



GEOLOGICAL SURVEY OF CANADA
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LEGEND

Table with columns: MAP UNIT, MATERIAL, LANDSCAPE OR LANDFORM, ASSUMED THICKNESS (feet), ORGANIC DEPOSITS AND PERMAFROST, GENERAL COMMENTS. Rows include Alluvial (A), Marine (W), Glaciofluvial (F), Lacustrine (L), Ice Contact (I), and Bedrock (R).

*Upper case letters used without morphologic descriptors in a complex unit indicate that the regional genetic unit occurs as a veneer (see complex units)

SURFICIAL GEOLOGY OF PROJECT AREA

DESCRIPTIVE NOTES

This map covers part of an area largely within the glaciated Canadian Shield of northeastern Manitoba (see index map) where surficial materials have been mapped by the Geological Survey of Canada. The region consists predominantly of low relief landscapes bordered along the northwestern margin by low hills of Precambrian bedrock. It is within the zone of discontinuous permafrost, and myriads of lakes separated by extensive peatlands and boreal forest cover render much of it formidable to access and habitation. Beneath the organic cover the surface almost everywhere reflects the effects of inundation by glacial lakes or marine waters. The lakes formed in front of the last continental glacier as it receded northward some 8000 to 7000 years ago followed by marine inundation of the eastern part of the region bordering Hudson Bay. Because of the interaction of these factors the area is characterized either by extensive blankets of thick varved clay and silt or by discontinuous patches of fine lacustrine or marine sediments between coarse lag deposits on hills or low ridges.

The map units were delimited on the basis of aerial photograph interpretation validated by aerial observations and selective ground control. The lithology and morphology of the bedrock and inorganic cover is reflected by five regional types of terrain: Canadian Shield bedrock, moraine, ice-contact, lacustrine, and marine terraces. Each regional type of map unit has within it variations of at least two or more of the other terrain types. Along with the regional categories are local units that consist of glaciofluvial and alluvial sediments, mostly associated with abandoned or modern valleys. In order to designate the considerable number of variations of regional units at the local level, a system developed for a similar reconnaissance topographic project in Labrador (Fulton et al., 1975) was adopted and was modified somewhat to suit this region and the mapping scale.

The system permits the mapper to designate differences or variations of lithology and landform using letter symbols and by combining and arranging them in a systematic way to designate a particular map unit. This permits a flexibility that accommodates all the variations of the basic lithologies and landforms identified within each general map unit.

Organic deposits of variable thickness cover the surficial sediments and bedrock in most low lying, poorly drained parts of the region. These deposits are mapped where they exhibit features and surface textures readily identified on aerial photographs. This cover is broken in places by low rises or distinctive landforms. Numerous local organic deposits that lack distinctive features or that are masked by tree cover occur in low lying areas and are not mapped.

Map Unit Designators

The principal designators represent general lithologic-genetic types common to this region and comprise the following seven upper case letters: R (bedrock), M (moraine), L (lacustrine), I (ice contact), F (glaciofluvial), W (marine), and A (alluvial). In addition, to designate the landscape or landform characteristics of the lithologic-genetic units the following lower case letters are used: h (hill), n (knoll), r (ridge), p (plain), b (blanket), a (delta), d (drumlin), and t (terrace). These morphologic descriptors are placed after the lithologic-genetic ones, resulting in a designator with a lithologic, genetic, and morphologic connotation (e.g., Mh, Md, Wt). The applicability of the use of this basic designator is extended greatly by combining from two up to four of these to form a particular map unit. The combinations are referred to as complex (e.g., Lp, Lr) or composite (e.g., Lp, Lr) units.

Complex Units: A horizontal line separating two basic inorganic units (e.g., Lp) indicates that the upper one is a veneer overlying a morphologically dominant one. Units designated as veneer may have considerable variations in local thickness; however, in order for the relief of the underlying material to be visible, the thickness of the veneering material generally will not exceed local relief. Furthermore, in these areas the underlying unit commonly is exposed locally. For example, within a complex of Precambrian bedrock knolls, veneered with lacustrine clay (Lp), outcrops of bedrock would still occur, and where sufficiently numerous or extensive to be regularly evident on aerial photographs, the designator is extended to a complex composite one (e.g., Lp, Rn).

Composite Units: Composite units consist of two consecutively arranged basic designators separated by a single dot (Lp.Rn) or by two dots (Lp..Rn). Where one dot is used, the first letter couplet designates the nature of more than 50 per cent of the area represented by the map unit, and the second couplet designates the nature of roughly between 25 and 50 per cent. Where two dots are used, the first letter couplet designates the nature of more than 75 per cent of the area represented by the map unit, and the second couplet designates the general nature of the remainder.

Complex Composite Units: The same system of separation of designators by dots applies at the composite units, except that one or both of the basic designators are replaced by complex designators (e.g., Lp..Lr or Lp..Lr).

Specific Lithology Symbols: Where a specific lithology of either gravel or sand is identified in marine or lacustrine deposits, the lower case letters g or s, respectively, are placed ahead of the general lithologic-genetic symbol (e.g., gl, r, sl, p).

Reference

Fulton, R.J., Hodgson, D.A., and Minning, G.V. 1975. Inventory of Quaternary geology, southern Labrador: An example of Quaternary geology terrain studies in undeveloped areas. Geol. Surv. Can., Paper 74-46, 14p.

MAP SYMBOLS

Lithologic - Genetic Designator Morphologic Descriptor
A - alluvial (gravel, sand, silt) h - hill (> 50 feet relief)
W - marine (clay, silt, gravel, sand) n - knoll (< 50 feet relief)
F - glaciofluvial (gravel, sand, silt) r - ridge
L - lacustrine (clay and silt; gravel, sand) d - drumlin or drumloid
I - ice contact (sand, gravel) p - plain
M - moraine (fill) b - blanket
R - bedrock (Precambrian igneous and metamorphic; Paleozoic carbonate) a - delta
t - terrace

Mapped Organic Deposits
Bog and bog containing fen: peaty material generally 5 to 9 feet thick and several feet or more above local water table; permafrost commonly occurs at a depth 1 to 4 feet depending on local factors (forest cover, slope aspect, drainage etc.)
Fen and fen containing bog: either a nearly continuous organic blanket over water or peaty material at or just below the level of the local water table; permafrost appears to be absent
Mixed bog and fen with bog most extensive
Mixed bog and fen with fen most extensive

Geological boundary
Moraine ridge
Drumlin or drumloid (ice direction shown, not shown)
Glacial stria (ice direction shown)
Esker (direction of flow assumed, uncertain)
Abandoned beach
Partly buried channel (large, small)
Abandoned or underfit channel (large, small)
Escarpment or steep bank
Minor intersecting lineaments or grooves
Limit of forebay flooding
Dam or cofferdam (completed, proposed)
Gravel pit

*Information taken from published geological maps
Note: Symbols are printed in red on the face of the map and may form geological boundaries
Some map units and symbols shown in the legend may not appear on this map