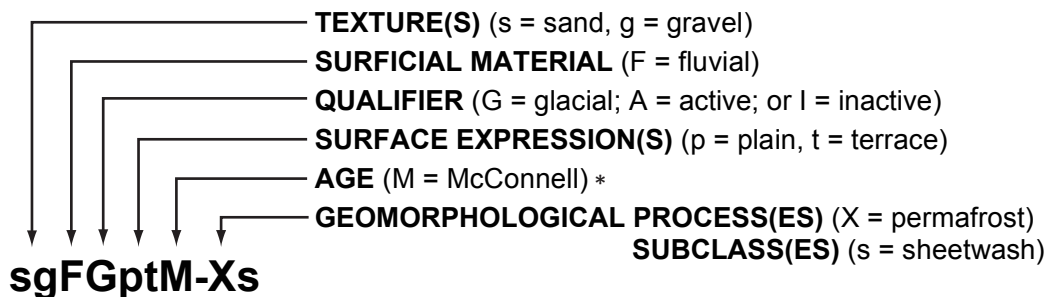
Geomorphological Process Subclasses:

- “b” was added to indicate “beaver damming” (i.e. “-Ub”) within inundation processes
- “c” was added to indicate “cryoplanation” (i.e. “-Zc”) within periglacial processes
- “l” was added to indicate “segregated ice” (i.e. “-Xl”) within permafrost processes
- “n” was added to indicate “open-system pingos” (i.e. “-Xn”) within permafrost processes
- “s” was added to indicate “sheetwash” (i.e. “-Xs”) within permafrost processes

Simplified Key to Yukon Terrain Classification System & Surficial Geology Map Labels

Based on the Terrain Classification System for British Columbia (Howes & Kenk, 1997).

Yukon custom modifications written in *italicized text* and highlighted by asterisks (*).



TEXTURE - up to 3 lower case letters in front of surficial material, *in order of decreasing dominance* *

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 (0.002 - 0.062 mm)
c	clay (<0.002 mm)
m	mud (mix of silt and clay)
d	mixed fragments (>2 mm, rounded and angular)
g	gravel (>2 mm, rounded; mix of b, k, p)
x	angular fragments (>2 mm; mix of r & a)
r	rubble (2-256 mm, angular particles)
y	shells (shells or shell fragments)
e	fibric organic (poorly decomposed)
u	mesic organic (intermediate decomposition)
h	humic organic (highly decomposed)

SURFICIAL MATERIAL - first single upper case letter shown in map unit. (Upper case letter immediately following surficial material is the glacial or activity QUALIFIER.)

A	Anthropogenic
C	Colluvium
D	Weathered Bedrock
E	Eolian
F	Fluvial (FA = Active Fluvial)
FG	Glaciofluvial
I	Ice (Glacier)
L	Lacustrine
LG	Glaciolacustrine
M	Morainal (till)
O	Organic
R	Bedrock
U	Undifferentiated materials (<i>UG = Glacial Drift</i>) *
V	Volcanic

- * H Water bodies
- * S Snow patches

SURFACE EXPRESSION - up to 3 lower case letters following surficial material

* a	apron (BC steepness codes "j", "a", "k" and "s" not used)
b	blanket (>1 m thick)
c	cone(s)
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
x	thin veneer (2 - 20 cm thick)

COMPONENT DELIMITERS - separators for up to 4 components that may be included in a map unit label. All components are listed before process(es), e.g.

sgFGptM.dsmMbM/xsCv\zclGpM-XsV

.	components on either side of the "." symbol are of approximately equal proportion
/	the component in front of the "/" symbol is more extensive than the one that follows
//	the component in front of the "//" symbol is considerably more extensive than the one that follows
\	the component(s) in front of the "\" symbol stratigraphically overlies the component(s) that follows

* **AGE** - single upper case letter following surface expression

H	Holocene
>H	pre-Holocene
N	Neoglacial
<M	Postglacial
M	McConnell (late Wisconsinan)
>M	pre-McConnell
S	Laurentide, Tutsieta (late Wisconsinan)
L	Laurentide, maximum (late Wisconsinan)
G	Gladstone (early Wisconsinan)
>G	pre-Gladstone
R	Reid (Illinoian)
>R	pre-Reid (Pliocene - early Pleistocene)
P	Pleistocene undifferentiated
Q	Quaternary
>Q	pre-Quaternary
T	Tertiary
U	undifferentiated

GEOMORPHOLOGICAL PROCESS - up to 3 upper case letters following dash "-". Lower case letters indicate subclasses.

