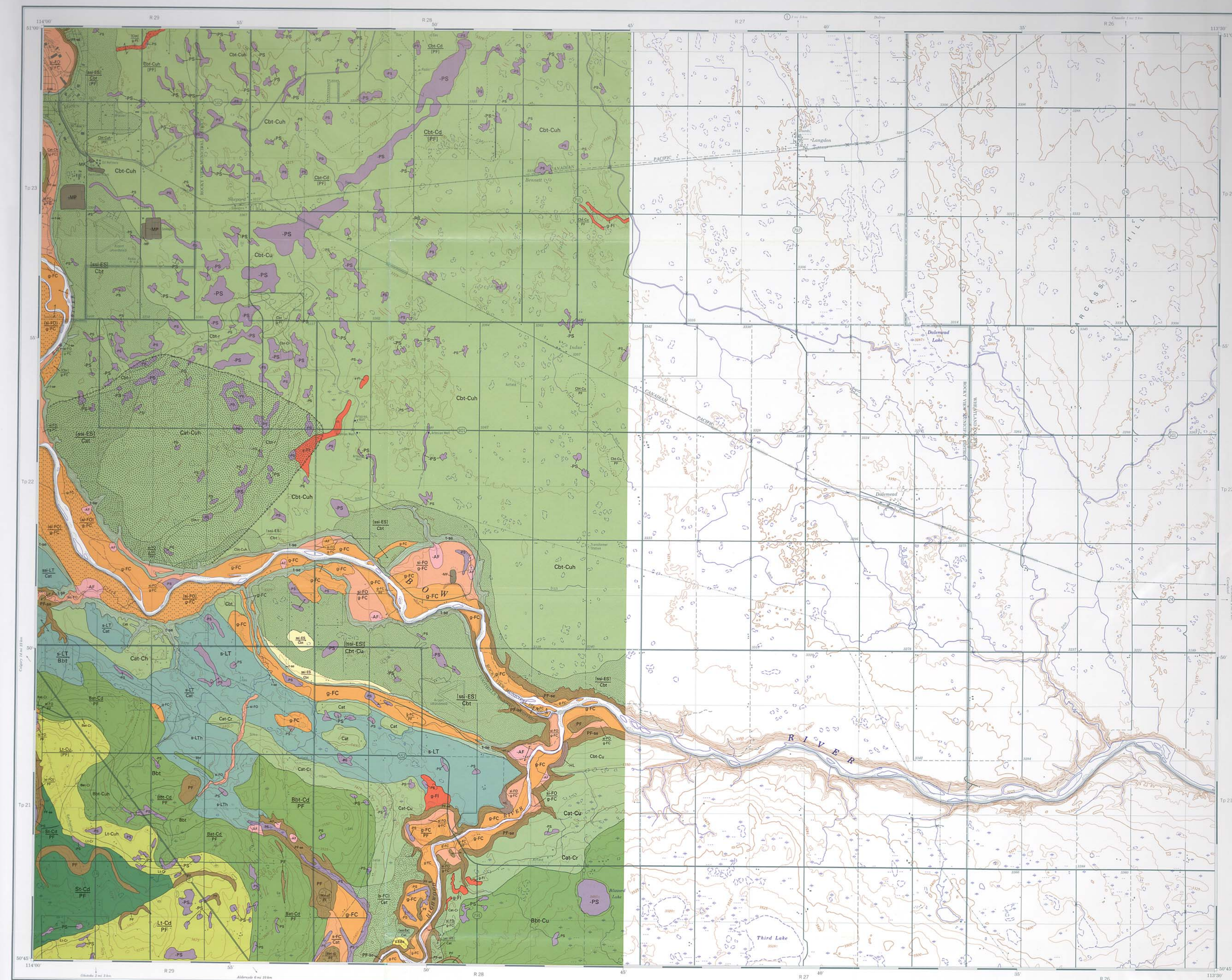


SYMBOL	STRATIGRAPHIC UNIT	LITHOLOGY (Material)	LITHOGENESIS (Origin of material)	MORPHOLOGY (Descriptive and/or genetic)	COMMENT
M1	Recent alluvium	diverse lithology, bedrock to clay; reconstructed pebble zone; most common material	material deposited by river; accumulated by river; compacted and uncompacted fill	variable; generally flat to undulating	fill of variable thickness and limited areal extent
M2	Recent alluvium	silt and clay, minor sand and organic material	material deposited in meadows, ponds and bays	flat to gently undulating	generally undulating, limited to gravel thickness and limited areal extent
M3	Recent alluvium	poorly sorted silt, sand, clay and organic sediment, organic loam	sediment deposited in ponds of all origins	flat to gently undulating	sediment is commonly overlain by water for at least part of the year
M4	Recent alluvium	variable; clay to bedrock, mainly accumulated by rapid downflow; movement of local sediment	landslide sediment; material accumulated by rapid downflow; movement of local sediment	undulating to hummocky terrain near the base of slopes	
M5	Recent alluvium	sand	colluvial sand	downs	
M6	Crossfield Drift (unit b)	sand and silt overlying pebble loam (M6)	colluvial suspended load sediment (loose overlying glacial sediment)	not included in unit definition	colluvial sediment is generally 2 to 4 metres thick
M7	Crossfield Drift (unit a)	silt, sand, gravel with minor clay	sediment deposited at or beyond the top of a slope by sedimentary talus	flat to undulating and surface inclined downstream, generally fan shaped	
M8	Crossfield Drift (unit a)	sand overlying pebble loam (M8)	fluvial channel sediment	not included in unit definition	sand is generally 2 to 4 metres thick
M9	Crossfield Drift (unit a)	gravel, minor sand	fluvial channel sediment	not included in unit definition	thickness of fluvial sediment generally unknown
M10	Quaternary sediment overlying Percepsio Hills Formation	gravel, minor sand overlying sandstone and siltstone	fluvial channel sediment overlying nonmarine bedrock	not included in unit definition	
M11	Crossfield Drift (unit b)	silt overlying gravel	fluvial overbank sediment overlying fluvial channel sediment	not included in unit definition	silt is generally less than 2 metres thick
M12	Crossfield Drift (unit b)	pebble loam (M12) overlying gravel	glacial sediment overlying fluvial channel sediment	not included in unit definition	ill is generally 2 to 4 metres thick
M13	Crossfield Drift (unit b)	sand, minor gravelly sand	fluvial channel sediment deposited on, within, or beneath glacial ice	flat to hummocky; commonly occurs in discontinuous, sinuous ridges a few 1/2 of metres across and a few metres high	potential source for fill gravel and sand maturation
