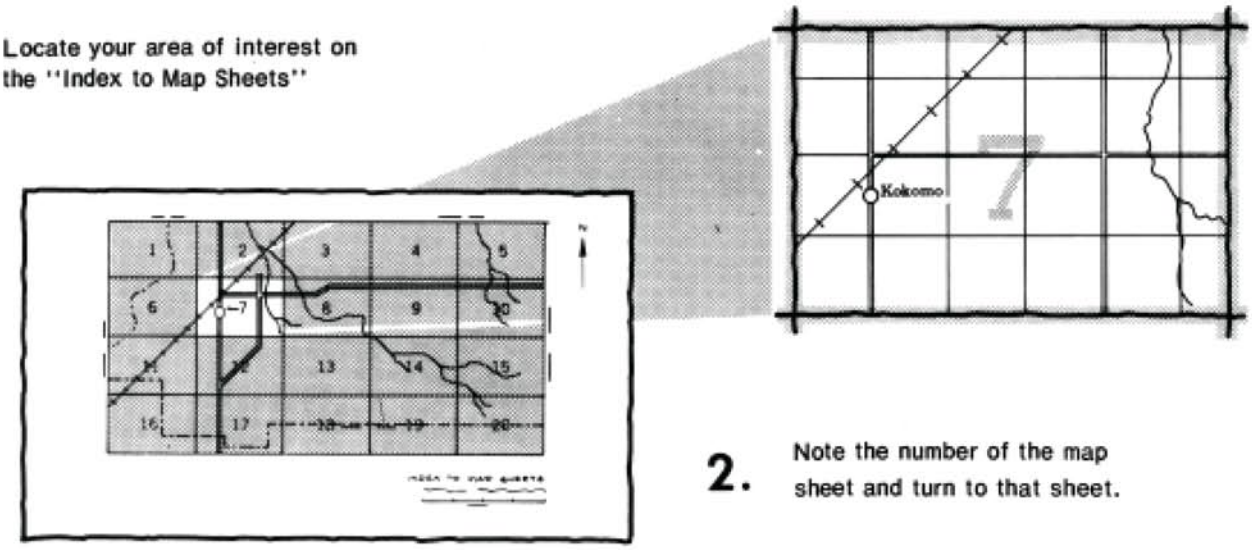
SOIL SURVEY OF

Bristol County, Massachusetts, Northern Part

United States Department of Agriculture
Soil Conservation Service
in cooperation with
Massachusetts Agricultural Experiment Station

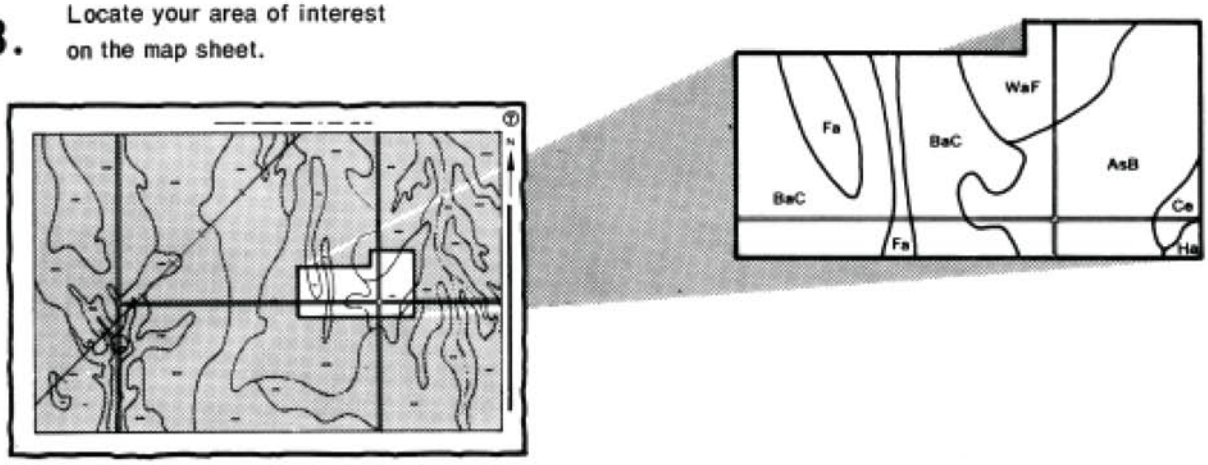
HOW TO USE

1. Locate your area of interest on the "Index to Map Sheets"

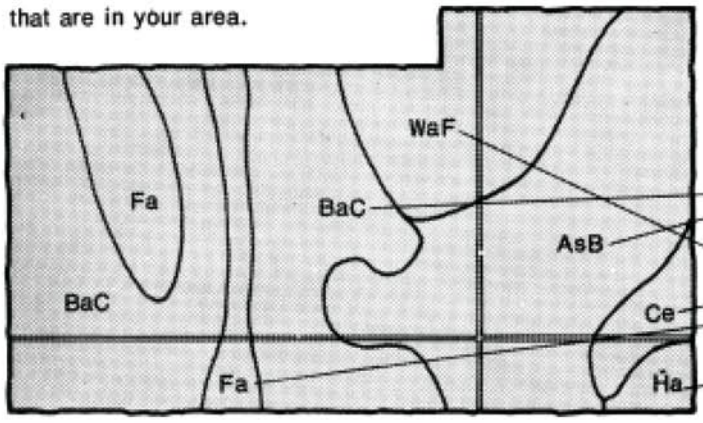


2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



4. List the map unit symbols that are in your area.

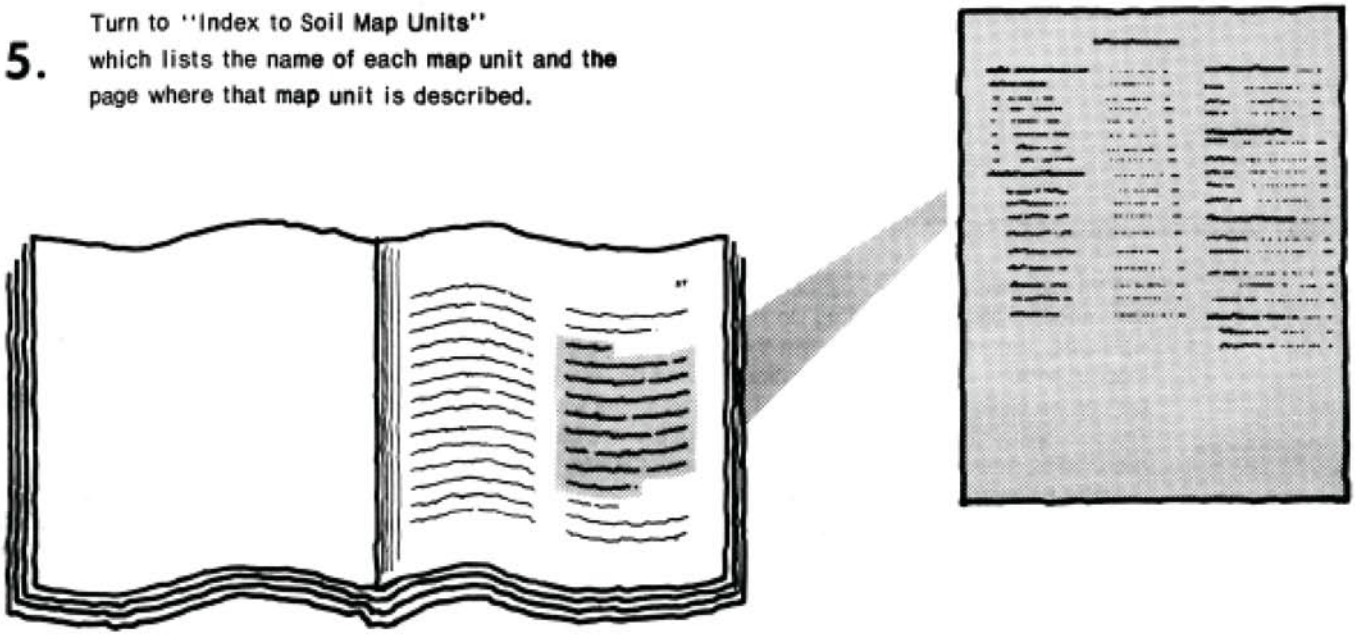


Symbols

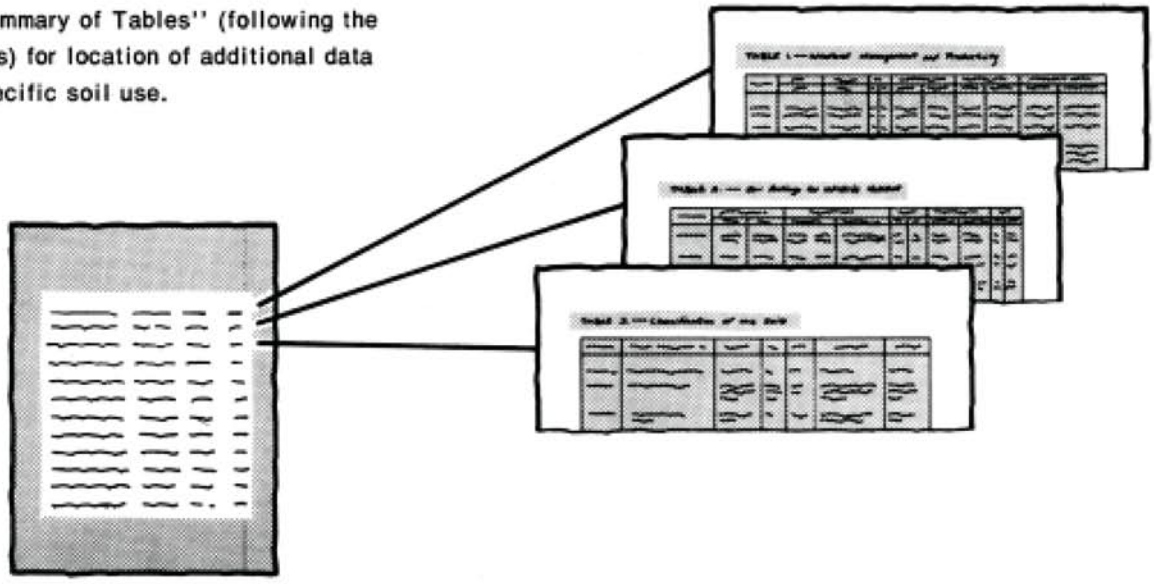
AsB
BaC
Ce
Fa
Ha
WaF

THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1963-1975. Soil names and descriptions were approved in 1976. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1975. This survey was made cooperatively by the Soil Conservation Service and the Massachusetts Agricultural Experiment Station. It is part of the technical assistance furnished to the Bristol Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps can cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Cover: Improved pasture on Paxton fine sandy loam, 3 to 8 percent slopes.

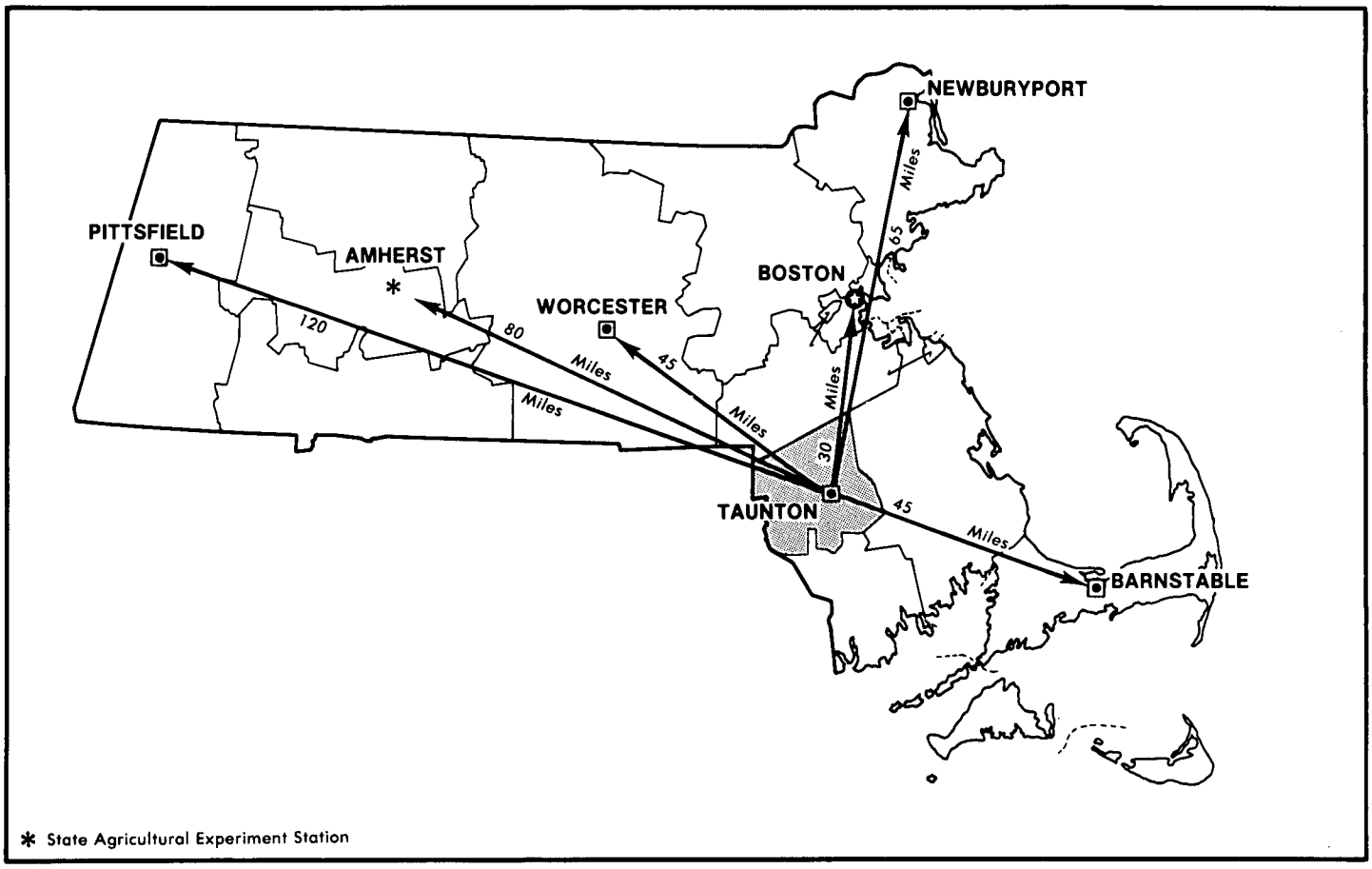
Contents

Issued November 1978

Index to soil map units

Summary of Tables

Summary of Tables—Continued



Location of Bristol County in Massachusetts.

SOIL SURVEY OF BRISTOL COUNTY, MASSACHUSETTS, NORTHERN PART

By Rino J. Roffinoli and Charles F. Hotz

Soils surveyed by C. B. Newsome, R. J. Roffinoli, G. W. Stanke, and C W. Upham, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service, in cooperation with Massachusetts Agricultural Experiment Station

The survey area is in the southeastern part of Massachusetts (see locator map). It has an area of 189,800 acres, or about 297 square miles. It is bounded on the west by the State of Rhode Island, on the north by Norfolk County, on the east by Plymouth County, and on the south by the Bristol County towns of Swansea, Somerset, and Freetown. The major topographic features are the rolling moraine and outwash deposits and the river valleys dissecting these deposits. The Taunton and Ten Mile Rivers provide most of the drainage of the survey area. Elevation ranges from sea level at the confluence of the Taunton and Assonet Rivers, to 390 feet at War Memorial Park in North Attleboro.

General nature of the area

This section gives general information concerning the area. It discusses settlement, natural resources, farming, and climate.

Settlement

The first settlements were established in the decades following the landing of the Pilgrims at Plymouth Rock in 1620. The first settlers farmed along the largest rivers. Fishing and whaling were early enterprises. Later settlers moved inland and used the rivers for transportation. With the development of manufacturing these rivers and streams were used for water power. After the Civil War many farmers abandoned their farms and moved to the new lands opened in the West. With the expansion of industry settlers from coastal developments of Cape Cod Bay and Narragansett Bay and, later, immigrants from Europe concentrated in the larger manufacturing towns. Early immigrants came mostly from Ireland; later immigrants came from Italy, Poland, Canada, and Portugal.

Natural resources

Soil is the most important natural resource in the survey area. The main use of soils has shifted from the production of crops and livestock to use for timber, industrial development, homesites, and as a source of construction material.

At present mineral resources are mostly limited to sand and gravel, but exploration is underway to determine the extent of coal deposits. At one time coal was mined in Mansfield and North Attleboro.

Most of the area is drained into Narragansett Bay by the Taunton River, the Ten Mile River, and their tributaries. Ponds and lakes are used mostly for recreational purposes, but some have been developed for municipal and industrial water supply. Wells provide most of the water supply.

Farming

Early farming was general and included the raising of hay, corn, wheat, oats, rye, vegetables, fruit, and livestock. Production reached a peak around 1860, but crop production and farm acreage have declined rapidly since that time. Demand for more land to meet the needs of urban, suburban, and industrial growth, and increased land value have made it difficult to keep the soil in farm use.

The main farm enterprise is dairy farming. Hogs and poultry are also raised. The principal crops include silage and sweet corn, hay, truck crops (fig. 1), ornamental nursery stock, and cranberries (fig. 2). The average farm is about 75 acres in size.

Climate

In Bristol County, Northern Part, winters are cold and summers are warm. The beginning and the end of the warm period are somewhat delayed because of the moderating influence of the Atlantic Ocean. In winter the ground is frequently covered with snow. Total annual precipitation is nearly always adequate for crops that are suited to local temperatures.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at Taunton for the period

1951 to 1973. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 29 degrees F, and the average daily minimum temperature is 19 degrees. The lowest temperature on record, which occurred at Taunton on January 22, 1961 is -21 degrees. In summer the average temperature is 69 degrees, and the average daily maximum temperature is 80 degrees. The highest recorded temperature, which occurred on June 26, 1952, is 99 degrees.

Growing degree days, shown in table 1, are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature. The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 22 inches, or 49 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 12 inches. The heaviest 1-day rainfall during the period of record was 6.17 inches at Taunton on August 19, 1955. Thunderstorms occur on about 21 days each year, and most occur in summer.

Average seasonal snowfall is 38 inches. The greatest snow depth at any one time during the period of record was 30 inches. On the average, 22 days have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 75 percent. The percentage of possible sunshine is 60 in summer and 55 in winter. The prevailing wind is from the southwest. Average windspeed is highest, 13 miles per hour, in April.

Winter storms moving northeastward along the coast frequently bring rain and thawing followed by snow and cold weather. In summer, sea breezes moderate the temperature, particularly near the coast.

Climatic data in this section were specially prepared for the Soil Conservation Service by the National Climatic Center, Asheville, North Carolina.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

After a guide for classifying and naming the soils was worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are discussed in the sections "General soil map for broad land use planning" and "Soil maps for detailed planning."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it is readily available to different groups of users, among them farmers, managers of rangeland and woodland, engineers, planners, developers and builders, homebuyers, and those seeking recreation.

General soil map for broad land use planning

The general soil map at the back of this publication shows, in color, map units that have a distinct pattern of soils and of relief and drainage. Each map unit is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map provides a broad perspective of the soils and landscapes in the survey area. It provides a

basis for comparing the potential of large areas for general kinds of land use. Areas that are, for the most part, suited to certain kinds of farming or to other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

Map units in this survey area were matched with those in the published Plymouth County Soil Survey. Some discrepancies exist which are the result of minor differences in legends and changes in series concepts. In all cases, similar soils join at the county boundaries. Map units were joined with adjacent progressive surveys for those parts of the boundary where mapping has been completed in the adjacent soil survey. The 5 map units in Bristol County, Northern Part, are described on the following pages.

1. Hinckley-Medisaprists-Windsor

Nearly level to steep, excessively drained soils that formed in glacial outwash, and very poorly drained organic soils

This map unit is an irregularly shaped continuous area. The topography is mostly plane to sloping. The Hinckley and Windsor soils formed in water-sorted deposits. Medisaprists formed in deposits of organic material (fig. 3).

This map unit makes up about 55 percent of the total survey area. It is about 26 percent Hinckley soils, 17 percent Medisaprists, 15 percent Windsor soils, and 42 percent soils of minor extent.

The Hinckley and Windsor soils are excessively drained. The Hinckley soils have a gravelly subsoil and a stratified sand and gravel substratum. The Windsor soils formed on thick deposits of sand and have less than 10 percent gravel, but in places they contain thin strata of gravelly sand. The low-lying Medisaprists have deposits of organic material that range from 16 inches to more than 10 feet in thickness. The Hinckley and Windsor soils are rapidly to very rapidly permeable and retain a small amount of water for plant use. Medisaprists have a water table at or near the surface for more than 9 months of the year, and water commonly ponds on the surface during the wettest part of the year.

Soils of minor extent are the moderately well drained Deerfield soils, the poorly drained Wareham soils, and the very poorly drained Scarboro soils. The Deerfield, Wareham, and Scarboro soils are generally in depressions among the major soils.

