Soils of Connecticut

By David E. Hill, Edward H. Sautter, and Walter N. Gonick

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FOREWORD

A soil survey of the Connecticut Valley, one of the first in the nation, was completed in 1898 by soil scientists of the U. S. Bureau of Soils (Dorsey and Bonsteel 1900) under its director, Milton Whitney, a former employee of The Connecticut Agricultural Experiment Station. The purpose of the survey was to identify soils that were suitable for growing cigar tobacco. This survey, in which only 10 soil series were recognized, was the forerunner of more detailed surveys that naturally evolved as knowledge increased about the physical, chemical, and biological properties of soils.

In 1939, M.F. Morgan of the Soils Department of this Station completed a reconnaissance survey of the soils of Connecticut. His report "The Soil Characteristics of Connecticut Land Types" (CAES Bulletin 423) identified 66 different kinds of soils that appeared from ridgetop to valley floor, encompassing all 169 towns. Morgan's map showed where these soils occurred in each town and he described the differences among them. In 1948, a detailed soil survey was initiated by the Connecticut Cooperative Soil Survey, a joint effort by the USDA, Soil Conservation Service (SCS) and the Agricultural Experiment Stations of Connecticut. Under the guidance of A.E. Shearin, SCS, field soil scientists mapped about 90 different kinds of soils in greater detail. This task was completed in 1979. Modern soil surveys have been published for five of Connecticut's eight counties, and the remaining ones will soon be available.

It is difficult, however, to comprehend the total array of Connecticut soils from one or several county reports. Thus, we have combined these reports into a broad soil map for the entire state. This General Soil Map is intended to foster further interest in the soil as a basic natural resource. Public understanding of soils should assist in providing better land use planning so that future generations of Connecticut citizens will inherit not only fertile farm acres, but also cities and towns whose land is well suited for building without degrading the quality of soil and water.

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COVER PHOTO: Farms occupy the fertile valley of the Housatonic River. The Copake-Groton soils (Unit 14) occupy outwash terraces in the foreground. The wooded hills rising above the valley are occupied by Charlton-Hollis soils (Unit 8). Photos courtesy of Soil Conservation Service, U.S. Dept. of Agriculture.

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As pressures on the land increase, more attention is being devoted to the effects of these competing demands on our soil and water resources. This publication is an inventory of the most extensive soils of Connecticut. The enclosed map shows where the soils are located, and the narrative describes the system of soil classification used in Connecticut as well as the composition of the map units.

The soils of Connecticut, an irreplaceable natural resource, have witnessed many historical changes since the Dutch, under Adriaen Block, established a temporary trading post at Hartford in 1633. English settlers from Massachusetts subsequently established agricultural communities in Windsor, Wethersfield, and Hartford, and those were expanded after King Charles II granted a charter to John Winthrop, Jr. Land was painstakingly cleared for farming, including the most stubborn rocky hillsides. By 1820 fully 75% of the land was devoted to farming (Harper 1918). But the soils were mostly stony and infertile, and, as westward migration progressed, farming on the steep and hilly lands was abandoned and the land reverted to woodland. Vestiges of former agricultural pursuits can be seen in the networks of moss-and-lichen-covered stone walls throughout the woodlands. The farming that remained was and still is viable. Dairy and poultry are the principal enterprises on the more favorable soils of the Eastern and Western Highlands. Many valuable crops are grown on the terraces of the Connecticut River Valley, among them tobacco, nursery stock, potatoes, and other vegetables for local markets.

Suburbanization of Connecticut's land has progressed steadily since the early 1900s and an improved transportation network has accelerated the trend in the past 20 years. Most development has been at the expense of farmland, but a decline in wooded acres has also been noticeable in the last decade. Many large agricultural holdings, notably in tobacco and dairy farms, have been subdivided for houses or developed for industrial parks and shopping centers. The influx of workers to meet the needs of industry increased the demand for housing. Prime farmlands in former rural zones were the main targets for development, but now the marginal lands nearer the population centers are being reevaluated for potential development. Construction of single family dwellings has always been popular. With the dwindling supply of land, however, condominiums and clustered developments are becoming a more attractive means to conserve space and open new markets.

The often indiscriminate use of less desirable areas for construction has prompted the Legislature to enact laws regulating the use of land. Zoning ordinances of towns have been strengthened, tidal wetlands have been protected, and the use of inland wetlands is now regulated. The Farmlands Preservation Act was passed in 1978 to reduce development on prime farmland.

This report summarizes our knowledge of the quality of the state's soil resources and their geographic distribution. It presents for the first time information that can be applied to general planning and gives citizens a fundamental knowledge of the soils of Connecticut.

The properties of the major components of the units are estimated and interpretations are made for their use for sanitary facilities, building sites, recreation, cropland, woodland and wildlife habitat.

SOIL FORMATION

Soils are natural bodies which thinly mantle the geological materials from which they were derived. Each soil has unique layers, called horizons, which can be distinguished by their physical and chemical characteristics. These characteristics are either inherited from the geological materials or acquired as a result of various physical and chemical processes that acted upon the parent materials. Soil formation is seldom static. Some processes occur seasonally; others occur slowly over hundreds or even thousands of years. The kind of soil that develops is a function of five soil forming factors—parent material, climate, living organisms, topography, and time. Each factor modifies the effects of the others. Climate and living organisms are the dominant active agents that modify the parent material deposited by geologic events. In Connecticut, these active forces have influenced soil formation in the uplands for at least 10,000 years since the last glacier covered the state.

The physical processes of soil formation are grinding of local bedrock by glacial ice to smaller particles and fragments, transportation by water and wind, and deposition on new land surfaces. Since glacial times, fragments of pulverized bedrock have been further reduced in size by frost action and differential expansion of various minerals within the rock fragments. As the climate warmed and vegetation reappeared, chemical processes began to exert an increasing influence on soil formation. Oxidation turned the parent materials a rusty brown color. Hydrolysis and hydration altered primary clay-size particles to produce secondary clay minerals. For example, illite was altered to vermiculite in the surface horizon.

The morphological differences observed among soils in Connecticut are primarily attributed to parent material, topography, and time. Different kinds of rocks ground by the glacier and transported by ice, water and wind have provided different parent materials. Color differences are exemplified by the reddish soils of the Central Lowlands derived from red Triassic sandstone and shale and by the brownish and olive colored soils of the Eastern and Western Highlands derived from granite, gneiss, and schist. Topography has influenced soil formation through differences attributed to slope and drainage. Horizons are generally thinner on steep land than on more gentle slopes. Drainage and the depth of the water table below the surface profoundly influence soil color and the depth to mottles, which are the basis for segregating soils by drainage class (i.e., moderately well drained, poorly drained, etc.). Time is expressed as the length of time that soil formation has progressed. The soils of the floodplains, which may receive new sediment, have had less time to develop than soils of the uplands. The influence of climate and living organisms has been relatively uniform throughout the state and does not account for important local differences in soil morphology.

Parent material

The parent materials from which the soils derived were produced by a series of geological events since the dawn of time. Knowledge of these events helps us understand many of the inherited characteristics of the soils. Millions of years ago, Connecticut was a uniform plain sloping gently seaward. This New England peneplane was uplifted during the balancing and adjusting of the earth's crust and a new cycle of erosion began. Subsequently, a great block of the igneous rocks in the central portion of the state faulted downward to form the Central Lowlands. Sediments from the surrounding uplands filled the new valley in the Triassic Period of geologic time. Their reddish color and plant fossil remains reveal a tropical climate. Eventually these sediments hardened with silica and lime cement and formed the present red shales and sandstones. Great lava flows intruded the red sediments and some erupted on the surface forming dense masses of basalt known locally as trap rock.

As the New England region continued to uplift, erosion occurred and the kinds of rocks that formed the superstructure of Connecticut determined the gross topographic features that we find today. The granites, gneisses, and schists of the Eastern and Western Highlands withstood erosion and their mountains and hills are taller than the sandstones and shales of the Central Lowlands. Only the resistant trap rock ridges stand as remnants among the former masses of soft sedimentary rock that covered or surrounded them during the Triassic Period.

A belt of resistant schist and weaker marble formations lies in the northwest part of the state and is part of the Taconic Province of New York and Massachusetts. The weaker marble formations have eroded substantially and form sections of the valleys through which the upper Housatonic and Still Rivers flow.

About 25 to 30,000 years ago, during the latter part of the Pleistocene Epoch, a great ice sheet pushed southward from Canada and covered New England. The great masses of ice and snow that bulldozed across Connecticut scoured the soil cover away and modified the topography. As the climate warmed and the ice sheet stagnated and melted, the soil particles and rock fragments in the ice were either deposited in place or transported by melting glacial water to form terraces of stratified sand and gravel or beds of silt and clay laid down in ancient glacial lakes. Most outwash terraces are in valleys, but material deposited by water flowing between the melting ice masses and the adjacent exposed uplands can be found on some hillsides. These are called kame terraces and often contain large depressions called kettles.

Two kinds of glacial till were deposited directly by the glaciers. Masses of debris, including former soils, were bulldozed by the advancing glacier and at times became too large. The ice overrode the debris and compressed it forming low, rounded hills called drumlins. In places, protruding masses of resistant rock obstructed glacial flow and the soil material carried at its base was plastered around it. The dense, compact parent material is called basal till and is known locally as hardpan. Contrary to popular belief, its clay content is quite low (Hill and Gonick 1963). It is simply closely packed sand, silt, and clay. The compacted material obstructs vertical movement of water and forces it to move laterally, often creating seepage spots on hillsides. The second kind of till formed when the soil and rock suspended in the ice was deposited as the ice mass melted in place. Geologists call this material ablation till. It is less dense than basal till and vertical movement of water is less obstructed. In general, ablation tills form thinner deposits over bedrock than basal tills and the soils formed on them lack hardpans (Hill and Shearin 1969).

Four postglacial events have influenced the parent materials. First, wind reworked great quantities of silt and fine sand to form dune-shaped hills and silty deposits mantling till and stratified material alike (Ritchie et al. 1957). Most wind deposition occurred during the last stages of melting and before vegetation reappeared on the landscape. Second, many natural lakes filled with the remains of aquatic vegetation that formed muck and peat deposits. Third, the slowly rising sea level produced tidal marshes composed of silt, clay, and the remains of marsh vegetation (Hill and Shearin 1970). Finally, streams carrying eroded soil particles from upland areas overflowed and deposited their loads on floodplains. These floodplains are most pronounced along the state's major rivers.

Thus, earlier geological events set the stage for the development and deposition of parent materials from which soils form. The red Triassic sandstones and shales of the Central Lowlands gave rise to reddish colored soils. Parent materials from the grayish and olive granites, gneisses and schists of the Eastern and Western Highlands produce acid, brownish soils. Limestone and marble bedrock occurring in the northwestern part of the state and intermittently down the Housatonic River produce brownish soils with alkaline subsoils.

The sand and silt fractions of all soils are dominated by the minerals quartz, feldspar, and mica. The dominant clay mineral in all parent materials is illite, which is often interstratified with vermiculite. As chemical weathering proceeds, illite loses potassium from its structure and becomes hydrolyzed to form vermiculite. Vermiculite, then, is the most abundant clay mineral in the solum and accounts for some increase in the cation exchange capacity of surface soils compared to unweathered minerals in the parent material (Sawhney 1960).

The texture of individual soils has been determined largely by geological events but modification by physical and chemical weathering has generally produced finer textures at the surface. Material deposited directly from the glacier usually consists of a heterogeneous mixture of rock fragments and particles ranging in size from large boulders to fine clay. Particles carried by water from the melting glacier formed stratified deposits of gravel, sand, and silt.

Organic parent materials in Connecticut are found in inland fresh water swamps and marshes and in tidal marshes along the coast. Deposits of fresh water peat have accumulated over thousands of years and have filled many former lakes and ponds. These deposits are mute testimony to the process of natural eutrophication. The tidal marshes along the coast and up the Connecticut and Housatonic Rivers are mixtures of organic residues from decaying salt marsh vegetation, silt and clay derived partly from eroding uplands, and partly from the floor of Long Island Sound (Sawhney and Frink 1978). The mineral sediments are deposited on the marsh by tides. The soils of the tidal marshes have genetic horizons in which sulfides, extracted from sea water by plant and animal life, accumulate. These soils become extremely acid when drained or stockpiled as dredged spoil because the sulfides are oxidized to sulfate and sulfuric acid.

Climate

Connecticut has a humid continental climate with long, moderately cool winters and short, mild summers. The continental character of the climate is attributed to cold, dry air masses flowing predominantly from the northwest in winter and warm, moist air flowing predominantly from the southwest in summer. The elements of climate that affect soil formation are temperature and precipitation. The variability in these elements throughout the state is relatively small. The average annual rainfall of 42-49 inches (Brumbach 1965) is fairly evenly distributed throughout the year and is adequate for most farm crops, ornamentals, and woodland species. Many summer rains, however, are due to local thunderstorms rather than advancing weather fronts.

Water percolating through the soil alters its chemical composition over time. Soluble chemical constituents produced by weathering are mobilized by the water. Some elements, such as iron and manganese, are translocated only short distances and are reprecipitated; others, such as calcium, magnesium, potassium, and sodium leach away entirely and eventually reach the sea. Rainfall also causes soils to erode if unprotected by vegetation. The effects of erosion are greatest on steep slopes, where soil profiles are thinner and more weakly developed than in less sloping areas.

Mean annual temperature in Connecticut varies from 50°F along the coast and in the Central Lowlands to 45°F in the northeastern and northwestern hills (Brumbach 1965). The growing season ranges from 160-180 days. These relatively high mean annual temperatures promote high levels of biological activity and cause fairly rapid mineralization of organic matter. Frost to a depth of 18-24 inches in winter causes seasonal aggregation of fine soil particles and enhances percolation and leaching potential.

Plant and Animal Life

The most distinctive feature that distinguishes a soil from its parent material is its organic constituents, the living plants and animals and their decaying remains. After the glaciers melted, climate began to exert its influence on the parent material. But it was not until vegetation reappeared that chemical and biological activity speeded the weathering process. Although the native trees and shrubs have had a major influence on the development of soils, they have interacted uniformly throughout the state and do not account for major differences in soil morphology. Living plants extract nutrients from the soil. Some of these nutrients are cycled annually but there is a net loss as some are leached away by water percolating through the soil. Plant life is also capable of altering clay minerals. Boyle, Voigt, and Sawhney (1967) have shown that organic acids exuded by plant roots and some fungi alter and degrade micaeous clays in soils to form fragile amorphous material.

Topography

The effects of topography on soil formation are primarily expressed in terms of slope gradient, orientation, and elevation. In places where parent materials are similar, steep slopes combining with the effects of rainfall have produced soil horizons that are thinner and less developed than soils formed on more gentle slopes. Soils in level areas or depressions, especially those with slowly permeable hardpans or clay layers, are poorly drained and have a perched water table. Soils saturated with water display gray or mottled soil colors in their subsoil layers and their topsoils are thicker and contain greater amounts of organic matter.

The effects of slope orientation and elevation on soil formation are not well expressed. North-facing slopes are cooler and moister and south-facing slopes are warmer and dryer and provide contrast. But in Connecticut, bedrock structures are generally oriented north to south so that east- and west-facing slopes predominate, which provides little contrast. Elevations in the state are also relatively modest. In the Western Highlands only a few hilltops exceed 300 feet within 5 miles of Long Island Sound. They rise progressively in the northwest to exceed 2,000 feet. The highest elevation in the state is about 2,370 feet on the southern flanks of Mt. Frissell, which peaks in Massachusetts. In the Eastern Highlands, elevations within 5 miles of Long Island Sound seldom exceed 250 feet. They rise progressively to the north and exceed 1,200 feet in places. The highest elevation in the Eastern Highlands is 1,315 feet at Burley Hill on the Stafford-Union town line. The prominent trap rock ridges of the Central Lowlands generally have steep escarpments on one side that form palisades. Some ridges have elevations exceeding 300 feet; the highest elevation is 1,024 feet at West Peak of the Hanging Hills in Meriden. Elevations exceeding 1,000 feet cover less than 10% of the state and are mostly in northwest Litchfield County. Elevations exceeding 2,000 feet cover less than 1% of the state and are confined to upper slopes and mountain peaks in the northwesternmost town of Salisbury. Extensive lowlying terraces and flood plains of stratified sand and gravel, silt, and clay are parallel to the Connecticut, Housatonic and Quinnipiac Rivers and their main tributaries. Thus, elevation and aspect affect soil location, but have had little effect on soil formation.

Time

The Wisconsin glacier, having reached its southernmost position on Long Island, yielded to a warming climate 10 to 15,000 years ago. Vegetation probably became reestablished 10 to 12,000 years ago. The earliest radioactive carbon date from sedges buried and preserved beneath tidal marshes in Clinton is 11,240 ± 160 years (Bloom and Stuiver 1963). Thus, the soils of the state are relatively young in comparison to the soils south of the glacial margin. The young soils have horizons that are weakly expressed except for color development in the B horizon. In contrast to older soils south of the glacial margin, the soils of Connecticut show little or no translocation and accumulation of clays in the B horizon.

There is a strong possibility that soil morphology presently observed is somewhat different from that first observed by colonial farmers. A thin bleached horizon at the surface undoubtedly was common in some virgin acid soils of the state especially in the Eastern and Western Highlands regions. This bleached horizon remains only in a few uncultivated places where man's activities have not obliterated the surface features.

The alluvial soils of the flood plains along major rivers and streams are younger than many of the soils on the glaciated uplands. They lack even the development of bright subsoil colors that characterize upland soils. Portions of the flood plains continue to receive fresh sediment mostly during major floods that may occur once or twice each century. The very young soils of the tidal marshes along the coast continually receive new deposits of silt and clay (Bloom 1967) from incoming tides. These organic-rich soils also lack conspicuous profile development.

In conclusion, the soils of Connecticut are young compared to the soils of unglaciated regions to the south. Their morphological differences are primarily attributed to parent material, topography, and time. Climate and vegetation have also influenced soil formation but the differences they create are expressed over a greater region than the state.

KINDS OF SOILS

The five factors of soil formation discussed in the previous section have produced many kinds of soils in Connecticut, each with distinctive characteristics which set them apart from their neighbors on the landscape. The classification system developed by the National Cooperative Soil Survey has evolved over more than 40 years through a series of approximations and has been embodied in its present form in Soil Taxonomy (1975).

The classification system has six categories: order, suborder, great group, subgroup, family, and series. These categories are arranged from the broadest to the most restrictive. The properties used to develop this system are those that may be directly observed and measured in the field or inferred from field and laboratory measurements. The properties used to define the higher categories in the system are the result of soil genesis or factors that affect soil genesis. The categories of the system are presented with examples pertaining to Connecticut.

