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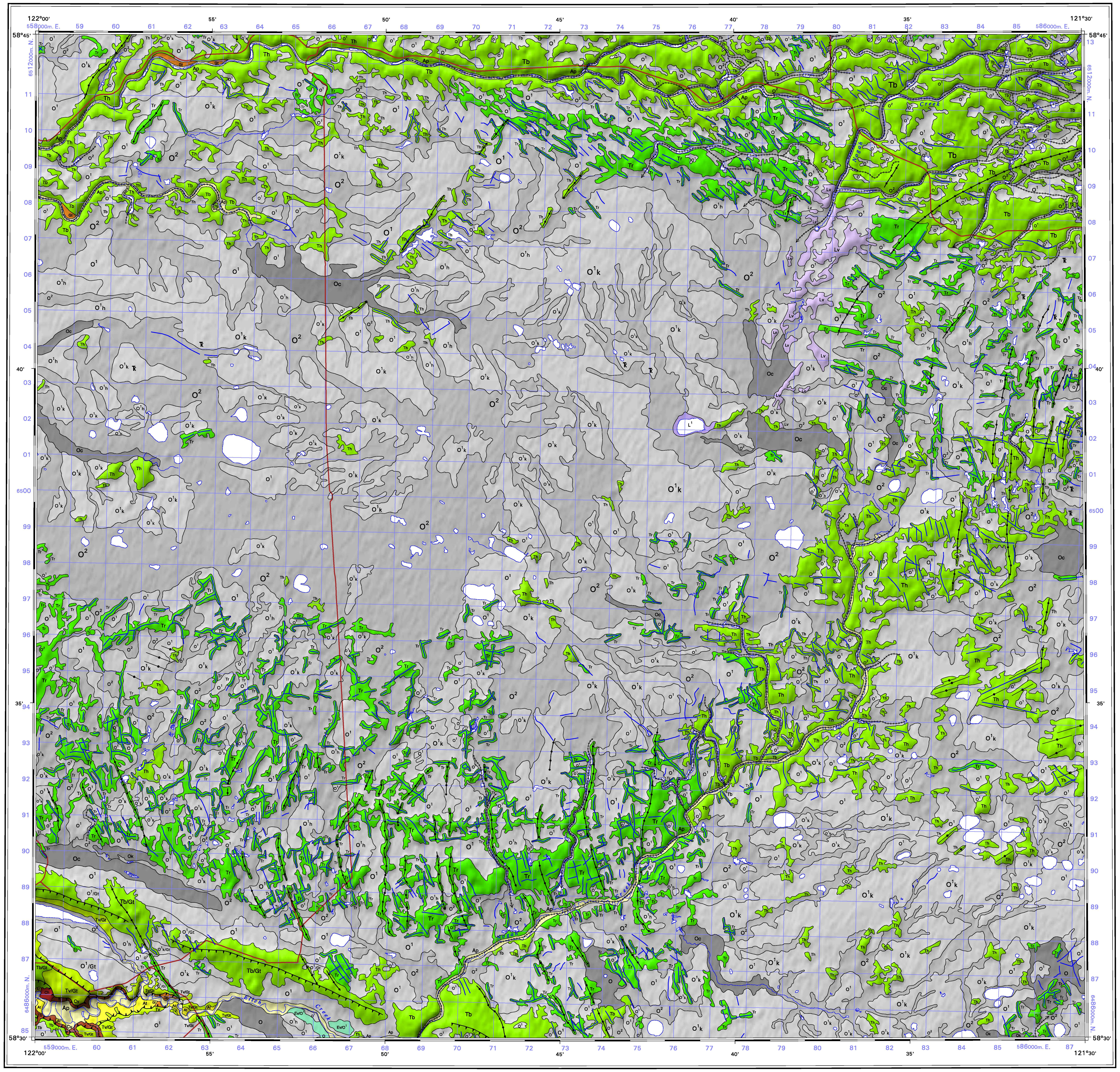
GEOLOGICAL SURVEY OF CANADA   COMMISSION GÉOLOGIQUE DU CANADA

BRITISH COLUMBIA



LEGEND

This legend is common to GSC OF4754, OF5070, OF5237, OF5305, OF5306, OF5307, OF5309, OF5527, and OF5540. Coloured legend blocks indicate units that appear on this map.

***NOTE:** In areas where the surficial cover forms a complex pattern, the area is coloured according to the dominant unit and labelled in descending order of cover (e.g. O-Tr). Where buried aggregate deposits (sand and gravel - commonly associated with Gt or Gd surficial units) are known, or suspected, areas are coloured according to the overlying unit and labelled in the following manner: Lv/Gd.*

QUATERNARY
SURFICIAL DEPOSITS
POST LAST GLACIATION

NONGLACIAL ENVIRONMENTS

AN — ***ANTHROPOGENIC DEPOSITS:** culturally-made or modified geological materials such that their original physical properties (e.g. structure, cohesion, compaction) have been drastically altered; >2 m thick.*

***ORGANIC DEPOSITS:** peat and muck; 1 to 3 m thick on average; formed by the accumulation of plant material in various stages of decomposition; generally occurs as flat, wet terrain (swamps and bogs) over poorly drained substrates.*