This map unit is used for farming, urban developments, and rural homesites. Some areas, particularly Medisaprists, are in woodland. Drouthiness is the main limitation for farming in Hinckley and Windsor soils. Coarse texture and rapid permeability limit nonfarm uses. Wetness is the main limitation in areas of Medisaprists.

2. Paxton-Whitman-Ridgebury

Nearly level to moderately steep, well drained to very poorly drained soils on glaciated uplands

Most of this map unit is in the vicinity of Dighton, Rehoboth, and Seekonk. The topography is mainly nearly level and gently sloping. The soils formed in loamy glacial till.

This map unit makes up about 21 percent of the survey area. It is about 27 percent Paxton soils, 15 percent Whitman soils, 10 percent Ridgebury soils, and 48 percent soils of minor extent.

The major soils have a firm to very firm substratum that restricts movement of water and root development. The Paxton soils are well drained, the Ridegbury soils are poorly drained, and the Whitman soils are very poorly drained. The Paxton soils are on hills and ridges, and the Ridgebury and Whitman soils are in low-lying positions at the base of slopes and along drainageways.

Soils of minor extent are the well drained Charlton soils and the moderately well drained Woodbridge soils. In many areas of this map unit stones and boulders are scattered 5 to 50 feet apart.

Stoniness, restricted permeability, and wetness are the main limitations to use. Sites for intensive land use need to be thoroughly investigated. Most of this map unit is in woodland. Some parts have been cleared and are used for farming; other parts are used for urban developments and for rural homesites.

3. Paxton-Woodbridge-Ridgebury

Nearly level to moderately steep, well drained to poorly drained soils on glaciated uplands

Most of this map unit is in the northern part of the survey area. The remainder is in the southern part. The topography is mostly nearly level and gently sloping. The soils formed in loamy glacial till (fig. 4).

This map unit makes up about 19 percent of the survey area. It is about 33 percent Paxton soils, 22 percent Woodbridge soils, 13 percent Ridgebury soils, and 32 percent soils of minor extent.

The Paxton, Woodbridge, and Ridgebury soils have a very firm substratum that restricts water movement. The Paxton soils are well drained and are on hills and ridges. The Woodbridge soils are moderately well drained and are generally in concave positions on hillsides or at the base of slopes. The Ridgebury soils are poorly drained and are in low-lying areas and in drainageways.

Soils of minor extent are the well drained Charlton soils that do not have a hardpan, and the very poorly drained Whitman soils. In many areas of this map unit

stones and boulders are scattered over the surface 5 to 50 feet apart.

Stoniness, restricted water movement, and wetness are the main limitations to use. Sites for intensive land use need to be thoroughly investigated. Many parts of this map unit are in woodland or are idle. Some areas are used for dairy farming, urban developments, and rural homesites.

4. Charlton-Rock outcrop-Paxton

Nearly level to steep, well drained soils and Rock outcrop on glaciated uplands

This map unit is in 3 areas in the vicinity of North Attleboro and Attleboro. The topography is mainly gently sloping to moderately steep. The soils formed in loamy glacial till between outcrops of rock (fig. 5).

This map unit makes up about 3 percent of the survey area. It is about 35 percent Charlton soils, 20 percent Rock outcrop, 15 percent Paxton soils, and 30 percent soils of minor extent.

The Charlton soils are well drained and have a friable, moderately coarse textured subsoil and substratum. The Paxton soils are well drained and have a similar texture, but have a firm substratum that restricts water movement and root development. Rock outcrop consists of areas of exposed bedrock.

Soils of minor extent are the moderately well drained Woodbridge soils, the poorly drained Ridgebury soils, and the very poorly drained Whitman soils. In many areas of this map unit stones and boulders are scattered over the surface 5 to 50 feet apart.

Slope, stoniness, exposures of bedrock, and restricted permeability are the main limitations to use. Sites for intensive land use need to be thoroughly investigated (fig. 6). Most parts of this map unit are in woodland or are used for recreational purposes.

5. Raynham-Scio-Birdsall

Nearly level to gently sloping, moderately well drained to very poorly drained soils that formed on old lakebeds

The two areas of this map unit are in the vicinity of Raynham and Taunton. The topography is mainly nearly level. The soils formed in lacustrine deposits of silt and very fine sand (fig. 7).

This map unit makes up about 2 percent of the survey area. It is about 30 percent Raynham soils, 25 percent Scio soils, 20 percent Birdsall soils, and 25 percent soils of minor extent.

The Raynham soils are poorly drained, the Scio soils are moderately well drained, and the Birdsall soils are very poorly drained. Permeability is restricted because of the fine texture. The Birdsall soils and the Raynham soils are in low positions and in depressions.

Soils of minor extent are the well drained Unadilla and Agawam soils on knolls. The moderately well drained Amostown soils are in lower areas.

Wetness and restricted permeability are the main limitations to use. Sites for intensive land use need to be thoroughly investigated. Woodland, urban developments, and wildlife habitat are major land uses.

Soil maps for detailed planning

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for each map unit, or soil, is given in the section "Use and management of the soils."

Preceding the name of each map unit is the symbol that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated, and the management concerns and practices needed are discussed.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils that have profiles that are almost alike make up a *soil series.* Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile.

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Merrimac fine sandy loam, 0 to 3 percent slopes, is one of several phases within the Merrimac series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes.

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area includes some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes, is an example.

Most map units include small, scattered areas of soils other than those that appear in the name of the map unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the map unit. These soils are described in the description of each

map unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

Most mapped areas include places that have little or no soil material and support little or no vegetation. Such places are called *miscellaneous areas*; they are delineated on the soil map and given descriptive names. Pits, gravel, is an example. Some of these areas are too small to be delineated and are identified by a special symbol on the soil map.

The acreage and proportionate extent of each map unit are given in table 4, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary.

AgA—Agawam fine sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and well drained. It is on terraces and outwash plains. Slopes are smooth and flat and are generally 200 to 500 feet long. The mapped areas are irregular in shape and range from 5 to 25 acres in size.

Typically, the surface layer is very friable, dark yellowish brown fine sandy loam about 10 inches thick. The subsoil is very friable, yellowish brown fine sandy loam 22 inches thick. The loose substratum to a depth of 60 inches is light olive brown sand.

Included with this soil in mapping are areas of Ninigret and Unadilla soils that are generally smaller than 4 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the surface layer and upper part of the subsoil, moderately rapid to rapid in the lower part of the subsoil, and rapid in the substratum. Available water capacity is high. In unlimed areas, reaction is strongly acid or medium acid. The root zone extends into the loose substratum.

This soil has good potential for farming, and much acreage has been farmed. It has good potential for most urban use and some acreage is in housing developments. This soil has poor potential for most sanitary waste disposal facilities. It has good potential for trees, and some previously cleared acreage has reverted to or has been planted in trees. It has good potential for openland and woodland wildlife habitat.

The soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained in cultivated areas. The hazard of erosion is slight. Conservation management includes improving soil tilth and increasing organic-matter content by mixing crop residue and animal manure into the plow layer. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees, but only a small acreage is in woodland. Limitations are slight for woodland, and productivity is high. Important tree species are eastern white pine, northern red oak, and red pine.

The soil has few limitations for most urban use and for septic tank filter fields. Rapid permeability in the substratum is a limitation for other sanitary waste disposal facilities. Capability class I.

AgB—Agawam fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is on terraces and outwash plains. Slopes are smooth or undulating and are generally 200 to 800 feet long. The mapped areas are irregular in shape and range from 10 to 50 acres in size.

Typically, the surface layer is very friable, dark yellowish brown fine sandy loam about 10 inches thick. The subsoil is very friable, yellowish brown fine sandy loam about 20 inches thick. The substratum to a depth of 60 inches is loose, light olive brown sand.

Included with this soil in mapping are areas of Ninigret and Unadilla soils that are generally smaller than 3 acres in size. Included soils make up about 15 percent of the map unit.

Permeability is moderately rapid in the surface layer and upper part of the subsoil, moderately rapid to rapid in the lower part of the subsoil, and rapid in the substratum. Available water capacity is high. In unlimed areas, reaction is strongly acid or medium acid. The root zone extends into the loose substratum.

This soil has good potential for farming, and much acreage has been farmed. It has good potential for many urban uses, and some acreage is in housing developments or lots. The soil has poor potential for most sanitary waste disposal facilities. It has good potential for trees and for openland and woodland wildlife habitat. Some previously cleared acreage has reverted to or has been planted in trees.

The soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is moderate. Conservation management includes controlling erosion, improving tilth, and increasing organic-matter content of the soil. If this soil is farmed, minimum tillage, use of cover crops, and incorporating grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are pasture management practices that help to maintain desirable plant species.

The soil is well suited to trees, but only a small acreage is wooded. Limitations are few for woodland, and productivity is high. Important tree species are eastern white pine, northern red oak, and red pine.

The soil has few limitations for most urban use. Slope is a limitation for small commercial buildings. Limitations are few for septic tank filter fields, but rapid permeability of the substratum is a limitation for other sanitary waste disposal facilities. Capability subclass IIe.

AmA—Amostown fine sandy loam, 0 to 5 percent slopes. This soil is deep, nearly level and gently sloping, and moderately well drained. It is on terraces, outwash

plains, and deltas. Slopes are smooth or very gently undulating and are generally 100 to 600 feet long. The mapped areas are irregular in shape and range from 5 to 20 acres in size.

Typically, the surface layer is very friable, dark yellowish brown fine sandy loam about 9 inches thick. The subsoil is fine sandy loam 15 inches thick. It is friable and yellowish brown in the upper 7 inches and firm and brownish yellow in the lower 8 inches. The substratum to a depth of 60 inches is firm, light gray very fine sandy loam. The lower part of the subsoil and the substratum have distinct and prominent mottles of yellowish red and strong brown.

Included with this soil in mapping are areas of Ninigret and Scio soils that are generally smaller than 3 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the surface layer and subsoil, and moderate to slow in the substratum. Available water capacity is high. Reaction is strongly acid or medium acid above the substratum, and strongly acid to neutral in the substratum. A seasonal high water table is at a depth of between 12 and 30 inches for about 5 months during winter and early in spring.

This soil has good potential for farming, and most acreage has been previously farmed. It has fair to poor potential for most urban use, and some acreage is used for homesites. The soil has poor potential for most sanitary waste disposal facilities. It has good potential for trees, and some cleared acreage has reverted to or has been planted in trees. It has good potential for openland and woodland wildlife habitat.

The soil is suited to crops, hay, and pasture. Good tilth is easily maintained in cultivated areas. The seasonal high water table is the major concern of management. The hazard of erosion is slight on nearly level soil and moderate on gently sloping soil. Conservation management includes controlling erosion, improving tilth, increasing organic-matter content, and installing subsurface drains where needed. If this soil is farmed, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increase the organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil has few limitations for trees, but only a small acreage is in woods. Productivity is high. Important tree species are eastern white pine, red oak, and white ash.

The soil has limitations for most urban uses because of susceptibility to frost action and the seasonal high water table. The seasonal high water table and slow permeability are limitations for most sanitary waste disposal facilities. Capability subclass IIw.

Bd—Birdsall silt loam. This soil is deep, nearly level, and very poorly drained. It is in low-lying areas and depressions near large streams. Slopes are plane or slightly concave and are generally 100 to 400 feet long. The mapped areas are elongated or irregular in shape and are 5 to 15 acres in size.

Typically, the surface layer is very friable, very dark gray silt loam about 7 inches thick. The subsoil extends to a depth of 21 inches and is firm, mottled, light brownish gray silt loam and gray very fine sandy loam. The substratum to a depth of 60 inches is friable, grayish brown very fine sandy loam.

Included with this soil in mapping are areas of Raynham soil and Medisaprists, shallow, that are generally less than 3 acres in size. Also included are areas of soils that have a very fine sand substratum and areas of mineral soil that have a layer of surficial peat or muck 4 to 16 inches thick. Included soils make up about 15 to 20 percent of the map unit.

Permeability is moderately slow in the subsoil and slow in the substratum. Available water capacity is high. Reaction ranges from strongly acid to neutral. The root zone extends a few inches below the surface layer. Root growth is restricted by a high water table that is at or near the surface more than 9 months of the year.

This soil has poor potential for farming, urban uses, sanitary waste disposal facilities, and trees. It has fair potential for wetland wildlife habitat. Most acreage is poor quality woodland or is idle.

The soil has severe limitation for hay and pasture because it is wet most of the year. The high water table restricts plant growth and limits use of machinery. Artificial drainage generally is difficult because of the slow permeability.

The soil is poorly suited to trees. Productivity is low. The high water table restricts tree growth, hinders stand reproduction, and limits use of machinery. Important tree species are eastern white pine and red maple.

The soil has limitations for urban use because of the high water table and high potential frost action. The high water table and slow permeability are severe limitations for sanitary waste disposal facilities. Capability subclass VIw.

CoB—Charlton-Paxton fine sandy loams, 3 to 8 percent slopes. This map unit consists of deep, gently sloping, well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from about 5 to 20 acres in size. They are approximately 45 percent Charlton soils and 30 percent Paxton soils. Slopes are smooth and convex and are generally 100 to 300 feet long.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 27 inches thick. The upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 17 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 27 inches thick. The upper 12 inches of the subsoil is yellowish brown fine sandy loam, and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray sandy loam.

Included with these soils in mapping are areas of Woodbridge and Ridgebury soils that are generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum and areas of soils that are nearly level. Included soils make up about 25 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum in the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth, root growth is restricted by the firm and very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have good potential for farming. They have good potential for urban use on the Charlton soil and fair potential on the Paxton soil. Both soils have poor potential for most sanitary waste disposal facilities. They have good potential for trees, and for openland and woodland wildlife habitat. Most acreage is farmed. Some areas of soils have been developed for homesites and commercial use, and some acreage has reverted to or has been planted in trees.

These soils are suited to cultivated crops. Good tilth is easily maintained in cultivated areas. The hazard of erosion is moderate. Conservation practices include using cover crops and mixing crop residue and animal manure into the plow layer to improve tilth and increase organic matter content. Incorporating grasses and legumes in the cropping system help to reduce runoff and control erosion. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

These soils are well suited to trees, and productivity is moderate. Important tree species are eastern white pine and northern red oak.

These soils have limitations for most urban use because of the seasonal high water table in the Paxton soil. They have limitations for sanitary waste disposal facilities because of moderate to moderately rapid permeability in the Charlton soil and because of the seasonal high water table and slow permeability in the Paxton soil. Capability subclass IIe.

CpB—Charlton-Paxton very stony fine sandy loams, 0 to 8 percent slopes. This map unit consists of deep, nearly level and gently sloping, well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from about 5 to 100 acres in size. They are approximately 45 percent Charlton soils and 30 percent Paxton soils. Slopes are smooth and convex and are generally 100 to 300 feet long. Stones are scattered over the surface about 20 to 50 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 27 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 17 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 27 inches thick. The upper 12 inches of the subsoil is yellowish brown fine sandy loam, and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

Included with these soils in mapping are areas of very stony Woodbridge and Ridgebury soils that are generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum and areas of soils that have a firm substratum at a depth of 40 to 60 inches. Included soils make up about 25 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow or slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth root growth is restricted by the firm or very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming. They have fair potential for most urban use and poor potential for sanitary waste disposal facilities. They have good potential for trees and for woodland wildlife habitat. Most acreage is woodland. Some acreage is in unimproved pasture. Some areas of soil have been developed for commercial use or for homesites.

These soils are not suited to cultivated crops because of stones on the surface. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help maintain desirable pasture plants.

These soils are well suited to trees, and productivity is moderate. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use because of large stones on the surface and a seasonal high water table in the Paxton soil. They have limitations for sanita-

ry waste disposal facilities because of moderate to moderately rapid permeability in the Charlton soil and because of a seasonal high water table and slow permeability in the Paxton soil. Capability subclass VIs.

CpC—Charlton-Paxton very stony fine sandy loams, 8 to 15 percent slopes. This map unit consists of deep, sloping, well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from about 5 to 50 acres in size. They are approximately 45 percent Charlton soils and 30 percent Paxton soils. Slopes are generally smooth and convex and are about 100 to 300 feet long. Stones are scattered over the surface about 20 to 50 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 25 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 15 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 24 inches thick. The upper 11 inches of the subsoil is yellowish brown fine sandy loam, and the lower 13 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

Included with these soils in mapping are areas of very stony Woodbridge soil generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum and areas of soils that have a firm substratum at a depth of 40 to 60 inches. Included soils make up about 25 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow or slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth root growth is restricted by the firm or very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming. They have fair potential for most urban use and poor potential for sanitary waste disposal facilities. The soils have good potential for trees and for woodland wildlife habitat. Most acreage is in woodland. Some acreage is in unimproved pasture. Some areas of soil have been developed for homesites or for commercial use.

These soils are not suited to cultivated crops because of stones on the surface. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help maintain desirable pasture plants.

These soils are well suited to trees, and productivity is moderate. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use because of large stones on the surface, and a seasonal high water table in the Paxton soil. They have limitations for sanitary waste disposal facilities because of the moderate to moderately rapid permeability in the Charlton soil and a seasonal high water table and slow permeability in the Paxton soil. Capability subclass VIs.

CsB—Charlton-Paxton extremely stony fine sandy loams, 0 to 8 percent slopes. This map unit consists of deep, nearly level and gently sloping, well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separetely. Areas range from about 5 to 100 acres in size. They are approximately 45 percent Charlton soils and 30 percent Paxton soils. Slopes are generally smooth and convex and are about 100 to 400 feet long. Stones and boulders on the surface are 5 to 20 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 27 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 17 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 27 inches thick. The upper 12 inches of the subsoil is yellowish brown fine sandy loam and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

Included in mapping are areas of extremely stony Woodbridge and Ridgebury soils that are generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum and areas of soils that have a substratum at a depth of 40 to 60 inches. In places, outcrops of bedrock are more than 100 feet apart. Included soils make up about 25 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. Permeability is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth root growth is restricted by the firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming, for most urban use, and for sanitary waste disposal facilities. They have good potential for trees and fair

potential for woodland wildlife habitat. Most acreage is wooded. Some areas of soil have been developed for homesites or for commercial use.

These soils are not suited to cultivated crops, hay, and pasture. Stones are on the surface.

These soils are well suited to trees, and productivity is moderate. Stones on the surface limit use of machinery. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use because of large stones and boulders on the surface and a seasonal high water table in the Paxton soil. They have limitations for sanitary waste disposal facilities because of moderate to moderately rapid permeability in the Charlton soil and a seasonal high water table and slow permeability in the Paxton soil. Capability subclass VIIs.

CsC—Charlton-Paxton extremely stony fine sandy loams, 8 to 15 percent slopes. This map unit consists of deep, sloping, well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from about 5 to 100 acres in size. They are approximately 45 percent Charlton and 30 percent Paxton soils. Slopes are generally smooth and convex and are about 100 to 400 feet long. Stones and boulders on the surface are 5 to 20 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 25 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 15 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 24 inches thick. The upper 11 inches of the subsoil is yellowish brown fine sandy loam, and the lower 13 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

Included with these soils in mapping are areas of extremely stony Woodbridge and Ridgebury soils that are generally less than 4 acres in size. Also included are areas of soils that have gravelly loamy sand substratum, areas of soils that have a firm substratum at a depth of 40 to 60 inches, a few small areas of moderately steep soil, and in some places outcrops of bedrock that are more than 100 feet apart. Included soils make up about 25 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth root growth is restricted by the firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming, most urban use, and sanitary waste disposal facilities. They have a good potential for trees and fair potential for woodland wildlife habitat. Most acreage is wooded. Some areas of soil have been developed for homesites.

These soils are not suited to cultivated crops, hay, and pasture. Stones are on the surface.

These soils are well suited to trees, and productivity is moderate. Stones on the surface limit the use of machinery. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use because of large stones and boulders on the surface and a seasonal high water table in the Paxton soils. They have limitations for sanitary waste disposal facilities because of moderate or moderately rapid permeability in the Charlton soil and a seasonal high water table and slow permeability in the Paxton soil. Capability subclass VIIs.

CtB—Charlton-Paxton fine sandy loams, rocky, 3 to 8 percent slopes. This map unit consists of gently sloping, well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from 5 to 60 acres in size. They consist of approximately 50 percent Charlton soils, 20 percent Paxton soils, and up to 10 percent Rock outcrop. Slopes are smooth and convex and are generally 100 to 300 feet long. Outcrops of bedrock are 50 to 100 feet apart and stones on the surface are 20 to 50 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 27 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 17 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 27 inches thick. The upper 12 inches of the subsoil is yellowish brown fine sandy loam, and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

Included with these soils in mapping are stony Woodbridge and Ridgebury soils that are generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum and areas of soils that have a firm layer at a depth of 40 to 60 inches. Included soils make up about 20 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the

Paxton soil. It is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth root growth is restricted by the firm or very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming. They are mainly used for unimproved pasture. They have fair potential for most urban use, and poor potential for sanitary waste disposal facilities. The soils have good potential for trees and for woodland wildlife habitat. Most acreage is in woodland. Some acreage is farmed.

These soils are not suited to cultivated crops. Outcrops of bedrock and stones are on the surface. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help maintain desirable pasture plants (fig. 8).