M14	Crossfield Drift (unit b)	gravel, minor sand, poorly sorted, contains inclusions of eroded material	fluvial channel sediment deposited on, within, or beneath glacial ice	flat to hummocky; commonly occurs in discontinuous, sinuous ridges a few 1/2 of metres across and a few metres high	
M15	Crossfield Drift (unit b)	pebble loam (M15) overlying gravel	glacial sediment overlying non-contact fluvial channel sediment	not included in unit definition	gravel beds are discontinuous and cannot be traced laterally
M16	Crossfield Drift (unit b)	pebble loam (M16) overlying gravel	glacial sediment overlying non-contact fluvial channel sediment	not included in unit definition	
M17	Crossfield Drift (unit b)	silt and clay	fluvial overbank sediment	not included in unit definition	
M18	Crossfield Drift (unit b)	silt	fluvial overbank sediment	flat to undulating	
M19	Crossfield Drift (unit b)	silt overlying gravel	fluvial overbank sediment overlying fluvial channel sediment	not included in unit definition	
M20	Quaternary sediment overlying Percepsio Hills Formation	silt overlying sandstone, and siltstone	fluvial overbank sediment overlying nonmarine bedrock	not included in unit definition	silt is generally 2 to 4 metres thick
M21	Quaternary sediment overlying Percepsio Hills Formation	silt overlying gravel overlying sandstone, siltstone, and shale	fluvial overbank sediment overlying nonmarine bedrock	not included in unit definition	bedrock occurs within 6 metres of the surface
M22	Quaternary sediment overlying Percepsio Hills Formation	fine sand	lacustrine traction load sediment	not included in unit definition	
M23	Quaternary sediment overlying Percepsio Hills Formation	fine sand	lacustrine traction load sediment	hummocky topography results from deposition on stagnant ice followed by subsequent melting of ice	
M24	Balzac Drift (unit b)	sand overlying pebble loam (M24)	lacustrine traction load sediment overlying glacial sediment	not included in unit definition	sand is generally from 2 to 4 metres thick
M25	Balzac Drift (unit b)	pebble loam (M25)	glacial sediment	eroded slope commonly valley side	dominant lithology in fill of varying stratigraphic units. Also includes fluvial and lacustrine sediment in places interbedded with the ill. Bedrock occurs in lower part of slope in places.
M26	Crossfield Drift (unit a)	pebble loam (M26)	glacial sediment	not included in unit definition	
M27	Crossfield Drift (unit a)	pebble loam (M27)	superglacial-mudflow sediment	glacier margin collapse ridge	contains isolated bodies of poorly sorted ice contact fluvial channel sediment
M28	Crossfield Drift (unit a)	pebble loam (M28)	superglacial-mudflow sediment	undulating glacial collapse terrain	
M29	Crossfield Drift (unit a)	pebble loam (M29)	superglacial-mudflow sediment	undulating to hummocky glacial collapse terrain	