-V	Gully erosion
-B	Braided floodplain
-I	Irregularly sinuous floodplain
-J	Anastomosing floodplain
-M	Meandering floodplain
-A	Snow avalanches
-F	Slow landslide (subclasses: g = rock creep)
-R	Rapid landslide (subclasses: b = rockfall; d = debris flow)
* -L	Undifferentiated landslide (subclasses: s = slide; u = slump)
-C	Cryoturbation
-N	Nivation
-S	Solifluction
-Z	General periglacial processes (subclass: c = cryoplanation)
* -X	Permafrost (subclasses: s = sheetwash; n = pingo; l = seg. ice)
-E	Glacial meltwater channels
-H	Kettled
* -T	Glacial ice-contact
* -U	Inundation (subclass: b = beaver damming)

4. PRODUCTS

4.1. GIS DATA

15 GIS datasets are available as part of this compilation, as listed in the table below. All data layers are available for download in ESRI file geodatabase (v10), ESRI shapefile and Google Earth (kmz) formats from the [YGS integrated data system \(YGSIDS\)](#) or directly through the hyperlinks supplied in the table below.

SCALE-DEPENDENT LAYERS			
1:250,000	1:100-125,000	1:50,000	1:20-25,000
Polygons	Polygons	Polygons	Polygons
Lines	Lines	Lines	Lines
Points	Points	Points	Points
SCALE-INDEPENDENT LAYERS			
Till geochemistry samples			
Stratigraphic section descriptions			
Surficial geology map index			

Please note: it is important to always use the layer of appropriate scale for your project (for example, 1:250,000 scale data are not appropriate for 1:50,000 or property-scale use, although they can still provide a general idea of terrain conditions for the area).

- Due to the large number of features captured in some datasets, files may be relatively large in size (up to 100 MB) and these may consequently be slow to download and/or manipulate on older or slower computers or with a slow internet connection (especially for Google Earth files).
- If you are unable to download a product online, or require a smaller subset of the data for a specific area, please contact us. Smaller Google Earth files for specific mapsheets are also available for download here: http://www.geology.gov.yk.ca/google_earth_surficial.html.

4.1.1. SURFICIAL POLYGONS

[250k](#), [100-125k](#), [50k](#) and [20-25k](#)

- The two key attribute fields within these polygon layers are:
“LABEL” = map unit as published on the original map
“LABEL_FNL” = standardized map unit (converted to BC standards)
- The rest of the fields are derived from splitting the LABEL_FNL map unit into up to 4 different components (A,B,C,D) with up to three different geomorphological processes (A,B,C) and various textural and surface expression modifiers, all following the Yukon terrain classification system standards outlined above in Section 3.
- Detailed polygon field descriptions can be found in the following file:
[“Yukon surficial polygon attributes.xls”](#).
- Polygons should always be symbolized by the combined MATERIAL_A and QUALIFIER_A fields (plus AGE_A if desired. ArcGIS symbology templates are provided in the following file: “ArcGIS_layer_symbology.zip”

4.1.2. SURFICIAL LINES

[250k](#), [100-125k](#), [50k](#) and [20-25k](#)

- The two key attribute fields within the dataset are “TYPE” and “SUBTYPE” which contain standardized surficial geology line feature terminology.
- A complete list of standardized surficial geology line feature terminology is presented in the following file: [“Yukon surficial geol codes.xls”](#) (“LINES” tab).
- Original feature descriptions are preserved in the “OLD_TYPE” and “OLD_SUBTYPE” fields. Where applicable, the relative age of features is also indicated in the “AGE” field.