These soils are well suited to trees, and productivity is moderate. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use because of outcrops of bedrock, stones on the surface, and a seasonal high water table in the Paxton soils. They have limitations for sanitary waste disposal facilities because of rock outcrops and because of moderate to moderately rapid permeability in the Charlton soil and a seasonal high water table and slow permeability in the Paxton soil. Capability subclass VIs.

CtC—Charlton-Paxton fine sandy loams, rocky, 8 to 15 percent slopes. This map unit consists of sloping, well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from about 5 to 40 acres in size. They are approximately 50 percent Charlton soils, 20 percent Paxton soils and as much as 10 percent Rock outcrop. Slopes are rolling and are generally 100 to 500 feet long. Outcrops of bedrock are 50 to 100 feet apart. Stones are scattered over the surface 20 to 50 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 25 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 15 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 24 inches thick. The upper 11 inches of the subsoil is yellowish brown fine sandy loam, and the lower 13 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

Included with these soils in mapping are stony Woodbridge and Ridgebury soils, generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum and areas of soils that have a firm substratum at a depth of 40 to 60 inches. Included soils make up about 20 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth root growth is restricted by the firm or very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming, fair potential for most urban use, and poor potential for sanitary waste disposal facilities. They have good potential for trees and for woodland wildlife habitat. Most acreage is in woodland. Some acreage is farmed and is used mainly for unimproved pasture.

These soils are not suited to cultivated crops because of stones on the surface and outcrops of bedrock. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help maintain desirable pasture plants.

These soils are well suited to trees, and productivity is moderate. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use because of outcrops of bedrock, and large stones on the surface and a seasonal high water table in the Paxton soil. They have limitations for sanitary waste disposal facilities because of rock outcrops, moderate to moderately rapid permeability in the Charlton soil, and a seasonal high water table and slow permeability in the Paxton soil. Capability subclass VIs.

CtD—Charlton-Paxton fine sandy loams, rocky, 15 to 25 percent slopes. This map unit consists of well drained soils on hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from 5 to about 30 acres in size. They are approximately 50 percent Charlton soils, 20 percent Paxton soils, and up to 10 percent rock outcrop. Slopes are generally 100 to 200 feet long. Outcrops of bedrock are 50 to 100 feet apart and stones are on the surface 20 to 50 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 23 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 6 inches is dark yellowish brown fine sandy loam, and the lower 14 inches is yellowish brown gravelly fine sandy loam. The substratum extends to a depth of 65 inches and is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 22 inches thick. The upper 10 inches of the subsoil is yellowish brown fine sandy loam, and the lower 12 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

Included with these soils in mapping are areas of stony Woodbridge and Ridgebury soils that are generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum and areas of soils that have a substratum at a depth of 40 to 60 inches. Included soils make up about 20 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of about 30 inches in the Paxton soil; below this depth root growth is restricted by the firm and very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming, for most urban use, and for sanitary waste disposal facilities. They have good potential for trees and for woodland wildlife habitat. Most acreage is in woodland. Some acreage is farmed and is used mainly for unimproved pasture.

These soils are not suited to cultivated crops because of stones on the surface, outcrops of bedrock, and slope. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

These soils are well suited to trees, and productivity is moderate. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use because of bedrock outcrops, large stones on the surface, and slope. They have limitations for sanitary waste disposal facilities because of rock outcrops, steep slopes, moderate to moderately rapid permeability in the Charlton soil, and a seasonal high water table and slow permeability in the firm substratum of the Paxton soil. Capability subclass VIs.

CuC—Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes. This map unit consists of gently sloping and sloping, well drained soils and Rock outcrop on glacial hills and ridges. These Charlton and Paxton soils are in such an intricate pattern that it was not practical to map them separately. Areas range from about 10 to 200 acres in size. They consist of approximately 35 percent Charlton soils, 25 percent Rock outcrop, and 20 percent Paxton soils. Slopes are undulating and rolling and are generally 100 to 800 feet long. Outcrops of bedrock are 5 to 50 feet apart, and stones are scattered over the surface 5 to 20 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable, fine sandy loam and is 25 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 7 inches is dark yellowish brown fine sandy loam, and the lower 15 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 24 inches thick. The upper 11 inches of the subsoil is yellowish brown fine sandy loam, and the lower 13 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

The Rock outcrop part of this complex consists of exposures of granite, gneiss, and conglomerate bedrock.

Included with these soils in mapping are areas of extremely stony Ridgebury and Whitman soils that are generally less than 4 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum. Included soils make up about 20 percent of the map unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum in the Charlton soil. It extends to a depth of 30 inches in the Paxton soil; below this depth root growth is restricted by the firm and very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in this complex have poor potential for farming, urban use, and sanitary waste disposal facilities. They have good potential for trees and fair potential for woodland wildlife habitat. Most acreage is wooded.

These soils are not suited to cultivated crops, hay, and pasture. Outcrops of bedrock and large stones are on the surface.

These soils are well suited to trees, and productivity is moderate. Outcrops of bedrock and stones on the surface interfere with use of machinery. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use and sanitary waste disposal facilities because of outcrops of bedrock, large stones on the surface, moderate to moderately rapid permeability in the Charlton soil, and a seasonal high water table in the Paxton soil. Capability subclass VIIs.

CuE—Charlton-Rock outcrop-Paxton complex, 15 to 35 percent slopes. This map unit consists of moderately steep and steep, well drained soils and Rock outcrop on glacial hills and ridges. These Charlton and Paxton soils and Rock outcrop are in such an intricate pattern that it was not practical to map them separately. Areas range from about 10 to 30 acres in size. They are approximately

35 percent Charlton soils, 25 percent Rock outcrop, and 20 percent Paxton soils. Slopes are hilly and steep and are generally 100 to 400 feet long. Outcrops of bedrock are 5 to 50 feet apart, and stones are scattered over the surface 5 to 20 feet apart.

Typically in the Charlton soil, the surface layer is very friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is very friable fine sandy loam and is 22 inches thick. In sequence from the top, the upper 3 inches of the subsoil is brown fine sandy loam, the next 6 inches is dark yellowish brown fine sandy loam, and the lower 13 inches is yellowish brown gravelly fine sandy loam. The substratum to a depth of 65 inches is friable, light brownish gray gravelly sandy loam.

Typically in the Paxton soil, the surface layer is very friable, dark brown fine sandy loam about 2 inches thick. The subsoil is very friable and is 21 inches thick. The upper 9 inches of the subsoil is yellowish brown fine sandy loam, and the lower 12 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is firm or very firm, olive gray gravelly sandy loam.

The Rock outcrop part of this complex consists of exposures of granite, gneiss, and conglomerate bedrock.

Included with these soils in mapping are areas of extremely stony Ridgebury and Whitman soils that are generally less than 3 acres in size. Also included are areas of soils that have a gravelly loamy sand substratum. Included soils make up about 20 percent of the unit.

Permeability is moderate to moderately rapid throughout the Charlton soil and in the subsoil of the Paxton soil. It is moderately slow to slow in the substratum of the Paxton soil. Available water capacity is moderate. The root zone extends into the substratum of the Charlton soil. It extends to a depth of 30 inches in the Paxton soil; below this depth root growth is restricted by the firm and very firm substratum. Reaction ranges from very strongly acid to slightly acid in these soils. A seasonal high water table is perched above the substratum for brief periods in winter and spring in the Paxton soil.

The soils in his complex have poor potential for farming, urban use, and sanitary waste disposal facilities. They have good potential for trees and fair potential for woodland wildlife habitat. Most acreage is wooded.

These soils are not suited to cultivated crops, hay, and pasture. Outcrops of bedrock and large stones are on the surface.

These soils are well suited to trees, and productivity is moderate. Outcrops of bedrock and stones on the surface interfere with use of machinery. Important tree species are eastern white pine and northern red oak.

These soils have limitations for urban use and sanitary waste disposal facilities because of outcrops of bedrock, large stones on the surface, slope, moderate to moderately rapid permeability in the Charlton soil, and a seasonal high water table in the Paxton soil. Capability subclass VIIs.

De—Deerfield loamy sand. This soil is deep, nearly level and gently sloping, and moderately well drained. It is on outwash plains. Slopes are smooth (fig. 9) or gently undulating and are 100 to 600 feet long. They are generally less than 3 percent but range to 6 percent in some places. The mapped areas are irregular in shape and are 5 to 40 acres in size.

Typically, the surface layer is very friable, very dark brown loamy sand about 11 inches thick. The subsoil is 15 inches thick. It is loose, yellowish brown sand in the upper part and loose, olive brown sand in the lower part. The substratum to a depth of 60 inches is loose, brown sand in the upper 11 inches and loose, grayish brown sand below. It has yellowish red, yellowish brown, and light brownish gray mottles.

Included with this soil in mapping are areas of Windsor and Wareham soils that are generally less than 4 acres in size. Also included are areas of soils that have somewhat more gravel than is described as typical for this Deerfield soil. Included soils make up about 20 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is low. Reaction ranges from very strongly acid to medium acid. The root zone extends to a depth of about 26 inches. Root growth is restricted by the seasonal high water table.

This soil has fair to poor potential for farming. It has poor potential for most urban use and for sanitary waste disposal facilities. The soil has good potential for trees and fair potential for openland wildlife habitat. Most acreage is wooded. Some acreage is farmed. Some areas of soil are used for homesites.

The soil has limited suitability for farming because of the restricted root zone and low available water capacity. The seasonal high water table is the major concern of management. Fertilizer nutrients are quickly leached away by rapidly percolating water. The hazard of erosion is slight. Conservation management includes frequent irrigation and application of fertilizer, addition of organic matter to the plow layer, and use of cover crops.

The soil is suited to trees and has slight limitation for this use. Productivity is moderate. Important tree species are eastern white pine and northern red oak.

The soil has limitations for most urban use because of the seasonal high water table. The seasonal high water table and rapid permeability are limitations for sanitary waste disposal facilities. Capability subclass IIIw.

Du—Dumps. Dumps are landfill or sanitary landfill. They are mostly on outwash terraces and many dumps are adjacent to streams. Most mapped areas are from 3 to 40 acres in size. They are distributed throughout the county.

Dumps are used to dispose of trash. They consist largely of paper, metal, plastic, and glass. A few dumps include industrial waste, tree stumps, old car bodies, concrete, and debris from the destruction of buildings. The older dumps have no soil; the dump material was commonly burned.

Included with the dumps in mapping are small areas, generally less than 1 acre in size, of Westbrook soil and Udorthents, smoothed. A few small dumps have outcrops of bedrock. A few dumps that are adjacent to larger streams are subject to flooding along the edges.

Dumps require onsite investigation and evaluation for land use decisions. The composition of the leachate produced within the dump, its destination, and its effect are important considerations. A few dumps have been successfully used for industrial sites. Capability subclass not assigned.

HfA—Hinckley sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and excessively drained. It is on glacial outwash deposits. Slopes are 100 to 300 feet long. The mapped areas are irregular in shape and are 5 to 25 acres in size.

Typically, the surface layer is very friable, very dark brown sandy loam about 2 inches thick. The subsoil is very friable and is dark yellowish brown sandy loam in the upper 4 inches and yellowish brown gravelly loamy sand in the lower 18 inches. The substratum to a depth of 61 inches is loose and olive colored. It is very gravelly sand in the upper 10 inches; below this it is very gravelly coarse sand.

Included with this soil in mapping are areas of Windsor and Merrimac soils that are generally less than 4 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low. Reaction ranges from extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has poor potential for farming. It has good potential for most urban use and poor potential for most sanitary waste disposal facilities. This soil has poor potential for trees and for wildlife habitat. Most acreage is in low quality woodland. Some acreage is used for homesites.

The soil is poorly suited to farming because of drouthiness. Fertilizer nutrients are leached away by rapidly percolating water. The hazard of erosion is slight. Conservation management includes irrigation, frequent applications of fertilizer, and use of cover crops.

Trees grow slowly on this soil. Productivity is low. Important tree species are eastern white pine and northern red oak.

The soil has few limitations for most urban use. Unstable sidewalls limit shallow excavations. Establishing lawns is generally difficult because of drouthiness. Limitations are few for septic tank filter fields, but very rapid permeability of the substratum is a limitation for most other sanitary waste disposal facilities. Capability subclass IIIs.

HfB—Hinckley sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping and undulating, and excessively drained. It is on glacial outwash deposits. Slopes are 100 to 500 feet long. The mapped areas are irregular in shape and are 5 to 50 acres in size.

Typically, the surface layer is very friable, very dark brown sandy loam about 1 inch thick. The subsoil is very friable and is 21 inches thick. It is dark yellowish brown sandy loam in the upper 3 inches and yellowish brown gravelly loamy sand in the lower 18 inches. The substratum to a depth of 61 inches is loose and olive colored. It is very gravelly sand in the upper 10 inches and is very gravelly coarse sand below this.

Included with this soil in mapping are areas of Windsor and Merrimac soils that are generally less than 3 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low. Reaction ranges from extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has poor potential for farming. It has good potential for most urban use and poor potential for most sanitary waste disposal facilities. This soil has poor potential for trees and for wildlife habitat. Most acreage is in low quality woodland. Some acreage is in homesites.

The soil is poorly suited to farming because of drouthiness. Fertilizer nutrients are leached away by rapidly percolating water. The hazard of erosion is slight. Conservation management includes irrigation, frequent applications of fertilizer, and use of cover crops.

Trees grow slowly on this soil. Productivity is low. Important tree species are eastern white pine and northern red oak.

The soil has few limitations for most urban use. The slope is a limitation for small commercial buildings. Establishing lawns is generally difficult because of drouthiness. Limitations are slight for septic tank filter fields, but very rapid permeability of the substratum is a limitation for most other sanitary waste disposal facilities. Capability subclass IIIs.

HfC—Hinckley sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping or rolling, and excessively drained. It is on glacial outwash deposits. Slopes are 50 to 200 feet long. The mapped areas are irregular in shape and are 5 to 50 acres in size.

Typically, the surface layer is very friable, very dark brown sandy loam about 1 inch thick. The subsoil is very friable and is 19 inches thick. It is dark yellowish brown sandy loam in the upper 3 inches and yellowish brown gravelly loamy sand in the lower 16 inches. The substratum to a depth of 61 inches is loose and is olive colored. It is very gravelly sand in the upper 12 inches and is very gravelly coarse sand below this.

Included with this soil in mapping are areas of Wareham and Deerfield soils that are generally less than 4 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low. Reaction ranges from extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has poor potential for farming. It has fair potential for most urban use and poor potential for most sanitary waste disposal facilities. The soil has poor potential for trees and for wildlife habitat. Most acreage is in low quality woodland. Some acreage is in homesites.

The soil is poorly suited to farming because of drouthiness. Fertilizer nutrients are leached away by rapidly percolating water. The hazard of erosion is moderate. Conservation management includes irrigation, frequent application of fertilizer, and use of cover crops.

Trees grow slowly on this soil. Productivity is low. Important tree species are eastern white pine and northern red oak.

The soil is limited for most urban use because of slope. Sidewall instability limits shallow excavations. Establishing lawns is generally difficult because of drouthiness. The slope is a limitation to septic tank filter fields. Very rapid permeability of the substratum is a limitation for most other sanitary waste disposal facilities. Capability subclass IVs.

HfD—Hinckley sandy loam, 15 to 25 percent slopes. This soil is deep, moderately steep or hilly, and excessively drained. It is on glacial outwash deposits. Slopes are 50 to 200 feet long. The mapped areas are irregular in shape and are 10 to 60 acres in size.

Typically, the surface layer is very friable, very dark brown sandy loam about 1 inch thick. The subsoil is very friable and is 17 inches thick. It is dark yellowish brown sandy loam in the upper 3 inches and yellowish brown gravelly loamy sand in the lower 14 inches. The substratum to a depth of 61 inches is loose and is olive colored. It is very gravelly sand in the upper 10 inches and is very gravelly coarse sand below this.

Included with this soil in mapping are areas of Windsor soil that are generally less than 3 acres in size. Also included are small wet areas of soil in depressions and at the base of slopes. These areas are shown on the map by wet spot symbols. Included soils make up about 15 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low. Reaction ranges from extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, trees, and wildlife habitat. Most acreage is in low quality woodland.

The soil is poorly suited to farming because of drouthiness and moderately steep slopes. Fertilizer nutrients are leached away by rapidly percolating water. The hazard of erosion is moderately severe. Conservation management includes irrigation, frequent application of fertilizer, and use of cover crops.

Trees grow slowly on this soil. Productivity is low. Slope limits use of equipment. Important tree species are eastern white pine and northern red oak.

The soil is limited for urban use because of slope. Very rapid permeability of the substratum is a limitation for sanitary waste disposal facilities. Capability subclass VIs.

HfE—Hinckley sandy loam, 25 to 35 percent slopes. This soil is deep, steep, and excessively drained. It is on glacial outwash deposits. Slopes are 50 to 200 feet long. The mapped areas are irregular or serpentine in shape and are 10 to 30 acres in size.

Typically, the surface layer is very friable, very dark brown sandy loam about 1 inch thick. The subsoil is very friable and is 16 inches thick. It is dark yellowish brown sandy loam in the upper 2 inches and yellowish brown gravelly loamy sand in the lower 14 inches. The substratum to a depth of 61 inches is loose and is olive colored. It is very gravelly sand in the upper 10 inches and is very gravelly coarse sand below this.

Included with this soil in mapping are areas of Windsor soil that are generally less than 1 acre in size. Also included are small wet areas of soil in depressions and at the base of slopes. These areas are shown on the map by wet spot symbols. Included soils make up about 15 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low. Reaction ranges from extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, trees, and wildlife habitat. Most acreage is in low quality woodland.

The soil is not suited to farming because of drouthiness and steepness. Fertilizer nutrients are leached away by rapidly percolating water. The hazard of erosion is severe.

Trees grow slowly on this soil. Productivity is low. Slope limits use of equipment. Important tree species are eastern white pine and northern red oak.

The soil is limited for urban use because of slope. Very rapid permeability of the substratum is a limitation for sanitary waste disposal facilities. Capability subclass VIIs.

HsB—Hinckley very stony sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping and undulating, and excessively drained. It is on glacial outwash deposits. Slopes are 100 to 400 feet long. Stones are on the surface 20 to 50 feet apart. The mapped areas are irregular in shape and are 5 to 20 acres in size.

Typically, the surface layer is very friable, very dark brown sandy loam about 1 inch thick. The subsoil is very friable and is 21 inches thick. It is dark yellowish brown sandy loam in the upper 3 inches and yellowish brown gravelly loamy sand in the lower 18 inches. The substratum to a depth of 61 inches is loose and is olive colored. It is gravelly sand in the upper 10 inches and is very gravelly coarse sand below this.

Included with this soil in mapping are areas of Windsor and Merrimac soils that are generally less than 3 acres in size. Included soils make up about 15 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low. Reaction ranges from extremely acid to medium acid. The

root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has poor potential for farming. It has fair potential for most urban use and poor potential for most sanitary waste disposal facilities. The soil has poor potential for trees and for wildlife habitat. Most acreage is in low quality woodland. Some acreage is used for homesites.

The soil is poorly suited to farming. It is drouthy and stones are on the surface.

Trees grow slowly on this soil. Productivity is low. Important tree species are eastern white pine and northern red oak.

The soil has limitations for most urban use because of stones on the surface and slope. Sidewall instability limits shallow excavations. Establishing lawns is generally difficult because of drouthiness. Rapid permeability of the substratum is a limitation for most sanitary waste disposal facilities. Capability subclass VIs.

HsC—Hinckley very stony sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping or rolling, and excessively drained. It is on glacial outwash deposits. Slopes are 50 to 200 feet long. Stones are on the surface 20 to 50 feet apart. The mapped areas are irregular in shape and are 5 to 40 acres in size.

Typically, the surface layer is very friable, very dark brown sandy loam about 1 inch thick. The subsoil is very friable, and is 19 inches thick. It is dark yellowish brown sandy loam in the upper 3 inches and yellowish brown gravelly loamy sand in the lower 16 inches. The substratum to a depth of 61 inches is loose and is olive colored. It is very gravelly sand in the upper 10 inches and is very gravelly coarse sand below this.

Included with this soil in mapping are areas of Wareham and Deerfield soils that are generally less than 3 acres in size. Included soils make up about 15 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low. Reaction ranges from extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has poor potential for farming. It has fair or poor potential for urban use. It has poor potential for most sanitary waste disposal facilities, for trees, and for wildlife habitat. Most acreage is in low quality woodland.

The soil is poorly suited to farming. It is drouthy and stones are on the surface.

Trees grow slowly on this soil, and productivity is low. Important tree species are eastern white pine and northern red oak.

The soil has limitations for most urban use because of surface stones and slope. Sidewall instability is a limitation for shallow excavations. Establishing lawns is generally difficult because of drouthiness. Rapid permeability of the substratum is a limitation for most sanitary waste disposal facilities. Capability subclass VIs.

MB—Medisaprists, sandy surface. These soils are nearly level and very poorly drained. They consist of deposits of organic material that have been modified for the production of cranberries by the addition of thin layers of sand to the surface of the organic material. The mapped areas range from 5 to 80 acres in size.

The soil consists of about 6 inches of coarse sand overlying 16 inches to 10 feet or more of black to very dark grayish brown or reddish brown, partly decomposed organic material. The layers vary in color, thickness, and composition.