M30	Crossfield Drift (unit a)	pebble loam (M30)	superglacial-mudflow sediment	hummocky glacial collapse terrain	contains isolated bodies of poorly sorted ice contact fluvial channel sediment
M31	Crossfield Drift (unit a)	pebble loam (M31) overlying gravel	superglacial-mudflow sediment overlying fluvial channel sediment	hummocky glacial collapse terrain	ill is generally 4 to 6 metres thick
M32	Crossfield Drift (unit a)	sand and silt overlying pebble loam (M32)	colluvial suspended load sediment overlying glacial sediment	not included in unit definition	siltation is from 0 to 2 metres thick
M33	Crossfield Drift (unit b)	pebble loam (M33)	glacial sediment	not included in unit definition	
M34	Crossfield Drift (unit b)	pebble loam (M34)	glacial sediment	glacier margin ridge	contains isolated bodies of poorly sorted ice contact fluvial channel sediment
M35	Crossfield Drift (unit b)	pebble loam (M35)	superglacial-mudflow sediment	undulating glacial collapse terrain	
M36	Crossfield Drift (unit b)	pebble loam (M36)	superglacial-mudflow sediment	undulating to hummocky glacial-collapse terrain	contains isolated bodies of poorly sorted ice contact fluvial channel sediment
M37	Crossfield Drift (unit b) overlying Percepsio Hills Formation	pebble loam (M37) overlying sandstone, siltstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	eroded bedrock draped by glacial collapse sediment	ill is generally 2 to 4 metres thick
M38	Crossfield Drift (unit b) overlying Percepsio Hills Formation	pebble loam (M38) overlying sandstone, siltstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	undulating to hummocky glacial-collapse terrain	ill is generally 2 to 4 metres thick
M39	Crossfield Drift (unit b)	sand and silt overlying pebble loam (M39)	colluvial suspended load sediment overlying glacial sediment	not included in unit definition	colluvial sediment is less than 2 metres thick
M40	Crossfield Drift (unit b) overlying Percepsio Hills Formation	sand and silt overlying pebble loam (M40) overlying sandstone, and siltstone	colluvial suspended load sediment overlying nonmarine bedrock	not included in unit definition	colluvial sediment is less than 2 metres thick; bedrock occurs within 4 to 6 metres of the surface
M41	Balzac Drift (unit a)	pebble loam (M41)	glacial sediment	glacier margin collapse ridge	contains isolated bodies of poorly sorted ice contact fluvial channel sediment
M42	Balzac Drift (unit a) overlying Percepsio Hills Formation	pebble loam (M42) overlying sandstone, siltstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	eroded bedrock surface draped by glacial collapse sediment	ill is generally 2 to 4 metres thick
M43	Balzac Drift (unit a) overlying Percepsio Hills Formation	pebble loam (M43) overlying sandstone, siltstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	glacial sediment overlying nonmarine bedrock	
