

LEGEND

Description of Map Units

- f** Artificial fill
- al** Alluvium: Stream deposited sediments consisting of undifferentiated gravel, sand, silt, and organic materials. Often includes areas of swamp in old channels or beaver ponds.
- swp** Swamp: Areas where surface is covered with organic material and assessment of the underlying surficial material was not made.
- af** Alluvial fan: Small alluvial fans forming at the base of steep slopes where small ephemeral streams are eroding older glacial sediments. Usually consist of the medium to fine sand.

Fine sand (fs) and very fine sand (vfs): Fine and very fine sand (sometimes distinguished and sometimes lumped) occurring stratigraphically above and in places interbedded with the Champlain Sea clay (see below). Good exposures reveal thin, horizontal beds, often with cross-bedding revealing westward, southward, and directed currents. These sands were probably derived from deltas built into the Champlain Sea by both the Winooski River to the south and the Lamoille River to the north. Overflows of relatively less dense fresh water carried plumes of fine sand, silt and clay over broad areas offshore from the deltas.

- vfs** Very fine sand
- vfs-s-c** Very fine sand, silt and clay
- fs** Fine sand
- fs-s-c** Fine sand, silt and clay
- fs-vfs** Fine sand and very fine sand

Medium sand (ms)/Medium-fine sand (mfs): Relatively homogeneous deposits of light gray to light brown medium and medium fine sand. Origin may be from either the deltas building into the Champlain Sea from both the Lamoille and Winooski Rivers (most likely) or from the Lamoille River as point bar or flood plain deposits (less likely).

- mfs** Medium fine sand
- mfs-fs-s-c** Medium fine sand
- mfs-s-c** Medium fine sand, silt and clay
- ms** Medium sand
- ms-mfs** Medium sand and medium fine sand
- ms-mfs-fs** Medium sand, medium fine sand, and fine sand
- ms-mfs-vfs** Medium sand, medium fine sand and very fine sand
- mcs** Medium coarse sand

Gravel/Pebbly coarse sand/Pebbly medium-coarse sand: Old Lamoille River channel gravels occurring on terraces at elevations between 140–200 feet. Coarse sediments unconformably overlie older and finer grained sediments (usually fine sand and clay) and occupy channels cut into these sediments.

- g** Gravel
- pmcs** Pebbly medium coarse sand
- pmcs-mfs** Pebbly medium coarse sand and medium fine sand

Champlain Sea "Clay": Gray silt (s) and clay (c) oftentimes interlayered with fine and very fine sand (vfs). Usually appears massive, but good exposures reveal thin horizontal laminations. May contain small marine pelecypods (clams).

- s-c** Champlain Sea "Clay": Gray silt (s) and clay (c) oftentimes interlayered with fine and very fine sand (vfs). Usually appears massive, but good exposures reveal thin horizontal laminations. May contain small marine pelecypods (clams).
- s** Silt
- s-vfs** Silt and very fine sand

Lake Vermont varved silt and clay: Varved lacustrine sediments consisting of distinct, rhythmically bedded layers of silt (summer) and clay (winter). Individual layers are thin (1–3 mm thick). Silt layers are usually gray, but clay layers are often reddish brown. Trace fossils (animal tracks) are sometimes visible on bedding planes. Usually deposited directly on glacial till or bedrock. Only small, rare exposures were encountered within the quadrangle.

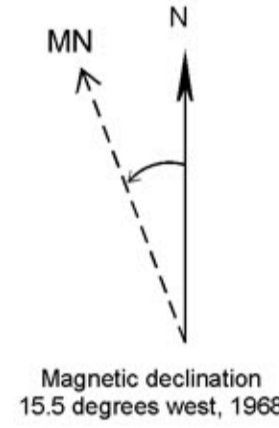
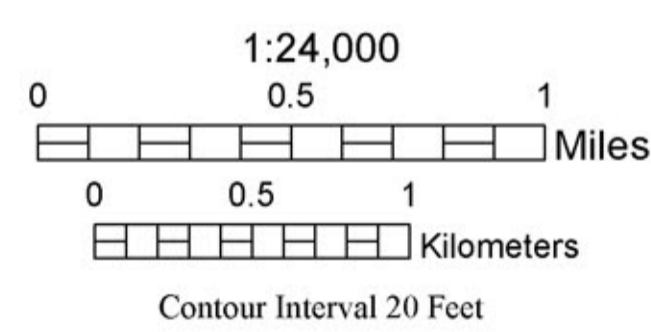
- vc** Lake Vermont varved silt and clay: Varved lacustrine sediments consisting of distinct, rhythmically bedded layers of silt (summer) and clay (winter). Individual layers are thin (1–3 mm thick). Silt layers are usually gray, but clay layers are often reddish brown. Trace fossils (animal tracks) are sometimes visible on bedding planes. Usually deposited directly on glacial till or bedrock. Only small, rare exposures were encountered within the quadrangle.

Glacial Till: Gray, clay rich, compact diamict with abundant erratics of Paleozoic sedimentary rocks, Cretaceous igneous rocks, and Grenville (late-middle Proterozoic) gneisses from the Laurentian Mtns. north of the St. Lawrence valley. Areas mapped as till commonly contain abundant outcrops of Paleozoic sedimentary rocks.

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- Lakes and streams
- Striations
- Outcrops/field sites

Base map from U.S. Geological Survey.
 Quadrangle names printed in blue.
 Coordinate System: Vermont State Plane, meters, NAD 83.
 Geographic coordinates shown at top corners are in NAD 83.
 Grid overlay on map is Universal Transverse Mercator,
 Zone 18N, NAD 27.
 Digitization: ECS Marin, 2007
 Digital cartography: Marjorie Gale, 2009



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 The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

SURFICIAL GEOLOGIC MAP OF THE COLCHESTER, VERMONT 7.5 MINUTE QUADRANGLE

by
Stephen Wright
 2009



Glacial erratics eroded from till along the shore of Lake Champlain near "Camp Norfleet" in the Colchester Quadrangle. High-grade Grenville-age gneisses, originating from the Laurentian Mountains north of Montréal, Québec, occur with the more common local lower Paleozoic sandstones and carbonates. The most common erratics are small pieces of the Iberville shale, but these don't survive long in the beach zone.



Deformed lacustrine sediments overlain by a readvance of the Laurentide Ice Sheet. Dikes of fine sand (light brown) were injected into deformed silt-rich sediments (grey). Exposure from 1 m deep pit excavated adjacent to Mallets Creek within 20 m of bedrock and till outcrops (UTM coordinates: 647120, 4936560).