Included with these soils in mapping are areas of soils in which the thin sand layer overlies mineral material or organic material that is less than 16 inches thick. Included soils make up about 25 percent of the map unit.

Permeability is moderately slow to rapid, and available water capacity is high. The water table is controlled. Reaction ranges from extremely acid to slightly acid.

These soils have poor potential for farming, urban use, sanitary waste disposal facilities, and trees. They have good potential for wetland wildlife habitat.

The soils are well suited to cranberries. They are unsuited to cultivated crops, hay, and pasture because of the high water table and low bearing strength.

The soils are unsuited to most trees because of the high water table. They are suited to red maple.

The soils are limited for urban use and for sanitary waste disposal facilities. Limitations are the high water table and hazard of flooding. Capability subclass VIIw.

MC—Medisaprists, deep. These soils are nearly level and very poorly drained. They consist of deposits of organic material in depressions. The mapped areas range from 5 to 500 acres in size.

The soil extends to a depth of 60 inches. It consists of layers of black to very dark grayish brown or reddish brown, partly decomposed organic matter that varies in color, thickness, and composition. The depth to mineral material ranges from 30 inches to more than 10 feet.

Included with these soils in mapping are areas of Whitman, Scarboro, and Birdsall soils and Medisaprists, shallow, that are generally less than 4 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is moderate to rapid, and available water capacity is high. The root zone is restricted by a high water table that is at or near the surface more than 9 months of the year. Soil reaction ranges from extremely acid to strongly acid.

These soils have poor potential for farming, urban use, sanitary waste disposal facilities, and commercial trees. They have good potential for wetland wildlife habitat. Most acreage is in poor quality woodland; however, some acreage is in stands of Atlantic white cedar.

The soils are not suited to cultivated crops, hay, and pasture. They have a high water table.

The soils are not suited to commercial hardwood trees because of the high water table. They are suited to Atlantic white cedar.

The soils are limited for urban use and sanitary waste disposal facilities. Limitations are the high water table, hazard of flooding, and low bearing strength. Capability subclass VIIw.

MD—Medisaprists, shallow. These soils are nearly level and very poorly drained. They consist of deposits of organic material in depressions. The mapped areas range from 5 to 100 acres in size.

The soil extends to a depth of 30 inches. It consists of layers of black to very dark grayish brown or reddish brown partly decomposed organic material that varies in color, thickness, and composition. Depth to mineral material ranges from 16 to 30 inches.

Included with these soils in mapping are areas of Whitman, Scarboro, and Birdsall soils and Medisaprists, deep, that are generally less than 4 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is moderate to rapid, and available water capacity is high. The root zone is restricted by a high water table which is at or near the surface more than 9 months of the year. Reaction ranges from extremely acid to strongly acid.

These soils have poor potential for farming, urban use, sanitary waste disposal facilities, and commercial trees. They have good potential for wetland wildlife habitat. Most acreage is in poor quality woodland.

The soils are not suited to cultivated crops, hay, and pasture. They have a high water table.

The soils are not suited to commercial trees because of the high water table. Some areas of soil support stands of Atlantic white cedar.

The soils are limited for urban use and for sanitary waste disposal facilities. Limitations are the high water table, hazard of flooding, and low bearing strength. Capability subclass VIIw.

MeA—Merrimac fine sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and somewhat excessively drained. It is on glacial outwash plains. Slopes are smooth or very gently undulating and are generally 300 to 600 feet long. The mapped areas are irregular in shape and are from 5 to 50 acres in size.

Typically, the surface layer is very friable, black fine sandy loam about 2 inches thick. The subsoil is very friable, fine sandy loam that is dark brown in the upper 2 inches and dark yellowish brown in the lower 20 inches. The substratum to a depth of 61 inches is loose and is light olive brown. It is very gravelly coarse sand in the upper 18 inches and is gravelly coarse sand in the lower 19 inches.

Included with these soils in mapping are areas of Hinckley and Sudbury soils that are generally less than 3 acres in size. Also included are areas of soils that have stones scattered over the surface more than 100 feet apart and areas of Merrimac soil that has sandy loam in the lower part of the subsoil. Included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. Reaction is extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has fair to good potential for farming, and most acreage has been farmed. It has good potential for most urban use, and much of the acreage has been developed for homesites. The soil has poor potential for most sanitary waste disposal facilities. It has good potential for trees and fair potential for openland and woodland wildlife habitat. Some acreage has reverted to or has been planted in trees.

The soil is well suited to cultivated crops, hay, and pasture. Drouthiness is the major concern of management. Good tilth is easily maintained. The hazard of erosion is slight. Conservation management includes water management, improving tilth, and increasing organic-matter content. If this soil is farmed, use of minimum tillage, cover crops, and grasses and legumes in the cropping system improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is suited to trees and has slight limitation for this use. Productivity is moderate. Important species are eastern white pine, red oak, and white oak.

The soil has few limitations for most urban use. Rapid permeability is a limitation for sanitary waste disposal facilities. Capability subclass IIs.

MeB—Merrimac fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and somewhat excessively drained. It is on glacial outwash plains. Slopes are smooth or undulating and are generally 50 to 400 feet long. The mapped areas are irregular in shape and are from 5 to 50 acres in size.

Typically, the surface layer is very friable, black fine sandy loam about 2 inches thick. The subsoil is very friable and is dark brown fine sandy loam in the upper 2 inches and dark yellowish brown fine sandy loam in the lower 19 inches. The substratum to a depth of 61 inches is loose and is light olive brown. It is very gravelly coarse sand in the upper 18 inches and is gravelly coarse sand in the lower 19 inches.

Included with this soil in mapping are areas of Hinckley and Sudbury soils that are generally less than 4 acres in size. Also included are soils that have stones scattered over the surface from 60 to more than 100 feet apart. Included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. Reaction is extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has fair to good potential for farming, and most acreage has been farmed. It has good potential for most urban use, and much acreage has been developed for homesites. This soil has poor potential for most sanitary waste disposal facilities. It has good potential for trees

and fair potential for openland and woodland wildlife habitat. Some acreage has reverted to or has been planted in trees.

The soil is well suited to cultivated crops, hay, and pasture. Drouthiness is the major concern of management. Good tilth is easily maintained. The hazard of erosion is moderate. Conservation management includes water management, controlling erosion, improving tilth, and increasing organic-matter content. If this soil is farmed, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help control erosion, improve tilth, and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is suited to trees and has slight limitation for this use. Productivity is moderate. Important tree species are eastern white pine, red oak, and white oak.

The soil has few limitations for most urban use. Rapid permeability is a limitation for sanitary waste disposal facilities. Capability subclass IIs.

MeC—Merrimac fine sandy loam, 8 to 15 percent slopes. This soil is deep, sloping, and somewhat excessively drained. It is on glacial outwash plains. Slopes are smooth or rolling and are generally 50 to 300 feet long. The mapped areas are irregular in shape and are from 5 to 40 acres in size.

Typically, the surface layer is very friable, black fine sandy loam about 2 inches thick. The subsoil is very friable, dark brown fine sandy loam in the upper 2 inches and very friable, dark yellowish brown fine sandy loam in the lower 17 inches. The substratum to a depth of 61 inches is loose and is light olive brown. It is very gravelly coarse sand in the upper 18 inches and is gravelly coarse sand in the lower 19 inches.

Included with this soil in mapping are areas of Hinckley soil that are generally less than 4 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. Reaction is extremely acid to medium acid. The root zone extends into the loose substratum. Root growth is restricted by lack of moisture.

This soil has fair to good potential for farming, and most acreage is or has been farmed. It has fair potential for most urban use and some acreage has been developed for homesites. This soil has poor potential for most sanitary waste disposal facilities. It has good potential for trees and fair potential for openland and woodland wildlife habitat. Much of the acreage has reverted to or has been planted in trees.

The soil is suited to cultivated crops, hay, and pasture. Erosion is the major concern of management. Drouthiness is also a concern. Good tilth is easily maintained. The hazard of erosion is moderately severe. Conservation management includes controlling erosion, water management, improving tilth, and increasing organic-matter content. If this soil is farmed, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help control erosion, improve tilth, and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is suited to trees and has slight limitation for this use. Productivity is moderate. Important tree species are eastern white pine, red oak, and white oak.

The soil is limited for urban use because of slope. Rapid permeability is a limitation for sanitary waste disposal facilities. Capability subclass IIIe.

Ng—Ninigret fine sandy loam. This soil is deep, nearly level, and moderately well drained. It is on glacial outwash plains. Slopes are smooth or gently undulating and are generally 100 to 500 feet long. The mapped areas are irregular in shape and range from 5 to 25 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 6 inches thick. The subsoil is friable, yellowish brown fine sandy loam and is 17 inches thick. It has yellowish red and pale brown mottles in the lower half. The substratum to a depth of 63 inches is friable, yellowish brown loamy fine sand. It has light brownish gray and reddish yellow mottles in the upper 17 inches and is light brownish gray fine sand below this.

Included with this soil in mapping are areas of Agawam, Sudbury and Windsor soils that are generally less than 4 acres in size. Also included are small areas of Ninigret soil that has slopes as much as 8 percent. Included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. Reaction is very strongly acid or medium acid. The root zone extends into the loose substratum. Root growth is restricted by a seasonal high water table in the lower part of the subsoil.

This soil has good potential for farming, and most acreage has been farmed. It has fair to poor potential for urban use and poor potential for sanitary waste disposal facilities. The soil has good potential for trees and for openland and woodland wildlife habitat. Some areas of soil have been developed for homesites, and some has reverted to or has been planted in trees.

The soil is well suited to cultivated crops although the seasonal high water table generally keeps this soil wet in the early spring and delays farming operations. Good tilth is easily maintained. The hazard of erosion is slight. Artificial drainage is generally not needed for hay and pasture. Conservation management includes installing field drainage if needed, improving tilth, and increasing organic-matter content. If this soil is farmed, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help to reduce runoff. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increases organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees, but only a small acreage is wooded. Limitations are slight for this use, and productivity is high. Important tree species are eastern white pine, red oak, and white oak.

The soil is limited for most urban use because of the seasonal high water table. It has limitations for sanitary waste disposal facilities because of the seasonal high water table and moderately rapid permeability in the substratum. Capability subclass IIw.

PaB—Paxton fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is generally on the tops and upper side slopes of drumloids. Slopes are smooth and slightly convex and are commonly 100 to 300 feet long. The mapped areas are rectangular in shape and 5 to 20 acres in size or are oval in shape and 10 to 30 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 8 inches thick. The subsoil is very friable and is 22 inches thick. The upper 7 inches is yellowish brown fine sandy loam and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is brittle and is olive gray. It is firm, gravelly sandy loam in the upper 10 inches and is very firm, very gravelly sandy loam below this.

Included with this soil in mapping are areas of Woodbridge and Charlton soils that are generally less than 4 acres in size. Also included are areas of soils that have a loamy sand substratum, areas of Paxton soil that has slopes of less than 3 percent, areas of soils that have stones scattered over the surface more than 100 feet apart, and seep spots, which are indicated on the soil map by wet spot symbols. In the vicinity of Attleboro and North Attleboro this Paxton soil has redder color than is typical for the series. Included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The available water capacity is moderate. The root zone extends to a depth of about 30 inches. Root growth is restricted by the very firm substratum. In unlimed areas the soil is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

This soil has good potential for farming, and most acreage has been farmed. It has fair potential for most urban use. This soil has poor potential for most sanitary waste disposal facilities. It has good potential for trees and for openland and woodland wildlife habitat. Some acreage has reverted to or has been planted in trees.

The soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is moderate. Conservation management includes controlling erosion, improving tilth, and increasing organic-matter content. If this soil is farmed, stripcropping, minimum tillage, use of cover crops, and incorporating grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and animal manure into the plow layer helps to improve tilth and organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees but only a small acreage is in woodland. Productivity is moderate. Important tree species include northern red oak and eastern white pine.

The soil is limited for most urban use and for most sanitary waste disposal facilities. Slow or moderately slow permeability and the brief seasonal high water table are limitations. Capability subclass IIe.

PaC—Paxto fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is generally on the upper side slopes of drumlins. Slopes are smooth and slightly convex and are generally 200 to 400 feet long. The mapped areas are rectangular in shape and range from 5 to 15 acres in size, or they are oval in shape and range from 10 to 30 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 8 inches thick. The subsoil is very friable and is 17 inches thick. The upper 7 inches is yellowish brown fine sandy loam and the lower 10 inches is light olive brown sandy loam. The substratum to a depth of 58 inches is firm, brittle, and olive gray. It is firm gravelly sandy loam in the upper 10 inches and is very firm very gravelly sandy loam below this.

Included with this soil in mapping are areas of Paxton soil that has slopes of 15 to 25 percent and is generally less than 3 acres in size. In the vicinity of Attleboro and North Attleboro this Paxton soil has redder color than is typical for the series. Also included are seep spots, which are indicated on the soil map by wet spot symbols. Included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The available water capacity is moderate. The root zone extends to a depth of about 25 inches. Root growth is hampered by the very firm substratum. In unlimed areas the soil is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

This soil has good potential for farming, and most acreage has been farmed. It has fair potential for most urban uses. The soil has poor potential for sanitary waste disposal facilities. It has good potential for trees and openland and woodland wildlife habitat. Some acreage has reverted to or has been planted in trees.

The soil is suited to cultivated crops, orchards, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is moderately severe. Conservation management includes controlling erosion, improving tilth, and increasing organic-matter content. If the soil is farmed, stripcropping, terraces, minimum tillage, use of cover crops, and incorporating grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees, but only a small acreage is in woodland. Productivity is moderate. Important tree species are northern red oak and eastern white pine.

This soil has limitations for most urban use and for most sanitary waste disposal facilities. Slow or moderately slow permeability and a brief seasonal high water table are limitations. Capability subclass IIIe.

PbB—Paxton very stony fine sandy loam, 0 to 8 percent slopes. This soil is deep, nearly level and gently sloping, and well drained. It is generally on the tops and upper side slopes of drumloids. Slopes are smooth and slightly convex and are generally 100 to 300 feet long. Stones are scattered over the surface 20 to 50 feet apart. The mapped areas are oval or irregular in shape and are 20 to 80 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 27 inches thick. The upper 12 inches is yellowish brown fine sandy loam and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is brittle and is olive gray. It is firm, gravelly sandy loam in the upper 10 inches and is very firm, very gravelly sandy loam below this.

Included with this soil in mapping are areas of very stony Woodbridge and Charlton soils that are generally less than 3 acres in size. Also included are areas of Paxton soil that has 0 to 3 percent slopes, and seep spots, which are indicated on the soil map by wet spot symbols. In the vicinity of Attleboro and North Attleboro this Paxton soil has redder color than is typical for the series. Included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The available water capacity is moderate. The root zone extends to a depth of about 30 inches. Root growth is restricted by the very firm substratum. Reaction is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

This soil has poor potential for farming. It is mainly in unimproved pasture. It has fair potential for most urban use, and poor potential for sanitary waste disposal facilities. Some acreage is in homesites. The soil has good potential for trees and for woodland wildlife habitat. Most acreage is in woodland.

The soil is unsuited to cultivated crops because of stones on the surface. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees. Productivity is moderate. Important tree species are red oak and eastern white pine.

The soil has limitations for most urban use and for most sanitary waste disposal facilities. Moderately slow or slow permeability, large stones, and a brief high water table are limitations. Capability subclass VIs.

PbC—Paxton very stony fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is generally on side slopes of drumloids. Slopes are smooth and convex, and are generally 200 to 400 feet long. Stones are scattered over the surface 20 to 50 feet apart. The mapped areas are irregularly shaped and are 10 to 40 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 27 inches thick. The upper 12 inches of the subsoil is yellowish brown fine sandy loam and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is brittle and is olive gray. It is firm, gravelly sandy loam in the upper 10 inches and is very firm, very gravelly sandy loam below this.

Included with this soil in mapping are areas of Paxton soil that has 15 to 20 percent slopes and is generally less than 3 acres in size. Also included are seep spots and widely scattered outcrops of rock. They are indicated on the soil map by wet spot or rock outcrop symbols. In the vicinity of Attleboro and North Attleboro this Paxton soil has redder color than is typical for the series. Included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The available water capacity is moderate. The root zone extends to a depth of about 27 inches. Root growth is hampered by the very firm substratum. Reaction is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

This soil is poorly suited to farming. It is mainly in unimproved pasture. It has fair potential for most urban use and poor potential for most sanitary waste disposal facilities. This soil has good potential for trees and for woodland wildlife habitat. Most acreage is in woodland.

The soil is not suited to cultivated crops because of stones on the surface. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees. Productivity is moderate. Important tree species are northern red oak and eastern white pine.

The soil has limitations for most urban use and for most sanitary waste disposal facilities. Moderately slow or slow permeability, large stones, and a brief high water table are limitations. Capability subclass VIs.

PbD—Paxton very stony fine sandy loam, 15 to 25 percent slopes. This soil is deep, moderately steep, and well drained. It is generally on side slopes of drumloids. Slopes are smooth and convex and are commonly 100 to 300 feet long. Stones are scattered over the surface 20 to 50 feet apart. The mapped areas are irregular in shape and are 5 to 10 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 22 inches thick. The upper 9 inches of the subsoil is yellowish brown fine sandy loam, and the lower 13 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is brittle and is olive gray. It is

firm, gravelly sandy loam in the upper 10 inches and is very firm, very gravelly sandy loam below this.

Included with this soil in mapping are areas of very stony Charlton soil that are generally less than 4 acres in size. Also included are seep spots and widely scattered outcrops of rock, which are indicated on the soil map by spot symbols, and areas of extremely stony Paxton and Charlton soils. In the vicinity of Attleboro and North Attleboro this Paxton soil has redder color than is typical for the series. Included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The available water capacity is moderate. The root zone extends to a depth of about 24 inches. Root growth is restricted by the very firm substratum. Reaction is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

This soil is poorly suited for farming. The chief farm use is unimproved pasture. This soil has poor potential for urban use and sanitary waste disposal facilities. It has good potential for trees and for woodland wildlife habitat. Most acreage is in woodland.

The soil is unsuited to cultivated crops because of stones on the surface. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees. It has moderate limitation for the use of equipment. Productivity is moderate. Important tree species are northern red oak and eastern white pine.

The soil is limited for urban use and for most sanitary waste disposal facilities. The moderately steep slope is a limitation. Capability subclass VIs.

PcB—Paxton extremely stony fine sandy loam, 0 to 8 percent slopes. This soil is deep, nearly level and gently sloping, and well drained. It is generally on the tops and upper side slopes of drumloids. Slopes are smooth and slightly convex and are commonly 100 to 300 feet long. Stones are scattered over the surface 5 to 20 feet apart. The mapped areas are oval in shape and are 30 to 75 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 27 inches thick. The upper 12 inches of the subsoil is yellowish brown fine sandy loam, and the lower 15 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is brittle and is olive gray. It is firm, gravelly sandy loam in the upper 10 inches and is very firm, very gravelly sandy loam below this.

Included with this soil in mapping are areas of extremely stony Woodbridge soils that are generally less than 4 acres in size. Also included are areas of Paxton soil that has 0 to 3 percent slopes, and widely scattered outcrops of rock and seep spots which are indicated on the soil map by spot symbols. In the vicinity of Attleboro and North Attleboro this Paxton soil has redder color than is typical for the series. Included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The available water capacity is moderate. The root zone extends to a depth of about 30 inches. Root growth is restricted by the very firm substratum. Reaction is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

This soil has poor potential for farming, urban use, and sanitary waste disposal facilities. It has good potential for trees and fair potential for woodland wildlife habitat. Most acreage is in woodland.

The soil is unsuited to cultivated crops, hay, and pasture. Stones are on the surface.

The soil is well suited to trees. It has moderate limitations for the use of equipment. Productivity is moderate. Important tree species are northern red oak and eastern white pine.

The soil has limitations for urban use and for sanitary waste disposal facilities. Large stones, moderately slow or slow permeability, and a brief seasonal high water table are limitations. Capability subclass VIIs.

PcC—Paxton extremely stony fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is generally on side slopes of drumloids. Slopes are smooth and convex and are commonly 200 to 400 feet long. Stones are scattered over the surface 5 to 20 feet apart. The mapped areas are irregularly shaped and are 10 to 40 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 3 inches thick. The subsoil is very friable and is 25 inches thick. The upper 11 inches of the subsoil is yellowish brown fine sandy loam, and the lower 14 inches is light olive brown sandy loam. The substratum to a depth of 57 inches is brittle and is olive gray. It is firm, gravelly sandy loam in the upper 10 inches and is very firm, very gravelly sandy loam below this.

Included with this soil in mapping are areas of extremely stony Woodbridge soil that are generally less than 4 acres in size. Also included are seep spots and widely scattered outcrops of rock that are indicated on the soil map by spot symbols. In the vicinity of Attleboro and North Attleboro this Paxton soil has redder color than is typical for the series. Included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The available water capacity is moderate. The root zone extends to a depth of about 27 inches. Root growth is restricted by the firm substratum. Reaction is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

This soil has poor potential for farming, urban use, and sanitary waste disposal facilities. It has good potential for trees and fair potential for woodland wildlife habitat. Most acreage is in woodland.

