

LEGEND

PLEISTOCENE AND HOLOCENE, UNDIVIDED

- 0** ORGANIC DEPOSIT: woody fibrous and mucky peat; up to 7 m thick; present in bogs, fens, swamps and marshes; generally flat topography.
- 1** EOLIAN DEPOSIT: fine and medium-grained sand and silt; up to 7 m thick; longitudinal and parabolic dunes scoured by blowouts; undulating to rolling topography.
- LACUSTRINE DEPOSIT: silt and clay with local ice-rafted stones up to 80 m thick; deposited mainly in proglacial lakes, but includes also undifferentiated recent lake sediment; flat to gently undulating topography.
- 2a** Coarse sediment: sand silt; undulating surface in places modified by wind.
- 2b** Fine Sediment: silt and clay; flat to gently undulating surface.
- 3a** Coarse sediment: gravel, gravel and sand, fine to coarse-grained sand, minor silt beds.
- 3b** Fine Sediment: fine sand, silt and clay, minor gravel beds.
- 4** STREAM AND SLOPEWASH ERODED DEPOSIT: exposed till and bedrock, local slump material; slopes of river valleys and meltwater channels, in places badland type terrain. 4a - mostly bedrock

PLEISTOCENE

- 5** CRYOTURBATED EOLIAN (LOESS) AND FLUVIAL DEPOSIT: mixed fine sand, silt and gravel, local clay; up to 3 m thick; overlies proglacial gravel and sand on the unglaciated Cypress Hill and Del Bonita uplands; flat to gently undulating topography.
- ICE-CONTACT LACUSTRINE DEPOSIT: sand, silt and clay, local till, up to 20 m thick; deposited in supraglacial and ice-walled lakes or in proglacial lakes floored by ice; undulating to hummocky topography.
- 6a** Coarse Sediment: sand and silt.
- 6b** Fine Sediment: silt and clay.
- ICE CONTACT FLUVIAL DEPOSIT: gravel, sand, silt and clay, local till, up to 25 m thick; deposited in ice-front fans and deltas, undulating to hummocky topography.
- 7a** Coarse Sediment: gravel, gravel and sand, fine to coarse grained sand.
- 7b** Fine Sediment: fine sand, silt and clay.
- 8** ICE CONTACT LACUSTRINE AND FLUVIAL DEPOSITS, UNDIVIDED: gravel, sand, silt and clay, local till, up to 25 m thick; deposited in intermetnet supraglacial lakes and streams, or at margins of ice-floored proglacial lakes; undulating to hummocky topography.

- 9** DRAPED MORAINNE: till of uneven thickness, with minor amounts of water-sorted material and local bedrock exposures; up to 10 m thick; includes local areas of undifferentiated subglacially molded deposit with streamlined features; flat to undulating surface reflecting topography of underlying bedrock and other deposits.
- STAGNATION MORAINNE: till of uneven thickness, local water-sorted material; up to 30 m thick; undulating to hummocky topography reflecting variations in till thickness.
- 10a** Undulating topography, with local relief generally less than 3 m.
- 10b** Hummocky topography moderately to weakly developed, with irregularly shaped and poorly defined knobs and kettles; local relief 5 to 20 m.
- 10c** Hummocky topography strongly developed, with generally round well defined knobs, dimpled kettles, doughnut shaped hills and kettles; local relief 5 to 20 m.
- 10d** Mixed hummocky and moraine plateau topography: flat-topped irregularly shaped hills with a cover of stratified sand, silt and clay, interspersed with mounds composed of till; local relief 5 to 20 m.

- 11** RIDGED END MORAINNE: till, gravel and silt; deposited in ridges at or near a glacier margin; up to 15 m thick; typically forms a series of subparallel ridges.
- ICE-THRUST MORAINNE: mixed and contorted bedrock, till and water sorted material that have been translocated by ice in a more-or-less intact state as thrust blocks, or deformed into thrust slabs and folds; up to 100 m thick topography consists of ridges, irregularly shaped hills and depressions.
- 12a** ICE THRUST AND STAGNATION MORAINNE, UNDIVIDED: bedrock, till, local water-sorted material; up to 50 m thick; locally hummocky topography.
- GLACIAL AND FLUVIAL DEPOSITS, UNDIVIDED: mixed till, sand, silt and gravel, local bedrock exposures; flat to hummocky topography.

- 12b** Draped Moraine interspersed with fluvial deposit; up to 5 m thick; flat to undulating topography.
- 13a** Stagnation moraine interspersed with fluvial deposit; the thickness unknown; rolling to hummocky topography locally strongly modified by stream erosion.

