GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

MAP 1381A

SURFICIAL GEOLOGY AND LANDFORMS

WILLISTON LAKE AREA

(MAP 1)

BRITISH COLUMBIA

Scale 1:125,000

Miles 2 0 2 4 6 Miles
Kilometres 3 0 3 6 9 Kilometres

Universal Transverse Mercator Projection

LEGEND

Note: This legend is common to maps 1381A, 1382A and 1383A

	LITHOLOGY	TOPOGRAPHIC EXPRESSION	TOPOGRAPHIC SITUATION	ENGINEERING NOTES
POST GLACIAL	Ap — *Modern Alluvium: gravel and sand, silt, and minor muck and peat; at or near present base level (mostly floodplain and channel deposits)*	*Flat, low terrace levels; (includes terraces up to 20 feet above modern floodplain)*	*Bordering major rivers and tributaries*	*Floodplains unsuitable for location of structures because of flooding risk and generally poor subsoil drainage, low terraces suitable where cover of silt is thin or lacking; good source of aggregate*
	Af — *Fan Deposits (including associated contiguous sediments): poorly sorted gravel, sand, silt, and clay*	*Low angle (< 15°) fans; some irregularly shaped*	*Valley sides at abrupt changes of stream gradient*	*Generally offer well-drained building sites, but sudden channel shifting may cause damage; good source of aggregate*
	O — *Organic Deposits: muck, mucky peat, peat, and marl*	*Flat, irregularly shaped areas generally cover <10 square miles*	*Flat poorly drained areas (mainly on broad valley bottoms)*	*Unsuitable for location of structures because of low bearing capacity and poor drainage*
	Ce — *Slump Deposits: clay, silt, sand, and minor gravel (landslide or earth-flow in unconsolidated material)*	*Ridges and hummocks generally organized in sinuous bands*	*Bordering rivers and streams*	*Unsuitable for location of structures, because in most places these deposits are being undercut by the local stream and are continually subject to further movement*
	Cs — *Colluvial Deposits: mainly bedrock rubble (deposit of rocktalls or landslides in consolidated materials; includes taluses)*	*Hummocks, closed depressions; high angle (20°-33°) debris fans (taluses)*	*Base of steep slopes*	*Location and instability of deposits results in unsuitable structure locations; may be good sources of local bedrock aggregate*
	Fti — *Fluvial Deposits: gravel and sand, and minor silt; terraces intermediate in time and space between modern or near modern terraces and terraces associated with deglaciation*	*Flat, intermediate, level terraces; up to 50 feet above modern floodplain*	*Bordering major rivers and tributaries*	*Suitable for location of structures where silt cover is thin or lacking; good source of aggregate*
	E — *Aeolian Deposits: sand and minor silt; mainly in dune form overlying lacustrine deposits*	*Irregularly shaped mounds and ridges of low (< 20 feet) relief*	*Broad valley bottoms*	*Subject to wind erosion where vegetation mat is removed; location of structures limited by the nature of underlying materials*
GLACIAL	Lp / Lv — *Lacustrine Deposits: clay, silt, and sand; minor gravel near former shorelines; Lp, deposits generally over 12 feet thick that mask underlying topography; Lv, thin veneer generally less than 12 feet thick not masking underlying topography*	*Flat to gently rolling when thickness <12 feet, gently rolling when thickness >12 feet*	*Broad valley bottoms*	*Generally unsuitable for location of structures because of poor bearing capacity and drainage characteristics, improves near former shorelines where gravel is present. This unit is subject to slumping along shoreline of Williston Lake*
	Ftm / Ftk — *Fluvial Deposits, Non-Ice Contact: gravel, sand, and silt; Ftm, deposits of the higher terraces associated with final deglaciation; Ftk, pitted, characterized by relatively flat surfaces broken by closed depressions*	*Flat, high terrace levels with surfaces up to 550 feet above modern floodplain; where kettled, flat is broken by isolated or clustered circular depressions*	*Valley bottoms*	*Suitable for location of structures where silt cover is thin or lacking ; but subject to large scale landsliding at shoreline of Williston Lake ; good source of aggregate*
	Fth — *Fluvial Deposits, Ice Contact: gravel, sand, and silt; mainly poorly sorted; some till and lacustrine deposits; includes kames, kame terraces, crevasse fillings, eskers and one "end moraine" ridge located between Portage and Bullhead Mtns*	*Hummocks, elongated and sinuous ridges, flat terraces, closed depressions*	*Mainly major valley bottoms; sides and bottoms of minor valleys*	*Suitable for location of structures; but subject to large scale landsliding at shoreline of Williston Lake ; good source of aggregate*
	Fu — *Fluvial Deposits, Undifferentiated: gravel, sand, and silt*	*Subdued hummocks, closed depressions*	*Valley bottom*	*Suitable for location of structures where mainly gravel and sand; good source of aggregate*
	Mh / Md — *Morainal Deposits (undisturbed): till and minor contiguous and enclosed glaciofluvial deposits; Mh, hummocky; Md, drumlinoid*	*Hummocks, closed depressions, streamlined ridges and depressions*	*Valley bottom*	*Well-drained hummocks and ridges and minor areas of gravel and sand offer good but generally areally restricted structure locations; excellent fill for embankment construction but generally unsuitable for aggregate unless washed*
	Mr — *Morainal Deposits (disturbed): thin till; reworked, eroded, and masked by colluvium; minor fluvial, aeolian and lacustrine deposits; including scattered bedrock exposures*	*Featureless or having general form of underlying bedrock topography*	*Mainly on steep (10°-33°) valley slopes*	*Material is generally suitable for bearing structures but steep slopes limit the availability of suitable locations; generally unsuitable as aggregate unless washed*
	D — *Glacial Drift, Undifferentiated: mainly thin till, gravel, sand, and silt over bedrock*	*Gently rolling, hummocks, closed depressions, streamlined ridges and depressions, flat terraces*	*Bedrock controlled, low angle (< 10°) slopes near base of major valley sides*	*Because of composition and thickness variability of areas included in this unit, it is not feasible to generalize on the availability of construction sites or the suitability of these materials as aggregate*
	R — *Rock and near surface rock: cover, where present, generally consists of colluvium, glacial erratics, and disturbed till*	*Variable; commonly exposed forming steep (> 33°) slopes*	*Upper parts of major valleys; summit areas of mountains; along river banks*	*Suitable for structure locations; carbonate rocks suitable for rip-rap and crushed aggregate*

Geological boundary (defined, approximate, assumed)
Trend of drumlinoid or streamlined feature, ice direction known (usually one symbol represents several features in an area)
Landslide escarpment
Major terrace escarpment
Esker (direction of stream flow known, unknown)
Moraine ridge, marginal meltwater channel, or break in slope indicating the upper limit of ice during a certain advance
Meltwater channel, abandoned or with underfit stream, (direction of flow known, unknown)
minor meltwater channel
major meltwater channel
Cirque
Dunes
Unit identification uncertain

Geology by N.W. Rutter, 1966-69

Geological cartography by R.D. Fairfield, Geological Survey of Canada

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

Topographical base prepared prior to the creation of Williston Lake

Base-map from map 94 C published at 1/250,000 scale by the Army Survey Establishment, R.C.E.

Magnetic declination 1974 varies from 28°19' easterly at centre of east edge to 28°31' easterly at centre of west edge. Mean annual change -3.7'

Elevations in feet above mean sea-level

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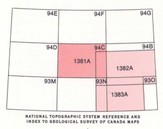

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO GEOLOGICAL SURVEY OF CANADA MAPS