The soil is unsuited to cultivated crops, hay, and pasture. Stones are on the surface.

The soil is well suited to trees. It has moderate limitations for the use of equipment. Productivity is moderate. Important tree species are northern red oak and eastern white pine.

The soil has limitations for urban use and for sanitary waste disposal facilities. Large stones, moderately slow or slow permeability, and a brief seasonal high water table are limitations. Capability subclass VIIs.

Pe—Pipestone loamy fine sand. This soil is deep, nearly level, and somewhat poorly drained. It is on sandy glacial outwash. Slopes are smooth or very gently undulating and are generally 100 to 400 feet long. The mapped areas are irregular in shape and are from 5 to 25 acres in size.

Typically, the surface layer is friable, black loamy fine sand in the upper 4 inches and loose, mottled grayish brown fine sand in the lower 4 inches. The subsoil extends to a depth of 23 inches, and is friable, dark reddish brown fine sand in the upper 7 inches and loose, mottled, dark yellowish brown fine sand in the lower 8 inches. The substratum to a depth of 60 inches is loose, mottled, light olive brown fine sand.

Included with this soil in mapping are areas of Deerfield, Wareham, and Scarboro soils that are generally less than 3 acres in size. Also included are areas of soil in which the dark reddish brown subsoil is cemented. Included soils make up about 20 percent of the map unit.

Permeability is rapid in the subsoil and very rapid in the substratum, and available water capacity is low. Soil reaction ranges from extremely acid to strongly acid in the upper part of the profile and from very strongly acid to medium acid in the lower part and in the substratum. The root zone extends to a depth of about 20 inches. Root growth is restricted by a seasonal high water table which is at or near the surface 7 to 9 months of the year and by drouthiness in summer and early in fall when the water table drops.

This soil has fair to poor potential for farming. The main farm use is unimproved pasture. The soil has poor potential for urban use and for sanitary waste disposal facilities. It has fair to poor potential for trees and poor potential for wildlife habitat. Most acreage is wooded.

The soil is poorly suited to cultivated crops, hay, and pasture because of the seasonal high water table. The hazard of erosion is slight. The main concern of management is wetness. Conservation management includes providing field drainage, improving tilth, and increasing organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are pasture management practices that help to maintain desirable plant species.

The seasonal high water table is a major concern in tree productivity. It imposes limitations on equipment use and seedling growth. Important tree species are eastern white pine and red maple.

The seasonal high water table is a limitation for most urban use and for sanitary waste disposal facilities. Rapid percolation is a limitation for sanitary landfills. Capability subclass IVw.

Pg—Pits, gravel. Pits, gravel, are mostly excavations in gravelly and sandy glacial outwash, but some excavations are in loose, sandy glacial till. They are commonly irregular in shape, depending on the nature of the deposits and ownership boundaries. The pits range from 2 to 100 acres or more in size.

The pits were created when gravel was removed for construction purposes. They are 3 to 50 feet deep. The sides are generally steep and the floor is commonly nearly level. Piles of stones and boulders are generally scattered over the pit floor.

Included in mapping are small pools of water in some of the pits, and pits from which the loamy material was removed. Permeability varies but generally ranges from moderately rapid to very rapid. The pits are drouthy because of the low available water capacity. They are commonly devoid of vegetation, but some older pits support scattered bushes, grass, and annual forbs.

The potential ranges from good to poor for urban and recreational use. Onsite investigation needs to be made and each site considered individually. The potential is poor for farming, sanitary waste disposal facilities, and woodland. It is generally poor for wildlife habitat, but some birds prefer nesting in these areas.

Pits, gravel, are poorly suited to farming and woodland. The available water is very low.

The pits have limitations for most urban and recreational use. Possible pollution of ground water is a limitation for sanitary waste disposal. Capability subclass not assigned.

Ra—Raynham silt loam. This soil is deep, nearly level, and poorly drained. It is in low areas and depressions near large streams. Slopes are smooth and concave. The mapped areas are irregular in shape and range from 5 to 50 acres in size.

Typically, the surface layer is friable, dark grayish brown silt loam about 4 inches thick. The subsoil is friable silt loam and is 19 inches thick. It is yellowish brown and has dark yellowish brown and light olive gray mottles in the upper 9 inches and is grayish brown and has yellowish brown and brownish yellow mottles in the lower 10 inches. The substratum to a depth of 60 inches is friable, light brownish gray silt loam that has reddish brown and dark reddish brown mottles.

Included with this soil in mapping are areas of Scio, Birdsall, Walpole Variant, and Amostown soils that are generally less than 4 acres in size. Included soils make up about 20 to 30 percent of the map unit.

Permeability is moderately slow or moderate in the subsoil and slow in the substratum. Available water capacity is high. Reaction is very strongly acid or strongly acid in the subsoil, and strongly acid in the substratum. The root zone extends to the substratum, but root growth is impeded by the seasonal high water table. The water table is at or near the surface 6 to 8 months of the year.

This soil has fair potential for farming. It has poor potential for urban use and for most sanitary waste disposal facilities. This soil has fair to poor potential for trees, and fair potential for wetland wildlife habitat. Most acreage is in woodland.

The soil is poorly suited to cultivated crops. It is better suited to hay and improved pasture. Wetness is the main limitation. The hazard of erosion is slight. Conservation management includes installing field drainage systems if outlets are available, improving soil tilth, and maintaining organic-matter content. If this soil is cultivated, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is limited for most management practices used in the growing and harvesting of trees because of the seasonal high water table. Productivity is moderate. Important tree species are eastern white pine and red maple.

The soil has limitations for most urban use and for sanitary waste disposal facilities. The high water table and slow permeability are limitations. Capability subclass IIIw.

RdA—Ridgebury fine sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and poorly drained. It is in depressions and along drainageways in the uplands. Slopes are smooth and concave. The mapped areas are irregular in shape and are generally 5 to 30 acres in size.

Typically, the surface layer is very friable, very dark gray fine sandy loam about 3 inches thick. The subsoil is about 17 inches thick. It is friable, grayish brown fine sandy loam that has yellowish brown, strong brown and brownish gray mottles. The substratum to a depth of 60 inches is very firm, olive gray gravelly sandy loam that has gray, strong brown, yellowish brown, yellowish red, and light olive gray mottles.

Included with this soil in mapping are areas of Woodbridge and Whitman soils that are generally less than 4 acres in size. Also included are areas of soils in which the substratum is gravelly loamy sand. Included soils make up about 15 percent of the map unit.

Permeability is moderate to moderately rapid in the surface layer and subsoil, and slow in the substratum. Available water capacity is low. Reaction ranges from very strongly acid to medium acid. The root zone extends to the substratum, but root growth is impeded by the seasonal high water table. The high water table is at or near the surface 6 to 8 months of the year.

This soil has fair potential for farming. It has poor potential for urban use, sanitary waste disposal facilities, and for trees. This soil has good to fair potential for wetland wildlife habitat. Most acreage is in hay or pasture, but some areas of soils are in cultivated crops. The rest of the acreage has been abandoned and is growing up in brush.

The soil is limited for cultivated crops, hay, and improved pasture because the seasonal high water table keeps the soil saturated through late spring. The hazard of erosion is slight. Conservation management includes installing field drains where feasible, proper timing of farming operations, and use of adapted plant species. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants. Keeping livestock from pasture when the soil is saturated increases production and helps prevent cutting the sod.

The soil is limited for most management practices used in the growing and harvesting of trees because of the seasonal high water table. Productivity is moderate. An important tree species is eastern white pine.

The soil has limitations for most urban use and for sanitary waste disposal facilities. The high water table and slow permeability are limitations. Capability subclass IIIw.

RdB—Ridgebury fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and poorly drained. It is in depressions and along drainageways in the uplands. Slopes are smooth and concave. The mapped areas are oval or long and narrow in shape and are generally 5 to 15 acres in size.

Typically, the surface layer is very friable, very dark gray fine sandy loam about 3 inches thick. The subsoil is about 15 inches thick. It is friable, grayish brown fine sandy loam that has yellowish brown, strong brown, and brownish gray mottles. The substratum to a depth of 60 inches is very firm, olive gray gravelly sandy loam that has gray, strong brown, yellowish brown, yellowish red, and light olive gray mottles.

Included with this soil in mapping are areas of Woodbridge and Whitman soils that are generally less than 3 acres in size. Also included are areas of soils in which the substratum is gravelly loamy sand. These included soils make up about 15 percent of the map unit.

Permeability is moderate to moderately rapid in the surface layer and subsoil, and slow in the substratum. Available water capacity is low. Reaction ranges from very strongly acid to medium acid. The root zone extends to the substratum, but root growth is impeded by the seasonal high water table. The high water table is at or near the surface 6 to 8 months of the year.

This soil has fair potential for farming. It has poor potential for urban use, sanitary waste disposal facilities, and for trees. The soil has fair potential for openland and woodland wildlife habitat. Most acreage is in hay or pasture, but some areas of soil are in cultivated crops. The remaining acreage has been abandoned and is growing up in brush.

The soil is limited for cultivated crops, hay, and improved pasture because the seasonal high water table keeps the soil saturated through late in spring. The hazard of erosion is moderate. Conservation management includes installing field drains where feasible, proper timing of farming operations, controlling erosion, and using

adapted species. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species. Keeping livestock from pasture when the soil is saturated increases production and helps prevent cutting the sod.

The soil is limited for most management practices used in growing and harvesting trees because of the seasonal high water table. Productivity is moderate. An important tree species is eastern white pine.

The soil has limitations for most urban use and for sanitary waste disposal facilities. The high water table and slow permeability are limitations. Capability subclass IIIw.

ReA—Ridgebury extremely stony fine sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and poorly drained. It is in depressions and along drainageways in the uplands. Slopes are smooth and concave. The mapped areas are oval or long and narrow in shape and are generally 5 to 50 acres in size. Stones are scattered over the surface 5 to 20 feet apart.

Typically, the surface layer is very friable, very dark gray fine sandy loam about 3 inches thick. The subsoil is about 17 inches thick. It is friable, grayish brown fine sandy loam that has yellowish brown, strong brown, and brownish gray mottles. The substratum to a depth of 60 inches is very firm olive gray gravelly sandy loam that has gray, strong brown, yellowish brown, yellowish red, and light olive gray mottles.

Included with the soil in mapping are areas of extremely stony Woodbridge and Whitman soils that are generally less than 4 acres in size. Also included in mapping are areas of soils that have a gravelly loamy sand substratum. The included soils make up about 15 percent of the map unit.

Permeability is moderate to moderately rapid in the surface layer and subsoil, and slow in the substratum. Available water capacity is low. Reaction ranges from very strongly acid to medium acid. The root zone extends to the substratum, but root growth is impeded by a seasonal high water table that is at or near the surface 6 to 8 months of the year.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, and trees. It has fair potential for wetland wildlife habitat. Most is in woodland.

The soil has limitations for farming because of the seasonal high water table and stones on the surface.

The soil has limitations for most management practices used in the growing and harvesting of trees because of the seasonal high water table and stones on the surface. Important tree species are eastern white pine and red maple.

The soil has limitations for most urban use and for sanitary waste disposal facilities because of the seasonal high water table, slow permeability and stones on the surface. Capability subclass VIIs.

ReB—Ridgebury extremely stony fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and poorly drained. It is in depressions and along drainageways on uplands. Slopes are smooth and concave. The mapped areas are oval or long and narrow in shape and are generally 5 to 30 acres in size. Stones are scattered over the surface 5 to 20 feet apart.

Typically, the surface layer is very friable, very dark gray fine sandy loam about 3 inches thick. The subsoil is about 17 inches thick. It is friable, grayish brown fine sandy loam that has yellowish brown, strong brown, and brownish gray mottles. The substratum to a depth of 60 inches is very firm olive gray gravelly sandy loam that has gray, strong brown, yellowish brown, yellowish red, and light olive gray mottles.

Included with this soil in mapping are areas of extremely stony Woodbridge and Whitman soils that are generally less that 4 acres in size. Also included are areas of soils in which the substratum is gravelly loamy sand. Some drainageways are paved with stones. The included soils make up about 15 percent of the map unit.

Permeability is moderate to moderately rapid in the surface layer and subsoil, and slow in the substratum. Available water capacity is low. Reaction ranges from very strongly acid to medium acid. The root zone extends to the substratum, but root growth is impeded by the seasonal high water table. The high water table is at or near the surface for 6 to 8 months of the year.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, and for trees. It has fair potential for woodland wildlife habitat. Most acreage is in woodland.

The soil is limited for farming. The seasonal high water table and stones on the surface are limitations.

The soil has limitations for most management practices used in the growing and harvesting of trees because of the seasonal high water table and stones on the surface. Important tree species are eastern white pine and red maple.

The soil has limitations for most urban use and for sanitary waste disposal facilities. The seasonal high water table, slow permeability, and stones on the surface are limitations. Capability subclass VIIs.

Sb—Scarboro mucky loamy fine sand. This soil is deep, level or nearly level, and very poorly drained. It is in pockets and depressions on outwash plains. The mapped areas are generally irregular in shape and range from 5 to 40 acres in size.

Typically, about 6 inches of organic material overlies the mineral surface layer. The lower part is almost completely decomposed. The mineral surface layer is black, mucky, loamy fine sand 6 inches thick. The subsurface layer is gray loamy sand about 6 inches thick. The substratum to a depth of 60 inches is mottled, dark grayish brown loamy sand in the upper 18 inches and mottled, dark grayish brown sand in the lower 30 inches.

Included with this soil in mapping are areas of Wareham and Walpole soils that are generally less than 4 acres in size. Also included are areas of soils in which the substratum is massive and very firm in places and areas

of soils in which the substratum is very firm very fine sand or silt loam. Included soils make up about 20 percent of the map unit.

Permeability is rapid, and available water capacity is moderate. Reaction is very strongly acid or medium acid. The root zone is limited by the high water table which is at or near the surface more than 9 months of the year.

This soil is mostly in woodland. Small areas of soil are used for pasture, and some acreage has been drained and is used for cultivated crops. The soil has good potential for wetland wildlife habitat.

The soil is poorly suited to cultivated crops, hay, and pasture. It has a high water table.

The soil is limited for woodland because of the high water table. The water table restricts the root zone and creates a hazard to production of some species. It is also a concern in logging operations.

The soil is limited for urban use and for sanitary waste disposal facilities. The high water table of long duration is a limitation. Capability subclass Vw.

ScA—Scio silt loam, 0 to 3 percent slopes. This soil is deep, nearly level, and moderately well drained. It is near the larger streams. Slopes are smooth or undulating and are generally 200 to 300 feet long. The mapped areas are irregular in shape and range from 5 to 10 acres in size.

Typically, the surface layer is very friable, dark brown silt loam about 8 inches thick. The subsoil is 18 inches thick. It is friable, yellowish brown silt loam in the upper part and firm, mottled, light olive brown silt loam in the lower part. The substratum to a depth of 66 inches is firm, grayish brown silt loam that has many reddish brown mottles.

Included with this soil in mapping are areas of Unadilla and Raynham soils that are generally less than 3 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is moderate in the subsoil. Available water capacity is high. The root zone is restricted by a seasonal high water table. In unlimed areas reaction is very strongly acid to medium acid.

This soil has good potential for farming, and most acreage has been farmed. It has fair or poor potential for urban use and poor potential for sanitary waste disposal facilities. The soil has good potential for trees and for openland and woodland wildlife habitat. Some acreage is in woodland. Some areas of soils are used for homesites.

The soil is suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The seasonal high water table is the major concern of management. The hazard of erosion is slight. Conservation management includes improving tilth, increasing organic-matter content, and installing subsurface drains if needed. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil has few limitations for trees but only a small acreage is in woodland. Productivity is high. Important tree species are eastern white pine and red oak.

The soil has limitations for urban use because of a seasonal high water table and high potential frost action. The seasonal high water table is a limitation for sanitary waste disposal facilities. Capability subclass IIw.

ScB—Scio silt loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and moderately well drained. It is near the larger streams. Slopes are smooth or undulating and are generally 200 to 300 feet long. The mapped areas are irregular in shape and range from 5 to 10 acres in size.

Typically, the surface layer is very friable, dark brown silt loam about 8 inches thick. The subsoil is 18 inches thick. It is friable, yellowish brown silt loam in the upper part and firm, mottled, light olive brown silt loam in the lower part. The substratum to a depth of 66 inches is firm, grayish brown silt loam that has many reddish brown mottles.

Included with this soil in mapping are areas of Unadilla and Raynham soils that are generally less than 3 acres in size. Included soils make up about 20 percent of the map unit.

Permeability is moderate in the subsoil. Available water capacity is high. The root zone is restricted by a seasonal high water table. In unlimed areas reaction is very strongly acid to medium acid.

This soil has good potential for farming and most acreage has been farmed. It has fair to poor potential for urban use and poor potential for sanitary waste disposal facilities. This soil has good potential for trees and for openland and woodland wildlife habitat. Some acreage is in woodland and some areas of soils are in homesites.

The soil is suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is moderate. Conservation management includes controlling erosion, improving tilth, increasing organic-matter content, and installing subsurface drains where needed. If this soil is farmed, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species.

The soil has few limitations for trees, but only a small acreage is wooded. Productivity is high. Important tree species are eastern white pine and red oak.

The soil has limitations for urban use because of a seasonal high water table and high potential frost action. The seasonal high water table is a limitation for sanitary waste disposal facilities. Capability subclass IIw.

StA—Sudbury fine sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and moderately well drained. It is on outwash plains. The mapped areas are irregular in shape and generally range from 5 to 25 acres in size. Slopes are commonly smooth and are 100 to 500 feet long.

Typically, the surface layer is very friable, dark brown fine sandy loam about 6 inches thick. The very friable subsoil is 16 inches thick. In sequence from the top, the upper 4 inches of the subsoil is brown fine sandy loam, the middle 7 inches is yellowish brown fine sandy loam, and the lower 5 inches is yellowish brown gravelly sandy loam that has strong brown and light brownish gray mottles. The mottled substratum to a depth of 60 inches is very friable, light olive brown loamy fine sand in the upper 7 inches; loose, yellowish brown gravelly loamy sand in the next 11 inches; and loose, light olive brown gravelly coarse sand in the lower 20 inches.

Included with this soil in mapping are areas of Merrimac and Walpole soil that are generally less than 4 acres in size. Also included are areas of soils that have a surface layer and subsoil of loamy sand, and areas of soils that are mottled at a depth of between 24 and 40 inches. The included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. Reaction ranges from extremely acid to medium acid. The root zone extends into the substratum. Root growth is restricted by a seasonal high water table which is in the lower part of the subsoil in winter and spring.

This soil has good potential for farming, and most acreage has been farmed. It has poor potential for urban use and for sanitary waste disposal facilities. The soil has good potential for trees and for openland and woodland wildlife habitat. Some areas of soil have been developed for homesites and commercial use, and some acreage has reverted to or has been planted in trees.

The soil is suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is slight. Wetness is the major concern of management. Conservation management includes installing field drains where needed, improving tilth, and increasing organic-matter content. If this soil is farmed, use of cover crops, incorporating grasses and legumes in the cropping system, and mixing crop residue and animal manure into the plow layer help to improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees, but only a small acreage is in woodland. Productivity is moderate. Important tree species are eastern white pine and northern red oak.

The soil has limitations for most urban use and for sanitary waste disposal facilities because of wetness, seepage, and susceptibility to frost action. Capability subclass IIw.

StB—Sudbury fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and moderately well drained. It is on outwash plains. The mapped areas are irregular in shape and generally range from 5 to 25 acres in size. Slopes are commonly smooth and are 100 to 400 feet long.

Typically, the surface layer is very friable, dark brown fine sandy loam about 6 inches thick. The very friable subsoil is 16 inches thick. In sequence from the top, the upper 4 inches of the subsoil is brown fine sandy loam; the next 7 inches is yellowish brown fine sandy loam; and the lower 5 inches is yellowish brown gravelly sandy loam that has strong brown and light brownish gray mottles. The mottled substratum to a depth of 60 inches is very friable, light olive brown loamy fine sand in the upper 7 inches; loose, yellowish brown gravelly loamy sand in the next 11 inches; and loose, light olive brown gravelly coarse sand in the lower 20 inches.

Included with this soil in mapping are areas of Merrimac and Walpole soils that are generally less than 4 acres in size. Also included are areas of soils in which the surface layer and subsoil are loamy sand and areas of soils that are mottled at a depth of between 24 and 40 inches. These included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. Reaction ranges from extremely acid to medium acid. The root zone extends into the substratum, but root growth is restricted by a seasonal high water table which is in the lower part of the subsoil in winter and spring.

This soil has good potential for farming, and most acreage has been farmed. It has poor potential for urban use and for sanitary waste disposal facilities. The soil has good potential for trees and for openland and woodland wildlife habitat. Some areas of soils have been developed for homesites and commercial use, and some acreage has reverted to or has been planted in trees.

The soil is suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is moderate. Wetness is the major concern of management. Conservation management includes installing field drains where needed, controlling erosion, improving tilth, and increasing organic-matter content. If this soil is farmed, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees, but only a small acreage is in woodland. Productivity is moderate. Important tree species are eastern white pine and northern red oak.