ORDER Ten orders are recognized. The properties used to differentiate among the orders are those that reflect both the kind and degree of the dominant soil forming processes that have occurred. Each order is identified by a word ending in *sol.* In Connecticut, the three most common orders are:

Entisols — mineral soils that lack distinct genetic horizons by reason of their inert parent material (quartz soil), or where deposition has been recent (floodplains).

Histosols — organic soils with prominently thick layers of organic matter. Most Histosols are muck or peat which have accumulated in an aquatic environment.

Inceptisols — mineral soils with genetic horizons of alteration or concentrations of elements such as iron or manganese but with little accumulation of translocated materials other than carbonates or amorphous silica. Textures are finer than loamy sand and the clay fraction has a moderate to high capacity to retain cations.

SUBORDER These are subdivisions of orders that are based primarily on properties that influence soil formation and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name signifies the order. In Connecticut, for example, there are four kinds of Entisols represented.

Aqu*ents* — Entisols formed in soils saturated with water.

Fluv*ents* — Entisols formed in alluvial sediments on floodplains of rivers.

Orth*ents* — Entisols formed in very gravelly sand or in highly disturbed loamy material.

Psamm*ents* — Entisols formed in very sandy material dominantly of quartz.

GREAT GROUP The suborders are divided into groups based upon similarities in kind, arrangement, and degree of expression of horizons. These may include soil moisture, temperature regimes, and base saturation. Great groups are identified by the name of the suborder and a prefix that signifies some important characteristic of the soil. Connecticut is represented by 13 great groups. Following our examples of Entisols, there are *Udi*psamments, *Udi*fluvents, and *Udor*thents. The prefix *udi* (*ud*) signifies a soil moisture regime characterized by even distribution of moisture throughout the year in temperate zones. There are also *Fluva*quents which are Entisols saturated with water that are formed in alluvial sediments on floodplains of rivers.

SUBGROUP The great groups may be further subdivided. Soils displaying the central concept of the great groups are called *typic.* Those that are transitional to other orders, suborders, or great groups are called intergrades. Those that are representative of great groups but do not indicate transitions to any other known kind of soil are called extragrades. Each subgroup is identified by one or more adjectives preceding the name of the great group. Connecticut is represented by 36 subgroups. Examples in the Entisol order are Typic Udifluvents, Typic Udorthents, and Typic Udipsamments, all of which represent the central concept of the great group. Aquic Udifluvents and Aquic Udipsamments are transitional to the suborder Aquents, (i.e. they are Fluvents or Psamments that are characteristically wet).

FAMILY Subgroups may be subdivided upon similarities in the physical and chemical properties of the subsoil that affect management. They include particle size class, mineral content, temperature regime, thickness of soil penetrable by roots, moisture content, and slope. A family name consists of the subgroup preceded by a series of adjectives which are class names for the soil properties used to differentiate between families. There are 60 families represented in Connecticut. An example in the Entisol order would be coarse-silty, mixed, non-acid, mesic, Typic Udifluvent. Translated, this soil would represent the central concept of a young soil developed in alluvial sediments on a floodplain that is moist and whose:

particle size class is coarse-silty (contains <15% fine sand or coarser; <18% clay).

minerology is mixed (contains <40% of any one mineral other than quartz or feldspar).

reaction is non-acid (contains a pH more than 5.5 in some layer).

temperature regime is mesic (mean annual soil temperature between 47 and 59°F).

SERIES These are members of families that have formed in a particular kind of material and have horizons that are similar in characteristics and arrangement in the soil profile. These characteristics include: color, texture, structure, reaction, consistence, mineral and chemical composition. There are currently about 90 soil series mapped in Connecticut. An example in the coarse, silty, mixed, non-acid, mesic Typic Udifluvent family is the Hadley series, a well drained soil of the floodplains.

It is not the intent of this chapter to present all the details of the classification system as they pertain to Connecticut soils. Only the basic structure of the system has been discussed and examples presented for students of soil science. Full details may be obtained from Soil Taxonomy (1975). Table 1 shows the classification of all the soil series that form the map units described in the following chapter. It does not list all soil series in Connecticut, just the major ones in 1978 when the General Soil Map was printed.

Table 1. Classification of soil components of mapping units.

ENTISOLS	
Aeric Fluvaquents	
Coarse-loamy, mixed, nonacid, mesic	Rumney
Typic Udifluvents	
Coarse-silty, mixed, nonacid, mesic	Hadley
Aquic Udifluvents	
Coarse-silty, mixed, nonacid, mesic	Winooski
Typic Udorthents	
Sandy-skeletal, mixed, mesic	Hinckley Manchester
Typic Udipsamments	
Mixed, mesic	Penwood Windsor
HISTISOLS	
Typic Sulfihemists	
Euic, mesic	Westbrook
INCEPTISOLS	
Typic Haplaquepts	
Fine, illitic, nonacid, mesic	Scantic
Aeric Haplaquepts	
Coarse-loamy over sandy or sandy-skeletal, mixed, acid, mesic	Raypol
Typic Dystrochrepts	
Sandy, mixed, mesic	Hartford Merrimac
Coarse-loamy, mixed, mesic	Brookfield Charlton Cheshire Narragansett Yalesville
Coarse-loamy over sandy or sandy-skeletal, mixed, mesic	Agawam Branford Canton Haven
INCEPTISOLS—continued	
Coarse-silty over sandy or sandy-skeletal, mixed, mesic	Enfield
Aquic Dystrochrepts	
Coarse-loamy over sandy or sandy-skeletal, mixed mesic	Ninigret
Fluvaquentic Dystrochrepts	
Coarse-loamy, mixed, mesic	Podunk
Lithic Dystrochrepts	
Loamy, mixed, mesic	Brimfield Hollis Holyoke
Typic Eutrochrepts	
Sandy-skeletal, mixed, mesic	Groton
Aquic Eutrochrepts	
Coarse-loamy, mixed, mesic	Amenia
Aquic Dystric Eutrochrepts	
Coarse-loamy over clayey, mixed, mesic	Elmwood
Fine, mixed, mesic	Buxton
Dystric Eutrochrepts	
Coarse-loamy, mixed, mesic	Stockbridge
Coarse-loamy over sandy or sandy-skeletal, mixed, mesic	Copake
Lithic Eutrochrepts	
Loamy, mixed, mesic	Farmington
Typic Fragiochrepts	
Coarse-loamy, mixed, mesic	Bernardston Broadbrook Ludlow Paxton Rainbow Wethersfield Woodbridge

GENERAL SOIL MAP OF CONNECTICUT

The enclosed General Soil Map of Connecticut delineates areas in which different kinds of major soils occur in a regular pattern on the landscape. The major components of the 31 map units have some similar properties but usually their properties differ. Each square inch represents an area of 16 square miles or 10,240 acres; thus, it is impossible to show minor soils whose extent may be limited to 200 or 300 acres.

Areas of the Eastern and Western Highlands Dominated by Soils Formed in Glacial Till Derived from Gneiss, Schist, and Granite

The nine map units of this category make up about 63 percent of the State of Connecticut. Bedrock near the surface is a prominent feature in the soils of units 1, 2, 3 and 4. The soils of units 5 and 6 have a firm and compact substratum. Units 7, 8, and 9 consist of friable soils that are mostly deep to rock, but part of each unit consists of shallow soils.

1. BRIMFIELD-BROOKFIELD: Reddish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep soils with a friable substratum; on uplands.

Extent:	1% of state
Location:	Northeastern Connecticut in towns of Stafford, Union, Willington and Woodstock
Parent material:	Glacial till comprised of grayish acid schist with iron pyrite
Dominant slopes:	8-25%; Range: 3-35%+
Topography:	Irregular with landforms controlled by the underlying bedrock
Surface stoniness:	Dominantly extremely stony but a few areas cleared with slopes less than 15%
Rock outcrops:	Common
Composition of unit:	Brimfield–45%; Brookfield–30%; Others–25%

Brimfield soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability. The available water capacity is low because of their shallowness. Typically, the surface layer is fine sandy loam. The reddish subsoil is fine sandy loam and gravelly fine sandy loam. Bedrock is at a depth of about 15 inches. Brimfield soils are mostly on ridgetops.

Brookfield soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The reddish subsoil is fine sandy loam grading to gravelly sandy loam in the substratum. Brookfield soils are mostly on hillsides.

Soils of minor extent are mainly the shallow, well drained or somewhat excessively drained Hollis soils; the deep, well drained Charlton and Canton soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester and Ridgebury soils. Hollis, Charlton, and Canton soils are on landscape positions similar to those of Brimfield and Brookfield soils. Sutton and Woodbridge soils are on relatively flat to slightly concave downslope positions. Leicester and Ridgebury soils are in low-lying positions, along narrow drainageways.

Most areas of this map unit are in unmanaged woodland. A few gently sloping and sloping areas have been cleared for row crops and pasture for dairy farming. A few scattered areas, mostly along roads, are cleared for community developments or are idle.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, steepness of slopes, and surface stoniness. Fresh fragments of Brimfield schist containing iron pyrite are also known to produce sulfur acidity in soils upon exposure to air. The acidity may be transmitted to farm ponds and other surface bodies of water.

2. HOLLIS-BERNARDSTON: Brownish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep soils with a firm substratum; on uplands.

Extent:	<1% of state
Location:	Northwestern Connecticut mostly in town of Salisbury
Parent material:	Glacial till comprised mostly of grayish quartz-micaceous schist
Dominant slopes:	8-25%; Range: 3-35%+
Topography:	Irregular with low drumlins interspersed with steep rocky slopes and rocky peaks. Landforms and drainage patterns are controlled by the underlying bedrock.
Surface stoniness:	Mostly extremely stony but a few areas cleared on slopes less than 15%
Rock outcrops:	Common
Composition of unit:	Hollis–40%; Bernardston–35%; Others–25%

Hollis soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability above the bedrock. The available water capacity is low because of their shallowness. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and gravelly fine sandy loam. Bedrock is at a depth of about 15 inches. Hollis soils are mostly on ridgetops and east-facing slopes.

Bernardston soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam grading to channery silt loam in the substratum. The substratum acquires its characteristics from the underlying bedrock, a grayish schist. Bernardston soils are mostly on the tops and flanks of low drumlins.

Soils of minor extent are mainly the deep, well drained Stockbridge soils; moderately well drained Woodbridge soils; and poorly drained Ridgebury soils.

Stockbridge soils are on landscape positions similar to Bernardston soils but the underlying till is composed of limestone material. Woodbridge soils are on relatively flat to slightly concave downslope positions. Ridgebury soils are in low-lying positions and in narrow drainageways.

Most areas of this map unit are in unmanaged woodland. A few small areas are used to grow hay and as pasture for dairy farming. Other cleared areas are idle or are used for recreation.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, steepness of slopes, and surface stoniness.

3. HOLLIS-CHARLTON: Brownish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep soils with a friable substratum on uplands.

Extent:	10% of state
Location:	Throughout Eastern and Western Highlands regions
Parent material:	Glacial till comprised of various acid gneisses, and schists
Dominant slopes:	8-25%; Range: 3-35%+
Topography:	Very irregular with landforms and drainage patterns controlled by the underlying bedrock
Surface stoniness:	Mostly extremely stony and very stony but some clearing on slopes less than 15%
Rock outcrops:	Many
Composition of unit:	Hollis–40%; Charlton–30%; Others–30%

Hollis soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and gravelly fine sandy loam. Bedrock is at a depth of about 15 inches. Hollis soils are mostly on ridgetops.

Charlton soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and grades to gravelly sandy loam in the substratum. Charlton soils are mostly on sidehill positions on the landscape.

Soils of minor extent are mainly the deep, well drained Canton and Paxton soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester and Ridgebury soils. Canton, Paxton, Sutton, and Woodbridge soils are on landscape positions similar to those of Charlton soils. Leicester and Ridgebury soils are in low-lying positions mostly along narrow drainageways.

Most areas of this map unit are in unmanaged woodland, but areas in the southwestern part of the state near Long Island Sound and around Candlewood Lake are used for houses and commercial developments. Some of the gently sloping and sloping areas in the eastern and northwestern parts of the state have been cleared for pasture.

Rough stony pastures and steep slopes typify the cleared areas of the Hollis-Charlton unit.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, steepness of slopes, and surface stoniness.

4. HOLLIS-WOODBRIDGE: Brownish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep, moderately well drained soils with a firm substratum; on uplands.

Extent:	1% of state
Location:	Northeastern Connecticut mostly in towns of Ashford, Canterbury, Eastford, and Killingly
Parent material:	Glacial till comprised mostly of acid gray gneisses and schists
Dominant slopes:	3-25%; Range: 3-35%+
Topography:	Somewhat irregular with low smoothed drumlins interspersed between irregular landforms and drainage controlled by the underlying bedrock
Surface stoniness:	Dominantly extremely stony and very stony but cleared from farm areas where slopes are less than 15%
Rock outcrops:	Common
Composition of unit:	Hollis–45%; Woodbridge–30%; Others–25%

Hollis soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and gravelly fine sandy loam. Bedrock is at a depth of about 15 inches. Hollis soils are mostly on ridgetops.

Woodbridge soils are deep and moderately well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm, compact substratum or hardpan is at a depth of about 22 inches. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam with mottles in the lower part. The mottled substratum is gravelly sandy loam. Woodbridge soils are mostly on smoothed landforms of low drumlins where slopes are gentle.

Soils of minor extent are mainly the deep, well drained Paxton and Charlton soils; moderately well drained Sutton soils; and poorly drained Leicester and Ridgebury soils. Paxton and Charlton soils are on slightly higher landscape positions than Woodbridge soils. Sutton soils are on landscape positions similar to Woodbridge soils. Leicester and Ridgebury soils are in low-lying positions mostly along narrow drainageways.

Most areas of this map unit are in unmanaged woodland. A few gently sloping and sloping areas have been cleared and are used to grow hay and for pasture for dairy farming. Other scattered areas along roads have been cleared for houses or are idle.

The main limitations affecting the use of soils of this map unit are the shallow depth to bedrock, surface stoniness, steepness of slopes, and wetness due to impeded drainage over hardpan.

5. BROADBROOK-RAINBOW: Brownish, gently sloping and moderately steep, deep, well drained and moderately well drained silty soils with a firm substratum; on uplands.

Extent:	1% of state
Location:	Mostly in Southeastern Connecticut throughout New London County
Parent material:	Glacial till comprised of acid gray gneisses and granite-gneiss. Soils are capped with windblown silts.
Dominant slopes:	3-8%; Range: 0-25%
Topography:	Mostly low, smoothly rounded hills or drumlins
Surface stoniness:	Mostly very stony but cleared from many areas on slopes less than 15%
Rock outcrops:	Few
Composition of unit:	Broadbrook–40%; Rainbow–30%; Others–30%

Broadbrook soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm and compact hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is also silt loam and changes somewhat abruptly to gravelly sandy loam in the substratum. Broadbrook soils are mostly on higher positions in the landscape than Rainbow soils.

Rainbow soils are deep and moderately well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm, compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is silt loam or very fine sandy loam. The brownish subsoil is also silt loam with mottles in the lower part. The mottled substratum is fine sandy loam. Rainbow soils are mostly near the base of long slopes but some occur on the top of hills in slightly concave positions.

Soils of minor extent are the deep, well drained Narragansett and Paxton soils; the shallow, well drained or somewhat excessively drained Hollis soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester and Ridgebury soils. Narragansett, Sutton, Paxton, and Woodbridge soils are on landscape positions similar to Broadbrook and Rainbow soils. Leicester and Ridgebury soils are in low-lying positions and along narrow drainageways.

Most areas of this map unit are in unmanaged woodland. Many gently sloping and sloping areas have been cleared to grow hay, corn silage, and pasture for dairy farming. Other small scattered areas, mostly along roads, have been cleared for community developments or are idle.

The main limitations affecting the use of the soils of this map unit are the slow or very slow permeability of the substratum, wetness, steepness of slopes, and surface stoniness.

6. PAXTON-WOODBRIDGE: Brownish, gently sloping to moderately steep, deep, well drained and moderately well drained loamy soils with a firm substratum; on uplands.

Extent:	19% of state
Location:	Throughout Eastern and Western Highlands regions
Parent material:	Glacial till of varying acid gneiss, schist, and granite
Dominant slopes:	3-15%; Range: 0-35%
Topography:	Mostly low, smoothly rounded hills or drumlins
Surface stoniness:	Mostly very stony but many areas cleared on slopes less than 15%
Rock outcrops:	Few
Composition of unit:	Paxton–45%; Woodbridge–30%; Others–25%

Paxton soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm, compact substratum or hardpan is at a depth of about 22 inches. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam grading to gravelly sandy loam in the substratum. Paxton soils are mostly on landscape positions higher than the Woodbridge soils.

Woodbridge soils are deep and moderately well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm, compact substratum or hardpan is at a depth of about 22 inches. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam with mottles in the lower part. The mottled substratum is gravelly sandy loam. Woodbridge soils are mostly on smoothed landforms of drumlins where slopes are gentle.

On smoothly rounded drumlins productive hay and silage corn for dairy farming are associated with the Paxton-Woodbridge unit.

Soils of minor extent are mainly the deep, well drained Charlton, Canton, Broadbrook and the shallow, well drained or somewhat excessively drained Hollis soils; moderately well drained Sutton soils; and poorly drained Leicester and Ridgebury soils. Charlton, Canton, and Broadbrook soils are on landscape positions similar to the Paxton soils. Hollis soils are on irregular landscapes where the land forms are controlled by the underlying bedrock. Sutton soils are on landscape positions similar to the Woodbridge soils. Leicester and Ridgebury soils are in low-lying positions mostly along narrow drainageways.

Most of this map unit is in unmanaged woodland. In the eastern and northwestern parts of the state, many areas with slopes less than 15 percent are cleared to grow hay, corn, and pasture for dairy farming. In southwestern Connecticut many areas are used for community and industrial developments.

The main limitations affecting the use of the soils of this map unit are the slow or very slow permeability of the substratum; wetness, steepness of slopes, and surface stoniness.

7. CANTON-HOLLIS-CHARLTON: Brownish, gently sloping to steep, well drained and somewhat excessively drained, deep soils with a friable sandy or loamy substratum and shallow soils over bedrock; on uplands.

Extent:	4% of state
Location:	Throughout the Eastern Highlands region
Parent material:	Glacial till comprised mostly of acid gray gneisses, schists and granite
Dominant slopes:	8-15%; Range: 3-25%+
Topography:	Irregularly shaped hills with landforms and drainage patterns controlled by the underlying bedrock
Surface stoniness:	Dominantly very stony and extremely stony with some areas cleared on slopes less than 15%
Rock outcrops:	Common
Composition of unit:	Canton–30%; Hollis–30%; Charlton–20%; Others–20%

Canton soils are deep and well drained. They have moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and changes abruptly to gravelly loamy sand in the substratum. Canton soils are on side-hill positions similar to those of Charlton soils.