4.1.3. SURFICIAL POINTS

[250k](#), [100-125k](#), [50k](#) and [20-25k](#)

- The two key attribute fields within this dataset are “TYPE” and “SUBTYPE” which contain standardized surficial geology point feature terminology.
- A complete list of standardized surficial geology point feature terminology is presented in the following file: [“Yukon surficial geol codes.xls”](#) (“POINTS” tab).
- Original feature descriptions are preserved in the “OLD_TYPE” and “OLD_SUBTYPE” fields. Where applicable, the relative age of features is also indicated in the “AGE” field.

- Azimuth directions of oriented point features are also captured in the “ORIENTATN” field so that rotation-dependent symbology can be applied (e.g. streamlined landforms, drumlins, flutings, etc).

4.1.4. STRATIGRAPHIC SECTIONS

- Detailed [stratigraphic section descriptions](#) from 421 locations were captured as depicted on 51 published and unpublished surficial geology maps of various scales.
- Each stratigraphic section site has multiple stratigraphic layers/units. Attribute data captured for 1198 of these layers/units includes: unit depths and thicknesses; surficial material classification; and detailed descriptive notes such as texture, structure, sorting, colour, age and/or relative location.

4.1.5. TILL GEOCHEMISTRY

- Complete analytical results for 1102 [till geochemistry samples](#) are compiled into a single Yukon-wide dataset. Over 40 elements are included in the attribute table for each sample, although each sample may not have been analyzed for every element.
- The till samples were collected during 4 regional till sampling surveys conducted by Yukon Geological Survey in the Faro/Anvil Range, Weasel Lake, Finlayson Lake, and Glenlyon/East Carmacks areas between 1998 and 2002.

4.1.6. SURFICIAL GEOLOGY MAP INDEX

- The [surficial geology map index](#) dataset is a Yukon-wide compilation of map footprints and associated citation data for the 175 published and unpublished surficial geology maps that were incorporated into the Yukon digital surficial geology.
- Attribute data for each map footprint includes: year, scale, author, publishing agency, map number, NTS sheet and map title.

4.2. STANDARDIZED SYMBOLOGY

This file ([ArcGIS_layer_symbology.zip](#)) contains the following subfolders and files which can be loaded into ArcGIS to display YGS standardized symbology for the point, line and polygon surficial geology layers.

- “**custom_symbol_fonts**” folder:

The following four *.ttf files must be copied to your system fonts folder (C:\WINDOWS\Fonts) before opening ArcMap for some of the point symbology to display correctly: **gsc3.ttf, gsc4.ttf, gsc6.ttf and gsc8.ttf**

- ArcGIS MXD project file (**Yukon_surficial_geology_compilation_template.mxd**):

Open this file in ArcMap to load preset legends for each of the point, line and polygon layers for each available geodatabase. No map layers will initially load as you will have to remap the data source to locate the geodatabases you have downloaded (click the red exclamation mark beside the layer of interest or open the Layer Properties window, click the “Source” tab, click the “Set Data Source...” button, and navigate to where you have copied the geodatabase of interest).

- ArcMap layer files:

You can alternatively load ArcMap symbology for a point, line or polygon layer by importing any of these layer files under the Layer Properties > Symbology tab.

- **legend_lines_type_subtype.lyr** (lines symbolized by TYPE and SUBTYPE fields – used for general classification of all lines)
- **legend_lines_validity_age.lyr** (lines symbolized by TYPE, VALIDITY and AGE fields – used for geological boundaries and glacial features (limits, moraines, cirques, arêtes, and paleo lake shorelines)).
- **legend_points.lyr** (requires installation of custom symbol fonts as described above)
- **legend_polygons.lyr** (polygons symbolized by MATERIAL_A, QUALIFIER_A and AGE_A fields).

5. LIMITATIONS

Please note that all features were captured as reflected on the original maps, so some polygon and line features may not match across adjacent mapsheets published by different authors. It was beyond the scope of this project to create a seamless product by resolving these edge-matching discrepancies.