The soil has limitations for most urban use and for sanitary waste disposal facilities. Wetness, seepage, and susceptibility to frost action are limitations. Capability subclass IIw.

UD—Udorthents, smoothed. Udorthents, smoothed, consists of areas from which soil material has been excavated, and nearby areas in which this material has been deposited. The original soil material is generally excessively drained to moderately well drained, and ranges

from nearly level to very steep. The mapped areas are elongated along roads, irregular near shopping centers or factories, and rectangular around athletic fields. They range from 4 to 30 acres in size. Depth of excavation and fill ranges from 2 to 20 feet. Texture generally ranges from sand and gravel to fine sandy loam, but in some places it is silt loam. Udorthents, smoothed, have a level or nearly level central part and strongly sloping to very steep margins.

Included in mapping in some places are areas of Urban land that have been altered and obscured by urban works and structures. Also included are places that have been filled with trash that can be very unstable for long periods of time. The inclusions make up about 20 percent of this map unit.

Permeability ranges from slow to very rapid, and available water capacity ranges from high to very low. Gravel and cobblestones are adundant in areas of this map unit that are associated with glacial outwash soils; stones and boulders are abundant in areas that are associated with glacial till soils.

These areas are stable. Some places have structures or impervious material on the level part and vegetation on the slopes. The areas have poor potential for farming, for sanitary waste disposal facilities, and for woodland or wildlife habitat. They are in urban use for roads, highways, schools, shopping centers, and athletic fields.

Because of the variability of these areas, limitations for alternative use can be determined only by onsite inspection. Capability subclass not assigned.

UnA—Unadilla very fine sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and well drained. It is on old lakebed deposits. The mapped areas are irregular in shape and are from 10 to 15 acres in size.

Typically, the surface layer is very friable, dark brown very fine sandy loam about 7 inches thick. The subsoil is very friable, yellowish brown very fine sandy loam about 21 inches thick. The substratum to a depth of 60 inches is very friable, yellowish brown loamy very fine sand.

Included with this soil in mapping are areas of Scio soil less than 4 acres in size. Also included are areas of Agawam and Amostown soils. The included soils make up about 20 percent of the map unit.

Permeability is moderate in the subsoil and slow to rapid in the substratum. Available water capacity is high, and soil reaction is very strongly acid to medium acid unless limed. The root zone extends into the very friable substratum.

This soil has good potential for farming, and most acreage is or has been farmed. It has good potential for most urban use and for sanitary waste disposal facilities. The soil has good potential for trees and for openland and woodland wildlife habitat. Some acreage has been developed for homesites or commercial use.

The soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is slight. Conservation management includes maintaining good fertility, improving tilth, and increasing organic-matter content. If the soil is farmed, the use of minimum tillage, cover crops, and grasses and legumes in the cropping system help maintain good tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees. Productivity is high. Important tree species are eastern white pine and northern red oak.

The soil has few limitations for most urban use and for sanitary waste disposal facilities. Capability class I.

UnB—Unadilla very fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is on old lakebed deposits. Slopes are smooth and are generally 50 to 100 feet long. The mapped areas are irregular in shape and are from 5 to 25 acres in size.

Typically, the surface layer is very friable, dark brown very fine sandy loam about 7 inches thick. The subsoil is very friable, yellowish brown very fine sandy loam about 21 inches thick. The substratum to a depth of 60 inches is very friable, yellowish brown loamy very fine sand.

Included with this soil in mapping are areas of Scio soil that are generally less than 4 acres in size. Also included are areas of Agawam and Amostown soils. The included soils make up about 20 percent of the map unit.

Permeability is moderate in the subsoil and slow to rapid in the substratum. Available water capacity is high. Reaction is very strongly acid to medium acid unless limed. The root zone extends into the very friable substratum.

This soil has good potential for farming, and most acreage has been farmed. It has good potential for most urban use and for sanitary waste disposal facilities. The soil has good potential for trees and for openland and woodland wildlife habitat. Some acreage has been developed for commercial use or for homesites.

The soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained. The hazard of erosion is moderate. Conservation management includes controlling erosion, improving tilth, and increasing organic-matter content. If the soil is farmed, stripcropping, minimum tillage, use of cover crops, and incorporating grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and animal manure into the plow layer helps to improve tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees. Productivity is high. Important tree species are eastern white pine and northern red oak.

The soil has few limitations for most urban use and for sanitary waste disposal facilities. Capability subclass IIe.

Ur—Urban Land. Urban land is so altered or obscured by urban works and structures that identification of soils is not possible. Buildings, industrial areas, paved parking lots, sidewalks, roads, and railroad yards cover most of

the surfaces. The mapped areas of Urban land commonly have sharp angular boundaries and are irregular in shape. Areas vary from 50 to several hundred acres in size.

Included in this map unit on the soil map are some small areas of Paxton, Charlton, Hinckley, Unadilla, Windsor, and Merrimac soils. Also included are some areas of Udorthents, smoothed.

These areas are in urban use. Onsite investigation is needed to solve soil-related problems. Capability subclass not assigned.

Wa—Walpole fine sandy loam. This soil is deep, nearly level, and poorly drained. It is in low areas and depressions on glacial outwash plains. Slopes are smooth and nearly flat and are generally 100 to 600 feet long. The mapped areas are elongated or irregular in shape and are 5 to 60 acres in size.

Typically, the surface layer is very friable, very dark gray fine sandy loam about 3 inches thick. The sandy loam subsoil is 23 inches thick and is mottled. It is very friable and brown in the upper 17 inches and is friable and grayish brown in the lower 6 inches. The substratum to a depth of 60 inches is loose, pale olive gravelly loamy coarse sand that is mottled.

Included with this soil in mapping are areas of Wareham and Scarboro soils that are generally less than 4 acres in size. Also included are areas of gently sloping Walpole soil. The included soils make up 15 percent of the map unit.

Permeability is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. Reaction ranges from very strongly acid to medium acid. The root zone extends into the substratum, but root growth is restricted by a seasonal high water table that is at or near the surface 7 to 9 months of the year.

This soil has fair potential for farming. The main farm use in undrained areas is unimproved pasture. The soil has poor potential for urban use and for sanitary waste disposal facilities. It has fair potential for trees. It has fair potential for openland and woodland wildlife habitat and good potential for wetland wildlife habitat. Most acreage is wooded. Some acreage has been drained and is used for farm crops.

The soil is not suited to cultivated crops, hay, and improved pasture unless it is artificially drained. The seasonal high water table restricts plant growth and limits use of machinery. If suitable outlets are available, the soil is generally easy to drain. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants. Keeping livestock from pastureland when the soil is wet increases pasture and helps to prevent cutting the sod.

The soil is limited for trees. The high water table restricts growth, hinders stand reproduction, and limits use of machinery. Important tree species are eastern white pine and red maple.

The soil has limitations for urban use because of the seasonal high water table and high potential frost action. It has limitations for sanitary waste disposal facilities because of the high water table and rapid permeability in the substratum. Capability subclass IIIw.

Wb—Walpole Variant fine sandy loam. This soil is deep, nearly level, and poorly drained. It is on terraces. Slopes are smooth or very gently undulating and are 100 to 200 feet long. The mapped areas are elongated or irregular in shape and range from 5 to 40 acres in size.

Typically, the surface layer is very friable, black fine sandy loam about 3 inches thick. The subsoil is 25 inches thick. It is very friable, brown fine sandy loam in the upper 9 inches and is friable, light brownish gray fine sandy loam in the lower 16 inches. The subsoil has strong brown, yellowish brown, and light gray mottles. The substratum to a depth of 60 inches is firm, light olive gray loamy very fine sand that has strong brown and light gray mottles.

Included with this soil in mapping are areas of Amostown, Raynham and Birdsall soil that are generally less than 4 acres in size. Also included are areas of soils in which the surface layer and subsoil are loamy sand. The included soils make up about 20 percent of the map unit.

Permeability is moderately rapid in the subsoil and moderate to slow in the substratum. Available water capacity is moderate. Reaction ranges from very strongly acid to strongly acid. The root zone extends into the substratum, but root growth is restricted by a seasonal high water table that is near or at the surface 7 to 9 months of the year.

This soil has fair potential for farming. The main use in undrained areas is for unimproved pasture. The soil has poor potential for urban use and for sanitary waste disposal facilities. It has fair potential for trees. It has fair potential for openland and woodland wildlife habitat and good potential for wetland wildlife habitat. Much of the acreage is wooded, and some acreage is farmed.

The soil is not suited to cultivated crops, hay, and improved pasture unless it is artificially drained. The seasonal high water table restricts plant growth and limits use of machinery. Although suitable outlets are available in places, this soil is generally difficult to drain because of moderately slow permeability in the substratum. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants. Keeping livestock from pastureland when the soil is wet increases pasture production and helps to prevent cutting the sod.

The soil is limited for trees. The seasonal high water table restricts growth, hinders stand reproduction and limits use of machinery. Important tree species are red maple and eastern white pine.

The soil has limitations for urban use because of the seasonal high water table and high potential frost action. It has limitations for sanitary waste disposal facilities because of the seasonal high water table and slow percolation in the substratum. Capability subclass IIIw.

Wc—Wareham loamy sand. This soil is deep, nearly level, and poorly drained. It is on sandy glacial outwash. Slopes are smooth or very gently undulating, and are 100 to 200 feet long. The mapped areas are irregular in shape and range from 5 to 15 acres in size.

Typically, the surface layer is very friable, very dark grayish brown loamy sand about 6 inches thick. The subsoil is loose, loamy coarse sand about 30 inches thick. The upper 10 inches of the subsoil is yellowish brown, and the lower 20 inches is light brownish gray. The subsoil is mottled in yellowish red, strong brown, and light brownish gray. The substratum to a depth of 60 inches is loose, pale olive coarse sand that is mottled in brown and light olive brown.

Included with this soil in mapping are areas of Walpole, Scarboro, and Pipestone soils that are generally less than 4 acres in size. Also included are a few small areas of soils that have gentle slopes, and areas of soils that have a gravelly substratum. The included soils make up about 20 percent of the map unit.

Permeability is rapid, and available water capacity is low. Reaction ranges from strongly acid to extremely acid. The root zone is restricted by a seasonal high water table which is at or near the surface 6 to 8 months of the year.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, and trees. The potential is fair for openland and wetland wildlife habitat. Most acreage is in woodland.

The soil is poorly suited to cultivated crops. It is moderately suited to moisture-tolerant hay and pasture plants. The soil can be drained and used for cropland if suitable outlets are available. Conservation management includes installing field drainage where feasible and appropriate timing of farming operations. Good tilth and organic-matter content are easy to maintain. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species.

The soil has limitations for trees, and productivity is low. Important tree species are red maple and eastern white pine.

The soil has limitations for most urban use and for sanitary waste disposal facilities. The seasonal high water table and rapid permeability are limitations. Capability subclass IVw.

WD—Westbrook mucky peat. This soil is deep, level, and very poorly drained. It is on tidal flats that are subject to inundation twice daily by salt water. The mapped areas are irregular in shape and range from 5 to 80 acres in size.

Typically, the surface layer is dark grayish brown partly decomposed organic material about 24 inches thick. The subsurface layer extends to a depth of 35 inches and is very dark brown organic material that is more decomposed than the surface layer. The substratum to a depth of 60 inches is massive gray silt loam.

Included with this soil in mapping are areas of soils that are located upstream on the rivers. These soils are inundated twice daily by fresh water that is backed up by the incoming tide. Also included are areas of soils that have organic deposits over 5 feet thick, and areas of soils which are underlain by sand. Some soils have less than 16 inches of organic material overlying silt or sand. One area of soils in the town of Dighton has small islands of rock outcrop. Included areas are as much as 10 acres in size. The included soils make up 30 percent of the map unit.

Permeability is moderate to rapid in the organic layers and moderate in the underlying mineral sediment. Reaction ranges from strongly acid to neutral, but acidity increases if the soil is drained.

This soil has poor potential for farming, urban use, and sanitary waste disposal facilities. It has poor potential for trees. The soil has good potential as wetland wildlife habitat for fish, shellfish, and coastal water wildfowl.

The soil is not suited to cultivated crops, hay, pasture, or trees. It is flooded daily with salt water.

The daily flooding is a limitation for most urban use and for sanitary waste disposal facilities. Capability subclass VIIIw.

Wg—Whitman fine sandy loam. This soil is deep, nearly level, and very poorly drained. It is in depressions and low areas on uplands. Slopes are smooth or very gently undulating and are 100 to 400 feet long. The mapped areas range from 5 to 10 acres in size.

Typically, the surface layer is very friable, black fine sandy loam about 8 inches thick. The subsoil is about 9 inches thick and is friable, light gray gravelly sandy loam that has yellowish red mottles. The substratum to a depth of 60 inches is very firm and gray and has strong brown mottles. It is gravelly sandy loam in the upper 14 inches and is gravelly loamy sand below this.

Included with this soil in mapping are areas of Ridgebury soil that are generally less than 4 acres in size. Also included are areas of gently sloping soils and areas of soils that are gravelly loamy sand throughout. The included soils make up about 20 percent of the map unit.

Permeability is moderate to moderately rapid in the surface layer and subsoil, and moderately slow in the substratum. Available water capacity is very low. Reaction is very strongly acid to medium acid. The root zone extends to the firm substratum, but root growth is restricted by a high water table which is at or near the surface for more than 9 months of the year.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, and trees. It has good potential for wetland wildlife habitat. Most acreage is in woodland.

The soil is not suited to cultivated crops, hay, and pasture. It has a seasonal high water table.

The soil is limited for trees because of the high water table. Productivity is low. Important tree species are red maple, and black and yellow birch.

The soil has limitations for urban use and for sanitary waste disposal facilities. The high water table and moderately slow permeability in the substratum are limitations. Capability subclass Vw.

Wh—Whitman extremely stony fine sandy loam. This soil is deep, nearly level, and very poorly drained. It is in depressions and low areas on uplands. Slopes are smooth or very gently undulating and are 100 to 400 feet long. The mapped areas range from 5 to 50 acres in size. Stones and boulders are scattered over the surface less than 20 feet apart.

Typically, the surface layer is very friable, black fine sandy loam about 8 inches thick. The subsoil is about 9 inches thick and is friable, light gray gravelly sandy loam that has yellowish red mottles. The substratum to a depth of 60 inches is very firm and gray and has strong brown mottles. It is gravelly sandy loam in the upper 14 inches and is gravelly loamy sand below this.

Included with this soil in mapping are areas of Ridgebury soil, that are generally less than 4 acres in size. Also included are areas of gently sloping soils and areas of soils that are gravelly loamy sand throughout. These included soils make up about 20 percent of the map unit.

Permeability is moderate to moderately rapid in the surface layer and subsoil, and moderately slow in the substratum. Available water capacity is very low. Reaction is very strongly acid to medium acid. The root zone extends to the firm substratum, but root growth is restricted by a high water table that is at or near the surface for more than 9 months of the year.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, and for trees. It has fair potential for wetland wildlife habitat. Most acreage is in woodland.

The soil is not suited to cultivated crops, hay, and pasture. It has stones on the surface and a seasonal high water table.

The soil has limitations for trees because of stones on the surface and the high water table. Productivity is low. Important tree species include red maple, and black and yellow birch.

The soil has limitations for urban use and for sanitary waste disposal facilities. Stones on the surface, a seasonal high water table, and moderately slow permeability in the substratum are limitations. Capability subclass VIIs.

WnA—Windsor loamy sand, 0 to 3 percent slopes. This soil is deep, nearly level, and excessively drained. It is on glacial outwash plains. The mapped areas are irregular in shape and are 5 to 25 acres in size.

Typically, the surface layer is very friable, dark brown loamy sand about 8 inches thick. The subsoil is 22 inches thick. It is very friable, strong brown loamy sand in the upper 14 inches and loose, yellowish brown sand in the lower 8 inches. The substratum to a depth of 68 inches is loose, light olive brown sand.

Included with this soil in mapping are areas of Hinckley and Deerfield soils, that are generally less than 4 acres in size. Also included are areas of soils that are coarse sand and areas of gently sloping soil. The included soils make up about 15 percent of the map unit.

Permeability is rapid to very rapid, and available water capacity is low. Reaction is very strongly acid or strongly acid. The root zone extends into the loose substratum, but root growth is often restricted by lack of moisture.

This soil has poor potential for farming, but most acreage has been farmed. It has good potential for most urban use, and poor potential for most sanitary waste disposal facilities. This soil has poor potential for trees and for wildlife habitat. Most acreage is farmed. Some acreage is in low quality woodland, and some areas of soil have been developed for homesites or commercial use.

The soil is limited for cultivated crops, hay, and pasture because it is drouthy. It warms up in early spring and is easy to work. Conservation management includes irrigating, maintaining soil tilth, and increasing organic-matter content by mixing crop residue and animal manure into the plow layer. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is limited for trees because of drouthiness. Tree growth and stand reproduction are slow, and productivity is low. Important tree species are eastern white pine, pitch pine, and northern red oak.

The soil has few limitations for most urban use. It has limitations for sanitary landfill use because of rapid permeability. The soil has slight limitation for septic tank filter fields, but the rapid permeability may result in pollution of nearby shallow wells or streams. Capability subclass IIIs.

WnB—Windsor loamy sand, 3 to 8 percent slopes. This soil is deep, gently sloping, and excessively drained. It is on glacial outwash plains. Slopes are smooth and convex and are generally 100 to 300 feet long. The mapped areas are irregular in shape and are 20 to 100 acres in size.

Typically, the surface layer is very friable, dark brown loamy sand about 8 inches thick. The subsoil is 22 inches thick. It is very friable, strong brown loamy sand in the upper 14 inches and is loose, yellowish brown sand in the lower 8 inches. The substratum to a depth of 68 inches is loose, light olive brown sand.

Included with the soil in mapping are areas of Hinckley and Deerfield soils, that are generally less than 4 acres in size. Also included are areas of soils that are coarse sand. The included soils make up about 15 percent of the map unit.

Permeability is rapid to very rapid, and available water capacity is low. Reaction is very strongly acid or strongly acid. The root zone extends into the loose substratum, but root growth is often restricted by lack of moisture.

This soil has poor potential for farming, but most acreage has been farmed. It has good potential for most urban use and poor potential for most sanitary waste disposal facilities. This soil has poor potential for trees and for wildlife habitat. Most acreage is in low quality woodland. Some areas of soils have been developed for homesites or commercial use.

The soil is limited for cultivated crops, hay, and pasture because it is drouthy. It warms up in early spring and is easy to work. Conservation management includes irrigating, maintaining soil tilth, and increasing organic-matter content. If this soil is farmed, minimum tillage, use of cover crops, incorporating grasses and legumes in the cropping system, and mixing crop residue and animal manure into the plow layer help to maintain tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species.

The soil is limited for trees because of drouthiness. Tree growth and stand reproduction are slow, and productivity is low. Important tree species include eastern white pine, pitch pine, and northern red oak.

The soil has few limitations for most urban use. The soil has slight limitation for septic tank filter fields, but rapid permeability may result in the pollution of nearby shallow wells or streams. The rapid permeability is a limitation for sanitary landfill. Capability subclass IIIs.

WnC—Windsor loamy sand, 8 to 15 percent slopes. This soil is deep, moderately sloping, and excessively drained. It is on glacial outwash plains. Slopes are smooth and convex and are generally 100 to 300 feet long. The mapped areas are irregular in shape and are 20 to 75 acres in size.

Typically, the surface layer is very friable, dark brown loamy sand about 6 inches thick. The subsoil is 20 inches thick. It is very friable, strong brown loamy sand in the upper 13 inches and is loose, yellowish brown sand in the lower 7 inches. The substratum to a depth of 68 inches is loose, light olive brown sand.

Included with this soil in mapping are areas of Hinckley, Deerfield, Pipestone, and Wareham soils that are generally smaller than 4 acres in size. Also included are areas of soils that are coarse sand and areas of soils in which the depth to the substratum is less than 20 inches. The included soils make up about 20 percent of the map unit.

Permeability is rapid to very rapid, and available water capacity is low. Reaction is very strongly acid or strongly acid. The root zone extends into the loose substratum, but root growth is often restricted by lack of moisture.

This soil has poor potential for farming, but some acreage has been farmed. It has fair potential for most urban use and poor potential for most sanitary waste disposal facilities. The soil has poor potential for trees and for wildlife habitat. Most acreage is in low quality woodland. Some areas have been developed for homesites.

The soil is limited for cultivated crops, hay, and pasture because of drouthiness. It warms up early in spring and is easy to work. The hazard of erosion is moderate. Conservation management includes irrigating, controlling erosion, maintaining soil tilth, and increasing organic-matter content. If the soil is farmed, stripcropping reduces runoff and helps to control erosion. Mixing crop residue and animal manure into the plow layer help to maintain tilth and increase organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is limited for trees because of drouthiness. Tree growth and stand reproduction are slow, and productivity is low. Important tree species are eastern white pine, red oak, and pitch pine.

The soil is limited for most urban use because of slope. It has limitations for most sanitary waste disposal facilities because of slope and rapid permeability. Capability subclass IVs.