Hollis soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and gravelly fine sandy loam. Bedrock is at a depth of about 15 inches. Hollis soils are mostly on ridgetops.

Charlton soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and grades to gravelly sandy loam in the substratum. Charlton soils are mostly on side-hill positions on the landscape.

Soils of minor extent are mainly the deep, well drained Paxton soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester and Ridgebury soils. Paxton, Sutton, and Woodbridge soils are on landscape positions similar to Canton and Charlton soils. Leicester and Ridgebury soils are in low-lying positions mostly along narrow drainageways.

Most areas of this map unit are in unmanaged woodland. Scattered areas where slopes are less than 15 percent are cleared to grow hay, corn, and pasture for dairy farming. Other cleared areas are used for community developments or are idle.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, steepness of slopes, rock outcrops, and surface stoniness.

8. CHARLTON-HOLLIS: Brownish, gently sloping to steep, well drained and somewhat excessively drained, deep soils with a friable loamy substratum and shallow soils over bedrock; on uplands.

Extent:	24% of state
Location:	Throughout the Eastern and Western Highlands regions
Parent material:	Glacial till comprised of various acid gneisses, schists, and granites
Dominant slopes:	8-15%; Range: 3-35%+
Topography:	Irregularly shaped hills with landforms, and drainage patterns controlled by the underlying bedrock
Surface stoniness:	Mostly very stony and extremely stony but many small areas have been cleared on slopes less than 15%
Rock outcrops:	Common
Composition of unit:	Charlton–40%; Hollis–25%; Others–35%

Charlton soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and grades to gravelly sandy loam in the substratum. Charlton soils are mostly on side-hill positions on the landscape.

Hollis soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and gravelly fine sandy loam. Bedrock is at a depth of about 15 inches. Hollis soils are mostly on ridgetops.

Soils of minor extent are mainly the deep, well drained Canton and Paxton soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester and Ridgebury soils. Canton, Paxton, Sutton, and Woodbridge soils are on landscape positions similar to those of Charlton soils. Leicester and Ridgebury soils are in low-lying positions mostly along narrow drainageways.

Most areas of this map unit are in unmanaged woodland. In the eastern and northwestern parts of the state many small areas with slopes less than 15 percent are used for pasture and to grow hay and corn for dairy farming. Many areas are used for community and industrial developments in coastal Fairfield County and the large cities of Waterbury and New London.

The main limitations affecting the use of the soils of this unit are the shallow depth to bedrock, steepness of slopes, rock outcrops, and surface stoniness.

9. NARRAGANSETT-HOLLIS: Brownish, gently sloping to steep, well drained and somewhat excessively drained, deep silty soils with a friable substratum and shallow soils over bedrock; on uplands.

Extent:	3% of state
Location:	Southeastern Connecticut mostly in New London County east of the Thames River
Parent material:	Glacial till comprised mostly of grayish acid gneiss and schist. Narragansett soils are capped with silty windblown material.
Dominant slopes:	8-15%; Range: 3-35%+
Topography:	Irregular hills with landforms and drainage patterns controlled by the underlying bedrock
Surface stoniness:	Mostly very stony and extremely stony but some areas have been cleared on slopes less than 15%.
Rock outcrops:	Common
Composition of unit:	Narragansett–35%; Hollis–35%; Others–30%

Narragansett soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and moderately rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes abruptly to gravelly sandy loam in the substratum. Narragansett soils are mostly on side-hill positions in the landscape.

Hollis soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam and gravelly fine sandy loam. Bedrock is at a depth of about 15 inches. Hollis soils are mostly on ridgetops.

Soils of minor extent are mainly the deep well drained Broadbrook and Charlton soils; moderately well drained Sutton and Rainbow soils; and poorly drained Leicester and Ridgebury soils. Broadbrook and Charlton soils are on landscape positions similar to Narragansett soils. Sutton and Rainbow soils are in slightly lower positions on the landscape than Narragansett soils. Leicester and Ridgebury soils are in low-lying positions, mostly along narrow drainageways.

Most areas of this unit are in unmanaged woodland. A few areas where slopes are less than 15 percent have been cleared for row crops and pasture for dairy farming. Small scattered areas have been cleared and used for community developments or are idle.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, steepness of slopes, and surface stoniness.

Areas of the Eastern and Western Highlands Dominated by Soils formed in Stratified Deposits Derived from Gneiss, Schist, and Granite

This category consists of three map units that make up about 13 percent of the State of Connecticut. Areas of these soils are on outwash terraces near streams that dissect the uplands. The soils are underlain by sand and gravel deposits.

10. AGAWAM-MERRIMAC-HINCKLEY: Brownish, nearly level to rolling, deep, well drained, somewhat excessively drained, and excessively drained soils with a sandy and gravelly substratum; on terraces.

Extent:	8% of state
Location:	Throughout Eastern and Western Highlands regions in valleys of rivers and streams
Parent material:	Glacial outwash and ice-contact stratified materials derived mostly from acid gneisses, schists, and granites
Dominant slopes:	3-15%; Range: 0-25%+
Topography:	Gently sloping to undulating terraces dissected in places by old drainage ways forming terrace escarpments. Also kame-kettle surfaces of terraces in valleys or on sides of hills above the valley floor.
Surface stoniness:	Generally free of stones except Hinckley soils may contain many cobbles
Rock outcrops:	Rare
Composition of unit:	Agawam–30%; Merrimac–25%; Hinckley–25%; Others–20%

Agawam soils are deep and well drained. They have moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam grading to loamy fine sand and sand in the substratum. Agawam soils are on broad, low-lying outwash terraces.

Merrimac soils are deep and somewhat excessively drained. They have moderately rapid or rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is sandy loam. The brownish subsoil is sandy loam and gravelly loamy sand grading to very gravelly sand in the substratum. Merrimac soils are mostly on broad, low lying outwash terraces similar to Agawam.

Hinckley soils are deep and excessively drained. They have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. The available water capacity is low. Typically, the surface layer is gravelly sandy loam. The brownish subsoil is gravelly sand and the substratum is gravelly sand and very gravelly sand. Hinckley soils are mostly on ice-contact terraces and are usually associated with kame-kettle topography.

Soils of minor extent are mainly the deep, well drained Haven and Enfield soils; moderately well drained Ninigret, Tisbury, and Sudbury soils; poorly drained Walpole soils; and very poorly drained Scarboro soils. Haven and Enfield soils are on landscape positions similar to Agawam and Merrimac soils. Ninigret, Tisbury, and Sudbury are in slight depressions in the outwash terraces. Walpole and Scarboro soils are in depressions and along drainageways.

Most areas of this map unit have been cleared and used for farming. In the eastern and northwestern parts of the state many areas are used for pasture and to grow hay and corn for dairy farming, but some areas are used for vegetable crops or nursery stock. In southwestern Connecticut and along Long Island Sound east of the Connecticut River many areas are used for community and industrial developments.

The main limitations affecting use of the soils of this map unit are droughtiness, steepness of slopes, and rapid or very rapid permeability which causes poor filtration. These areas may also be important for underground water supplies and may be sensitive to certain land uses.

11. HAVEN-RAYPOL: Brownish, nearly level to gently sloping, deep, well drained and poorly drained soils with a sandy and gravelly substratum; on terraces.

Extent:	1% of state
Location:	Mostly in Western Connecticut along the Saugatuck River in Westport and Weston and along the Still River in Danbury, Brookfield, and New Milford
Parent material:	Mantles of silty windblown material over sand and gravel of glacial outwash plains derived mostly from acid gneisses, granites, and schists
Dominant slopes:	3-8%; Range: 0-8%
Topography:	Gently sloping terraces along rather narrow stream valleys
Surface stoniness:	Free of stone
Rock outcrops:	Rare
Composition of unit:	Haven–45%; Raypol–25%; Others–30%

Haven soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes abruptly to gravelly sand and very gravelly sand in the substratum. Haven soils are on the highest portions of the terraces.

Raypol soils are deep and poorly drained. They have moderate permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and very fine sandy loam with mottles. The texture changes abruptly to sand and gravel in the substratum. Raypol soils occupy depressions and drainageways on the terraces.

Soils of minor extent are mainly the deep, excessively drained Hinckley soils; the deep, somewhat excessively drained Merrimac soils; the deep, well drained Agawam and Enfield soils; moderately well drained Ninigret and Tisbury soils; and poorly drained Walpole and Raynham soils. Agawam, Enfield, and Merrimac soils are on landscape positions similar to the Haven soils. Hinckley soils are on kame terraces and often lie along the margins of the valleys. Ninigret and Tisbury soils are in slight depressions in the landscape. Walpole and Raynham soils are in low-lying positions and along slowly flowing streams.

Most areas of this map unit have been cleared to grow crops for dairy farming. Some areas are in community and industrial developments, especially in Danbury. A few areas are idle or remain in woodland.

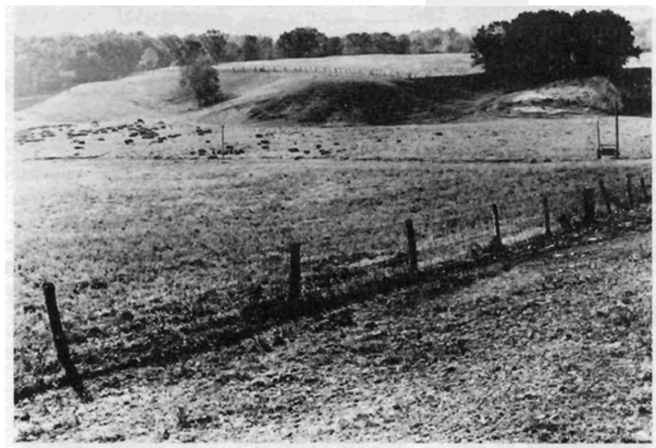
The main limitation affecting use of the soils of this map unit is wetness and rapid permeability of the substratum, which causes poorer filtration of bacteria and attenuation of phosphorus from septic tanks than finer textured, well drained soils. These areas may also be important sources of underground water supplies and may be sensitive to certain land uses.

12. HINCKLEY-MERRIMAC: Brownish, nearly level to rolling, deep, excessively drained and somewhat excessively drained soils with a sandy and gravelly substratum, on terraces.

Extent:	4% of state
Location:	Throughout the Eastern and Western Highlands regions along rivers and stream terraces
Parent material:	Glacial outwash and ice-contact stratified material derived mostly from gneisses, schists, and granites
Dominant slopes:	3-15%; Range: 0-30%+
Topography:	Gently sloping to undulating terraces often dissected by old drainage ways forming escarpments. Also kame-kettle surfaces of terraces in valleys or on sides of hills above the valley floor.
Surface stoniness:	Generally free of stones, except Hinckley soils may contain many cobbles
Rock outcrops:	Rare
Composition of unit:	Hinckley–45%; Merrimac–25%; Others–30%

Hinckley soils are deep and excessively drained. They have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. The available water capacity is low. Typically, the surface layer is gravelly sandy loam. The brownish subsoil is gravelly sand and the substratum is gravelly sand and very gravelly sand. Hinckley soils are mostly on ice-contact terraces and are usually associated with kame-kettle topography.

Merrimac soils are deep and somewhat excessively drained. They have moderately rapid or rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is sandy loam. The brownish subsoil is sandy loam and gravelly loamy sand and grades to very gravelly sand in the substratum. Merrimac soils are mostly on the broader, low-lying river terraces.



The Hinckley-Merrimac soils occupy terraces in Connecticut's valleys. Here, droughty pastures are found on the kame-kettle topography.

Soils of minor extent are mainly the deep, well drained Agawam, Haven and Enfield soils; moderately well drained Ninigret, Tisbury and Sudbury soils; poorly drained Walpole soils, and very poorly drained Scarboro soils. Agawam, Haven, and Enfield soils are on landscape positions similar to the Merrimac soils. Ninigret, Tisbury, and Sudbury soils are in slight depressions in the outwash terraces. Walpole and Scarboro soils are in low-lying positions and along streams and drainageways.

Most areas of this map unit have been cleared for farming. In the northeastern and northwestern parts of the state, most areas are used for pasture and to grow hay and silage corn for dairy farming, but small areas are used for vegetables and nursery stock. In southern Connecticut many areas are used for community and industrial developments. A few areas of this map unit are in unmanaged woodland or are idle.

The main limitations affecting use of the soils of this map unit are droughtiness, steepness of slopes, and rapid or very rapid permeability which causes poor filtration. These areas may also be important for underground water supplies.

Areas of the Western Highlands Dominated by Soils Formed in Glacial Till Derived from Limestone and Schist

This category, represented by one map unit, makes up about 2 percent of the State of Connecticut. The soils are mostly deep to rock and have a firm substratum. Shallow soils, however, comprise a significant part of the map unit. The underlying limestone bedrock has given rise to soils that are more alkaline than other upland soils in the Western Highlands.

13. STOCKBRIDGE-FARMINGTON-AMENIA: Brownish, gently sloping to steep, well drained and moderately well drained, deep soils with a firm substratum and somewhat excessively drained and well drained shallow soils over bedrock; on uplands.

Extent:	2% of state
Location:	In western-most portions of Litchfield and Fairfield Counties
Parent material:	Calcareous glacial till comprised mostly of dolomite, limestone and marble
Dominant slopes:	3-15%; Range: 0-25%+
Topography:	Low smoothly rounded drumlins interspersed between irregular landforms and drainage patterns controlled by the underlying bedrock
Surface stoniness:	Mostly cleared of stones except Farmington soils which are very stony
Rock outcrops:	Common in Farmington soils
Composition of unit:	Stockbridge–35%; Farmington–25%; Amenia–20%; Others–20%

Stockbridge soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow permeability in the substratum. The depth to the firm substratum is about 28 inches. The available water capacity is moderate. Typically, the surface layer is loam. The brownish subsoil and the firm substratum are loams. Stockbridge soils are mostly on the tops and sides of drumlins.

Farmington soils are shallow and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability above the bedrock. The available water capacity is low. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and loam. Limestone bedrock is at a depth of about 15 inches. Farmington soils are mostly on hillsides scoured by the glacier leaving little soil materials.

Amenia soils are deep and moderately well drained. They have moderate permeability in the surface layer and subsoil and slow permeability in the substratum. The depth to the firm substratum layer is about 24 inches. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and loam and has mottles in the lower part. The texture grades to gravelly fine sandy loam in the mottled substratum. Amenia soils are mostly on the flat portions of long smooth slopes.

Fertile fields of corn and hay predominate the limestone valleys of northwestern Connecticut. The Stockbridge-Farmington-Amenia unit lies in the foreground; the Hollis-Bernardston soils (Unit 2) occupy the hills in the haze beyond.

Soils of minor extent are mainly the deep, well drained Nellis and Bernardston soils; poorly drained Kendaia soils; and very poorly drained Lyons soils. Bernardston and Nellis soils are on landscape positions similar to those of Stockbridge soils. Kendaia and Lyons soils are in low-lying landscape positions, depressions, and drainageways.

Many areas with slopes less than 15 percent are cleared for pasture and to grow hay and silage corn for dairy farming. Some areas of this map unit are in unmanaged woodland. Scattered areas are used for community developments, recreation or industrial developments. A few areas have limestone quarries.

The main limitations affecting the use of the soils of this map unit are slow permeability, shallow depth to bedrock, steepness of slopes, and wetness due to impeded drainage.

Areas of the Western Highlands Dominated by Soils Formed in Stratified Deposits Derived from Limestone and Schist

This category, represented by one map unit, makes up about 1 percent of the State of Connecticut. Areas of these soils are on outwash terraces near streams that dissect the uplands. The soils are underlain by sand and gravel deposits. They are more alkaline than other soils on terraces of the Western Highlands because of the influence of limestone in the parent material.

14. COPAKE-GROTON: Brownish, nearly level to rolling, deep, well drained and excessively drained soils with a sandy and gravelly substratum; on terraces.

Extent:	1% of state
Location:	Along terraces of the Housatonic River in northwest Litchfield County
Parent material:	Calcareous glacial outwash and ice contact stratified materials derived mostly from limestone and marble
Dominant slopes:	3-15%; Range: 0-30%+
Topography:	Gently sloping to undulating terraces in places dissected by old drainage ways forming terrace escarpments. Also kame-kettle surfaces in valleys or on sides of hills above the valleys.
Surface stoniness:	Generally free of stones except Groton soils may contain many cobbles
Rock outcrops:	Rare
Composition of unit:	Copake–40%; Groton–35%; Others–25%

Copake soils are deep and well drained or somewhat excessively drained. They have moderate or moderately rapid permeability in the surface layer and subsoil and very rapid permeability in the calcareous substratum. The available water capacity is moderate. Typically, the surface layer is gravelly loam. The brownish subsoil is gravelly loam and changes abruptly to very gravelly sand in the substratum. Copake soils are mostly on broad outwash terraces along the Housatonic River and its tributaries.

Groton soils are deep and excessively drained. They have rapid or very rapid permeability. The available water capacity is low. Typically, the surface layer is gravelly sandy loam. The brownish subsoil is sandy loam and grades to very gravelly sand in the calcareous substratum. Groton soils are mostly on ice-contact terraces and are associated with kame-kettle topography.

Soils of minor extent are mainly the deep, well drained Unadilla and Hamlin soils; the deep, somewhat excessively drained Merrimac soils; the deep excessively drained Hinckley soils; moderately well drained Hero, Teel, and Tisbury soils; poorly drained Limerick, Fredon, and Wareham soils; and very poorly drained Granby and Saco soils. Hamlin, Teel, Limerick, and Saco soils are on floodplains. Hinckley soils are on landscape positions similar to Groton soils. Unadilla, Merrimac, Hero, and Tisbury soils occupy landscape positions similar to Copake soils. Fredon, Wareham, and Granby soils are in depressions, low-lying areas, and along drainageways.

Most areas of this map unit are in unmanaged woodland. Some areas in the northwestern part of the state are cleared for pasture and to grow hay and silage corn for dairy farming. A few areas are used for community developments, recreation, and industry.

The main limitations affecting use of the soils of this map unit are droughtiness, steepness of slopes, and rapid or very rapid permeability which allows poor filtration. These areas are also important for underground water supplies.

Areas of the Central Lowlands of the Connecticut River Valley Dominated by Soils Formed in Glacial Till Derived from Sandstone, Shale, Conglomerate, and Basalt

This category consists of seven map units that make up about 10 percent of the State of Connecticut. The soils have a distinctive reddish color inherited from the underlying sedimentary bedrock. Units 15, 16, 17, and 18 consist of soils that are mainly friable and deep to rock. Bedrock near the surface is a prominent feature in the soils of unit 19. The soils of units 20 and 21 have a firm and compact substratum.