O^1 — ***Bog peat:** sphagnum or forest peat formed in an ombrotrophic environment; wet terrain; may be treed or treeless; O^1h, hummocky, mounds and plateaus; area may be underlain by ground ice or shallow permafrost conditions; O^1k, thermokarst terrain related to melting ground ice.*

O^2 — ***Fen peat:** peat derived from sedges and partially decayed shrubs in a eutrophic environment; forms relatively open peatlands with a mineral-rich water table that persists seasonally near the surface; generally covered with low shrubs and an occasional sparse layer of trees.*

O — ***Undifferentiated bog and fen deposits:** Oh, undifferentiated hummocky bog and fen deposits; area may be underlain by ground ice or shallow permafrost conditions; Ok, undifferentiated bog and fen deposits with thermokarst terrain related to melting of ground ice; Oc, undifferentiated bog and fen deposits cut by numerous subparallel channels on gentle slopes.*

***COLLUVIAL DEPOSITS:** mass wasting debris; poorly sorted, massive to stratified debris deposited by direct, gravity-induced movement; composition dependant on source material.*

Ch — ***Landslide and slump debris:** active and inactive landslides; hummocky topography; diamicton, generally 1 to 10 m thick, but may exceed 10 m near the toe of large landslides.*

Cv — ***Colluvial veneer:** thin and discontinuous cover of slumped and/or soliflucted material <1 m thick; overlies bedrock or till.*

C — *Undifferentiated colluvial deposits.*

***ALLUVIAL DEPOSITS:** sorted gravel, sand, minor silt, and organic detritus deposited by streams; commonly stratified.*

Ap — ***Floodplain deposits:** sorted gravel, sand, silt, and organic detritus >1 m thick; forming active floodplains close to river level with meander channels and scroll marks.*

At — ***Fluvial terrace deposits:** inactive terraces above modern floodplain; >2 m thick; represents a potential aggregate source.*

Ad — ***Deltaic sediments:** stratified sand and gravel underlain by silt and clay; generally 2 to 15 m thick; occuring at the mouths of streams entering lakes.*

Af — ***Alluvial fan deposits:** poorly sorted gravel, sand, and organic detritus >1 m thick.*

Av — ***Alluvium veneer:** < 1 m thick; primarly as uniform sheets of slope wash on gentle slopes.*

A — *Undifferentiated fluvial deposits.*

L^1 — ***LACUSTRINE DEPOSITS:** sand, silt, and minor clay deposited in a former lake; >1 m thick; generally overlain by organic deposits; exposed by recent fluctuations in lake levels.*

NONGLACIAL AND PROGLACIAL ENVIRONMENTS

***EOLIAN DEPOSITS:** wind-deposited medium to fine sand; derived from deltaic or glaciolacustrine deposits; in some areas eolian sediments are thin or absent between dunes.*

Er — ***Ridged eolian deposits:** forming dunes; generally >2m thick.*

Ev — ***Eolian veneer:** discontinuous veneer of eolian sediments; <1 m thick.*

POSTGLACIAL OR LATE WISCONSINAN

PROGLACIAL AND GLACIAL ENVIRONMENTS

***GLACIOLACUSTRINE DEPOSITS:** fine sand, silt, and clay, with minor debris-flow diamicton, deposited in glacier-dammed lakes in valleys and along the margin of the retreating Laurentide Ice Sheet; usually overlain by organic deposits in lowlands.*

Lb — ***Glaciolacustrine blanket:** >1 m thick.*

Lv — ***Glaciolacustrine veneer:** thin and discontinuous; <1 m thick.*

***GLACIOFLUVIAL DEPOSITS:** well to poorly stratified sand and gravel; minor diamicton; deposited behind, at or in front of the ice margin by glacial meltwater; represents a potential aggregate source.*

G — ***Proglacial outwash:** cross-stratified gravel and sand deposited in front of the ice margin; Gp, outwash plain deposits, generally 1 to 5 m thick, generally mantle valley floors and surfaces adjacent to glacial meltwater channel margins; Gt, outwash terrace deposits, generally associated with meltwater channels and canyons; 1 to 10 m thick; Gd, glaciofluvial delta deposits; 1 to >30 m thick; Gf, glaciofluvial fan deposits; 1 to 10 m thick.*

Gi — ***Ice-contact stratified drift:** poorly-sorted sand and gravel with minor diamictons; deposited in contact with the retreating glacier; 1 to >20 m thick; Gih, hummocky topography relating to melting of underlying ice; Gik, surface marked by kettle holes; Gir, esker ridges; Git, kame terraces; Gid, ice-contact glaciofluvial delta deposits; 1 to >30 m thick, surface marked by kettles.*

***TILL:** diamicton deposited directly by the Laurentide Ice Sheet; sandy to clayey matrix with striated clasts of various lithologies, including many Canadian Shield, carbonate and sandstone erratics; clast content is typically low (<10 %).*

Tb — ***Till blanket:** >1 m thick, continous till cover forming undulating topography that locally obscures underlying units.*

Ts — ***Streamlined and fluted till:** >1 m thick, till surface marked by streamlined landforms including flutes and drumlins.*

