SURFICIAL MATERIALS
GLACIAL AND POSTGLACIAL DEPOSITS
GUILFORD, CONNECTICUT

GLACIAL ICE-LAID DEPOSITS

t	Thin Till
tt	Thick Till
ts	End Moraine deposits

GLACIAL MELTWATER DEPOSITS

Fine Deposits

f	Fines (very fine sand, silt, and clay)

Coarse Deposits

g	Gravel
sg	Sand and Gravel
s	Sand

Stacked Coarse Deposits

g/sg	Gravel overlying Sand and Gravel
g/s	Gravel overlying Sand
sg/s	Sand and Gravel overlying Sand
sg/s/sg	Sand and Gravel overlying Sand overlying Sand and Gravel
s/g	Sand overlying Gravel
s/sg	Sand overlying Sand and Gravel

Stacked Coarse Deposits Overlying Fine Deposits

g/s/f	Gravel overlying Sand overlying Fines
g/f	Gravel overlying Fines
sg/s/f	Sand and Gravel overlying Sand overlying Fines
sg/f	Sand and Gravel overlying Fines
s/f	Sand overlying Fines

Stacked Fine Deposits Overlying Coarse Deposits

f/sg	Fines overlying Sand and Gravel
f/s	Fines overlying Sand

POSTGLACIAL DEPOSITS

a	Floodplain Alluvium
a/sg *	Alluvium overlying undifferentiated Coarse deposits (g, sg, s)
a/s	Alluvium overlying Sand
a/f	Alluvium overlying Fines
a/s/f *	Alluvium overlying undifferentiated Coarse deposits overlying Fine deposits
a/f/g *	Alluvium overlying undifferentiated Fine deposits overlying Coarse deposits
sw	Swamp deposits
sw/s	Swamp deposits overlying Sand
sw/f	Swamp deposits overlying Fines
sw/s/f	Swamp deposits overlying Sand overlying Fines
sw/f/s	Swamp deposits overlying Fines overlying Sand
sm	Salt-Marsh and Tidal-Marsh deposits
sm/s/f	Salt-Marsh and Tidal-Marsh deposits overlying Sand
sm/f	Salt-Marsh and Tidal-Marsh deposits overlying Fines
ta	Talus
b	Beach deposits
af	Artificial Fill

* Alluvium may be overlying any of the Coarse deposits (g, sg, s)

w	Water

PARTICLE DIAMETER											
in	10	2.5	.16	.08	.04	.02	.01	.005	.0025	.00015	
mm	256	64	4	2	1	.5	.25	.125	.068	.004	
Boulders	Cobbles	Pebbles	Granules	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
GRAVEL PARTICLES				SAND PARTICLES				FINE PARTICLES			

Grain-size classification (modified from Wentworth, 1922)

EXPLANATION

Unconsolidated glacial and postglacial deposits, that range from a few feet to several hundred feet in thickness, overlie the bedrock surface of Connecticut (see Block Diagram).This map portrays the areal extent and subsurface grain-size (textural) distributions of these surficial materials. The map legend is designed to highlight the relationship between the depositional origins and the distribution and character of the materials portrayed. Most of Connecticut's surficial material is glacially derived, and can be divided into two broad depositional categories: Glacial Ice-Laid deposits (tills and moraine) which are generally exposed in the uplands, and are the most widespread surficial deposit in Connecticut; and Glacial Meltwater deposits (stratified deposits) which are most commonly concentrated in valleys and lowlands. A mapping emphasis is placed on stratified meltwater deposits because their distribution and character have historically influenced development patterns throughout the state.

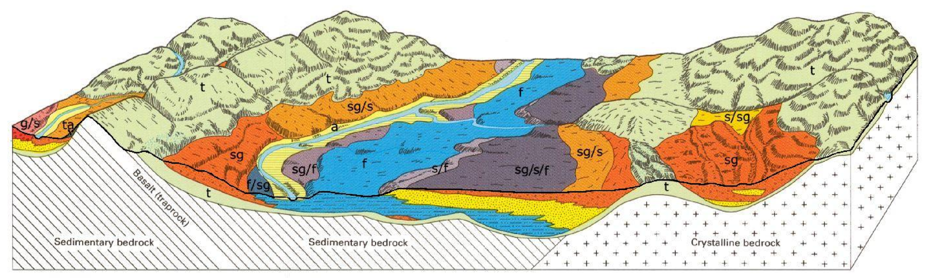
For a complete description of surficial materials map units, and further information concerning their thickness and modes of occurrence, please refer to the published Surficial Materials Map of Connecticut and the companion Quaternary Geologic Map of Connecticut and Long Island Sound Basin (see Data Sources).

Glacial Ice-Laid deposits (tills and moraine) were derived directly from the ice and consist of nonsorted, generally nonstratified mixtures of grain-sizes ranging from clay to large boulders. The matrix of most tills is predominantly sand and silt and boulders can be sparse to abundant. Some tills contain lenses of sorted sand and gravel and occasionally masses of laminated fine-grained sediment. The lack of sorting and stratification typical of ice-laid deposits often makes them poorly drained, difficult to dig in or plow, mediocre sources of groundwater and unsuited for septic systems. Till blankets the bedrock surface in variable thicknesses and commonly underlies stratified meltwater deposits (see Block Diagram). End moraine deposits (primarily ablation till) occur principally in southeastern Connecticut.

Glacial Meltwater deposits (stratified deposits) were laid down in glacial streams, lakes and ponds which occupied the valleys and lowlands of Connecticut as the last ice sheet melted away to the north. They are often composed of layers of well-to-poorly sorted sands, gravels, silts and clays with few to no boulders, and owing to their water-related depositional origins they have many characteristics that are favorable for development. Because water is a better sorting agent than ice, glacial meltwater deposits are commonly better sorted, more permeable, and better aquifers than ice-laid deposits. They can be good sources of construction aggregate, and are relatively easy to excavate and build highways and buildings on.