15. CHESHIRE-WETHERSFIELD-HOLYOKE: Reddish, gently sloping to steep, deep, well drained soils with a friable or firm substratum and well drained and somewhat excessively drained shallow soils over bedrock; on uplands.

Extent:	1% of state
Location:	Southern portion of Central Lowlands mostly in towns of Branford, North Branford, East Haven and North Haven
Parent material:	Glacial till derived from reddish sandstone, shale, and dark colored basalt
Dominant slopes:	3-15%; Range: 3-35%+
Topography:	Irregular with landforms and drainage controlled by the underlying bedrock interspersed with low, smoothly rounded hills or drumlins
Surface stoniness:	Dominantly cleared of stones except for Holyoke soils which are very stony
Rock outcrops:	Common on basalt ridges
Composition of unit:	Cheshire–30%; Wethersfield–25%; Holyoke–25%; Others–20%

Cheshire soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The reddish subsoil is fine sandy loam and grades to gravelly sandy loam in the substratum. Cheshire soils are mostly on the tops and sides of hills.

Wethersfield soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is loam. The reddish subsoil is loam and grades to gravelly loam in the substratum. Wethersfield soils are mostly on the crests and sides of low, smoothly rounded drumlins.

Holyoke soils are shallow and well drained or somewhat excessively drained. They have moderate permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is silt loam. The brownish or reddish subsoil is also silt loam. Bedrock is at a depth of about 15 inches. Holyoke soils are mostly on the crests and upper slopes of the prominent basalt or trap rock ridges of the Central Lowlands.

Soils of minor extent are mainly the moderately deep, well drained Yalesville soils that are on landscape positions similar to those of Cheshire and Wethersfield soils. The moderately well drained Watchaug and Ludlow soils are on concave slopes and the poorly drained Wilbraham soils are in depressions, and along drainageways.

Some areas of this map unit are in unmanaged woodland. Many areas with slopes less than 15 percent are used for pasture and to grow hay and silage corn for dairying. Scattered areas are planted to vegetables or are in orchards. Some areas are in community developments, business, and industry.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, steepness of slopes, and slow or very slow permeability.

16. CHESHIRE-YALESVILLE: Reddish, gently sloping and sloping, deep, well drained soils with a friable substratum and moderately deep soils over bedrock; on uplands.

Extent:	2% of state
Location:	Central Lowlands mostly in towns of Hamden, Wallingford, North Haven, Cheshire and Southington
Parent material:	Glacial till comprised mainly of red sandstone and shale
Dominant slopes:	3-8%; Range: 3-25%
Topography:	Irregular with landforms and drainage controlled by the underlying bedrock
Surface stoniness:	Most areas have been cleared of stones
Rock outcrops:	Few
Composition of unit:	Cheshire–40%; Yalesville–35%; Others–25%

Cheshire soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The reddish subsoil is fine sandy loam and grades to gravelly sandy loam in the substratum. Cheshire soils are on the tops and sides of hills.

Yalesville soils are moderately deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The reddish subsoil is fine sandy loam and loam grading to sandy loam in the substratum. Reddish sandstone bedrock is at a depth of about 36 inches. Yalesville soils are on the tops and sides of hills.

Soils of minor extent are mainly the deep, well drained Wethersfield soils; the shallow, well drained or somewhat excessively drained Holyoke soils; moderately well drained Watchaug and Ludlow soils; and poorly drained Wilbraham soils. Wethersfield and Holyoke soils are mostly on higher landscape positions on drumlins and prominent basalt or trap rock ridges. Watchaug and Ludlow soils are in slight depressions and on lower slopes. Wilbraham soils are at the base of slopes and along drainageways.

Most areas of this map unit have been cleared for pasture and to grow hay and silage corn for dairy farming. Some scattered areas are used for community, commercial, and industrial developments. A few areas are in unmanaged woodland.

The main limitations affecting the use of the soils of this map unit are the moderate depth to bedrock and steepness of slopes.

17. NARRAGANSETT-BROADBROOK-HOLYOKE: Brownish and reddish, gently sloping to steep, well drained, deep soils with a friable to firm substratum and well drained and somewhat excessively drained shallow soils over bedrock; on uplands.

Extent:	<1% of state
Location:	Central Lowlands mostly in towns of Bloomfield, East Granby, and Suffield
Parent material:	Glacial till comprised of reddish sandstone, shale and dark-colored basalt. Narragansett and Broadbrook soils are capped with windblown silts.
Dominant slopes:	8-25%; Range: 3-35%
Topography:	Irregular with landforms and drainage controlled by underlying bedrock interspersed with low, smoothly rounded hills or drumlins. Some prominent basalt ridges.
Surface stoniness:	Mostly very stony. Stones cleared from some areas on slopes less than 15%
Rock outcrops:	Common in areas of Holyoke soils
Composition of unit:	Narragansett–30%; Broadbrook–25%; Holyoke–25%; Others–20%

Narragansett soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and moderately rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes abruptly to gravelly sandy loam in the substratum. Narragansett soils are mostly on the tops and sides of low rounded hills.

Broadbrook soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm and compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes somewhat abruptly to gravelly sandy loam in the substratum. Broadbrook soils are mostly on the tops and sides of low, smoothly rounded drumlins.

Holyoke soils are shallow and well drained or somewhat excessively drained. They have moderate permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is silt loam. The brownish or reddish subsoil is also silt loam. Bedrock is at a depth of about 15 inches. Holyoke soils are mostly on the crests and upper slopes of prominent basalt or trap rock ridges of the Central Lowlands.

Soils of minor extent are mainly the deep, well drained Cheshire and Wethersfield soils and the moderately deep, well drained Yalesville soils; moderately well drained Watchaug and Ludlow soils; and poorly drained Wilbraham soils. Cheshire, Wethersfield, and Yalesville soils are on landscape positions similar to the Narragansett and Broadbrook soils. Watchaug soils are on concave slopes and in slight depressions. Wilbraham soils are in depressions at the base of steep slopes and along drainageways.

Most areas of this map unit are in unmanaged woodland. Scattered areas with slopes less than 15 percent are cleared for pasture and to grow hay and corn silage for dairy farming. A few areas are in orchards or used to grow nursery stock and vegetables. A few small areas are in community developments or are idle.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, slow or very slow permeability, steepness of slopes, and surface stoniness.

18. NARRAGANSETT-CHESHIRE: Brownish and reddish, gently sloping to moderately steep, deep, well drained soils with a friable substratum; on uplands.

Extent:	1% of state
Location:	Northeastern portion of Central Lowlands mostly in towns of Somers, Enfield, Ellington, South Windsor and Vernon
Parent material:	Glacial till derived from red sandstone and shale. Narragansett soils are capped with windblown silts.
Dominant slopes:	3-8%; Range: 3-35%
Topography:	Irregular with landforms and drainage controlled by the underlying bedrock
Surface stoniness:	Mostly very stony with some clearing in areas with slopes less than 15%
Rock outcrops:	Few
Composition of unit:	Narragansett–40%; Cheshire–35%; Others–25%

Narragansett soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and moderately rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes abruptly to gravelly sandy loam in the substratum. Narragansett soils are mostly on the tops and sides of low rounded hills.

Cheshire soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The reddish subsoil is fine sandy loam and grades to gravelly sandy loam in the substratum. Cheshire soils are on the tops and sides of hills.

Soils of minor extent are the deep, well drained Wethersfield and Broadbrook soils; and the moderately deep, well drained, Yalesville soils; moderately well drained Watchaug and Ludlow soils; and poorly drained Wilbraham soils. Wethersfield and Broadbrook soils are on the higher parts of drumlins and rounded hills. Watchaug and Ludlow soils are in slight depressions and on concave slopes. Wilbraham soils are at the base of slopes and along drainageways.

Most areas of this map unit are in unmanaged woodland. Areas with slopes less than 15 percent are cleared and used to grow vegetables, silage corn, hay, and nursery stock. Scattered areas are in community developments or are idle.

The main limitations affecting the use of the soils of this map unit are the steepness of slopes and surface stoniness.

19. HOLYOKE-WETHERSFIELD-CHESHIRE: Reddish, gently sloping to steep, well drained and somewhat excessively drained shallow soils over bedrock and deep, well drained soils with a firm or friable substratum; on uplands.

Extent:	2% of state
Location:	Throughout the Central Lowlands mostly on basalt ridges such as the Hanging Hills of Meriden, Higby and Besek Mountains, Sleeping Giant of Hamden, West and East Rocks of New Haven
Parent material:	Glacial till comprised mainly of basalt and red sandstone and shale
Dominant slopes:	8-25%; Range: 3-35%+
Topography:	Irregular with landforms and drainage controlled by the underlying bedrock. Interspersed with a few low, smoothly rounded drumlins and rocky ridges with steep west-facing slopes.
Surface stoniness:	Dominantly very stony and extremely stony. Stones cleared from many slopes less than 15%.
Rock outcrops:	Common on basalt ridges
Composition of unit:	Holyoke–35%; Wethersfield–25%; Cheshire–20%; Others–20%

Holyoke soils are shallow and well drained or somewhat excessively drained. They have moderate permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is silt loam. The brownish or reddish subsoil is also silt loam. Bedrock is at a depth of about 15 inches. Holyoke soils are mostly on the crests and upper slopes of prominent basalt or trap rock ridges of the Central Lowlands.

Wethersfield soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm, compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is loam. The reddish subsoil is loam and grades to gravelly loam in the substratum. Wethersfield soils are mostly on the tops and sides of low, smoothly rounded drumlins.

Cheshire soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The reddish subsoil is sandy loam and grades to gravelly sandy loam in the substratum. Cheshire soils are mostly on the tops and sides of low rounded hills.

Soils of minor extent are mainly moderately deep, well drained Yalesville soils; moderately well drained Watchaug and Ludlow soils; and poorly drained Wilbraham soils. Yalesville soils are on landscape positions similar to the Cheshire soils. Watchaug and Ludlow soils are in slight depressions and on concave slopes. Wilbraham soils are in depressions, at the base of steep slopes, and along drainageways.

Most areas of this map unit are in unmanaged woodland. A few areas are cleared for hay and pasture crops. A few scattered areas are in community developments. Some areas are used for recreation such as hiking and skiing. Trap rock quarries are in a few areas of this unit.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, steepness of slopes, slow permeability and surface stoniness.

20. WETHERSFIELD-HOLYOKE-BROADBROOK:

Reddish and brownish, gently sloping to steep, deep, well drained soils with a firm substratum and somewhat excessively drained and well drained shallow soils over bedrock; on uplands.

Extent:	1% of state
Location:	West central portion of the Central Lowlands along border of Western Highlands region from Bloomfield to Southington
Parent material:	Glacial till derived mainly from red sandstone and shale and dark basalt. Broadbrook soils are capped with windblown silts.
Dominant slopes:	8-25%; Range: 3-35%+
Topography:	Low smoothly rounded hills and drumlins interspersed with landforms and drainage controlled by underlying bedrock structures. Some steep rocky ridges oriented mostly north-south.
Surface stoniness:	Mostly very stony with extremely stony conditions on basalt ridges
Rock outcrops:	Common in areas of Holyoke soils
Composition of unit:	Wethersfield–30%; Holyoke–30%; Broadbrook–20%; Others–20%

Wethersfield soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is loam. The reddish brown subsoil is loam and grades to gravelly loam in the substratum. Wethersfield soils are mostly on the tops and sides of low, smoothly rounded drumlins.

Holyoke soils are shallow and well drained or somewhat excessively drained. They have moderate permeability above the bedrock. The available water capacity is low due to their shallowness. Typically, the surface layer is silt loam. The brownish or reddish subsoil is also silt loam. Bedrock is at a depth of about 15 inches. Holyoke soils are mostly on the crests and upper slopes of prominent basalt or trap rock ridges of the Central Lowlands.

Broadbrook soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes somewhat abruptly to gravelly sandy loam in the substratum. Broadbrook soils are mostly on the tops and sides of low, smoothly rounded drumlins, positions similar to the Wethersfield soils.

Soils of minor extent are mainly the deep, well drained Cheshire soils; the moderately deep, well drained Yalesville soils; moderately well drained Watchaug and Ludlow soils; and poorly drained Wilbraham soils. Cheshire and Yalesville soils are mostly on landscape positions similar to Wethersfield and Broadbrook soils. Watchaug and Ludlow soils are mostly on concave slopes and in slight depressions. Wilbraham soils are in depressions, at the base of steep slopes, and along drainageways.

Most areas of this map unit are in unmanaged woodland. A few areas where slopes are less than 15 percent are cleared for pasture and to grow hay and silage corn for dairy farming. A few areas are used for recreation. Other scattered areas are used for community developments or are idle.

The main limitations affecting the use of the soils of this map unit are the shallow depth to bedrock, slow permeability, steepness of slopes, and surface stoniness.

21. WETHERSFIELD-LUDLOW: Reddish, gently sloping to moderately steep, deep, well drained and moderately well drained soils with a firm substratum; on uplands.

Extent:	3% of state
Location:	Throughout the Central Lowlands west of the Connecticut River
Parent material:	Glacial till derived mainly from red sandstone and shale
Dominant slopes:	3-8%; Range: 0-25%+
Topography:	Low, smoothly rounded hills and drumlins generally oriented in a north-south direction
Surface stoniness:	Most areas have been cleared of stone
Rock outcrops:	Rare
Composition of unit:	Wethersfield–45%; Ludlow–30%; Others–25%

Wethersfield soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is loam. The reddish subsoil is loam and grades to gravelly loam in the substratum. Wethersfield soils are mostly on the tops and sides of low, smoothly rounded drumlins.

Ludlow soils are deep and moderately well drained. They have moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. The firm compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is silt loam. The reddish subsoil is silt loam with mottles in the lower part. The substratum is gravelly loam. Ludlow soils are mostly on concave slopes and in slight depressions.

Soils of minor extent are mainly the deep, well drained Cheshire soils; the moderately deep, well drained Yalesville soils; the shallow, well drained and somewhat excessively drained Holyoke soils; moderately well drained Watchaug soils and poorly drained Wilbraham soils. Cheshire and Yalesville soils are on landscape positions similar to the Wethersfield soils. Watchaug soils are in slight depressions and on concave slopes similar to Ludlow soils. Wilbraham soils are in depressions, at the base of steep slopes, and along drainageways.

Most areas of this map unit are cleared for pasture and to grow hay and silage corn for dairy farming. A few areas are in woodland. Scattered areas are cleared for community and industrial developments, or are idle.

The main limitations affecting the use of the soils of this map unit are the slow permeability, steepness of slopes, and wetness due to impeded drainage.

Areas of the Central Lowlands of the Connecticut River Valley Dominated by Soils Formed in Stratified Deposits Derived from Sandstone, Shale, Conglomerate, and Basalt

The nine map units of this category make up about 11 percent of the State of Connecticut. Most of the soils have a distinctive reddish color, but some are derived from brownish materials transported from the Eastern and Western Highlands. The soils in units 22, 23, 24, 25, and 26 are on broad outwash terraces and are underlain by sand and gravel deposits. The soils in units 27 and 28 are on glacial lake terraces and are underlain by deposits of fine-textured sediments. The soils of units 29 and 30 are on floodplains of major streams. They formed in sediments eroded from nearby terraces and uplands.

22. BRANFORD-MANCHESTER: Reddish, nearly level to rolling, deep, well drained and excessively drained soils with a sandy and gravelly substratum; on terraces.

Extent:	1% of state
Location:	Throughout the Central Lowlands region south of Hartford
Parent material:	Glacial outwash and ice-contact stratified material derived mostly from red sandstone, shale, and conglomerate. Branford soils are capped with windblown silts.
Dominant slopes:	3-15%; Range: 0-25%+
Topography:	Gently sloping to undulating terraces dissected in places by old drainageways forming terrace escarpments. Also kame-kettle surfaces of terraces in valleys or on sides of hills above the valley floor.
Surface stoniness:	Generally free of stones except Manchester soils may contain many cobbles
Rock outcrops:	Rare
Composition of unit:	Branford–40%; Manchester–35%; Others–25%

Branford soils are deep and well drained. They have moderate or moderately rapid permeability in the surface layer and subsoil and rapid permeability in th substratum. The available water capacity is moderat

Typically, the surface layer is silt loam. The reddish subsoil is loam and changes abruptly to very gravelly sand in the substratum. Branford soils are mostly on broad, low lying outwash terraces.

Manchester soils are deep and excessively drained. They have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. The available water capacity is low. Typically, the surface layer is gravelly sandy loam. The reddish subsoil is gravelly sandy loam and gravelly loamy sand and grades to very gravelly sand in the substratum. Manchester soils are mostly on ice-contact terraces and are usually associated with kame-kettle topography.

Soils of minor extent are mainly the deep, somewhat excessively drained Hartford soils; the deep, excessively drained Penwood soils; moderately well drained Ellington soils; poorly drained Walpole and Swanton soils; and very poorly drained Scarboro soils. Hartford and Penwood soils are on landscape positions similar to the Branford soils. Ellington soils are in slight depressions in the terraces. Walpole, Swanton, and Scarboro soils are in low-lying positions and along drainageways.

Most cleared areas are used to grow hay, silage corn, and pasture for dairy farming. Many small areas are used to grow vegetables and nursery stock. Some small areas of this unit are in unmanaged woodland. Scattered areas are in community and industrial developments or are idle.

The main limitations affecting use of the soils of this map unit are droughtiness, steepness of slopes, and rapid or very rapid permeability which causes poorer filtration of bacteria and attenuation of phosphorus from septic tanks than fine textured soils. These areas may also be important for underground water supplies and may be sensitive to certain land uses.

23. ENFIELD-AGAWAM-MANCHESTER: Brownish and reddish, nearly level to rolling, deep, well drained and excessively drained soils with a sandy and gravelly substratum; on terraces.

Extent:	1% of state
Location:	In the northern part of the Central Lowlands region mostly in the towns of East Windsor, Ellington, Vernon, Enfield, Somers, and West Hartford
Parent material:	Glacial outwash and ice-contact stratified materials derived mainly from red sandstone, shale, and conglomerate. Enfield soils are capped with windblown silts.
Dominant slopes:	0-15%; Range: 0-25%+
Topography:	Level to undulating terraces dissected in places by old drainageways forming terrace escarpments. Also kame-kettle surfaces in valleys.
Surface stoniness:	Generally free of stones except Manchester soils may contain many cobbles
Rock outcrops:	Rare
Composition of unit:	Enfield–30%; Agawam–30%; Manchester–20%; Others–20%

Enfield soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is silt loam. The reddish subsoil is silt loam and changes abruptly to very gravelly sand in the substratum. Enfield soils are on broad, low lying outwash terraces.

