

COMMISSION GÉOLOGIQUE DU CANADA

GEOLOGICAL SURVEY OF CANADA

CARTNAT

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

MORAINAL SEDIMENTS (till): Diamicton (pebble to boulder size clasts suspended in a poorly sorted clay to sand size matrix) deposited directly by glacial ice; redeposition, where it has occurred, has been by sediment gravity flow and/or ductile deformation. Tills of two provenances were deposited during the Erratics Train Glaciation: T contains clasts of Rocky Front and Main ranges Precambrian and Paleozoic limestone, dolostone, and quartzite; Foothills and Interior Plains Mesozoic and lower Tertiary sandstone, mudstone, and coal; as well as Canadian Shield provenance granitic and metamorphic rocks. T<sup>™</sup> contains Rocky Mountain Precambrian and Paleozoic limestone, dolostone, argillite, and quartzite (may include Precambrian igneous rocks south of Crowsnest River); and Foothills Mesozoic and lower Tertiary sandstone, shale, and coal (includes lower Cretaceous volcanics in the Crowsnest Pass area). Trace amounts of Canadian Shield provenance clasts are present only where montane ice overran pre-existing drift containing Canadian Shield provenance clasts

areas of thin (<1 m) and patchy colluvium; overlies bedrock

Till blanket: 1 to 5 m of diamicton that conforms to the underlying bedrock topography. Tb<sup>™</sup> generally contains more and coarser pebble and larger clasts than does Tb°

to 30 m; thickness may be tens of metres

Till veneer: <1 m thick or discontinuous diamicton with patches of exposed bedrock or colluvium. Tv<sup>™</sup> generally contains more and coarser pebble and larger clasts than does Tv° and both may contain extensive

Hummocky moraine: Diamicton and interstratified glaciofluvial gravel and sand, massive to thick bedded; bedding slumped, faulted, and folded by syndepositional ice meltout; may contain variable amounts of ice-walled lake fine sand and silt; forms hummocky, kame and kettle topography; local relief up

Rolling till plain: More than 5 m of diamicton; surface morphology undulates with 1-2 m local relief; totally or largely obscure surface morphology of underlying bedrock

EARLY PLEISTOCENE OR PLIOCENE GLACIAL OR NONGLACIAL SEDIMENTS Till? blanket: Stony diamicton cemented to a calcrete; contains striated clasts; thickness 2 to 3 m; rests on a succession of similar sediments of glacial or nonglacial origin

PALEOZOIC TO EARLY TERTIARY ROCK Sandstone, siltstone, shale, mudstone, conglomerate, coal, and minor volcanic rocks of early Tertiary and Mesozoic age and limestone, dolostone, and quartzite of Paleozoic and Precambrian age (includes areas of thin colluvial cover, blockfields, sorted stone polygons in alpine areas)

Areas of rock as above subject to rapid mass wasting processes (rockfall and snow avalanches)

Upper Mesozoic and Early Tertiary rock eroded into badland topography

Geological boundary (defined, assumed, inferred) . . Neoglacial lateral or end moraine . . . small (flow direction known, unknown). edge of ice-walled channel . . .

Ice limit (defined, assumed, inferred); . . M1 Maximum ice limit of Late Wisconsinan montane M2 Ice limit of first major readvance of Late Wisconsinan montane glacial ice

C1 Maximum ice limit of Late Wisconsinan continental glacial ice C2 Readvance position of Late Wisconsinan continental glacial ice Lateral and end moraine (associated with advance M1, M2, or

Radiocarbon age (years before present) . . One or more Foothills Erratics Train Erratic >1 m in length . . Cosmogenic 30 CI exposure age on Foothills erratic Montane erratic close to or at the all time upper limit Canadian Shield erratic at or near the all time upper limit

Arrows indicating direction of landslide movement (associated with the unit Ch) . . . . \* Assumes a zero erosion rate and no cosmic ray blockage by snow cover

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MAP LISTARY / CASTOTREOU

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Little, E.C.
1998: Surficial geology, Cardston, Alberta:
Geological Survey of Canada, Map 1936A, scale 1:50 000