M44	Balzac Drift (unit a) overlying Percepsio Hills Formation	pebble loam (M44) overlying sandstone, siltstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	eroded bedrock surface draped by glacial collapse sediment	ill is generally less than 4 metres thick
M45	Balzac Drift (unit a) overlying Percepsio Hills Formation	pebble loam (M45) overlying sandstone, siltstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	eroded bedrock surface draped by glacial collapse sediment	ill is generally less than 4 metres thick
M46	Balzac Drift (unit b)	pebble loam (M46)	glacial sediment	not included in unit definition	
M47	Balzac Drift (unit b)	pebble loam (M47)	superglacial-mudflow sediment	undulating glacial collapse terrain	
M48	Balzac Drift (unit b)	pebble loam (M48)	superglacial-mudflow sediment	undulating to hummocky glacial-collapse terrain	may contain isolated bodies of poorly sorted ice contact fluvial channel sediment
M49	Balzac Drift (unit b) overlying Percepsio Hills Formation	pebble loam (M49) overlying sandstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	eroded bedrock draped by glacial collapse sediment	ill is generally 2 to 4 metres thick
M50	Lochend Drift	pebble loam (M50)	superglacial-mudflow sediment	glacier margin collapse ridge	contains isolated bodies of poorly sorted ice contact fluvial channel sediment
M51	Lochend Drift	pebble loam (M51)	superglacial-mudflow sediment	undulating to hummocky glacial-collapse terrain	
M52	Lochend Drift overlying Percepsio Hills Formation	pebble loam (M52) overlying sandstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	undulating glacial collapse terrain	ill is generally 4 to 6 metres thick
M53	Lochend Drift overlying Percepsio Hills Formation	pebble loam (M53) overlying sandstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	eroded bedrock surface draped by glacial collapse sediment	ill is generally 2 to 4 metres thick
M54	Spy Hill Drift overlying Percepsio Hills Formation	pebble loam (M54) overlying sandstone, and shale	superglacial-mudflow sediment overlying nonmarine bedrock	eroded bedrock surface draped by glacial collapse sediment	ill is generally 2 to 4 metres thick
M55	Percepsio Hills Formation	cherty, calcareous sandstone and calcareous siltstone; thick bedded, pale grey	nonmarine bedrock	not included in unit definition	
M56	Percepsio Hills Formation	sandstone and mudstone	nonmarine bedrock	eroded slope	
M57	Quaternary sediment overlying Percepsio Hills Formation	silt overlying sandstone, and siltstone	fluvial overbank sediment	not included in unit definition	silt is generally less than 2 metres thick
M58	Balzac Drift (unit a) overlying Percepsio Hills Formation	pebble loam (M58) overlying sandstone, siltstone, and shale	glacial sediment overlying nonmarine bedrock	eroded bedrock draped by veneer of glacial sediment	ill is generally less than 2 metres thick