Agawam soils are deep and well drained. They have moderate or moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam grading to loamy fine sand and sand in the substratum. Agawam soils are on broad, low lying outwash terraces similar to the Enfield soils.

Suburban development engulfs many areas of the Enfield-Agawam-Manchester unit where farms once stood; the Narragansett-Cheshire soils (Unit 8) occupy the low hill rising above the outwash soils in the foreground.

Manchester soils are deep and excessively drained. They have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. The available water capacity is low. Typically, the surface layer is gravelly sandy loam. The reddish subsoil is gravelly sandy loam and gravelly loamy sand and grades to very gravelly sand in the substratum. Manchester soils are mostly on ice-contact terraces and are usually associated with kame-kettle topography.

Soils of minor extent are mainly the deep, somewhat excessively drained Merrimac and Hartford soils; moderately well drained Tisbury, Sudbury, and Ellington soils; and poorly drained Walpole soils. Merrimac and Hartford soils are on landscape positions similar to the Enfield and Agawam soils. Tisbury, Sudbury, and Ellington soils are mostly in slight depressions in the terraces. Walpole soils are in low depressions and along drainageways.

Many areas of this unit have been cleared for pasture and to grow hay and silage corn for dairy farming. Many small areas are used to grow vegetables and for orchards. A few large areas are used to grow tobacco, nursery stock, and potatoes. Many scattered areas are in community and industrial developments and compete with agriculture for land use.

The main limitations affecting use of the soils of this map unit are droughtiness in the Manchester soils and rapid permeability of the substratum in all soils which causes poorer filtration of bacteria and attenuation of phosphorus from septic tanks than fine textured soils. These areas may also be important for underground water supplies and may be sensitive to certain land uses.

24. HARTFORD-MANCHESTER: Reddish, nearly level to rolling, deep, somewhat excessively drained and excessively drained soils with a sandy and gravelly substratum; on terraces.

Extent:	2% of state
Location:	Mostly in Central Lowlands region east of the Connecticut River extending from Manchester to Middletown. It is also found southeastward from Middletown to Haddam along the Connecticut River as it cuts through the Eastern Highlands.
Parent material:	Glacial outwash and ice-contact stratified materials derived mainly from red sandstone, shale, and conglomerate
Dominant slopes:	0-15%; Range: 0-25%+
Topography:	Level to undulating terraces dissected in places by old drainageways forming escarpments. Also kame-kettle surfaces on valley terraces.
Surface stoniness:	Generally free of stones except Manchester soils may contain many cobbles
Rock outcrops:	Rare
Composition of unit:	Hartford–40%; Manchester–35%; Others–25%

Hartford soils are deep and somewhat excessively drained. They have moderately rapid or rapid permeability in the surface layer and subsoil and rapid or very rapid permeability in the substratum. The available water capacity is low. Typically, the surface layer is sandy loam. The reddish subsoil is sandy loam and loamy sand and grades to very gravelly sand in the substratum. Hartford soils are mostly on broad low-lying river terraces and have more gentle slopes than the Manchester soils.

Manchester soils are deep and excessively drained. They have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. The available water capacity is low. Typically, the surface layer is gravelly sandy loam. The reddish subsoil is gravelly sandy loam and gravelly loamy sand and grades to very gravelly sand in the substratum. Manchester soils are mostly on ice-contact terraces and are usually associated with kame-kettle topography.

Soils of minor extent are mainly the deep, excessively drained Penwood soils; the deep, well drained Enfield and Agawam soils; moderately well drained Ellington soils; and poorly drained Walpole soils. Penwood, Enfield, and Agawam soils are on landscape positions similar to the Hartford soils. Ellington soils are in slight depressions on the outwash terraces. Walpole soils are in low depressions and along drainageways.

Most areas with slopes less than 15 percent have been cleared for pasture and to grow hay and silage corn for dairy farming. A few areas are used to grow vegetables, nursery stock, and tobacco. Small scattered areas are in woodland or are idle. Several large areas are used for community and industrial developments and compete with agriculture for land use.

The main limitations affecting use of the soils of this map unit are droughtiness, steepness of slopes and rapid permeability which causes poorer filtration of bacteria and attenuation of phosphorus from septic tanks than fine textured soils. These areas may also be important for underground water supplies and may be sensitive to certain land uses.

25. PENWOOD-MANCHESTER: Reddish, nearly level to rolling, deep, excessively drained soils with a sandy and gravelly substratum; on terraces.

Extent:	2% of state
Location:	Mostly in the town of Southington along the Quinnipiac River from Meriden to New Haven, and along the southern reaches of the Mill, West, and Farm Rivers in the Central Lowlands region
Parent material:	Glacial outwash and ice-contact stratified material derived mostly from red sandstone, shale, and conglomerate
Dominant slopes:	0-8%; Range: 0-25%+
Topography:	Level to gently undulating complex of slopes near valley margins; kame-kettle surfaces
Surface stoniness:	Generally free of stone except Manchester soils may contain many cobbles
Rock outcrops:	Rare
Composition of unit:	Penwood–45%; Manchester–30%; Others–25%

Penwood soils are deep and excessively drained. They have rapid or very rapid permeability. The available water capacity is low. Typically, the brownish surface layer is loamy sand. The reddish subsoil is loamy sand and sand and grades to sand in the substratum. Penwood soils are mostly on smooth outwash terraces.

Manchester soils are deep and excessively drained. They have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. The available water capacity is low. Typically, the surface layer is gravelly sandy loam. The reddish subsoil is gravelly sandy loam and gravelly loamy sand and grades to very gravelly sand in the substratum. Manchester soils are mostly on ice-contact terraces and are usually associated with kame-kettle topography.

Soils of minor extent are mainly the deep, well drained Branford soils; the deep, somewhat excessively drained Hartford soils; moderately well drained Ellington and Podunk soils; and poorly drained Walpole soils. Branford and Hartford soils are on landscape positions similar to Penwood soils. Ellington soils are in slight depressions. Walpole soils are in low depressions and along drainageways. Podunk soils are on floodplains.

Most areas of this map unit are cleared and are used for community and industrial developments. Areas along streams and other small, scattered areas are in woodland or are idle. A few areas are used to grow vegetables, nursery stock and hay, and for pasture.

The main limitations affecting use of the soils of this map unit are droughtiness and rapid or very rapid permeability, which causes poor filtration. These areas may be important for underground water supplies and may be sensitive to certain land uses.

26. WINDSOR-NINIGRET-MERRIMAC: Brownish, nearly level to undulating, deep, excessively drained, moderately well drained and somewhat excessively drained soils with a sandy and gravelly substratum; on terraces.

Extent:	2% of state
Location:	In the Central Lowlands region mostly north of Hartford on broad terraces lying above the floodplains along both sides of the Connecticut River
Parent material:	Deep stratified sand and gravel of glacial outwash origin derived mostly from acid gneiss and schist of the Eastern and Western Highlands eroded and transported into the Central Lowlands and mixed with some reddish sands of local sandstone and shale
Dominant slopes:	0-3%; Range: 0-25%+
Topography:	Broad, smoothed plains with gently undulating slopes adjacent to upland areas
Surface stoniness:	Generally free of stones
Rock outcrops:	Rare
Composition of unit:	Windsor–35%; Ninigret–25%; Merrimac–20%; Others–20%

Windsor soils are deep and excessively drained. They have rapid permeability. The available water capacity is low. Typically, the surface layer is loamy sand. The brownish subsoil and the substratum are sand. Windsor soils are on broad terraces of outwash plains.

Ninigret soils are deep and moderately well drained. They have moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam with mottles. The mottled substratum is sand and gravel. Ninigret soils are on slight depressions in the broad outwash plains.

Merrimac soils are deep and somewhat excessively drained. They have moderately rapid or rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is sandy loam. The brownish subsoil is sandy loam and gravelly loamy sand and grades to very gravelly sand in the substratum. Merrimac soils are on the broad terraces similar to the Windsor soils.

Soils of minor extent are mainly the deep, well drained Agawam, Enfield, and Poquonock soils; moderately well drained Sudbury and Tisbury soils; and poorly drained Walpole soils. Agawam, Enfield, and Poquonock soils are on landscape positions similar to Windsor and Merrimac soils. Sudbury and Tisbury soils are in slight depressions. Walpole soils are in low depressions and along drainageways.

Most areas of this map unit have been cleared for farming. Tobacco, nursery stock, potatoes, and vegetables are the principal crops. Some areas are cleared for pasture and to grow hay and silage corn for dairy farming. Many areas are irrigated. Many small areas are in woodland. Scattered areas are in community and industrial developments and compete with agriculture for land use.

The main limitations affecting use of the soils of this map unit are droughtiness, wetness, and rapid permeability which causes poor filtration. These areas may be important for underground water supplies and may be sensitive to certain land uses.

27. ELMWOOD-BUXTON-SCANTIC: Brownish and reddish, nearly level to gently sloping, deep, moderately well drained and poorly drained soils with a silty or clayey substratum; on terraces.

Extent:	1% of state
Location:	In Central Lowlands region from the town of Berlin north to Windsor and Bloomfield mostly west of the Connecticut River. Some small areas are east of the Connecticut River in East Windsor, South Windsor, and Enfield.
Parent material:	Varved silt and clay sediments deposited in an ancient glacial lake
Dominant slopes:	0-8%; Range: 0-15%

Topography:	Broad, nearly level to gently undulating slopes in places dissected by old drainageways forming terrace escarpments
Surface stoniness:	Generally free of stones
Rock outcrops:	Rare
Composition of unit:	Elmwood–30%; Buxton–25%; Scantic–25%; Others–20%

Elmwood soils are deep and moderately well drained. They have moderately rapid permeability in the surface layer and subsoil and slow or very slow permeability in the clayey substratum. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is sandy loam with mottles in the lower part. The mottled substratum is silty clay loam. Elmwood soils are on broad, low lying glacial lacustrine terraces.

Buxton soils are deep and moderately well drained. They have slow or very slow permeability. The available water capacity is high. Typically, the surface layer is silt loam. The reddish subsoil is silt loam with mottles and grades to mottled silty clay loam in the substratum. Buxton soils are on landscape positions similar to Elmwood soils.

Scantic soils are deep and poorly drained. They have slow or very slow permeability. The available water capacity is high. Typically, the surface layer is silt loam. The grayish subsoil is silt loam and silty clay loam with mottles and grades to mottled clay in the substratum. Scantic soils are mostly in slight depressions on the broad lacustrine terraces.

The soils of minor extent are mainly the deep, well drained Enfield and Melrose soils; poorly drained Biddeford and Swanton soils; and very poorly drained Whately soils. Enfield and Melrose soils are on slightly higher landscape positions. Biddeford, Swanton, and Whately soils are in low depressions and along drainageways.

Most areas of this map unit are cleared. Many areas are used to grow hay and for pasture for dairy farming. Small scattered areas are in vegetables, woodland, or are idle. Community and industrial developments are numerous and compete with agriculture for land use.

The main limitations affecting the use of the soils of this map unit are slow permeability and wetness, [redacted]hich have inhibited high value agricultural crops [redacted]nd homesites with septic systems.

28. SCANTIC-BUXTON-BROADBROOK: Brownish and reddish nearly level to sloping, deep, poorly drained and moderately well drained soils with a silty or clayey substratum and well drained soils with a firm loamy substratum; on terraces.

Extent:	1% of state
Location:	In Central Lowlands mostly in the towns of Suffield, East Granby and Windsor Locks
Parent material:	Varved silt and clay sediments deposited in an ancient glacial lake and glacial till derived mostly from red sandstone and shale. Broadbrook soils are capped with windblown silt.
Dominant slopes:	0-8%; Range: 0-15%
Topography:	Broad, nearly level to gently undulating slopes, in places dissected by old drainageways forming terrace escarpments; interspersed with low, smoothly rounded drumlins.
Surface stoniness:	Mostly stone-free
Rock outcrops:	Rare
Composition of unit:	Scantic–30%; Buxton–25%; Broadbrook–20%; Others–25%

Scantic soils are deep and poorly drained. They have slow or very slow permeability. The available water capacity is high. Typically, the surface layer is silt loam. The grayish subsoil is silt loam and silty clay loam with mottles and grades to mottled clay in the substratum. Scantic soils are mostly in slight depressions on the broad lacustrine terraces.

Buxton soils are deep and moderately well drained. They have slow or very slow permeability. The available water capacity is high. Typically, the surface layer is silt loam. The reddish subsoil is silt loam with mottles and grades to mottled silty clay loam in the substratum. Buxton soils are mostly on the broad, low lying lacustrine terraces.

Broadbrook soils are deep and well drained. They have moderate permeability in the surface layer and subsoil and slow or very slow permeability in the substratum. The firm and compact substratum or hardpan is at a depth of about 26 inches. The available water capacity is moderate. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes somewhat abruptly to gravelly sandy loam in the substratum. Broadbrook soils are mostly on the low hills of glacial till which rise above the lacustrine terraces.

Soils of minor extent are mainly the deep, well drained Wethersfield and Melrose soils; moderately well drained Elmwood soils; poorly drained Swanton soils; and very poorly drained Biddeford soils. Wethersfield soils are on landscape positions similar to Broadbrook soils. Melrose and Elmwood soils occupy positions similar to Buxton soils. Swanton and Biddeford soils are in low depressions on the terraces and along drainageways.

Most areas of this map unit have been cleared for pasture and to grow hay and silage corn for dairy farming. Other small areas are in unmanaged woodland, or they are idle. Community development is somewhat sparse.

The main limitations affecting the use of the soils of this map unit are wetness and slow or very slow permeability which have inhibited high value agricultural crops and homesites with septic tanks.

29. HADLEY-WINOOSKI: Brownish, nearly level, deep, well drained and moderately well drained alluvial soils with a silty or silty and sandy substratum; on floodplains.

Extent:	1% of state
Location:	In the Central Lowlands region along the floodplain of the Connecticut River from Windsor to Wethersfield and along the floodplain of the Farmington River from Plainville to Simsbury
Parent material:	Recent silty sediments deposited by rivers along their floodplain. Derived from a mixture of materials of gneiss, schist, and sandstone origin.
Dominant slopes:	0-1%; Range: 0-3%
Topography:	Nearly level floodplain dissected in places by old drainageways. The soil pattern is complex and reflects variability among erosional and depositional forces.
Surface stoniness:	Generally stone-free
Rock outcrops:	Rare
Composition of unit:	Hadley–40%; Winooski–35%; Others–25%

Hadley soils are deep and well drained. They have moderate or moderately rapid permeability. The available water capacity is high. Typically, the surface layer is silt loam. The brownish subsoil is silt loam and changes abruptly to loamy fine sand in the substratum. Hadley soils are usually on the highest positions on the floodplain.

Winooski soils are deep and moderately well drained. They have moderate or moderately rapid permeability. The available water capacity is high. Typically, the surface layer is silt loam. The brownish subsoil is silt loam with mottles in the lower part. The mottled substratum is very fine sand. Winooski soils are in slight depressions and swales on the floodplain.

Soils of minor extent are mainly the deep, well drained Ondawa soils; moderately well drained Podunk soils; poorly drained Limerick and Rumney soils; and very poorly drained Saco soils. Ondawa soils occupy positions similar to the Hadley soils and Podunk soils are on positions similar to Winooski soils. Rumney, Limerick, and Saco soils are in the lowest depressions on the floodplain.

Many areas of this map unit have been cleared for pasture and to grow hay, silage corn, tobacco, and some vegetables. Other areas are in woodland or are idle.

The main limitations affecting use of the soils of this map unit are flooding and wetness; hence it is usually not suited for community development.

30. RUMNEY-PODUNK: Brownish, nearly level, deep, poorly drained and moderately well drained alluvial soils with a sandy and gravelly substratum; on floodplains.

Extent:	<1% of state
Location:	In the Central Lowlands region along the floodplain of the Connecticut River in Cromwell and Portland and along the floodplain of the Coginchaug River in Durham and Middlefield
Parent material:	Recent loamy sediments deposited by rivers along their floodplains. Derived from a mixture of materials of gneiss, schist, and sandstone origin.
Dominant slopes:	0-1%; Range: 0-3%
Topography:	Nearly level floodplains dissected in places by old drainageways. The soil pattern is complex and reflects variability among erosional and depositional forces.
Surface stoniness:	Generally stone-free
Rock outcrops:	Rare
Composition of unit:	Rumney–35%; Podunk–35%; Others–30%

Rumney soils are deep and poorly drained. They have moderate permeability in the surface layer and subsoil and rapid permeability in the substratum. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam with mottles. The mottled substratum is loamy fine sand. Podunk soils are in slight depressions on the floodplain.

The Rumney-Podunk soils are found along the floodplains of many of Connecticut's rivers and streams. They are used mainly to grow hay and for pasture.

Podunk soils are deep and moderately well drained. They have moderately rapid or rapid permeability. The available water capacity is moderate. Typically, the surface layer is fine sandy loam. The brownish subsoil is fine sandy loam with mottles. The mottled substratum is loamy fine sand. Podunk soils are on slight depressions in the floodplain.

Soils of minor extent are mainly the deep, well drained Ondawa and Hadley soils; moderately well drained Winooski soils; poorly drained Limerick soils; and very poorly drained Saco soils. Ondawa and Hadley soils occupy the highest positions of the floodplain. Winooski soils are on positions similar to Podunk soils. Limerick and Saco soils are in the lowest depressions and swales on the floodplain.

Most areas of this unit are in woodland. A few areas have been cleared for pasture, and to grow hay and silage corn for dairying. Other cleared areas are idle.

The main limitations affecting use of the soils of this map unit are flooding and wetness; hence it is usually not suited for development.

Areas of the Coastal Lowlands Affected by Tidal Water Dominated by Soils Formed in Organic Material

This category, represented by one map unit, makes up less than 1 percent of the State of Connecticut. Areas of these soils are in coastal tidal marshes. The soils consist of mixtures of peat and fine textured sediments.

31. WESTBROOK: Grayish, nearly level, deep, very poorly drained organic soils with a silty substratum; on tidal flats.

Extent:	<1% of state
Location:	In tidal areas along coastal Connecticut and inland along the Connecticut and Quinnipiac Rivers
Parent material:	Silty peat derived mainly from bottom sediments of Long Island Sound and organically enriched by vegetation growing on the surface of the marsh
Dominant slopes:	0-1%
Topography:	Uniformly level tidal marshes and estuarine flats dissected by drainage networks for mosquito control
Surface stoniness:	Stone-free
Rock outcrops:	Rare
Composition of unit:	Westbrook–80%; Others–20%

Westbrook soils are deep and very poorly drained. They have moderate to rapid permeability in the organic layers and moderate permeability in the underlying mineral sediments. The available water capacity is high. Typically, the surface layer is partly decomposed salt marsh vegetation. The underlying layers, to a depth of about 48 inches, are grayish partially decomposed marsh vegetation mixed with silty sediments. The mineral deposits underlying the organic layers are mostly silt. The soils are in flat marshy areas that are covered with salty or brackish water twice daily.