Th — ***Hummocky till:** >1 m thick; hummocky till surface.*

Tr — ***Ridged till deposits:** >1 m thick, moraines or crevasse fillings forming a ridged topography.*

Tv — ***Till veneer:** <1 m thick, discontinuous till cover, underlying bedrock topography is discernible.*

PRE-QUATERNARY
BEDROCK

R — ***Sedimentary bedrock:** Cretaceous Fort St. John Group shales (including the Shaftesbury Formation) and Dunvegan Formation sandstone exposed in highlands and along meltwater channel and canyon walls.*

Geological boundary (defined)
Meltwater channel, small (paleoflow direction known, unknown)
Meltwater channel, large (paleoflow direction unknown)
Major moraine
Minor moraine and crevasse filling
Flutings or drumlinoid ridges parallel to ice flow (direction unknown)
Thermokarst

NOTES

The Nogah Creek (NTS 94-I/12) map area was inundated by the Laurentide Ice Sheet during the late Wisconsinan glaciation (ca. 25 000–10 000 years ago). Bedrock was not encountered during field operations anywhere in the map area, instead thick clay and silt-rich till deposits appear to blanket almost the entire region. One particularly deep borrow pit exposed > 24 m of till, suggesting that thrusting and stacking of till sheets is likely to have occurred. The remarkably flat topography, coupled with the relative impermeability of the regional till has led to perched aquifers, poor surface drainage, and the development of extensive organic fen and bog deposits. Several borrow pits dug in such a manner as to prevent surface drainage from the surrounding peatlands into them were observed to remain dry, excepting that attributable to meteoric water accumulation, for two or more years. Where peat has accumulated, it is likely underlain by permafrost, and probably contains significant amounts of ground ice as evidenced by extensive thermokarst and kettled topography.

During deglaciation, the region was occupied by an increasingly lobate eastward retreating ice mass. Moraines in the southern part of the map area are interpreted as recessional moraines, while large meltwater channels in the northern map area correspond to lateral drainage along retreating ice margins. The southwestern corner of the map area borders what is interpreted to have been a subglacial tunnel valley. Evidence in support of this interpretation include its regional morphology, the presence of extensive glaciofluvial sand and gravel deposits flooring its base, lateral margins that are capped by 1–4 m of till, and moraines that drape the landscape, transverse to the long-profile of the valley. The sub-till gravel deposits (unit Tb/Gt) were exposed in numerous borrow pits dug during construction of the Nogah side road. There, 1–4 m of clay-rich till overlies 2–4 m of well sorted, foreset and planar-crossbedded fine to medium gravel and sand. These deposits are projected to extend laterally across a 5 x 0.5 km area.

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Geology by I.R. Smith, 2003–2005

Geological compilation by I.R. Smith, 2003–2006

Digital compilation by L. Robertson, GSC Northern Canada Division, 2006

Digital cartography by E. Everett, Data Dissemination Division (DDD)

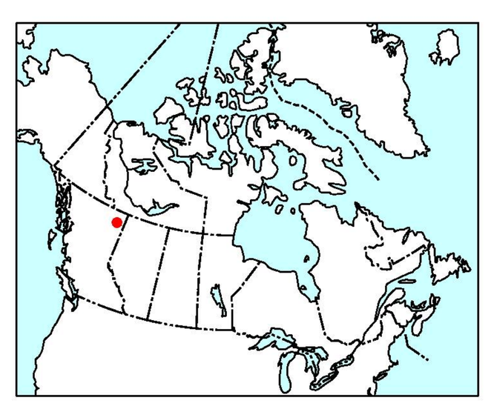
This map was produced from processes that conform to the Scientific and Technical Publishing Services Subdivision (DDD) Quality Management System, registered to the ISO 9001: 2000 standard

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

Digital base map provided by I.R. Smith, modified by DDD

Shaded relief image prepared by DDD, derived from the digital elevation model suppied by I.R. Smith, based on 3° arc_second SRTM imagery Illumination: azimuth 310°, altitude 25°, vertical factor 4.8x

Mean magnetic declination 2009, 21°17'E, decreasing 22.4' annually



LOCATION MAP

GSC OPEN FILE 5306

BCMEMPR MAP 2006-2

SURFICIAL GEOLOGY

NOGAH CREEK

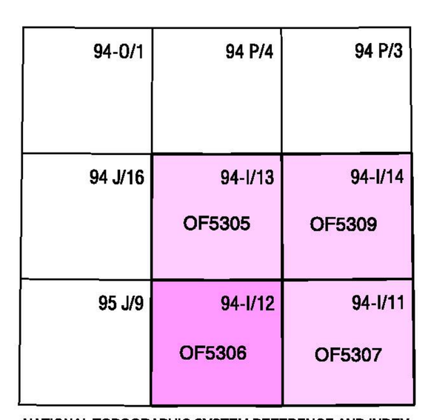
BRITISH COLUMBIA

Scale 1:50 000/Échelle 1/50 000

kilometres 1 0 1 2 3 4 kilomètres

Universal Transverse Mercator Projection
North American Datum 1983

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



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

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2009

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