While every attempt was made to ensure accuracy in data capture and conversion, the data are not guaranteed for accuracy or correctness and YGS accepts no responsibility for any damages resulting from use of erroneous data. It is recommended that the original map source always be consulted for your area of interest.

All datasets will be updated as new surficial geology mapping is completed in the territory. Check the “Compilation History” listed at the bottom of each compilation layer in the YGS integrated data system (YGSIDS) for details on any updates.

6. CONTACT INFORMATION

Any errors noted by the user of this data should be promptly reported to the Yukon Geological Survey. Please notify either one of us if you have any questions or encounter inaccuracies or problems with the data.

Panya Lipovsky (Panya.Lipovsky@gov.yk.ca) 867-667-8520

Jeffrey Bond (Jeff.Bond@gov.yk.ca) 867-667-8514

Yukon Geological Survey
Department of Energy, Mines & Resources, Yukon Government
Room 230 Elijah Smith Building, 300 Main Street
Whitehorse, YT, Y1A 2B5

7. ACKNOWLEDGEMENTS

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- Mike Segouin and Rod Smith (Geological Survey of Canada)
- Shannon Mallory, Bailey Staffen and Aubrey Sicotte (Yukon Geological Survey)

8. SUGGESTED CITATION

Lipovsky, P.S. & Bond, J.D. (compilers), 2014. Yukon digital surficial geology compilation, digital release 1, 08-Apr-2014. Yukon Geological Survey.

9. ORIGINAL SURFICIAL GEOLOGY SOURCE MAPS

- Compilation source maps, legends and related reports originally published by Yukon Geological Survey (YGS) may be downloaded in PDF format by searching the [YGS integrated data system \(YGSIDS\)](#) by author, title and/or publication number.
- Compilation source maps, legends and related reports originally published by the Geological Survey of Canada (GSC) may be downloaded in PDF format by searching the [GEOSCAN publications database](#) by author, title and/or publication number.

MAP SOURCES/REFERENCES INCLUDED IN COMPILATION:

(arranged by National Topographic Series/NTS map sheet number)

NTS 095C NW - Smith, I.R., 2005. 95C NW. GSC unpublished, 1:100 000 scale.

NTS 095C SW - Smith, I.R., 2004. Surficial geology, Southwest La Biche River, Yukon Territory. GSC Open File 4680, 1:100 000 scale.

NTS 095C/01 - Smith, I.R., 2002. Surficial geology, Mount Martin, Yukon Territory. GSC Open File 4260, 1:50 000 scale.

NTS 095C/02 - Smith, I.R., 2002. Surficial geology, Mount Merrill, Yukon Territory. GSC Open File 4324, 1:50 000 scale.

NTS 095C/07 - Smith, I.R., 2003. Surficial geology, Brown Lake (95C/7). GSC Open File 1771, 1:50 000 scale.

NTS 095C/08 - Smith, I.R., 2003. Surficial geology, Babiche Mountain, Yukon Territory - Northwest Territories. GSC Open File 1558, 1:50 000 scale.

NTS 095C/09 - Smith, I.R., 2003. Surficial geology, Chinkeh Creek (95C/9), Northwest Territories - Yukon Territory. GSC Open File 1615, 1:50 000 scale.

NTS 095C/10 - Smith, I.R., 2004. Surficial Geology, Tika Creek (95C/10), Yukon Territory - Northwest Territories. GSC Open File 4702, 1:50 000 scale.

NTS 095C/16 - Smith, I.R., 2003. Surficial geology, Etanda Lakes (95C/16), Northwest Territories - Yukon Territory. GSC Open File 1671, 1:50 000 scale.

NTS 095D - Klassen, R.W., 1983. Surficial Geology, Coal River [West Half], Yukon Territory. GSC Preliminary Map 13-1982, 1:250 000 scale (NTS 95D/03; 95D/04; 95D/05; 95D/06; 95D/11; 95D/12).

NTS 105A - Klassen, R.W. and Morison, S.R., 1982. Surficial geology, Watson Lake, Yukon Territory. GSC Map 21-1981, 1:250 000 scale.