Soils of minor extent are very poorly drained Pawcatuck soils and Beaches. Pawcatuck soils are on the same landscape positions but are underlain by sandy sediments. Beaches protect most of the tidal marshes from direct contact with the waves from Long Island Sound.

Most areas of this unit are in salt marsh vegetation. They provide habitat and food for fish, shellfish, and wildfowl. Small scattered areas are used for salt hay. It is estimated that nearly half of the tidal marshes have been filled for community development and industry. Their use is now regulated by law.

The main limitations affecting use of these soils are daily tidal flooding, high salt content and high potential sulfur acidity when drained.

ESTIMATED SOIL PROPERTIES

Table 2 presents estimated soil properties and class groupings for each soil component named on the General Soil Map of Connecticut. The estimates are based on laboratory tests and detailed examination of the soils in the field. These properties and groupings are especially significant in the engineering uses of soils and form the basis for many of the interpretations given in Table 3.

Descriptions of the column headings follow:

Column 1. Components of Map Units and Unit Numbers. The soils of the map units are listed in alphabetical order and are followed by the map unit numbers in which they occur.

Column 2. Depth to bedrock (feet). The depth in feet from the surface to the underlying bedrock is indicated in this column. In most soils the exact depth is unknown but exceeds the depth of 5 feet examined by the Connecticut Cooperative Soil Survey.

Column 3. Depth to High Water Table (feet). The depth in feet from the surface to a seasonal high water table is indicated in this column. This depth is determined largely by gray or mottled soil colors which indicate saturated conditions which are often oxygen-poor. The water table may be a true water table or it may be perched over slowly permeable materials. The duration of the water table at specific depths varies with the season and is not considered in this column.

Column 4. Hydrologic Group. All soils are divided into four hydrologic groups, A, B, C, and D and used in watershed planning to estimate runoff from precipitation (Soil Conservation Service 1972). The soil properties that determine the group classification are those that influence the minimum rate of infiltration obtained from bare soil after prolonged wetting. Dual groups are given for soils that have bedrock within 20 inches of the surface.

Column 5. Percolation Rate Class. Percolation rate refers to the speed at which water moves away from a water-filled percolation test hole. The four classes are defined by probabilities of rates falling within certain rate classes. These probabilities have been determined by field tests on key soils representing over 50% of the soils listed in Table 2. The classes are defined as follows:

Class	*Probability*	*Rate min/in*
Fast	80% chance that rate will fall	<5
Probably fast	50% chance that rate will fall in or above	10-20
Probably slow	50% chance that rate will fall in or below	10-20
Slow	80% chance that rate will fall	>30

Classes are not given for soils with water tables within 1.0 foot of the surface or for soils less than 1.5 feet deep over bedrock.

Column 6. Subsoil Erodibility Class. Erodibility refers to the relative ease that soil will erode when other factors such as slope are constant. The classes are Low, Moderate, and High. They are based on K values (Wischmeier and Smith 1978) of <.24, .24-35, and >.35 respectively for the thickest layer of the B horizon. Subsoil erodibility classes relate to highly disturbed soil in areas of construction.

Column 7. Biochemical Renovation Class. In this column, the capacity of soils to biochemically alter sewage treatment plant effluent applied to land surfaces is estimated. The relative terms Low, Moderate, and High are based on experimental laboratory results with selected soils (Hill 1972). Classes are not estimated for soils with water tables and bedrock at shallow depths.

Columns 8 and 9. Corrosivity class. Corrosivity pertains to potential chemical action induced by the soil that oxidizes, dissolves, and generally weakens uncoated steel or concrete. The relative classes are Low, Moderate, and High. Soil moisture, texture, acidity, electrical conductivity, and salt content are properties that affect corrosion.

Column 10. Depth from Surface (inches). Depths are given from the surface to major layers whose properties differ from one another.

Columns 11, 12, and 13. Materials Classification. Classifications are given for each of the major layers of the named soil using three systems. The U.S. Department of Agriculture texture system (Soil Survey Staff 1951) is based on particle size. The symbols used are:

s	— sand or sandy	g	— gravelly
si	— silt or silty	v	— very
c	— clay	f	— fine
l	— loam or loamy	ch	— channery

The Unified (American Society for Testing and Materials 1974) and AASHTO (American Association of State Highway and Transportation Officials 1970) systems are used by engineers. These systems are based on grain size and moisture relationships.

Column 14. Permeability. Permeability is a measure of the vertical component of drainage under saturated flow with a constant head of water. Permeability rates are expressed in inches of water per hour. Estimates, based on laboratory tests, are given for each major layer of the named soil.

Table 2. Estimated soil properties and class groupings for named soil components on the General Soil Map.

Component of Map Unit Unit Number	Depth to: Bedrock	Depth to: High Water Table	Hydrologic Group	Percolation Rate Class	Subsoil Erodibility Class	Biochemical Renovation Class	Corrosivity Class: Steel	Corrosivity Class: Concrete	Depth From Surface	Materials Classification: USDA Texture	Materials Classification: Unified System	Materials Classification: AASHTO System	Perme-ability
	(fe)	(feet)							(inches)				(in./hr.)
AGAWAM 10, 23	Usually >5	Usually >5	B	Fast	Moderate	Moderate	Low	High	0-16 16-26 26-60	fsl, l, vfsl fsl, vfsl s, ls, gs	SM, ML SM, SP-SM SM, SP, SM, GM GP-GM	A-4 A-2, A-3, A4 A-1, A-2, A3	2.0-6.0 2.0-20.0 6.0-20.0
AMENIA 13	Usually >5	1.5-3.0	C	Slow	Moderate	High	Moderate	Low	0-28 28-60	sil, l, gfsl gfsl, gl	ML, ML-CL, SM, SC GM, GC, SM, SC	A-2, A-4 A-2, A-4	0.6-2.0 0.06-0.2
BERNARDSTON 2	Usually >5	1.5-3.0	C	Slow	High	High	Moderate	Moderate	0-20 20-60	sil, l, chsil chsil	SM, ML, GM SM, ML, GM	A-4 A-2, A-4	0.6-2.0 0.06-0.2
BRANFORD 22	Usually >5	Usually >5	B	Fast	High	Moderate	Low	High	0-24 24-60	sil, l, fsl gs, vgs	ML, SM GP, SP	A-2, A-4 A-1, A-3	0.6-6.0 >6.0
BRIMFIELD 1	<1.5	Usually >5	C/D	—	Moderate	—	Low	High	0-16 16	fsl, sl, gsl bedrock	SM, ML —	A-2, A-4 —	0.6-6.0 —
BROADBROOK 5, 17, 20, 28	Usually >5	1.5-3.0	C	Slow	High	High	Low	Moderate	0-26 26-60	sil, vfsl gsl, fsl	ML, SM SM, ML	A-4 A-2, A-4	0.6-2.0 <0.2
BROOKFIELD 1	Usually >5	Usually >5	B	Probably fast	Moderate	Moderate	Low	High	0-26 26-60	fsl, l, gsl fsl, gsl	SM, ML SM	A-2, A-4 A-2, A-4	0.6-6.0 0.6-6.0
BUXTON 27, 28	Usually >5	1.0-3.0	C	Slow	High	High	High	Moderate	0-16 16-60	sil, sicl sic, sicl, c	ML, CL CL, MH	A-4, A-6, A-7 A-6, A-7	0.2-2.0 <0.2
CANTON 7	Usually >5	Usually >5	B	Probably fast	Moderate	Moderate	Low	High	0-22 22-60	fsl, vfsl gsl, lfs	SM, ML SM, SP-SM	A-2, A-4 A-1, A-2, A-3	2.0-6.0 6.0-20.0
CHARLTON 3, 7, 8	Usually >5	Usually >5	B	Probably fast	Moderate	Moderate	Low	High	0-26 26-60	fsl, gfsl gfsl, gsl	SM, ML SM	A-2, A-4 A-2, A-4	0.6-6.0 0.6-6.0
CHESHIRE 15, 16, 18, 19	Usually >5	Usually >5	B	Probably fast	High	Moderate	Low	High	0-26 26-60	fsl, sil fsl, gsl	SM, ML SM	A-2, A-4 A-2, A-4	0.6-2.0 0.6-2.0
COPAKE 14	Usually >5	Usually >5	B	Fast	Moderate	Low	Low	Moderate	0-26 26-60	gl, l, sil gs, vgs	SM, ML, GM GM, SP-SM, GP	A-2, A-4 A-1	0.6-6.0 >20.0
ELMWOOD 27	Usually >5	1.0-3.0	C	Slow	Moderate	High	High	Moderate	0-23 23-60	fsl, sl, l sicl, cl, c	SM, ML CL, CH	A-2, A-4 A-6, A-7	2.0-6.0 <0.2
ENFIELD 23	Usually >5	Usually >5	B	Fast	High	Moderate	Low	Moderate	0-24 24-60	sil, vfsl gs, vgs	ML SP, GP, GM	A-4 A-1	0.6-2.0 >6.0
FARMINGTON 13	<1.5	Usually >5	C/D	—	Moderate	—	Low	Moderate	0-18 18	sil, fsl, l bedrock	ML, SM, CL —	A-2, A-4, A-6 —	0.6-2.0
GROTON 14	Usually >5	Usually >5	A	Fast	Low	Low	Low	Low	0-10 10-60	gsl, gls, gfsl vgs, gs	SM, SP, GM, GP GP, GW, GP-GM	A-1, A-2 A-1	>6.0 >6.0
HADLEY 29	Usually >5	Usually >4	B	Probably fast	High	High	Low	Moderate	0-11 11-60	sil, vfsl sil, vfsl, vfs	ML, CL-ML ML, CL-ML, SM	A-4 A-4	0.6-2.0 0.6-2.0
HARTFORD 24	Usually >5	Usually >5	A	Fast	Moderate	Low	Low	High	0-8 8-26 26-60	sl, fsl, vfsl sl, ls, gsl gs, vgs	SM, ML SM, SP-SM SP, GP	A-2, A-4 A-2 A-1	2.0-6.0 2.0-6.0 >6.0
HAVEN 11	Usually >5	Usually >5	B	Fast	Moderate	Moderate	Low	High	0-28 28-60	l, sil, vfsl gs, vgs	ML, SM SP, GP, SW, SM	A-4 A-1, A-3	0.6-2.0 >20.0
HINCKLEY 10, 12	Usually >5	Usually >5	A	Fast	Low	Low	Low	High	0-15 15-60	sl, gsl, gls, vgls gs, vgs	SM, ML, GM, GP-GM SP, SP-SM, GP, GP-GM	A-1, A-2, A-4 A-1	6.0-20.0 >20.0

continued on next page

Table 2. **Estimated soil properties and class groupings for named soil components on the General Soil Map—continued.**

Component of Map Unit Unit Number	Depth to: Bedrock	Depth to: High Water Table	Hydrologic Group	Percolation Rate Class	Subsoil Erodibility Class	Biochemical Renovation Class	Corrosivity Class: Steel	Corrosivity Class: Concrete	Depth From Surface	Materials Classification: USDA Texture	Materials Classification: Unified System	Materials Classification: AASHTO System	Perme-ability
	(feet)	(feet)							(inches)				(in./hr.)
HOLLIS 2. 3, 4, 7, 8,	<1.5	Usually >5	C/D	—	Moderate	—	Low	High	0-15 15	fsl, sl bedrock	SM, ML —	A-2, A-4 —	0.6-6.0 —
HOLYOKE 15, 17, 19, 20	<1.5	Usually >5	C/D	—	High	—	Low	High	0-15 15	sil, l, gfsl bedrock	ML, SM —	A-4 —	0.6-2.0 —
LUDLOW 21	Usually >5	1.5-3.0	C	Slow	High	High	Low	Moderate	0-26 26-60	l, sil, gl gl, sil, l	ML ML	A-4 A-4	0.6-2.0 <0.2
MANCHESTER 22, 23, 24, 25	Usually >5	Usually >5	A	Fast	Low	Low	Low	High	0-16 16-60	gsl, gls, vgls, fsl gs, vgs	SM, GM SP, GW	A-1, A-2, A-4 A-1	6.0-20.0 >20.0
MERRIMAC 10, 12, 26	Usually >5	Usually >5	A	Fast	Moderate	Low	Low	High	0-22 22-60	fsl, sl gs, vgs	SM-ML SP, SP-SM, GP, GP-GM	A-2, A-4 A-1	2.0-6.0 6.0-20.0
NARRAGANSETT 9, 17, 18	Usually >5	Usually >5	B	Probably fast	High	Moderate	Low	Moderate	0-26 26-60	sil, vfsl gsl, gls	ML, SM SM, SP	A-4 A-1, A-2	0.6-2.0 2.0-20.0
NINIGRET 26	Usually >5	1.5-3.0	B	Fast	Moderate	Moderate	Low	High	0-26 26-60	fsl, vfsl, sl ls, s, gs	SM, ML SP, SM	A-2, A-4 A-1, A-2, A-3	2.0-6.0 6.0-20.0
PAXTON 6	Usually >5	1.5-3.0	C	Slow	High	High	Low	Moderate	0-26 26-60	fsl, sl, l fsl, l, gsl	SM, ML SM, ML	A-2, A-4 A-2, A-4	0.6-6.0 <0.2
PENWOOD 25	Usually >5	Usually >5	A	Fast	Low	Low	Low	High	0-8 8-60	ls, lfs ls, lfs, s, fs	SM SP, SM	A-2 A-2, A-3	6.0-20.0 6.0-20.0
PODUNK 30	Usually >5	1.5-3.0	B	Probably fast	High	Moderate	Moderate	Moderate	0-30 30-60	fsl, sl, l lfs, ls, s	SM, ML SP-SM, SM	A-2, A-4 A-1, A-2, A-3	0.6-6.0 2.0-20.0
RAINBOW 5	Usually >5	1.5-3.0	C	Slow	High	High	Moderate	Moderate	0-26 26-60	vfsl, sil fsl, gsl, l	ML SM, ML	A-4 A-2, A-4	0.6-2.0 <0.2
RAYPOL 11	Usually >5	0-1.5	C	—	High	—	High	Moderate	0-29 29-60	sil, vfsl gs, vgs	ML SP, GP	A-4 A-1, A-2, A-3	0.6-2.0 >6.0
RUMNEY 30	Usually >5	0-1.5	C	—	High	—	High	High	0-26 26-60	fsl, sl ls, gs	SM, ML SP, SM	A-2, A-4 A-1, A-2, A-3	2.0-6.0 >6.0
SCANTIC 27, 28	Usually >5	0-1.5	C	—	High	—	High	Moderate	0-11 11-29 29-60	sil, l, sicl sicl, sil, c sic, c, sicl	ML, MH, CL CL, MH, CH, CL-ML CL, CL-ML, MH, ML	A-4, A-5, A-6, A-7 A-4, A-5, A-6, A-7 A-4, A-5, A-6, A-7	0.2-2.0 <0.2 <0.2
STOCKBRIDGE 13	Usually >5	Usually >5	C	Slow	High	High	Moderate	Low	0-28 28-60	l, sil, gsil l, sil, gl	ML, CL-ML ML, CL-ML	A-4 A-4	0.6-2.0 0.06-0.2
WESTBROOK 31	Usually >5	+1.0-0.0	D	—	Low	—	High	High	0-48 48-60	organic sil, vfsl	PT ML, CL-ML, OL	— A-4	0.6-20.0 0.6-2.0
WETHERSFIELD 15, 19, 20, 21	Usually >5	1.5-3.0	C	Slow	High	High	Low	Moderate	0-26 26-60	l, sil, fsl l, sil, fsl	ML SM, ML	A-4, A-5 A-4	0.6-2.0 <0.2
WINDSOR 26	Usually >5	Usually >5	A	Fast	Low	Low	Low	High	0-10 10-60	ls, lfs ls, lfs, s, fs	SM SP, SM	A-2 A-2, A-3	6.0-20.0 6.0-20.0
WINOOSKI 29	Usually >5	1.5-3.0	B	Probably fast	High	High	Moderate	Moderate	0-9 9-60	sil, vfsl, lvfs vfsl, sil, lvfs	ML, SM ML, SM	A-4 A-4	0.6-6.0 0.6-6.0
WOODBRIDGE 4, 6	Usually >5	1.5-3.0	C	Slow	High	High	Low	Moderate	0-26 26-60	fsl, l, gfsl fsl, l, gfsl	SM, ML SM, ML	A-2, A-4 A-2, A-4	0.6-6.0 <0.2
YALESVILLE 16	1.5-3.5	Usually >5	C	Probably fast	High	Moderate	Low	High	0-36 36	fsl, sil, gsl bedrock	SM, ML, GM —	A-2, A-4 —	0.6-6.0 —

SOIL INTERPRETATIONS

In Table 3, we have interpreted the soils in each map unit for seven broad use categories (Soil Conservation Service 1974). The interpretations can be used to compare limitations and suitabilities of large areas in general land use planning. Each map unit is rated according to the dominant soil in the unit, but if two less-extensive soils with the same rating collectively exceed the dominant soil in extent, the rating of the two lesser components prevails. For example, if dominant soil X makes up 40% of the unit and is rated SEVERE for sanitary facilities and soils Y and Z each make up 30% of the unit and are rated MODERATE for the same use, then the rating for map unit XYZ is MODERATE for sanitary facilities. In addition to the overall rating for each map unit, each component of the unit is rated for the seven uses. The ratings are based on the most limiting feature of each component in the unit.

The interpretative ratings for each soil according to its limitations are SLIGHT, MODERATE, or SEVERE. Their suitability for various uses is rated GOOD, FAIR, or POOR. These ratings imply that the conditions for which they are rated are dominant in the map unit but may not apply to the unit as a whole. There are areas within the units whose properties may be better or worse than the properties for which the soils were rated. Ratings for precise soil survey delineations within a unit can be obtained from detailed soil survey maps that are available for each county in the state. For the most precise information on soil interpretations one needs to resort to on-site investigations. Thus, the *interpretative material presented in Table 3 should not be used as a substitute for the interpretations given in soil survey reports or on-site investigations. The interpretations in this report serve the purpose of acquainting the user with probable limitations and suitabilities of soils within the area delineated by the General Soil Map of Connecticut.*

The ratings given in Table 3 are defined as follows:

Limitation ratings:

SLIGHT: Soils with this rating have few limitations, if any, for the intended use.

MODERATE: Soils with this rating have one or more features that limit their use. It is more difficult and costly to overcome the natural limitations than for soils rated slight.