WnD—Windsor loamy sand, 15 to 25 percent slopes. This soil is deep, moderately steep and hilly, and excessively drained. It is on glacial outwash plains. Slopes are smooth and convex and are generally 100 to 200 feet long. The smooth mapped areas are 5 to 30 acres in size, and the hilly areas are 20 to 60 acres in size.

Typically, the surface layer is very friable, dark brown loamy sand about 5 inches thick. The subsoil is 18 inches thick. It is very friable, strong brown loamy sand in the upper 12 inches and is loose, yellowish brown sand in the lower 6 inches. The substratum to a depth of 68 inches is loose, light olive brown sand.

Included with this soil in mapping are areas of Hinckley, Deerfield, Pipestone, and Wareham soils that are generally less than 4 acres in size. Also included are areas of soils that are coarse sand, and areas of soils in which the depth to the substratum is less than 20 inches. The included soils make up about 20 percent of the map unit.

Permeability is rapid to very rapid, and available water capacity is low. Reaction is very strongly acid or strongly acid. The root zone extends into the loose substratum, but root growth is often restricted by lack of moisture.

This soil has poor potential for farming, urban use, sanitary waste disposal facilities, and trees and wildlife habitat. Most acreage is in low quality woodland.

The soil is not suited to cultivated crops, hay, and pasture because of slope and drouthiness. The hazard of erosion is severe.

The soil is limited for trees because of drouthiness. Tree growth and stand reproduction are slow, and productivity is low. Important tree species are eastern white pine, northern red oak, and pitch pine.

The soil is limited for urban use because of slope. It has limitations for sanitary waste disposal facilities because of slope and rapid permeability. Capability subclass VIs.

WrA—Woodbridge fine sandy loam, 0 to 3 percent slopes. This soil is deep, nearly level, and moderately well drained. It is in oval shaped areas on the tops of hills, or in broad flats at lower elevation. The mapped areas range from 5 to 15 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 8 inches thick. The subsoil is very friable sandy loam about 22 inches thick. The upper 8 inches of the subsoil is dark yellowish brown, and the lower 14 inches is yellowish brown and has dark brown and brownish yellow mottles. The substratum to a depth

of 62 inches is very firm, light brownish gray gravelly sandy loam that has yellowish red, brownish yellow, and light olive gray mottles.

Included with this soil in mapping are areas of Ridgebury soil that are generally less than 4 acres in size. Also included are areas of gently sloping soils, and areas of soils that have a loamy sand substratum. The included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and is slow or moderately slow in the substratum. Available water capacity is moderate. The root zone extends to about 30 inches, below which root growth is restricted by the very firm substratum. Reaction is medium acid to very strongly acid. A high water table is within a depth of 3 feet in winter and spring.

This soil has good potential for farming, and most acreage has been farmed. It has poor potential for most urban use and for most sanitary waste disposal facilities. The soil has good potential for trees and openland wildlife habitat, and fair potential for woodland wildlife habitat. Much of the acreage is farmed, but some acreage has been abandoned and has grown up to shrubs and trees.

This soil is suited to cultivated crops, hay, and pasture. The high water table is a concern in spring. Conservation management includes installation of artificial drainage. Mixing crop residue and animal manure into the plow layer improves tilth and increases organic-matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species. Keeping livestock from pasture when the soil is saturated prevents cutting the sod and is a desirable pasture management practice.

The soil is well suited to trees. Productivity is moderate. Important tree species are eastern white pine and northern red oak.

This soil has limitations for urban use because of a seasonal high water table and high potential frost action. It has limitations for sanitary waste disposal facilities because of the moderately slow or slow permeability and the high water table. Capability subclass IIw.

WrB—Woodbridge fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and moderately well drained. It is in rectangular or oval shaped areas on or near the tops of drumloidal hills or in irregularly shaped areas at lower elevations. Slopes are generally smooth and slightly concave and are generally 100 to 400 feet long. The mapped areas range from 5 to 25 acres in size.

Typically, the surface layer is very friable, dark brown fine sandy loam about 8 inches thick. The subsoil is very friable sandy loam about 20 inches thick. The upper 8 inches of the subsoil is dark yellowish brown, and the lower 12 inches is yellowish brown and has dark brown and brownish yellow mottles. The substratum to a depth of 62 inches is very firm, light brownish gray gravelly sandy loam that has yellowish red, brownish yellow, and light olive gray mottles.

Included with this soil in mapping are areas of Ridgebury soil that are generally less than 4 acres in size. Also included in mapping are areas of nearly level soils, and areas of soils that have loamy sand in the substratum. The included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil, and slow or moderately slow in the substratum. Available water capacity is moderate. The root zone extends to a depth of about 28 inches, below which root growth is restricted by the very firm substratum. Reaction ranges from medium acid to very strongly acid. A high water table is within a depth of 3 feet in winter and spring.

This soil has good potential for farming, and much of the acreage has been farmed. It has poor potential for urban use and for sanitary waste disposal facilities. The soil has good potential for trees and for openland wildlife habitat, and fair potential for woodland wildlife habitat. Some acreage has been abandoned and has grown up to shrubs and small trees.

The soil is suited to cultivated crops, hay, and pasture. The high water table is a concern in spring. Conservation management includes artificial drainage if needed, and improving tilth and increasing organic-matter content by mixing crop residue and animal manure into the plow layer. The hazard of erosion is moderate if this soil is cultivated. Proper stocking rates, deferred grazing, and pasture rotation are management practices that maintain desirable pasture plants.

The soil is well suited to trees. Productivity is moderate. Important tree species are eastern white pine and northern red oak.

The soil has limitations for urban use because of the seasonal high water table and high potential frost action. It has limitations for most sanitary waste disposal facilities because of moderately slow or slow permeability and a high water table. Capability subclass IIw.

WsB—Woodbridge very stony fine sandy loam, 0 to 8 percent slopes. This soil is deep, nearly level and gently sloping, and moderately well drained. It is in irregularly shaped areas on hills and is on broad flats at lower elevation. Slopes are generally smooth and slightly concave and are generally 100 to 500 feet long. The mapped areas range from 5 to 50 acres in size. Stones are scattered over the surface 20 to 50 feet apart.

Typically, the surface layer is very friable, dark brown fine sandy loam about 8 inches thick. The subsoil is very friable sandy loam about 22 inches thick. The upper 8 inches of the subsoil is dark yellowish brown, and the lower 14 inches is yellowish brown and has dark brown and brownish yellow mottles. The substratum to a depth of 62 inches is very firm, light brownish gray gravelly sandy loam that has yellowish red, brownish yellow, and light olive gray mottles.

Included with this soil in mapping are areas of Ridgebury soil that are generally less than 4 acres in size. Also included are areas of strongly sloping soils, areas of

soils that have stones on the surface less than 20 feet apart, and areas of soils that have a loamy sand substratum. The included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil, and slow or moderately slow in the substratum. Available water capacity is moderate. The root zone extends to a depth of about 30 inches, below which root growth is restricted by the very firm substratum. Reaction ranges from medium acid to very strongly acid. A high water table is within a depth of 3 feet in winter and spring.

This soil has poor potential for farming. It is mainly in unimproved pasture. It has poor potential for urban use and for sanitary waste disposal facilities. The soil has good potential for trees and fair potential for woodland wildlife habitat. Most acreage is in woodland.

The soil is unsuited to cultivated crops because of stones on the surface. Proper stocking rates, deferred grazing, and pasture rotation are management practices that help to maintain desirable pasture plants.

The soil is well suited to trees. Productivity is moderate. Important tree species are eastern white pine and northern red oak.

The soil has limitations for urban use and for sanitary waste disposal facilities. Moderately slow or slow permeability, the high water table, and high potential frost action are limitations. Capability subclass VIs.

WtB—Woodbridge extremely stony fine sandy loam, 0 to 8 percent slopes. This soil is deep, nearly level and gently sloping, and moderately well drained. It is in oval or irregularly shaped areas on the tops of drumloids or is on broad flats at lower elevation. Slopes are generally smooth and slightly concave and are generally 100 to 600 feet long. The mapped areas range from 5 to 50 acres in size. Stones are scattered over the surface 5 to 20 feet apart.

Typically, the surface layer is very friable, dark brown, fine sandy loam about 3 inches thick. The subsoil is very friable sandy loam about 27 inches thick. The upper 13 inches of the subsoil is dark yellowish brown, and the lower 14 inches is yellowish brown and has dark brown and brownish yellow mottles. The substratum to a depth of 62 inches is very firm, light brownish gray gravelly sandy loam that has yellowish red, brownish yellow, and light olive gray mottles.

Included with these soils in mapping are areas of Ridgebury soil that are generally less than 4 acres in size. Also included are areas of strongly sloping soils, areas of soils that have stones on the surface 20 to 50 feet apart, and areas of soils that have a loamy sand substratum. The included soils make up about 20 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and slow or moderately slow in the substratum. Available water capacity is moderate. Reaction ranges from medium acid to very strongly acid. The root zone extends to a depth of about 30 inches, below which root growth is restricted by the very firm substratum. A high water table is within a depth of 3 feet in winter and spring.

This soil has poor potential for farming, urban use and sanitary waste disposal facilities. It has good potential for trees and fair potential for woodland wildlife habitat. Most acreage is in woodland.

The soil is unsuited to cultivated crops, hay, and pasture because of stones on the surface.

The soil is well suited to trees. Productivity is moderate. Important tree species are eastern white pine and northern red oak.

The soil has limitations for most urban use and for sanitary waste disposal facilities. Moderately slow or slow permeability, a high water table, high potential frost action, and stones on the surface are limitations. Capability subclass VIIs.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank disposal systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops and pasture, rangeland, and woodland, as sites for buildings, highways and other transportation systems, sanitary facilities, and parks and other recreation facilities, and for wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area and on the environment. Productivity and the environment are closely related to the nature of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, and topsoil. Other

information indicates the presence of bedrock, wetness, or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

CHRISTOPHER G. MOUSTAKIS, resource conservationist, Soil Conservation Service, assisted in preparing this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

About 9,800 acres in the survey area are used for crops and pasture (*5*). An estimated 75 percent of this acreage is used for hay and pasture; 20 percent is used for row crops, mainly corn; and 5 percent is used for orchards, vegetables, nursery plants, and cranberries.

The survey area has some potential for increased production of food. Some potentially good cropland is now being used as woodland or pasture, or is idle. Food production could be increased by applying the latest crop production technology to all cropland in the area. This soil survey can greatly facilitate the application of such technology.

Acreage in crops and pasture has steadily declined during the past 50 years. Urban pressure from Boston, Providence, and Fall River, as well as from cities within the survey area, has been an important factor in this decline.

Soil erosion is a major concern on much of the cropland and pastureland in the survey area. Erosion is a hazard on soils where the slope exceeds 3 percent. The nonstony Charlton and Paxton soils, for example, have slopes steeper than 3 percent and are erodible.

Loss of the surface layer through erosion reduces productivity. In addition, part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging in soils that have a restrictive layer in or below the subsoil that limits the depth of the root zone. Examples of such layers are fragipans, as in the Paxton and Woodbridge soils, or bedrock, as in the Charlton-Paxton, rocky, soils.

Erosion of soil in cropland results in sediment entering streams. Control of erosion minimizes the pollution of streams by sediment and improves water quality for municipal use, for recreation, and for fish and wildlife.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps plant cover on the soil for extended periods can hold soil erosion loss to an amount that such loss will not reduce the productive capacity of the soil. On livestock farms, which require pastureland and hayland, the legume and grass forage crops in the cropping system reduce erosion on sloping land and also provide nitrogen and improve tilth for the following crop.

Practices that help control erosion are terracing, stripcropping, and cropping systems. Both field terraces and diversion terraces are effective in erosion control. Many parts of the area have short and irregular slopes that are not suited to terraces. Diversion terraces are effective in intercepting water and protecting fields downslope.

Stripcropping, in which alternate strips of row crops and close growing crops are planted across the slope, is also effective in controlling erosion. Stripcropping is best suited to soils that have long, uniform slopes.

Fields in the survey area that are not suited to other practices can use cropping systems that keep plant cover on the soil for extended periods. Minimum tillage or no tillage of crops that are normally intertilled protects soil from excessive erosion. These systems can be applied to most soils in the area.

Information concerning the design and management of erosion control practices for each kind of soil is available in the local office of the Soil Conservation Service.

A high water table is a major concern for many soils in the survey area. Some soils are naturally so wet that the production of crops common to the area is generally not feasible. Examples of such soils are the very poorly drained Birdsall, Scarboro, Westbrook, and Whitman soils and Medisaprists.

Poorly drained soils are too wet for good crop production during most years. Random tile drainage, drainage ditches, and use of moisture-tolerant crops are effective measures in farming these soils. Such soils are the Pipestone, Raynham, Ridgebury, Wareham, Walpole, and Walpole Variant soils.

Moderately well drained soils cannot be tilled or worked until late in spring or early in summer and are not well suited to early crops. The Amostown, Deerfield, Ninigret, Scio, Sudbury, and Woodbridge soils are in this group.

The design of drainage systems varies, depending on the kind of soil. Information on soil drainage and management of wet soils is available in the local office of the Soil Conservation Service.

Natural fertility is low in the soils of the survey area. The soils are naturally strongly acid or very strongly acid. They require applications of lime to raise the pH level sufficiently for good growth of crops that grow best on slightly acid or nearly neutral soils. Available phosphorus and potash levels are naturally low. Additions of lime and fertilizer should be based on the results of soil tests, on the need of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kind and amount of lime and fertilizer to apply.

Soil tilth is important in the germination of seeds and in the infiltration of water into the soil. Soils that have good tilth are granular and porous.

Many of the soils used for crops in the survey area are light in color and low in content of organic matter. Generally, the surface layer of these soils is granular and has good tilth. Regular additions of crop residue help to maintain soil structure and water infiltration.

Special crops grown commercially in the survey area are cranberries, vegetables, and nursery plants. Cranberries are grown only on very poorly drained organic soils. The most common vegetable crops grown are squash, sweet corn, tomatoes, snap beans, and lettuce (fig. 10).

Deep, friable, soils that have good natural drainage are especially well suited to vegetables and nursery crops. The Charlton, Agawam, and Unadilla soils are in this group. The Hinckley, Merrimac, and Windsor soils that have slopes of less than 8 percent are suited if irrigated.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. A few farmers may be obtaining average yields higher than those shown in table 5.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop (fig. 11). Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

The estimated yields reflect the productive capacity of the soils for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not included because the acreage of these crops is small. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the management concerns and productivity of the soils for these crops.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe (fig. 12). The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony (fig. 13); and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is indicated in table 6. All soils in the survey area except those named at a level higher than the series are included. Some of the soils that are well suited to crops and pasture may be in low-intensity use, for example, soils in capability classes I and II. Data in this table can be used to determine the farming potential of such soils.

Woodland management and productivity

The northern part of Bristol county orginally had a dense cover of trees. Clearing for farming, commercial purposes, and urban uses have eliminated all the virgin stands of timber. In 1968, the area had about 118,000 acres of woodland (*5*) which consisted of stands that had been cut over two, three, or four times. The predominant forest cover is northern hardwoods, mainly upland oaks and red maple.

In urban areas the trees along streets and in parks are valued for esthetic and recreational purposes. They are also important for screening less desirable views, reducing noise, and abating pollution. Maintaining the existing trees in the urban areas and planting others is desirable.

A landowner can encourage growth of desirable trees through woodland management. The financial returns from forest management on many soils justifies the expense involved (fig. 14), if production is good and the market potential and quality of the tree species are acceptable. Some poorly drained soils and soils that are shallow to bedrock produce such slow tree growth that returns will not justify a high level of management. In many areas woodland is the most practical use for soils that are not suited to crops and pasture.

Table 7 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland suitability) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *s*, sandy texture; and *r*, steep slopes. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: x, w, s, and r.

In table 7 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings. Plant competition is not considered in the ratings. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Considered in the ratings of *windthrow hazard* are characteristics of the soil that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate*, that some trees are blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *important trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number

of years. In this survey area, it is 50 years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Engineering

WILLIAM P. ANNABLE, civil engineer, Soil Conservation Service, assisted in preparing this section.

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this information are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers and ranchers.

The ratings in the engineering tables are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 8 shows, for each kind of soil, the degree and kind of limitations for building site development; table 9, for sanitary facilities; and table 11, for water management. Table 10 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

Some of the terms used in this soil survey have a special meaning in soil science. Many of these terms are defined in the Glossary.

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping are indicated in table 8. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are made for pipelines, sewerlines, communications and power transmission lines, basements, open ditches, and cemeteries. Such digging or trenching is influenced by soil wetness caused by a seasonal high

water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and the presence of very firm, dense soil layers, bedrock (fig. 15), or large stones. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is given, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 8 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 8 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, depth to hard rock or very compact layers, and content of large stones affect stability and ease of excavation.

Lawns and landscaping require soils that are suitable for the establishment and maintenance of turf for lawns and ornamental trees and shrubs for landscaping. The best soils are firm after rains, are not dusty when dry, and absorb water readily and hold sufficient moisture for plant growth. The surface layer should be free of stones. If shaping is required, the soils should be thick enough over bedrock or hardpan to allow for necessary grading. In rating the soils, the availability of water for sprinkling is assumed.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 9 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required. Soil suitability is rated by the terms *good, fair, or poor,* which, respectively, mean about the same as the terms *slight*, *moderate*, and *severe*.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very

high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 9 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 10 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 14 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 10 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel (fig. 16). A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 11 the soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Aquifer-fed excavated ponds are bodies of water made by excavating a pit or dugout into a ground-water aquifer. Excluded are ponds that are fed by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Ratings in table 11 are for ponds that are properly designed, located, and constructed. Soil properties and site features that affect aquifer-fed ponds are depth to a permanent water table, permeability of the aquifer, quality of the water, and ease of excavation (fig. 17).

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

ROBERT W. FRANZEN, wildlife biologist, Soil Conservation Service, assisted in preparing this section.

The survey area has four state parks that offer such recreational opportunities as swimming, picnicking, fishing, and camping. Five private camping grounds are in operation and a ski area is in North Attleboro. Capron Park in Attleboro has a zoo associated with the recreational area, and Memorial Park in North Attleboro has a few deer.

Many golf courses are in the survey area, and most of them are open to the public. Several indoor ice skating rinks are available.

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning,

design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 12 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 9, and interpretations for dwellings without basements and for local roads and streets, given in table 8.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading (fig. 18).

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They should have a surface that is free of stones and boulders and have moderate slopes. Suitability of the soil for traps, tees, or greens was not considered in rating the soils. Irrigation is an assumed management practice.

Wildlife habitat

RICHARD TURNER, Massachusetts Division of Fisheries and Wildlife, and ROBERT FRANZEN, wildlife biologist, Soil Conservation Service, assisted in preparing this section.

Urban developments throughout the survey area have significantly reduced the amount of habitat that was formerly available to wildlife. Housing developments, shopping centers, and Interstate Highways 95 and 295 have also affected habitat.

In the more densely urbanized sections, such wildlife common to urban areas as pigeons, starlings, and house sparrows are numerous. Many urban residents have installed bird feeders and nesting boxes and have planted trees and shrubs of value to wildlife. These practices increase the number and variety of wildlife.

Hockmock Swamp in the northeastern part of the survey area is of special importance to wildlife. This swamp has an area of about 10 square miles in the communities of Easton, Norton, Taunton, and Raynham, and extends into the towns of Bridgewater and West Bridgewater in Plymouth County. This swamp offers food and cover for a wide variety of wildlife. The variety is enhanced by the diversity of habitat that ranges from open water to thick stands of red maple and Atlantic white-cedar.

White-tailed deer is the only large game animal in the northern part of Bristol County. Small game includes ring-necked pheasant, bobwhite quail, ruffed grouse, woodcock, cottontail rabbits, varying hare, raccoons, opossums, gray squirrels, and red and gray foxes. The ponds, streams, and marshes provide habitat for native black ducks, mallards, and wood ducks as well as many other species of migratory waterfowl. Muskrat, otter, mink, and raccoons are in the wetland areas.

Ring-necked pheasants are released annually by the Massachusetts Division of Fisheries and Wildlife. Varying hare are also released, when they are available.

The main game fish are brook trout, brown trout, rainbow trout, largemouth bass and chain pickerel. The Division of Fisheries and Wildlife stocks streams that have public access with trout and manages native game fish in all public waters. The United States Department of the Interior maintains a trout hatchery in North Attleboro.

Of particular interest are species of wildlife that have recently expanded their range into this area. These species are the cardinal, tufted titmouse, mockingbird, and opossum.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments(*1*). The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 13, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

The elements of wildlife habitat are briefly described in the following paragraphs.

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley, rye, millet, buckwheat, and sunflowers.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, pokeweed, ragweed, deerstongue, and dandelion.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of native plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, sassafras, sumac, hazlenut, blackwalnut, grape, hickory, blackberry, blueberry, viburnum, bayberry, and briers. Examples of fruit-producing shrubs that are commercially available and suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, yew, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, arrowhead, cattail, and arrowarum, and rushes, sedges, and reeds.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Openland habitat consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kinds of wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, killdeer, cottontail rabbit, red fox, and woodchuck.

Woodland habitat consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Wetland habitat consists of open, marshy or swampy, shallow water areas (fig. 19) where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, rails, kingfishers, muskrat, mink, and beaver.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present data about pertinent soil and water features.