CRETACEOUS, TERTIARY AND PLEISTOCENE, UNDIVIDED

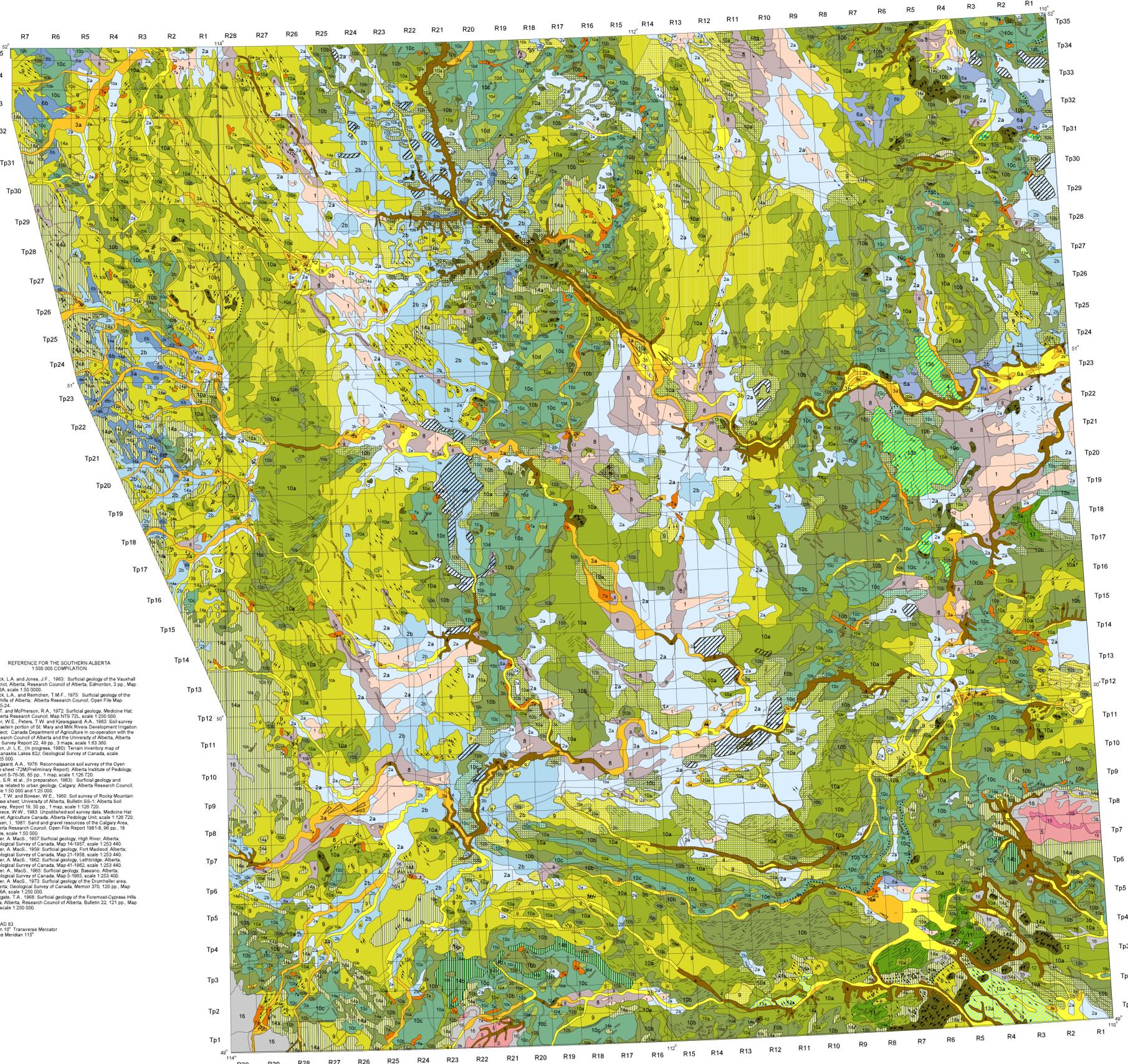
- 14a** BEDROCK AND GLACIAL DEPOSIT, UNDIVIDED: bedrock, discontinuous till, slump material, minor sand and gravel; flat, undulating, hummocky and ridged topography.
- Surface modified by lake and stream erosion and deposition
- Stagnation moraine under a cover of lacustrine sediment
- End moraine ridge
- Linear feature parallel to ice movement: flutes, drumlins.
- Linear feature transverse to ice movement: small ridges, elongated hummocks and depressions, ice crevasse filling
- Ice-thrust ridge
- Ice thrust block
- Source depression of ice-thrust block
- Esker
- Major meltwater channel
- Minor Meltwater Channel
- Meltwater channel partly buried by glacial deposit
- Meltwater delta
- Ice-contact meltwater delta or fan
- Alluvial fan

LATE TERTIARY AND EARLY PLEISTOCENE

- 15** FLUVIAL DEPOSITS: gravel and sand, minor silt beds; up to 10 m thick found overlying bedrock in upland areas, but generally covered by finer water-sorted material and exposed only along crests of erosional slopes.

CRETACEOUS AND TERTIARY, UNDIVIDED

- 16** BEDROCK: sandstone, siltstone, mudstone and shale, minor ironstone, limestone and coal beds; includes slump material; 16 a - unglaciated bedrock, 16 b - bedrock exposed by erosion or human activities



REFERENCE FOR THE SOUTHERN ALBERTA 1:500 000 COMPILATION

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- 4 Bowers, W.E., Peters, T.W. and Kneegand, A.A. 1963. Soil survey of eastern portion of St. Mary and Milk Rivers Development Irrigation Project. Canada Department of Agriculture in co-operation with the Research Council of Alberta and the University of Alberta, Alberta Soil Survey Report 22, 46 pp., 2 maps, scale 1:63 000.
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- 7 Moran, S.R. et al. (in preparation, 1983). Surficial geology and maps related to urban geology, Calgary, Alberta Research Council, scale 1:50 000 and 1:25 000.
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- 15 Stalker, A. MacS. 1973. Surficial geology of the Drumheller area, Alberta. Geological Survey of Canada, Memoir 370, 120 pp., Map 136A, scale 1:250 000.
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Datum NAD 83
Projection UTM
Reference Meridian 110°

Quaternary Geology, Southern Alberta

Geology by I. Shetsen
Published 1987
Geological fieldwork conducted from 1981 to 1983

Digital version co-ordinated by D. Chao
Digital Format - ArcView 3.1 (or later)
Completion Scale - 1:500 000
Derived from Map 2071967
Map207D, Digital Version 2000
Any revisions or additional geological information would be provided by the Alberta Geological Survey