SEVERE: Soils with this rating have one or more features that seriously limit their use. Correction of limitations requires special engineering designs based on extensive on-site testing. Correction may be very costly or may prove to be unfeasible. The probability of failing to correct the limitation also increases.

Suitability ratings:

GOOD: Soils with this rating are relatively free of restrictive features and are generally well suited for the specified use.

FAIR: Soils with this rating have one or more restrictive features and have intermediate suitability for the intended use. Use may require some modification of design or management.

POOR: Soils with this rating have one or more restrictive features that seriously limit their suitability. Use may be prohibitive without extensive modification of restrictive features.

Restrictive features:

The 11 restrictive features identified in Table 3 are as follows:

DR: *Depth to rock:* Bedrock at shallow depths restricts installation of septic tanks, footings and foundations of buildings and other structures. This feature also restricts rooting depth of plants and creates a shallow zone of available water for plant growth.

DY: *Droughty:* Very sandy soils have a low water holding capacity for optimum plant growth.

EF: *Excess fines:* Abundant silt and clay impairs the use of the material for various engineering purposes. Bearing strength may be reduced, and the material may be susceptible to frost heaving.

EH: *Excess humus:* Large amounts of organic matter reduce the bearing strength of material and hold excessive amounts of water.

FL: *Floods:* Soils subject to flooding restrict the building of structures and limit the operation of on-site waste disposal systems.

LS: *Large stones:* The presence of large stones and boulders restricts installation of septic tanks and footings for buildings. Large equipment must be used if they are to be removed. Large stones limit the use of farm machinery in planting and harvesting of crops and trees.

PF: *Poor filter:* Very sandy and gravelly soils with little silt and clay allows fast percolation of septic tank effluent and are sometimes poor filters of nutrients and bacteria that can pollute ground water supplies.

PS: *Percolates slowly:* Soils with abundant silt and clay or hardpan layers restrict vertical movement of septic tank effluent. Lateral flow may erupt on downslope surface. Slow percolation also requires construction of large leaching fields.

SL: *Slope:* Steeply sloping land restricts installation of septic systems and development of building sites and camp areas. Special design for installation of all structures and land shaping may be required at high cost. Steep slopes also restrict planting and harvesting of crops and increase potential of erosion on bare soil.

SS: *Small stones:* Numerous small stones restrict development of high intensity recreational areas. Grass areas of campgrounds, parks, and ball fields are difficult to establish and maintain due to the droughty conditions that accompany the abundant small stones.

WT: *Wetness:* High water tables, both perched and permanent, hinder the installation of septic systems and foundations for homes. Inundation of septic tank filter fields shortens their useful life. In poorly drained soils, high water tables can also adversely affect the growth of crops and reduce normal tree growth.

Column headings:

Column 1—Map Unit and Component Soils. Map units are in numerical order as found in the legend of the General Soil Map of Connecticut. The map unit name and the percentage of the state covered are followed by each component in order of abundance or extent. OTHERS represents the sum of all minor soils in the map unit.

Column 2—Percent of Map Unit. The percentage of each major component in the map unit is given in this column.

Columns 3, 4, and 5: Soil Limitations For. Ratings for sanitary facilities, building site development, and recreational development are given in these columns for the whole map unit and for each of its named major components. Restrictive features are listed for soils with moderate and severe limitations. The ratings for sanitary facilities are based on use for septic tank leaching fields, those for building site development are based on use for dwellings with basements, and those for recreational development are based on use for camp sites.

Columns 6, 7, 8, and 9. Soil Suitability For. Ratings for construction materials, cropland, woodland, and wildlife habitat are given in these columns for the whole map unit and for each of its named major components. Restrictive features are listed for soils with fair and poor suitabilities. The ratings for construction materials are based on use as a source of sand and gravel. Ratings for cropland are based on use for growing cultivated crops common to Connecticut. The ratings for woodland are based on use for commercial production of wood crops. Ratings for wildlife habitat are based on development for woodland wildlife habitat.

Table 3. **Interpretative ratings and limitations of map units and their component soils for seven categories of land use.**

Map Unit and Component Soils	Percent of Map Unit	Soil Limitations for:			Soil Suitability for:			
		Sanitary Facilities	Buiding Site Development	Recreational Development	Construction Materials	Cropland	Woodland	Wildlife Habitat
1 BRIMFIELD-BROOKFIELD (1%)		SEVERE	SEVERE	SEVERE	POOR	POOR	POOR	POOR
Brimfield	45	Severe: DR, SL	Severe: DR, SL	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, SL, LS	Poor: DR	Poor: DR
Brookfield	30	Moderate: SL	Moderate: SL	Severe: LS	Poor: EF	Poor: LS	Fair: LS	Fair: LS
Others	25							
2 HOLLIS-BERNARDSTON (<1%)		SEVERE	SEVERE	SEVERE	POOR	POOR	POOR	POOR
Hollis	40	Severe: DR, SL	Severe: DR, SL	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, SL, LS	Poor: DR	Poor: DR
Bernardston	35	Severe: PS	Moderate: WT, SL	Moderate: LS	Poor: EF	Poor: LS	Fair: LS	Fair: LS
Others	25							
3 HOLLIS-CHARLTON (10%		SEVERE	SEVERE	SEVERE	POOR	POOR	POOR	POOR
Hollis	40	Severe: DR, SL	Severe: DR, SL	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, SL, LS	Poor: DR	Poor: DR
Charlton	30	Moderate: SL	Moderate: SL	Severe: LS	Poor: EF	Poor: LS	Fair: LS	Fair: LS
Others	30							
4 HOLLIS-WOODBRIDGE (1%)		SEVERE	SEVERE	SEVERE	POOR	POOR	POOR	POOR
Hollis	45	Severe: DR, SL	Severe: DR, SL	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, SL, LS	Poor: DR	Poor: DR
Woodbridge	30	Severe: WT, PS	Severe: WT	Moderate: LS, WT, PS	Poor: EF	Poor: LS	Good	Good
Others	25							
5 BROADBROOK-RAINBOW (1%)		SEVERE	MODERATE	MODERATE	POOR	POOR	GOOD	GOOD
Broadbrook	40	Severe: PS	Moderate: WT	Moderate: LS, PS	Poor: EF	Poor: LS	Good	Good
Rainbow	30	Severe: WT, PS	Severe: WT	Moderate: LS, WT, PS	Poor: EF	Poor: LS	Good	Good
Others	30							
6 PAXTON-WOODBRIDGE (1		SEVERE	MODERATE	MODERATE	POOR	POOR	GOOD	GOOD
Paxton	45	Severe: PS	Moderate: WT, SL	Moderate: SL, LS, PS	Poor: EF	Poor: LS	Good	Good
Woodbridge	30	Severe: WT, PS	Severe: WT	Moderate: LS, WT, PS	Poor: EF	Poor: LS	Good	Good
Others	25							
7 CANTON-HOLLIS-CHARLTON (4%)		SEVERE	MODERATE	MODERATE	POOR	POOR	FAIR	GOOD
Canton	30	Severe: PF	Moderate: SL	Moderate: SL, LS	Poor: EF	Poor: LS	Fair: DY	Good
Hollis	30	Severe: DR	Severe: DR	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, LS	Poor: DR	Poor: DR
Charlton	20	Moderate: SL	Moderate: SL	Moderate: SL, LS	Poor: EF	Poor: LS	Good	Good
Others	20							
8 CHARLTON-HOLLIS (24%		MODERATE	MODERATE	MODERATE	POOR	POOR	GOOD	GOOD
Charlton	40	Moderate: SL	Moderate: SL	Moderate: SL, LS	Poor: EF	Poor: LS	Good	Good
Hollis	25	Severe: DR	Severe: DR	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, LS	Poor: DR	Poor: DR
Others	35							
9 NARRAGANSETT-HOLLIS (3%)		MODERATE	MODERATE	MODERATE	POOR	POOR	GOOD	GOOD
Narragansett	35	Moderate: SL	Moderate: SL	Moderate: SL, LS	Poor: EF	Poor: LS	Good	Good
Hollis	35	Severe: DR	Severe: DR	Severe: LS, DR	Poor: DR, EF	Poor: DR, LS	Poor: DR	Poor: DR
Others	30							
10 AGAWAM-MERRIMAC-HINCKLEY (8%)		SEVERE	SLIGHT	SLIGHT	GOOD	GOOD	FAIR	FAIR
Agawam	30	Severe: PF	Slight	Slight	Good	Good	Good	Good
Merrimac	25	Severe: PF	Slight	Slight	Good	Good	Fair: DY	Fair: DY
Hinckley	25	Severe: PF	Moderate: SL	Moderate: SL, SS	Good	Fair: SL, DY	Poor: DY	Poor: DY
Others	20							
11 HAVEN-RAYPOL (1%)		SEVERE	SLIGHT	SLIGHT	GOOD	GOOD	GOOD	GOOD
Haven	45	Severe: PF	Slight	Slight	Good	Good	Good	Good
Raypol	25	Severe: WT	Severe: WT	Severe: WT	Good	Fair: WT	Fair: WT	Fair: WT
Others	30							
12 HINCKLEY-MERRIMAC (4%)		SEVERE	MODERATE	MODERATE	GOOD	FAIR	POOR	POOR
Hinckley	45	Severe: PF	Moderate: SL	Moderate: SL, SS	Good	Fair: SL, DY	Poor: DY	Poor: DY
Merrimac	25	Severe: PF	Slight	Slight	Good	Good	Fair: DY	Fair: DY
Others	30							

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Table 3. Interpretative ratings and limitations of map units and their component soils for seven categories of land use—continued.

Map Unit and Component Soils	Percent of Map Unit	Soil Limitations for: Sanitary Facilities	Buiding Site Development	Recreational Development	Soil Suitability for: Construction Materials	Cropland	Woodland	Wildlife Habitat
13 STOCKBRIDGE-FARMINGTON-AMENIA (2%)		SEVERE	SEVERE	MODERATE	POOR	FAIR	GOOD	GOOD
Stockbridge	35	Severe: PS	Moderate: SL	Moderate: SL, PS	Poor: EF	Fair: SL	Good	Good
Farmington	25	Severe: DR	Severe: DR	Severe: SL, DR	Poor: DR, EF	Poor: DR, LS	Poor: DR	Poor: DR
Amenia	20	Severe: WT, PS	Severe: WT	Moderate: WT, PS	Poor: EF	Good	Good	Good
Others	20							
14 COPAKE-GROTON (1%)		SEVERE	SLIGHT	SLIGHT	GOOD	GOOD	GOOD	GOOD
Copake	40	Severe: PF	Slight	Slight	Good	Good	Good	Good
Groton	35	Severe: PF	Moderate: SL	Moderate: SL, SS	Good	Fair: SL, DY	Poor: DY	Poor: DY
Others	25							
15 CHESHIRE-WETHERSFIELD-HOLYOKE (1%)		SEVERE	MODERATE	MODERATE	POOR	GOOD	GOOD	GOOD
Cheshire	30	Slight	Slight	Slight	Poor: EF	Good	Good	Good
Wethersfield	25	Severe: PS	Moderate: WT	Moderate: PS	Poor: EF	Good	Good	Good
Holyoke	25	Severe: DR	Severe: DR	Severe: DR	Poor: DR, EF	Poor: DR, LS	Poor: DR	Poor: DR
Others	20							
16 CHESHIRE-YALESVILLE (2%)		SLIGHT	SLIGHT	SLIGHT	POOR	GOOD	GOOD	GOOD
Cheshire	40	Slight	Slight	Slight	Poor: EF	Good	Good	Good
Yalesville	35	Severe: DR	Severe: DR	Slight	Poor: DR, EF	Good	Good	Good
Others	25							
17 NARRAGANSETT-BROADBROOK-HOLYOKE (<1%)		SEVERE	MODERATE	MODERATE	POOR	POOR	GOOD	GOOD
Narragansett	30	Moderate: SL	Moderate: SL	Moderate: SL, LS	Poor: EF	Poor: LS	Good	Good
Broadbrook	25	Severe: PS	Moderate: WT, SL	Moderate: SL, LS, PS	Poor: EF	Poor: LS	Good	Good
Holyoke	25	Severe: DR, SL	Severe: DR, SL	Severe: SL, DR	Poor: DR, EF	Poor: DR, SL, LS	Poor: DR	Poor: DR
Others	20							
18 NARRAGANSETT-CHESHIRE (1%)		SLIGHT	SLIGHT	MODERATE	POOR	POOR	GOOD	GOOD
Narragansett	40	Slight	Slight	Moderate: LS	Poor: EF	Poor: LS	Good	Good
Cheshire	35	Slight	Slight	Moderate: LS	Poor: EF	Poor: LS	Good	Good
Others	25							
19 HOLYOKE-WETHERSFIELD-CHESHIRE (2%)		SEVERE	MODERATE	MODERATE	POOR	POOR	GOOD	GOOD
Holyoke	35	Severe: DR, SL	Severe: DR, SL	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, SL, LS	Poor: DR	Poor: DR
Wethersfield	25	Severe: PS	Moderate: WT, SL	Moderate: SL, LS, PS	Poor: EF	Poor: LS	Good	Good
Cheshire	20	Moderate: SL	Moderate: SL	Moderate: SL, LS	Poor: EF	Poor: LS	Good	Good
Others	20							
20 WETHERSFIELD-HOLYOKE-BROADBROOK (1%)		SEVERE	MODERATE	MODERATE	POOR	POOR	GOOD	GOOD
Wethersfield	30	Severe: PS	Moderate: WT, SL	Moderate: SL, LS, PS	Poor: EF	Poor: LS	Good	Good
Holyoke	30	Severe: DR, SL	Severe: DR, SL	Severe: SL, LS, DR	Poor: DR, EF	Poor: DR, SL, LS	Poor: DR	Poor: DR
Broadbrook	20	Severe: PS	Moderate: WT, SL	Moderate: SL, LS, PS	Poor: EF	Poor: LS	Good	Good
Others	20							
21 WETHERSFIELD-LUDLOW (3%)		SEVERE	MODERATE	MODERATE	POOR	GOOD	GOOD	GOOD
Wethersfield	45	Severe: PS	Moderate: WT	Moderate: PS	Poor: EF	Good	Good	Good
Ludlow	30	Severe: WT, PS	Severe: WT	Moderate: WT, PS	Poor: EF	Good	Good	Good
Others	25							
22 BRANFORD-MANCHESTER (1%)		SEVERE	SLIGHT	SLIGHT	GOOD	GOOD	GOOD	GOOD
Branford	40	Severe: PF	Slight	Slight	Good	Good	Good	Good
Manchester	35	Severe: PF	Moderate: SL	Moderate: SL, SS	Good	Fair: SL, DY	Poor: DY	Poor: DY
Others	25							
23 ENFIELD-AGAWAM-MANCHESTER (1%)		SEVERE	SLIGHT	SLIGHT	GOOD	GOOD	GOOD	GOOD
Enfield	30	Severe: PF	Slight	Slight	Good	Good	Good	Good
Agawam	30	Severe: PF	Slight	Slight	Good	Good	Good	Good
Manchester	20	Severe: PF	Moderate: SL	Moderate: SL, SS	Good	Fair: SL, DY	Poor: DY	Poor: DY
Others	20							

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Table 3. Interpretative ratings and limitations of map units and their component soils for seven categories of land use—continued.

Map Unit and Component Soils	Percent of Map Unit	Soil Limitations for: Sanitary Facilities	Buiding Site Development	Recreational Development	Soil Suitability for: Construction Materials	Cropland	Woodland	Wildlife Habitat
24 **HARTFORD-MANCHESTER (2%)**		SEVERE	SLIGHT	SLIGHT	GOOD	GOOD	FAIR	FAIR
Hartford	40	Severe: PF	Slight	Slight	Good	Good	Fair: DY	Fair: DY
Manchester	35	Severe: PF	Moderate: SL	Moderate: SL, SS	Good	Fair: SL, DY	Poor: DY	Poor: DY
Others	25							
25 **PENWOOD-MANCHESTER (2%)**		SEVERE	SLIGHT	SLIGHT	GOOD	FAIR	POOR	POOR
Penwood	45	Severe: PF	Slight	Slight	Good	Fair: DY	Poor: DY	Poor: DY
Manchester	30	Severe: PF	Slight	Moderate: SS	Good	Fair: DY	Poor: DY	Poor: DY
Others	25							
26 **WINDSOR-NINIGRET-MERRIMAC (2%)**		SEVERE	SLIGHT	SLIGHT	GOOD	GOOD	FAIR	FAIR
Windsor	35	Severe: PF	Slight	Slight	Good	Fair: DY	Poor: DY	Poor: DY
Ninigret	25	Severe: WT, PF	Severe: WT	Moderate: WT	Good	Good	Good	Good
Merrimac	20	Severe: PF	Slight	Slight	Good	Good	Fair: DY	Fair: DY
Others	20							
27 **ELMWOOD-BUXTON-SCANTIC (1%)**		SEVERE	SEVERE	MODERATE	POOR	GOOD	GOOD	GOOD
Elmwood	30	Severe: WT, PS	Severe: WT	Moderate: WT, PS	Poor: EF	Good	Good	Good
Buxton	25	Severe: WT, PS	Severe: WT	Moderate: WT, PS	Poor: EF	Good	Good	Good
Scantic	25	Severe: WT, PS	Severe: WT	Severe: WT	Poor: EF	Poor: WT	Fair: WT	Fair: WT
Others	20							
28 **SCANTIC-BUXTON-BROADBROOK (1%)**		SEVERE	SEVERE	MODERATE	POOR	GOOD	GOOD	GOOD
Scantic	30	Severe: WT, PS	Severe: WT	Severe: WT	Poor: EF	Poor: WT	Fair: WT	Fair: WT
Buxton	25	Severe: WT, PS	Severe: WT	Moderate: WT, PS	Poor: EF	Good	Good	Good
Broadbrook	20	Severe: PS	Moderate: WT	Moderate: PS	Poor: EF	Good	Good	Good
Others	25							
29 **HADLEY-WINOOSKI (1%)**		SEVERE	SEVERE	SEVERE	POOR	GOOD	GOOD	GOOD
Hadley	40	Severe: FL	Severe: FL	Severe: FL	Poor: EF	Good	Good	Good
Winooski	35	Severe: FL, WT	Severe: FL, WT	Severe: FL	Poor: EF	Good	Good	Good
Others	25							
30 **RUMNEY-PODUNK (<1%)**		SEVERE	SEVERE	SEVERE	GOOD	FAIR	FAIR	FAIR
Rumney	35	Severe: FL, WT	Severe: FL, WT	Severe: FL, WT	Good	Fair: WT	Fair: WT	Fair: WT
Podunk	35	Severe: FL, WT	Severe: FL, WT	Severe: FL	Good	Good	Good	Good
Others	30							
31 **WESTBROOK (<1%)**		SEVERE	SEVERE	SEVERE	POOR	POOR	POOR	POOR
Westbrook	80	Severe: FL, WT	Severe: FL, WT	Severe: FL, WT	Poor: EF, EH	Poor: FL	Poor: FL, WT	Poor: FL, WT
Others	20							

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GLOSSARY

Ablation till — Glacial till that is formed as stagnant ice masses melt away, depositing the soil and rock fragments incorporated in the ice. The till is loose and friable.