NTS 105A/02 - Lipovsky, P.S.; McKenna, K. and Huscroft, C.A., 2005. Surficial geology of Watson Lake (105A/2), Yukon Territory. YGS Open File 2005-7, 1:50 000 scale.

NTS 105A3-6 - Klassen, R.W., 1978. Surficial Geology, Rancheria River, Yukon Territory. GSC OF539 (Map 4), 1:100 000 scale.

NTS 105B - Klassen, R.W., 1983. Surficial geology, Wolf Lake, Yukon Territory. GSC Map 14-1982, 1:250 000 scale.

NTS 105B/1,2 - Klassen, R.W., 1978. Surficial Geology, Meister River, Yukon Territory. GSC OF539 (Map 2), 1:100 000 scale.

NTS 105C - Morison, S.R. and Klassen, R.W., 1997. Surficial geology, Teslin, Yukon Territory. GSC "A" Series Map 1891A, 1:125 000 scale.

NTS 105C NW (south half) (105C11&12) - Morison, S., McKenna, K., and Davies, S., 1982. 105C NW Surficial Geology and Soils (Southern Lakes Project). Yukon Government unpublished, 1:100 000 scale.

NTS 105C SE (105C/01,02,07,08) - Morison, S., McKenna, K., and Davies, S., 1982. 105C SE Surficial Geology and Soils (Southern Lakes Project). Yukon Government unpublished, 1:100 000 scale.

NTS 105C SW (105C/03,04,05,06) - Morison, S., McKenna, K., and Davies, S., 1982. 105C SW Surficial Geology and Soils (Southern Lakes Project). Yukon Government unpublished, 1:100 000 scale.

NTS 105C1, 105B3-4, 104O13-14, 104N16 - Klassen, R.W., 1978. Surficial Geology, Swift River, Yukon Territory. GSC OF539 (Map 3), 1:100 000 scale.

NTS 105C2-7 - Klassen, R.W., 1978. Surficial Geology, Delayee River, Yukon Territory. GSC OF539 (Map 5), 1:100 000 scale.

NTS 105D - Morison, S.R. and Klassen, R.W., 1991. Surficial geology, Whitehorse, Yukon Territory. GSC Map 12-1990, 1:250 000 scale.

NTS 105D NE (105D/09,10) - Morison, S., McKenna, K., and Davies, S., 1982. 105D NE Surficial Geology and Soils (Southern Lakes Project). Yukon Government unpublished, 1:100 000 scale.

NTS 105D NW (105D/11,12,13,14) - Morison, S., McKenna, K., and Davies, S., 1982. 105D NW Surficial Geology and Soils (Southern Lakes Project). Yukon Government unpublished, 1:100 000 scale.

NTS 105D SE (105D/01,02,07,08) - Morison, S., McKenna, K., and Davies, S., 1982. 105D SE Surficial Geology and Soils (Southern Lakes Project). Yukon Government unpublished, 1:100 000 scale.

NTS 105D SW (105D/03,04,05,06) - Morison, S., McKenna, K., and Davies, S., 1982. 105D SW Surficial Geology and Soils (Southern Lakes Project). Yukon Government unpublished, 1:100 000 scale.

NTS 105D/02 - Bond, Morison and McKenna, 2005. Surficial Geology of Carcross (NTS105D/02), Yukon. YGS GM2005-2, 1:50 000 scale.

NTS 105D/03 - Bond, Morison and McKenna, 2005. Surficial Geology of Fenwick Creek (NTS105D/03), Yukon. YGS GM2005-3, 1:50 000 scale.

NTS 105D/06 - Bond, Morison and McKenna, 2005. Surficial Geology of Alligator Lake (NTS105D/06), Yukon. YGS Geoscience Map 2005-4, 1:50 000 scale.

NTS 105D/07 - Bond, Morison and McKenna, 2005. Surficial Geology of Robinson (NTS105D/07), Yukon. YGS Geoscience Map 2005-5, 1:50 000 scale.

NTS 105D/10 - Bond, Morison and McKenna, 2005. Surficial Geology of MacRae (NTS105D/10), Yukon. YGS Geoscience Map 2005-6, 1:50 000 scale.

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