

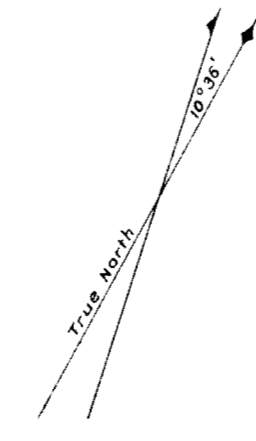
- LEGEND**
- RECENT
    - Swamps
    - Peat areas
    - Sands  
Champlain Sands and Dune Sands
    - Gravels  
Marine beach and fluvio-glacial Gravels
    - Champlain clay (Marine)
  - PLEISTOCENE
    - Sand ridges (morainic?)
    - Boulder ridges (morainic)
    - Boulder clay or till
    - Thin drift cover over bedrock
  - PALEOZOIC
    - Bedrock outcrops

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Based on map published by the  
Department of Militia and Defence.

**MORRISBURG SHEET**  
**ST. LAWRENCE RIVER SECTION**  
ONTARIO

Scale, 63,360 = 1 Mile to 1 Inch  
Elevation in feet (275) above sea level



**GEOLOGY**  
J. Neale  
L. Heber Cole } 1919-1920

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along the St. Lawrence River valley  
Mines Branch, Ottawa, Report No. 549

Note. For section J-K see Fig. 4 in report.

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**EXPLANATORY NOTES**

**SWAMPS.** The areas mapped as swamps, are wet during the greater part of the year, and some of them are never dry even in the driest summer. Nearly all the swamps are wooded, and some of them support a dense growth of trees. Swampy areas are constantly being drained, wherever possible, and if the underlying soil is suitable, the drained areas are cleared and turned over to cultivation. Not all the land below the swamps, however, is suitable for cultivation.

**SANDS.** The areas mapped as sands are mostly extensive plains of Champlain or marine sands; but included within these areas are small patches of silt or clay, with indefinite boundaries between them and the sand. Terrace sands along the St. Lawrence river, in places and occasional mounds or ridges of wind-blown sand, are also included under the general colour for sand. Ridges and mounds of sands which have considerable topographical relief, and which are believed to be earlier, and of a different origin to the above, are shown in a different colour. Most of the sands are of fine grain, too fine for use even for mortar or sand lime brick. They are of little economic value. Small quantities of sand, suitable for use in mortar or in concrete aggregates can be obtained from the beach gravel deposits. The best sands of the region are those from the fluvio-glacial deposits.

**GRAVELS.** Most of the gravel deposits along the St. Lawrence river are in the form of raised beaches of marine origin. They are never very extensive, but are widely distributed in some portions of the region, and are freely utilized for road material, or for concrete construction. Only a few of the deposits are of fluvio-glacial origin, but these are generally the most desirable gravels for concrete construction, being cleaner. Minor amounts of sand are obtained from both deposits.

**CHAMPLAIN CLAY.** This clay is widespread in the region, and sometimes forms continuous flat areas of large extent. This clay also forms the subsoil of most of the land over which the Champlain sand is spread. The best farming lands in the region are underlain by Champlain clay.

This clay is very plastic, often sticky after rains, and is absolutely stoneless when mixed with a certain proportion of sand; it may be used for the manufacture of building brick or field drain tile.

**BOULDER RIDGES.** These ridges are more stony than the land in the surrounding country. They are frequently so thickly strewn with stones, boulder, or blocks of limestone as to render them absolutely unfit for cultivation, or even pasturage, but they can be used as a source of valuable hardwood. The boulder accumulations on these ridges can be used for road building or for farm buildings.

**BOULDER CLAY OR TILL.** This is the most widespread surface material in the region. It is a glacial deposit consisting of an unsorted mixture of stones, gravel, sand, silt, and clay, in varying proportions. Some of the best soils result from the weathering of the surface of the more clayey types of till, but where sand and stones predominate, it may be almost barren, especially in dry seasons.

The till or boulder clay is often known as glacial drift, and many of the stones contained in it have been moved for long distances from their place of origin.

The lower parts of the till are frequently dense and hard, so that it is difficult to excavate. The name "hard pan" is often used for this formation.

**BEDROCK OUTCROPS.** Bedrock outcrops are not very numerous in the central area covered by these sheets, the drift covering in this district being heavy. In the Morrisburg sheet and also the Valleried sheet the rock floor, in places, comes near to the surface, and considerable areas are to be found with actual outcrops or with only a thin covering of drift over the rock. The rocks, with only one exception, are of Paleozoic age, and consist of sandstones, dolomites, and limestones. One area of very small extent, about 2 miles northeast of Prescott, is noted where Archean quartzite outcrops through the surrounding Paleozoic rocks. The Paleozoic rocks are, in many localities, suitable for building purposes, and the sandstone in the Beauharnois district is of sufficient purity to be ground for glass manufacture, and for use in steel foundries. Where convenient, and available, the limestone or dolomite is being crushed for road surfacing, and in some localities has been used for the manufacture of lime.