Alluvial soil — A soil composed of alluvium or sand, silt, or clay deposited on the floodplain of a river or stream.

Amorphous silica — Minerals of silica (silicon dioxide-SiO_2) that lack crystalline structure.

Aspect — The direction toward which a slope faces (exposure) i.e. a north-facing slope.

Available water (moisture) capacity — The capacity of soils to hold water available for use by most plants. It is defined as the difference between the amount of water at field capacity and the amount at wilting point. It is expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as follows:

Class	Inches
very low	less than 2.4
low	2.4 to 3.2
moderate	3.2 to 5.2
high	more than 5.2

Basalt — A dense, hard, dark colored rock formed from lava flows. It is also known as trap rock.

Basal till — Compact glacial till deposited beneath a mass of ice, usually in the form of drumlins.

Base saturation — The degree to which a soil is saturated with exchangeable bases (sum of calcium, magnesium, sodium, and potassium) expressed as a percentage of the cation exchange capacity.

Boulders — Rock fragments that are more than 24 inches in diameter.

Cations — Ions carrying a positive charge of electricity. Common soil cations are calcium, magnesium, sodium, and hydrogen.

Channery soil — A soil that contains more than 15% by volume of thin, flat fragments of sandstone, shale, slate, limestone, or schist that are as much as 6 inches along the major axis.

Cobble — A rounded or partly rounded fragment of rock 3 to 10 inches in diameter (7.5 to 25 centimeters).

Conglomerate — A sedimentary rock composed of cemented rounded particles of sand, gravel, and cobbles.

Drainage class (natural) — Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation. Seven classes of natural soil drainage are recognized:

Excessively drained. — Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured. All are free of the mottling related to wetness.

Somewhat excessively drained. — Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. All are free of the mottling related to wetness.

Well drained. — Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. They are mainly free of mottling.

Moderately well drained. — Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most crops are affected. A zone of mottling usually is found in the lower part of the B horizon.

Somewhat poorly drained. — Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Mottling occurs in the middle of the B horizon.

Poorly drained. — Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth.

Very poorly drained. — Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are frequently ponded.

Drumlin — A low, smoothed, elongated hill or ridge of compact glacial till (basal till). The major axis is parallel to the path of the glacier and it usually has a blunt nose facing the glacial advance.

Escarpment — A continuous line of steep slopes facing in one direction.

Estuarine — Pertaining to an estuary or bay at the mouth of a river where the tide meets the river's current.

Eutrophication — Nutrient enrichment of a body of water that causes abundant growth of algae and aquatic weeds.

Firm — A term of soil consistence describing moist soil that crushes under moderate pressure between thumb and forefinger, but resistance is noticeable.

Fragipan — A brittle subsurface horizon low in porosity, organic content, and clay but high in silt or very fine sand. It appears to be cemented and restricts roots. It is very hard when dry; however, when moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Friable — A term of soil consistence describing moist soil that crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Genesis, soil — The origin of the soil. It refers especially to the processes or factors of soil formation which have produced the solum and sets it apart from the unconsolidated parent material.

Glacial outwash — Gravel, sand, and silt, commonly stratified, deposited by melt water as it flows from glacial ice.

Glacial till — Unsorted, glacial material consisting of a mixture of clay, silt, sand, gravel, and boulders transported and deposited by glacial ice.

Gravel — Rounded or angular fragments of rocks larger than 0.08 inch (2 millimeters) but smaller than 3 inches in diameter. An individual piece is called a pebble.

Gravelly — Refers to a soil containing 15 to 50 percent, by volume, of rounded or angular rock fragments, not prominently flattened, up to 3 inches in diameter.

Hardpan — Usually a hardened or cemented soil horizon. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, or calcium carbonate. Locally, compact glacial till is also known as hardpan.

Horizon, soil — A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons and designations for them are:

O horizon — leaf litter or organic layer
A horizon — topsoil or plow layer
B horizon — subsoil layer
C horizon — substratum
R layer — bedrock or ledge

Hydrolysis – Chemical decomposition of a primary compound into two or more secondary compounds by taking up the elements of water (i.e. H and OH ions).

Hydration – The simple combination of a chemical compound with water in a definite molecular ratio.

Kame-kettle topography – A terrace consisting of a maze of small hills and closed basins or depressions in a haphazard arrangement. Kettles form as large blocks of glacial ice incorporated in the outwash material melt leaving a depression. Some kettles are large enough to form natural small lakes and ponds.

Lacustrine terrace – A terrace formed as material is deposited in old glacial lakes. Sediments are usually fine-grained silt and clay but sandy deposits may be found around the lake margins. The terrace is exposed as the lake subsequently drains.

Loose – A term of soil consistence describing soil that is non-coherent when it is dry or moist; it does not hold together in a mass.

Mineralization – The progressive natural decomposition of organic substances to their inorganic composition i.e. carbon dioxide, water, and mineral compounds.

Morphology, soil – The physical characteristics of the soil including the texture, structure, porosity, consistence, and color. Also the mineralogical and biological properties of the various horizons and the thickness and shape of those horizons in the soil profile.

Mottles (mottling) – Irregular patches of different colors that are observed in a clod or the cut face of the soil profile. The colors generally indicate poor aeration and impeded drainage. The mottles can be described as to their abundance, size, and contrast with the surrounding soil.

Oxidation – The uniting of a chemical compound with oxygen to form an oxide (i.e. the rusting of a metal).

Palisades – An escarpment whose slopes are nearly vertical outcroppings of bedrock.

Parent material – The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material.

Peneplane – A surface of slight relief and very gentle slopes formed by erosion of the land to almost base level. Such a surface can be uplifted to form a plateau and subjected to renewed erosion.

Perched water – Ground water that is separated from the true water table by a zone of unsaturated soil or rock (i.e. seasonal ground water that is perched over very slowly permeable compact glacial till or sediments of silt and clay).

Permeability – The quality that enables the soil to transmit water (or air) measured as the number of inches per hour that water moves through the soil: Terms describing permeability are:

Class	Inches/hour
Very slow	less than 0.06
Slow	0.06 to 0.2
Moderately slow	0.2 to 0.6
Moderate	0.6 to 2.0
Moderately rapid	2.0 to 6.0
Rapid	6.0 to 20
Very rapid	more than 20

Profile, soil – A vertical section of soil extending through all of its horizons and into the parent material (i.e. the cut face of a soil pit or excavation used to examine the morphology of a soil).

Pyrite – A yellowish mineral composed of iron sulfide (FeS_2) commonly called "fool's gold".

Reaction, soil – The degree of acidity or alkalinity of a soil expressed in pH values. A pH value of 7.0 is neutral.

Slope – The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by the horizontal distance times 100. Thus, a slope of 20 percent is a rise or drop of 20 feet in 100 feet of horizontal distance.

Solum – The upper part of a soil profile in which the processes of soil formation are active. The solum in a mature soil consists of the A and B horizons and contains most of the plant and animal life.

Stones – Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony – Refers to a soil containing stones in numbers that interfere with or prevent tillage.

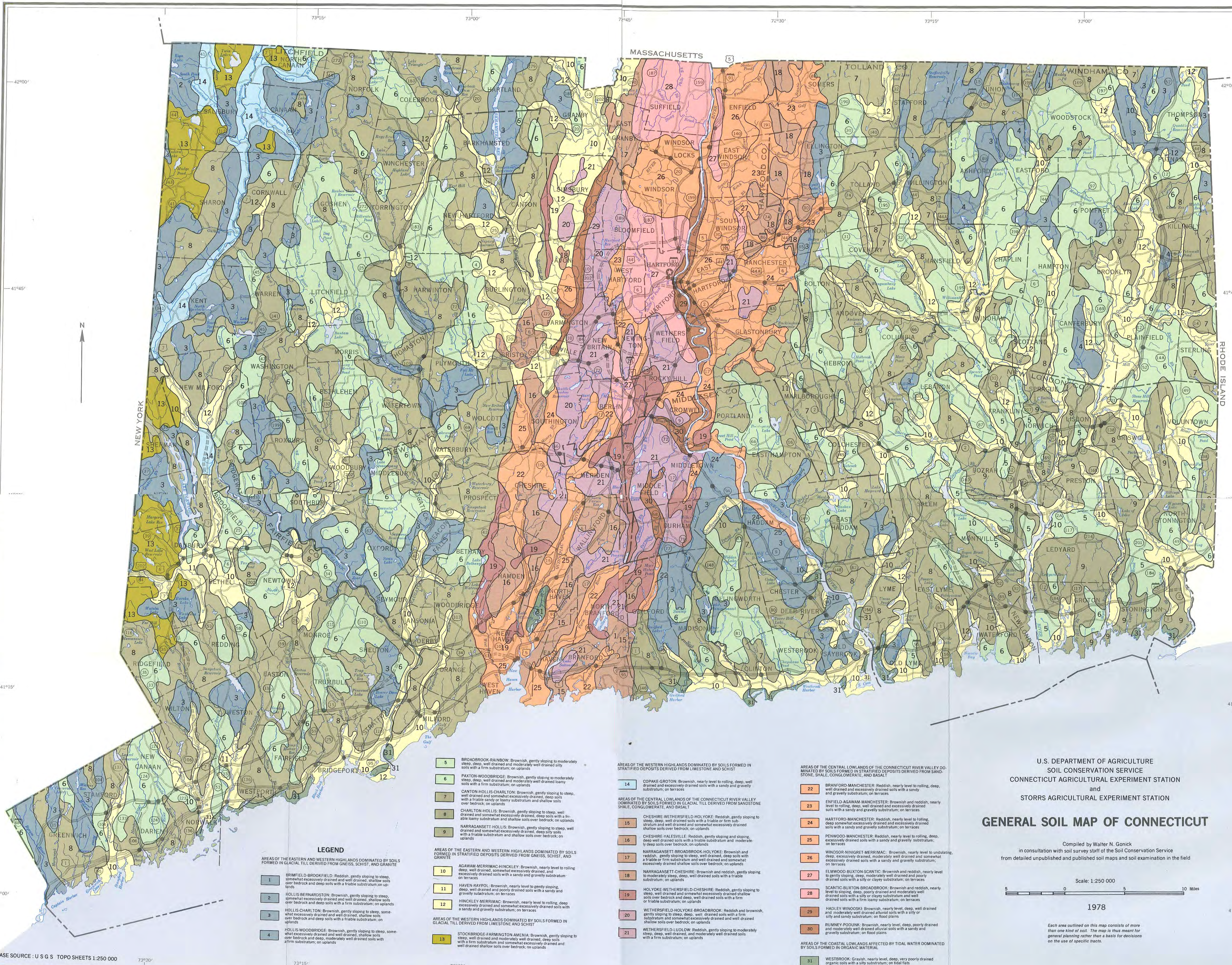
Subsoil – Technically, the B horizon, or layer of weathered soil below the topsoil.

Substratum – Technically, the C horizon, or layer of unweathered parent material below the subsoil.

Swale – A long depression on the landscape that serves as a drainageway for surface runoff.

Topsoil – Technically, the A horizon, or plowed layer rich in organic matter.

Varves (varved clay) – Thin layers of silt and/or clay deposited annually in a glacial lake. They are usually in pairs representing coarser silt deposition in open water from spring to fall and more clayey deposition under an ice cover in winter.



U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CONNECTICUT AGRICULTURAL EXPERIMENT STATION
and
STORRS AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP OF CONNECTICUT

Compiled by Walter N. Gonick
in consultation with soil survey staff of the Soil Conservation Service
from detailed unpublished and published soil maps and soil examination in the field

Scale: 1:250 000

5 0 5 10 Miles

1978

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

LEGEND

AREAS OF THE EASTERN AND WESTERN HIGHLANDS DOMINATED BY SOILS FORMED IN GLACIAL TILL DERIVED FROM GNEISS, SCHIST, AND GRANITE

1 BRIMFIELD-BROOKFIELD: Reddish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep soils with a friable substratum; on uplands

2 HOLLIS-BERNARDSTON: Brownish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep soils with a firm substratum; on uplands

3 HOLLIS-CHARLTON: Brownish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep soils with a friable substratum; on uplands

4 HOLLIS-WOODBRIDGE: Brownish, gently sloping to steep, somewhat excessively drained and well drained, shallow soils over bedrock and deep, moderately well drained soils with a firm substratum; on uplands

5 BROADBROOK-RAINBOW: Brownish, gently sloping to moderately steep, deep, well drained and moderately well drained silty soils with a firm substratum; on uplands

6 PAXTON-WOODBRIDGE: Brownish, gently sloping to moderately steep, deep, well drained and moderately well drained loamy soils with a firm substratum; on uplands

7 CANTON-HOLLIS-CHARLTON: Brownish, gently sloping to steep, well drained and somewhat excessively drained, deep soils with a friable sandy or loamy substratum and shallow soils over bedrock; on uplands

8 CHARLTON-HOLLIS: Brownish, gently sloping to steep, well drained and somewhat excessively drained, deep soils with a friable loamy substratum and shallow soils over bedrock; on uplands

9 NARRAGANSETT-HOLLIS: Brownish, gently sloping to steep, well drained and somewhat excessively drained, deep silty soils with a friable substratum and shallow soils over bedrock; on uplands

AREAS OF THE EASTERN AND WESTERN HIGHLANDS DOMINATED BY SOILS FORMED IN STRATIFIED DEPOSITS DERIVED FROM GNEISS, SCHIST, AND GRANITE

10 AGAWAM-MERRIMAC-HINCKLEY: Brownish, nearly level to rolling deep, well drained, somewhat excessively drained, and excessively drained soils with a sandy and gravelly substratum on terraces

11 HAVEN-RAYPOL: Brownish, nearly level to gently sloping, deep, well drained and poorly drained soils with a sandy and gravelly substratum; on terraces

12 HINCKLEY-MERRIMAC: Brownish, nearly level to rolling, deep excessively drained and somewhat excessively drained soils with a sandy and gravelly substratum; on terraces

AREAS OF THE WESTERN HIGHLANDS DOMINATED BY SOILS FORMED IN GLACIAL TILL DERIVED FROM LIMESTONE AND SCHIST

13 STOCKBRIDGE-FARMINGTON-AMENIA: Brownish, gently sloping to steep, well drained and moderately well drained, deep soils with a firm substratum and somewhat excessively drained and well drained shallow soils over bedrock; on uplands

AREAS OF THE WESTERN HIGHLANDS DOMINATED BY SOILS FORMED IN STRATIFIED DEPOSITS DERIVED FROM LIMESTONE AND SCHIST

14 COPAKE-GROTON: Brownish, nearly level to rolling, deep, well drained and excessively drained soils with a sandy and gravelly substratum; on terraces

AREAS OF THE CENTRAL LOWLANDS OF THE CONNECTICUT RIVER VALLEY DOMINATED BY SOILS FORMED IN GLACIAL TILL DERIVED FROM SANDSTONE SHALE, CONGLOMERATE, AND BASALT

15 CHESHIRE-WETHERSFIELD-HOLYOKE: Reddish, gently sloping to steep, deep, well drained soils with a friable or firm substratum and well drained and somewhat excessively drained shallow soils over bedrock; on uplands

16 CHESHIRE-YALESVILLE: Reddish, gently sloping and sloping, deep well drained soils with a friable substratum and moderately deep soils over bedrock; on uplands

17 NARRAGANSETT-BROADBROOK-HOLYOKE: Brownish and reddish, gently sloping to steep, well drained, deep soils with a friable or firm substratum and well drained and somewhat excessively drained shallow soils over bedrock; on uplands

18 NARRAGANSETT-CHESHIRE: Brownish and reddish, gently sloping to moderately steep, deep, well drained soils with a friable substratum; on uplands

19 HOLYOKE-WETHERSFIELD-CHESHIRE: Reddish, gently sloping to steep, well drained and somewhat excessively drained shallow soils over bedrock and deep, well drained soils with a firm or friable substratum; on uplands

20 WETHERSFIELD-HOLYOKE-BROADBROOK: Reddish and brownish, gently sloping to steep, deep, well drained soils with a firm substratum and somewhat excessively drained and well drained shallow soils over bedrock; on uplands

21 WETHERSFIELD-LUDLOW: Reddish, gently sloping to moderately steep, deep, well drained, and moderately well drained soils with a firm substratum; on uplands

AREAS OF THE CENTRAL LOWLANDS OF THE CONNECTICUT RIVER VALLEY DOMINATED BY SOILS FORMED IN STRATIFIED DEPOSITS DERIVED FROM SANDSTONE, SHALE, CONGLOMERATE, AND BASALT

22 BRANFORD-MANCHESTER: Reddish, nearly level to rolling, deep, well drained and excessively drained soils with a sandy and gravelly substratum; on terraces

23 ENFIELD-AGAWAM-MANCHESTER: Brownish and reddish, nearly level to rolling, deep, well drained and excessively drained soils with a sandy and gravelly substratum; on terraces

24 HARTFORD-MANCHESTER: Reddish, nearly level to rolling, deep somewhat excessively drained and excessively drained soils with a sandy and gravelly substratum; on terraces

25 PENWOOD-MANCHESTER: Reddish, nearly level to rolling, deep, excessively drained soils with a sandy and gravelly substratum; on terraces

26 WINDSOR-NINIGRET-MERRIMAC: Brownish, nearly level to undulating, deep, excessively drained, moderately well drained and somewhat excessively drained soils with a sandy and gravelly substratum; on terraces

27 ELMWOOD-BUXTON-SCANTIC: Brownish and reddish, nearly level to gently sloping, deep, moderately well drained and poorly drained soils with a silty or clayey substratum; on terraces

28 SCANTIC-BUXTON-BROADBROOK: Brownish and reddish, nearly level to sloping, deep, poorly drained and moderately well drained soils with a silty or clayey substratum and well drained soils with a firm loamy substratum; on terraces

29 HADLEY-WINOOSKI: Brownish, nearly level, deep, well drained and moderately well drained alluvial soils with a silty or silty and sandy substratum; on flood plains

30 RUMNEY-PODUNK: Brownish, nearly level, deep, poorly drained and moderately well drained alluvial soils with a sandy and gravelly substratum; on flood plains

AREAS OF THE COASTAL LOWLANDS AFFECTED BY TIDAL WATER DOMINATED BY SOILS FORMED IN ORGANIC MATERIAL

31 WESTBROOK: Grayish, nearly level, deep, very poorly drained organic soils with a silty substratum; on tidal flats