Surface Materials of the Calgary Urban Area: Dalemead Sheet

NTS 82-1/3
 S.R. Moran
 Published 1965
 Any revisions or additional geological information would be welcomed by the Alberta Research Council.



Base maps compiled by the Survey and Mapping Division, Geology, Mines and Resources, Ottawa.
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COLOUR CONVENTION
 The colour of a map unit reflects the material at a depth of 2m below the surface. Where a variety of glacial till occurs, which is less than 2m thick, a pattern indicates the composition of the clay.

SYMBOLS:
 - silt and clay
 - silt
 - sand and silt
 - gravel

DESCRIPTION OF STRATIGRAPHIC UNITS
C. CROSSFIELD DRIFT
 Glacial till and associated stratified drifts. The till has a texture of 20-30 percent sand, 30-50 percent silt and 20-30 percent clay. Pebbles generally occur in common to abundant granitic and gneissic rocks. Two units have been differentiated in the northern part of the area on the basis of morphological characteristics. A unit 8-12m thick contains approximately more granite pebbles than does unit 4. Above the basal contact of unit 8, the proportion of beds of silt and clay to sand and gravel is 1:1. Unit 4 contains approximately more sand than does unit 8. The basal contact of unit 4 is generally a well-sorted, graded sand and gravel. The basal contact of unit 8 is generally a well-sorted, graded sand and gravel. The basal contact of unit 8 is generally a well-sorted, graded sand and gravel. The basal contact of unit 8 is generally a well-sorted, graded sand and gravel.

DESCRIPTION OF LITHOLOGICAL SYMBOLS
M1 Recent alluvium
 Sediment containing more than 40% material finer than 0.075 mm and less than 40% material coarser than 0.850 mm (sand) and less than 40% material coarser than 0.850 mm (silt) and more than 0.850 mm (silt). Also includes units of unconsolidated silt and clay. The basal contact of unit 8 is generally a well-sorted, graded sand and gravel. The basal contact of unit 8 is generally a well-sorted, graded sand and gravel. The basal contact of unit 8 is generally a well-sorted, graded sand and gravel.

EXPLANATION OF MAP SYMBOL STRUCTURE
 The basic map symbol consists of a number that identifies the stratigraphic unit, the lithology, the lithogenesis, and the morphology of the unit respectively. A group may also be identified by a symbol that consists of only one of the elements where the others are unknown or not considered significant for the purpose of the map. The generalised unit symbol has the form:
 A-B-C-D-E

LEGEND
 - Buried valley visible at surface
 - Buried sand
 - Geologic contact, definite
 - Geologic contact, inferred
 - Minor watercourse channel
 - Minor traverse ridge, "waterboard mountain"

FLUVIAL SEDIMENT
M1 Recent alluvium
 Recently deposited sand, silt and clay. Generally loamy mixtures. Bedding distinct to obscure, bedding commonly cut by overlying beds of silt and clay. Bedding also commonly seen in discrete beds within the unit. Organic matter present in discrete layers although disseminated throughout and in places, fine sand and silt is incorporated. Bedding may be present in some places. Fine sand and silt is incorporated. Bedding may be present in some places. Fine sand and silt is incorporated.

LACUSTRINE SEDIMENT
L1 Lacustrine traction load sediment
 Silt, clayey, silty clay, or clay. Thinly bedded with plane bedding in the graded bed. Bedding is generally distinct to obscure. Bedding is generally distinct to obscure. Bedding is generally distinct to obscure.

GLACIAL SEDIMENT
M6 Crossfield Drift (unit b)
 Colluvial suspended load sediment. This unit is directly related to the material upon which it is deposited. This unit is directly related to the material upon which it is deposited. This unit is directly related to the material upon which it is deposited.

GLACIAL COLLAPSE TERRAIN
M24 Balzac Drift (unit b)
 Lacustrine traction load sediment. This unit is directly related to the material upon which it is deposited. This unit is directly related to the material upon which it is deposited. This unit is directly related to the material upon which it is deposited.

GLACIAL COLLAPSE TERRAIN
M24 Balzac Drift (unit b)
 Lacustrine traction load sediment. This unit is directly related to the material upon which it is deposited. This unit is directly related to the material upon which it is deposited. This unit is directly related to the material upon which it is deposited.