Meltwater deposits are depicted using four basic texturally-based map units: gravel, sand and gravel, sand, and fines. To the extent that it is known or can be inferred, the subsurface textural composition of meltwater deposits is shown for their entire vertical thickness. In many places similar conditions persisted for the entire time that a meltwater deposit was being laid down, and a single map unit (e.g. s- sand) is sufficient to describe the entire meltwater section. Areal and vertical textural variability can occur within the meltwater deposits because the amount of energy available to carry sediment varies with each meltwater setting (stream, delta, lake, etc.), and settings can change over time. High-energy depositional environments near glacial margins (proximal) tend to favor deposition of coarse material but as time passes, and the glacial margins melt back, less energy is available and finer grained distal deposits can become predominant. Where more complex stratigraphic relationships existed because of changing conditions during deposition, "stacked" map units are used to characterize the subsurface (e.g. sg/s/f - sand and gravel overlying sand overlying fines). Where postglacial deposits overlie meltwater deposits, this relationship is also shown (e.g. a/s - alluvium overlying sand).

Postglacial Sediments (primarily floodplain alluvium and swamp deposits) are less widely distributed and are typically thinner than the glacial deposits that they overlie, but they are locally important ecological, agricultural, commercial, and recreational resources. Talus, a result of rockfall at the base of steep bedrock (primarily trap rock) cliffs, provides a cool damp ecological niche. Beach, marsh and swamp deposits are key ecological elements of coastal and poorly drained inland settings. Deposits of floodplain alluvium are largely composed of sands, gravels and silts that have been reworked from glacial deposits and mixed with organic matter which increases their fertility. Despite their flood-prone nature, low, flat, fertile floodplains have historically been attractive for agricultural uses and development related to water-dependant commerce.



EXPLANATION OF CROSS-SECTION VIEW

	Gravel deposits
	Sand and gravel deposits
	Sand deposits
	Fine deposits
a	Alluvium
t	Till
ta	Talus

EXPLANATION OF SURFACE VIEW

sg	Sand and gravel deposits
f	Fine deposits
g/s	Gravel overlying sand
sg/s	Sand and gravel overlying sand
s/sg	Sand overlying sand and gravel
sg/s/f	Sand and gravel overlying sand overlying fines
sg/f	Sand and gravel overlying fines
s/f	Sand overlying fines
f/sg	Fines overlying sand and gravel
a	Alluvium
	Alluvium overlying fines
t	Till and bedrock
	Thick till

DATA SOURCES

SURFICIAL MATERIALS DATA – Surficial Materials shown on this map are from the Surficial Material Poly dataset which contains polygon data intended to be used at 1:24,000 scale. Based on Connecticut Surficial Materials digital data published in 1995 by the Connecticut Department of Environmental Protection, in cooperation with the U.S. Geological Survey. These data were digitized from the 1:24,000-scale compilation sheets prepared for the statewide Surficial Materials Map of Connecticut, (Stone, J.R., Schafer, J.P., London, E.H. and Thompson, W.B., 1992, U.S. Geological Survey special map, 2 sheets, scale 1:125,000).

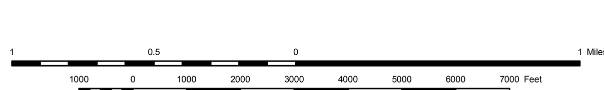
BASE MAP DATA - Based on data originally from 1:24,000-scale USGS 7.5 minute topographic quadrangle maps published between 1969 and 1992. It includes political boundaries, railroads, airports, hydrography, geographic names and geographic places. Streets and street names are from Tele Atlas® copyrighted data. Base map information is neither current nor complete.

RELATED INFORMATION
This map is intended to be printed at its original dimensions in order to maintain the 1:24,000 scale (1 inch = 2000 feet).

QUATERNARY GEOLOGY AND SURFICIAL MATERIALS DATA - 1:24,000-scale digital spatial data of Connecticut Quaternary Geology and Surficial Materials combined into one dataset, published by the Connecticut Department of Environmental Protection, in cooperation with the U.S. Geological Survey. These data were digitized from the 1:24,000-scale compilation sheets prepared for both the Surficial Materials Map of Connecticut, Stone and others, 1992, 1:125,000 and the Quaternary Geologic Map of Connecticut and Long Island Sound Basin, Stone and others, 2005, 1:125,000.

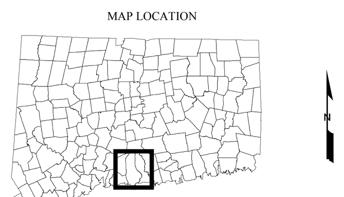
OTHER GEOLOGIC MAPS - This map is also available for individual USGS topographic quadrangles of Connecticut. Other bedrock, surficial, and quaternary (glacial) geology quadrangle maps and reports published by the Connecticut Geological and Natural History Survey, USGS, and others are also available from CT DEP.

MAPS AND DIGITAL DATA - Go to the CT ECO website for this map and a variety of others. Go to the CT DEP website for the digital spatial data shown on this map.



SCALE 1:24,000 (1 inch = 2000 feet) when map is printed at original size

MAP LOCATION



State Plane Coordinate System of 1983, Zone 3526
Lambert Conformal Conic Projection
North American Datum of 1983

STATE OF CONNECTICUT
DEPARTMENT OF
ENVIRONMENTAL PROTECTION
79 Elm Street
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Map is not colorfast
Protect from light and moisture

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