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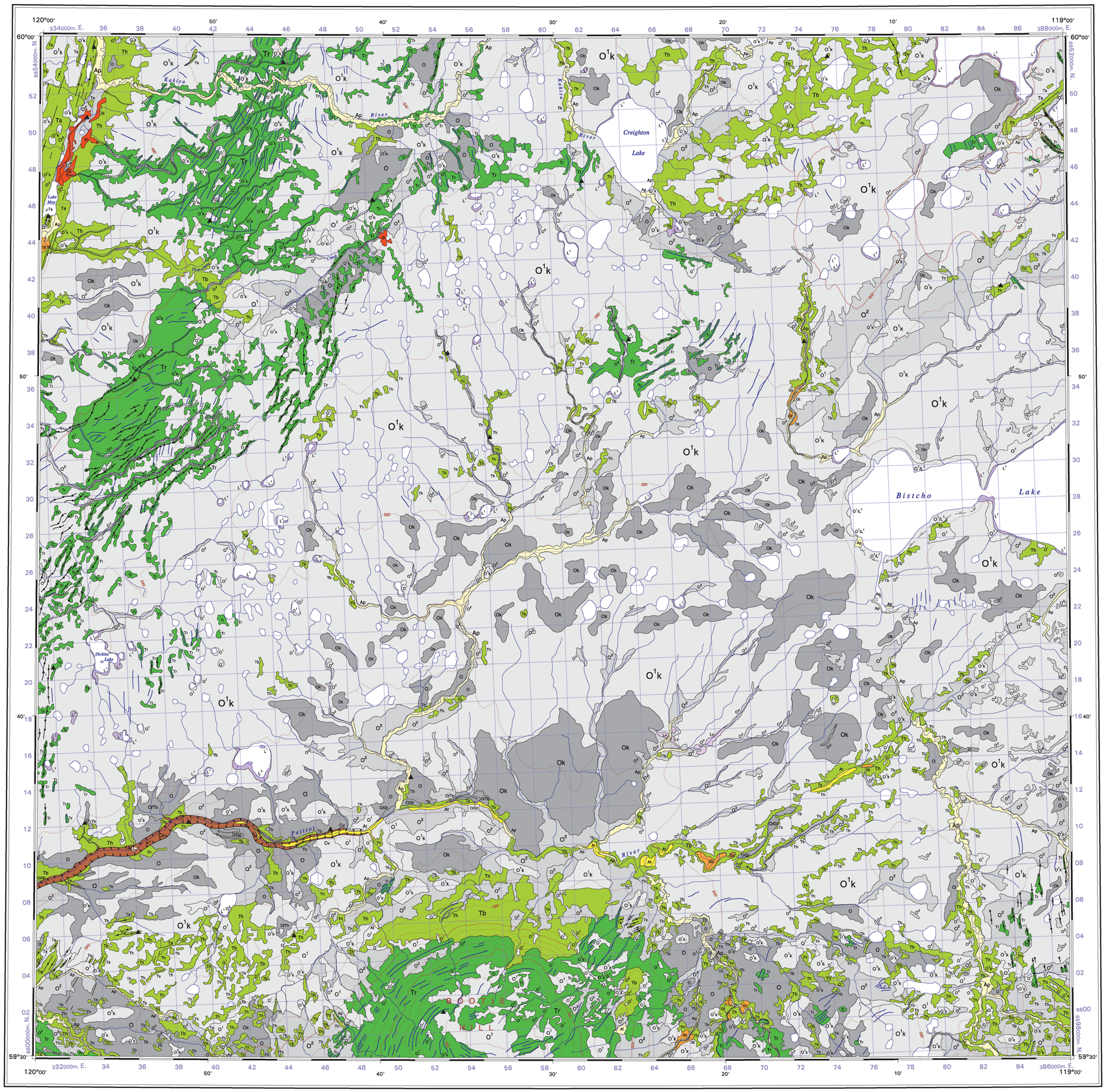
GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA

EUB Alberta Energy and Utilities Board | AGS Alberta Geological Survey



LEGEND

This legend is common to maps OF5070 and OF5237.
Coloured legend blocks indicate map 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 originally 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.*

O¹ — ***Bog peat:*** *sphagnum or forest peat formed in an ombrotrophic environment; wet terrain; may be treed or treeless; O¹h, hummocky, mounds, and plateaus; area may be underlain by ground ice or shallow permafrost conditions; O¹k, thermokarst terrain related to melting ground ice.*

O² — ***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; occurring 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; primarily as uniform sheets of slope wash on gentle slopes.*

A — *Undifferentiated fluvial deposits.*

L¹ — ***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.*

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 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, continuous 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:*** *>1m 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)
Paleoshoreline
Meltwater channel or underfit channel, small (paleoflow direction known, unknown)
Meltwater channel, large (paleoflow direction known)
Esker
Major moraine
Minor moraine and crevasse filling
Fluting parallel to ice flow (direction unknown)
Drumlin parallel to ice flow (flow direction unknown)
Field observation site (with, without sample)

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Geology by A. Plouffe, R.C. Paulen, I.R. Smith, 2004-2005

Digitizing and digital cartography by Géotech, Geomatic services

Digital map compilation by L. Robertson, Terrain Sciences Division

Digital cartography by J.L. Dohar, Earth Sciences Sector Information Division (ESS Info)

This map was produced from processes that conform to the ESS Info Publishing Services Subdivision 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 from data compiled by Alberta Sustainable Resource Development, modified by ESS Info

Mean magnetic declination 2006, 22°05'E, decreasing 24.3' annually. Readings vary from 22°25'E in the NW corner to 21°45'E in the SE corner of the map

Elevations in metres above mean sea level

EUB/AGS Map 395 GSC OF5070 Thinahtea Creek	EUB/AGS Map 360 GSC OF5183 Beatty Lake Area
EUB/AGS MAP 396 GSC OF5237 Mega River	EUB/AGS MAP 361 GSC OF5184 Zama City Area

Figure 1. NTS 84 M showing EUB/AGS (Alberta Energy and Utilities Board/Alberta Geological Survey) and GSC (Geological Survey of Canada) maps.

GSC OPEN FILE 5070

EUB/AGS MAP 395

SURFICIAL GEOLOGY

TINAHTEA CREEK

ALBERTA

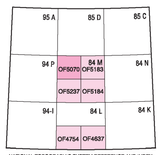
Scale 1:100 000/Échelle 1/100 000

kilometres 2 0 2 4 6 8 kilometres

Universal Transverse Mercator Projection
North American Datum 1983
© Her Majesty the Queen in Right of Canada 2006

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1983
© Sa Majesté la Reine du chef du Canada 2006

LOCATION MAP



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

OPEN FILE
DOSSIER PUBLIC
5070
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2006

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2006: Surficial geology, Tinahtea Creek, Alberta; Geological Survey of Canada, Open File 5070; Alberta Energy and Utilities Board, Alberta Geological Survey, Map 395, scale 1:100 000.

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