Engineering properties

Table 14 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 14 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 14 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*3*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*2*).

The *Unified* system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

The estimated classification, without group index numbers, is given in table 14. Also in table 14 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterburg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted.

Physical and chemical properties

Table 15 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment. The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.64. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Soil and water features

Table 16 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or soils that have moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent

slopes, and by tides. Water standing for short periods after rains or after snowmelts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the mapping of the soils. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Potential frost action refers to the likelihood of damage to pavements and other structures by frost heaving and low soil strength after thawing. Frost action results from the movement of soil moisture into the freezing temperature zone in the soil, which causes ice lenses to form. Soil texture, temperature, moisture content, porosity, permeability, and content of organic matter are the most important soil properties that affect frost action. It is assumed that the soil is not covered by insulating vegetation or snow and is not artificially drained. Silty and clayey soils that have a high water table in winter are most susceptible to frost action. Well drained very gravelly or sandy soils are the least susceptible.

Classification of the soils

This section describes the soil series of the survey area, defines the current system of classifying soils, and classifies the soils of the area according to that system.

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*4*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or mapping units, of each soil series are described in the section "Soil maps for detailed planning."

Agawam series

The Agawam series consists of coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts. These soils are deep and well drained. They formed in acid glacial outwash derived mainly from granite. They have a yellowish brown fine sandy loam B horizon and a light olive brown sand IIC horizon. The Agawarm soils are on outwash plains and terraces. Slopes range from 0 to 8 percent but are dominantly 0 to 3 percent.

The Agawam soils formed in the same kind of material and are associated with the moderately well drained Ninigret soils. They are on the same landscape as the Merrimac and Sudbury soils that have a gravelly B horizon.

Typical pedon of Agawam fine sandy loam, 0 to 3 percent slopes, in Norton, 50 feet east of Crane Street, 3,200 feet southeast of the junction of Pine Street and Crane Street:

Ap—0 to 10 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; many roots; strongly acid; abrupt smooth boundary.

B21—10 to 24 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; very friable; many roots; strongly acid; clear smooth boundary.

B22—24 to 32 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; very friable; common roots; strongly acid; gradual smooth boundary.

IIC—32 to 60 inches; light olive brown (2.5Y 5/4) sand; single grained; loose; strongly acid.

Depth to bedrock is more than 6 feet. The solum is 18 to 35 inches thick. Above a depth of 40 inches coarse fragment content is 0 to 10 percent, by volume, and some pedons have thin strata of fine gravel. In unlimed areas, reaction is strongly acid or medium acid.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. The A1 horizon in undisturbed pedons is 1 to 3 inches thick.

The B21 horizon has hue of 10YR or 2.5Y, value of 5, and chroma of 4 to 6. It is fine sandy loam or very fine sandy loam. The B22 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. The B3 horizon is sandy loam in some pedons.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4. It is loamy fine sand, loamy sand, fine sand, or sand.

Amostown series

The Amostown series consists of coarse-loamy, mixed, mesic Typic Dystrochrepts. These soils are deep and moderately well drained. They formed in glacial outwash overlying glaciolacustrine deposits. They have a yellowish brown or brownish yellow fine sandy loam B horizon and a gray very fine sandy loam IIC horizon. The Amostown soils are on glacial outwash plains and deltas. Slopes range from 0 to 5 percent.

The Amostown soils formed in the same kind of material as the poorly drained Walpole Variant soils. They are associated on the landscape with the Unadilla, Scio, Raynham, and Birdsall soils that have a silt loam or very fine sandy loam B horizon.

Typical pedon of Amostown fine sandy loam, 0 to 5 percent slopes, in Raynham, on west side of shopping center parking lot, 400 feet north of Route 44, and 4,000 feet west of Route 24:

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak, fine granular structure; very friable; many roots; strongly acid; abrupt smooth boundary.

B21—9 to 16 inches; yellowish brown (10YR 5/6) fine sandy loam; weak medium granular structure; friable; common roots; strongly acid; abrupt smooth boundary

B22—16 to 24 inches; brownish yellow (10YR 6/6) fine sandy loam; many medium distinct strong brown (7.5YR 5/8) and yellowish red (5YR 5/6) mottles; massive; firm; few roots; strongly acid; abrupt broken boundary.

IIC—24 to 60 inches; gray (5Y 6/1) very fine sandy loam; many coarse prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/8) mottles; weak thick platy structure; firm; strongly acid.

Thickness of the solum and depth to the contrasting material range from 22 to 35 inches. The solum is strongly acid or medium acid, and the underlying material is strongly acid to neutral.

The Ap horizon has value and chroma of 2 to 4.

The B21 horizon has hue of 7.5YR, 10YR, or 2.5Y; value of 4 or 5; and chroma of 4 to 6. The B22 horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The B horizon is fine sandy loam or sandy loam.

The IIC horizon has hue of 2.5Y or 5Y. It is silt loam or very fine sandy loam.

Birdsall series

The Birdsall series consists of coarse-silty, mixed, nonacid, mesic Typic Humaquepts. These soils are deep and very poorly drained. They formed in medium textured lacustrine deposits. They have a light brownish gray and gray silt loam and very fine sandy loam Bg horizon and a grayish brown very fine sandy loam Cg horizon. The Birdsall soils are in nearly level areas and depressions. Slopes are less than 3 percent.

The Birdsall soils formed in the same kind of material as the well drained Unadilla soils, the moderately well drained Scio soils, and the poorly drained Raynham soils.

Typical pedon of Birdsall silt loam, in woods, 800 feet north of a point on Howard Street that is 1,900 feet south of the junction of Prospect Street and Howard Street:

O1—4 inches to 0; litter of deciduous leaves, partly decomposed in the lower part.

A1—0 to 7 inches; very dark gray (10YR 3/1) silt loam; weak fine granular structure; very friable; few roots; very strongly acid; abrupt irregular boundary.

B21g—7 to 12 inches; light brownish gray (2.5Y 6/2) silt loam; few medium distinct yellowish brown (10YR 5/4) mottles; massive; firm; strongly acid; clear smooth boundary.

B22g—12 to 21 inches; gray (5Y 6/1) very fine sandy loam; few medium distinct brown (10YR 5/3) and (7.5YR 5/4) mottles; massive; firm; strongly acid; abrupt smooth boundary.

Cg—21 to 60 inches; grayish brown (2.5Y 5/2) very fine sandy loam; massive; friable; medium acid.

The solum is silt loam or very fine sandy loam. It is very strongly acid to neutral.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2.

The Bg horizon has hue of 2.5Y or 5Y, value of 4 to 7, and chroma of 0 or 2.

The Cg horizon has color similar to that of the Bg horizon. The Cg horizon is silt loam, very fine sandy loam, or loamy very fine sand.

Charlton series

The Charlton series consists of coarse-loamy, mixed, mesic Typic Dystrochrepts. These soils are deep and well drained. They formed in glacial till derived mainly from granite and gneiss. They have a brown, dark yellowish brown, and yellowish brown fine sandy loam B horizon and a light brownish gray, gravelly sandy loam C horizon. The Charlton soils are on uplands. Slopes range from 0 to 35 percent, but are dominantly 3 to 15 percent.

The Charlton soils formed in the same kind of material and are associated with the well drained Paxton soils and the moderately well drained Woodbridge soils, both of which have a fragipan.

Typical pedon of Charlton fine sandy loam in an area of Charlton-Paxton fine sandy loams, 3 to 8 percent slopes, in Easton, 50 feet northwest of intersection of Bay Street, Lincoln Street, and Allen Street:

O1—2 inches to 1 inch; loose leaves and partly matted organic material.

O2—1 inch to 0; black (10YR 2/1) decomposed organic material and some mineral material.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; many roots; less than 10 percent coarse fragments; very strongly acid; clear smooth boundary.

B21—2 to 5 inches; brown (7.5YR 4/4) fine sandy loam; weak, fine granular structure; very friable; many roots; 15 percent coarse fragments; very strongly acid; clear wavy boundary.
B22—5 to 12 inches; dark yellowish brown (10YR 4/4) fine sandy loam; massive; very friable; common roots; 15 percent coarse fragments; very strongly acid; clear wavy boundary.
B23—12 to 29 inches; yellowish brown (10YR 5/6) gravelly fine sandy loam; massive; very friable; few roots; 30 percent coarse fragments; very strongly acid; gradual smooth boundary.
C—29 to 65 inches; light brownish gray (2.5Y 6/2) gravelly sandy loam; massive; friable; very few roots in top 12 inches, none below; 40 percent coarse fragments; very strongly acid.

The solum is 20 to 36 inches thick. It is medium acid to very strongly acid.

The A1 horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3.

The upper part of the B horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6; the lower part has hue of 10YR or 2.5Y and value and chroma of 4 to 6. The B horizon is fine sandy loam or sandy loam or their gravelly analogs.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is generally gravelly sandy loam and has a high content of coarse sand, but in places it is gravelly fine sandy loam and loam. This horizon is firm or friable.

Deerfield series

The Deerfield series consists of mixed, mesic Aquic Udipsamments. These soils are deep and moderately well drained. They formed in acid glacial outwash derived mainly from gneiss and granite. They have a yellowish brown and olive brown sand B horizon and a mottled, brown and grayish brown sand C horizon. The Deerfield soils are on outwash plains. Slopes range from 0 to 6 percent.

The Deerfield soils formed in the same kind of material and are associated with the excessively drained Windsor soils and the poorly drained Wareham soils. They are on the same landscape as the Ninigret and Agawam soils that have fine sandy loam in the upper part of the B horizon.

Typical pedon of Deerfield loamy sand, in Taunton, 50 feet north of Allston Avenue, 300 feet west from intersection with Crane Avenue:

Ap—0 to 11 inches; very dark brown (10YR 2/2) loamy sand; weak fine and medium granular structure; very friable; many roots; 1 percent gravel; very strongly acid; abrupt wavy boundary.
B2—11 to 21 inches; yellowish brown (10YR 5/4) sand; single grained; loose; common roots; 1 percent gravel; very strongly acid; clear smooth boundary.
B3—21 to 26 inches; olive brown (2.5Y 4/4) sand; single grained; loose; very few roots; 2 percent gravel; very strongly acid; abrupt wavy boundary.
C1—26 to 37 inches; brown (10YR 5/3) sand; many medium and coarse prominent yellowish red (5YR 5/6) and common medium distinct yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; single grained; loose; 1 percent gravel; very strongly acid; clear wavy boundary.
C2—37 to 60 inches; grayish brown (2.5Y 5/2) sand; many medium and coarse distinct yellowish brown (10YR 5/4) mottles; single grained; loose; 1 percent fine gravel; strongly acid.

The solum ranges from 18 to 30 inches in thickness. It is very strongly acid to medium acid. Depth to mottling ranges from 15 to 30 inches.

The Ap horizon has hue of 10YR, value of 2 or 3, and chroma of 1 to 3. The A1 horizon, where present, has color similar to that of the Ap horizon.

The B2 horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. The B3 horizon has hue of 2.5Y, value of 4 or 5, and chroma of 4 to 6. The B horizon is loamy sand, loamy coarse sand, sand, or coarse sand. It has brown or gray mottles in some pedons.

The C horizon is grayish brown (10YR 5/2) to olive (5Y 5/3). It has gray, brown, and red mottles. It is fine sand to coarse sand.

Hinckley series

The Hinckley series consists of sandy-skeletal, mixed, mesic Typic Udorthents. These soils are deep, nearly level to steep, and excessively drained. They formed in gravelly glacial outwash. They have a dark yellowish brown and yellowish brown sandy loam and gravelly loamy sand B horizon and an olive very gravelly sand IIC horizon. Hinckley soils are on outwash plains, kames, and eskers. Slopes range from 0 to 35 percent.

The Hinckley soils formed in the same kind of material as the somewhat excessively drained Merrimac soils, the moderately well drained Sudbury soils, and the poorly drained Walpole soils. They are associated on the landscape with the Windsor and Deerfield soils that are sandy throughout the B horizon.

Typical pedon of Hinckley sandy loam, 3 to 8 percent slopes, in Raynham, about 400 feet east of power transmission line from a point 900 feet north of an entrance road to gravel pit 4,000 feet north of White Street:

O1—1 inch to 0; loose leaves and twigs.
A1—0 to 1 inch; very dark brown (10YR 2/2) sandy loam; weak fine granular structure; very friable; many fine roots; 10 percent gravel; extremely acid; abrupt smooth boundary.
B21—1 to 4 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; very friable; few roots; 10 percent gravel; extremely acid; abrupt wavy boundary.
IIB22—4 to 14 inches; yellowish brown (10YR 5/6) gravelly loamy sand; single grained; very friable; few roots; 40 percent gravel and cobblestones; very strongly acid; abrupt smooth boundary.
IIB23—14 to 22 inches; yellowish brown (10YR 5/6) gravelly loamy sand; single grained; very friable; 40 percent coarse fragments; very strongly acid; abrupt smooth boundary.
IIC1—22 to 32 inches; olive (5Y 5/6) very gravelly sand; single grained; loose; 60 percent gravel and cobblestones; strongly acid; abrupt smooth boundary.
IIC2—32 to 61 inches; olive (5Y 5/6) very gravelly coarse sand; single grained; loose; 70 percent gravel and cobblestones; medium acid.

The solum ranges from 12 to 30 inches in thickness. Gravel and cobblestones make up 10 to 50 percent of individual horizons in the solum and 35 to 70 percent of the IIC horizon. In unlimed areas, reaction is extemely acid to medium acid.

The A1 horizon has value of 2 or 3 and chroma of 1 or 2.

The B horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. The upper part of the B horizon, to a depth of about 10 inches, is loamy sand, loamy coarse sand, or sandy loam. The B horizon below a depth of 10 inches is loamy sand or loamy coarse sand.

The IIC horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 4 or 6. The IIC horizon is dominantly stratified sand and waterrounded gravel and cobblestones.

Medisaprists

The Medisaprists consist of areas of soils that have more than 16 inches of organic material above mineral

soil material. These soils are very poorly drained. They formed in vegetative debris that accumulated in swamps. They are in depressions and broad drainageways and along the margins of large ponds and lakes throughout the survey area. Slopes are less than 1 percent. Areas of Medisaprists vary from 2 or 3 acres to a few hundred acres.

These soils are too variable for a typical pedon to be described; however, the organic material ranges from 16 to more than 60 inches in thickness. It is 0 to 30 percent tree stumps, trunks, stems, and branches. Reaction throughout the pedon is extremely acid to slightly acid.

The surface tier ranges from black sapric material to reddish brown hemic or fibric material. The subsurface tier is dominantly sapric material, but in some pedons it has layers of hemic or fibric material. The bottom tier is generally sapric or hemic material.

The underlying mineral soil material is strongly gleyed outwash, glacial till, or lacustrine or marine sediment ranging from stratified sand and gravel to clay.

Some areas of Medisaprists have been developed for the commercial production of cranberries. In these areas, 4 to 12 inches of coarse sand or gravelly coarse sand has been placed on the surface of the organic soils to serve as a rooting medium for the cranberry vines. Below the sand layer, the organic soils have the same general characteristics already described for Medisaprists.

Merrimac series

The Merrimac series consists of sandy, mixed, mesic Typic Dystrochrepts. These soils are deep and somewhat excessively drained. They formed in glacial outwash. They have a dark brown and dark yellowish brown fine sandy loam B horizon and a light olive brown, stratified, gravelly coarse sand C horizon. In this survey area, the fine sandy loam in Merrimac soils extends to a greater depth than is defined for the series. The Merrimac soils are on outwash plains. Slopes range from 0 to 15 percent, but are mostly 0 to 8 percent.

The Merrimac soils formed in the same kind of material and are associated with the excessively drained Hinckley soils and the moderately well drained Sudbury soils.

Typical pedon of Merrimac fine sandy loam, 0 to 3 percent slopes, in Mansfield, north roadbank of Maple Street about 550 feet east of Winter Street:

A1—0 to 2 inches; black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; common roots; 10 percent gravel; extremely acid; abrupt smooth boundary.

B21—2 to 4 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; common roots; 10 percent gravel; extremely acid; clear wavy boundary.

B22—4 to 24 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; common roots; 15 percent coarse fragments; very strongly acid; gradual smooth boundary.

IIC1—24 to 42 inches; light olive brown (2.5Y 5/4) very gravelly coarse sand; single grained; loose; common roots; 50 percent coarse fragments; medium acid; abrupt smooth boundary.

IIC2—42 to 61 inches; light olive brown (2.5Y 5/4) gravelly coarse sand; loose; single grained; 30 percent coarse fragments; slightly acid.

The solum is 18 to 30 inches thick. It is extremely acid to medium acid. Coarse fragment content is 10 to 30 percent in individual horizons in the solum. Coarse fragment content in the IIC horizon is 30 to 70 percent.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. A thin, lighter colored A2 horizon is in some pedons.

The upper part of the B horizon has hue of 10YR, value of 3, 4, or 5, and chroma of 3 or 4. The B horizon generally is fine sandy loam to a depth of 15 to 30 inches.

The IIC horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4.

Ninigret series

The Ninigret series consists of coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts. These soils are deep and moderately well drained. They formed in glacial outwash. They have a mottled, yellowish brown fine sandy loam B horizon and a mottled, yellowish brown and light brownish gray loamy fine sand and fine sand IIC horizon. The Ninigret soils are on outwash plains. Slopes range from 0 to 3 percent.

The Ninigret soils formed in the same kind of material as the well drained Agawam soils. They are associated on the landscape with the sandy Deerfield soils.

Typical pedon of Ninigret fine sandy loam, in Norton, 500 feet south of Plain Street, 1.5 miles west of junction of Plain Street and Bay Road:

Ap—0 to 6 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many fine medium and coarse roots; less than 5 percent fine gravel; very strongly acid.

B21—6 to 14 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; friable; few fine and medium roots; less than 3 percent fine gravel; very strongly acid; clear smooth boundary.

B22—14 to 18 inches; yellowish brown (10YR 5/6) fine sandy loam; common medium distinct yellowish red (5YR 5/8) mottles; friable; weak fine subangular blocky structure; few fine and medium roots; less than 3 percent fine gravel; very strongly acid; clear wavy boundary.

B23—18 to 23 inches; yellowish brown (10YR 5/4) fine sandy loam; many coarse distinct pale brown (10YR 6/3) and many coarse prominent yellowish red (5YR 4/6) mottles; massive; friable; few fine and medium roots; less than 3 percent fine gravel; very strongly acid; abrupt wavy boundary.

IIC1—23 to 40 inches; yellowish brown (10YR 5/4) loamy fine sand; common fine distinct light brownish gray (10YR 6/2) and reddish yellow (7.5YR 6/8) mottles; single grained; friable; very few roots; less than 3 percent fine gravel; very strongly acid; clear smooth boundary.

IIC2—40 to 63 inches; light brownish gray (2.5Y 6/2) fine sand; single grained; loose; less than 3 percent fine gravel; very strongly acid.

The solum ranges from 20 to 30 inches in thickness. Coarse fragment content ranges from 0 to 10 percent throughout the soil. In unlimed pedons reaction is very strongly acid or medium acid throughout.

The Ap horizon has value and chroma of 2 or 3.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6; the lower part has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. The B horizon is mainly fine sandy loam but in places has layers of sandy loam as much as 5 inches thick.

The IIC horizon has hue of 10YR to 5Y. It is loamy fine sand, loamy sand, fine sand or sand and their gravelly analogs.

Paxton series

The Paxton series consists of coarse-loamy, mixed, mesic Typic Fragiochrepts. These soils are deep, gently

sloping to moderately steep, and well drained. They formed in glacial till. They have a yellowish brown fine sandy loam and light olive brown sandy loam B horizon and a very firm gravelly sandy loam Cx horizon. The Paxton soils are on drumloids. Slopes range from 0 to 25 percent.

The Paxton soils formed in the same kind of material as the moderately well drained Woodbridge soils and the poorly drained Ridgebury soils. They are on landscape similar to that of the well drained Charlton soils that do not have a hardpan within a depth of 40 inches.

Typical pedon of Paxton fine sandy loam in an area of Paxton very stony fine sandy loam, 0 to 8 percent slopes, 300 feet west of Allen Road and 0.5 mile north of intersection of Allen Road and Rockland Street in Easton:

A1—0 to 3 inches; dark brown (10YR 3/3) fine sandy loam; weak very fine granular structure; very friable; many medium to fine roots; very strongly acid; abrupt smooth boundary.

B21—3 to 9 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; very friable; many medium to fine roots; 15 percent gravel; strongly acid; gradual wavy boundary.

B22—9 to 15 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; very friable; common medium to fine roots; 15 percent gravel; strongly acid; gradual wavy boundary.

B23—15 to 30 inches; light olive brown (2.5Y 5/4) sandy loam; massive; very friable; few fine roots; 15 percent gravel; strongly acid; abrupt smooth boundary.

C1x—30 to 40 inches; olive gray (5Y 5/2) gravelly sandy loam; massive; firm, brittle; 35 percent rock fragments; strongly acid; clear smooth boundary.

C2x—40 to 57 inches; olive gray (5Y 5/2) very gravelly sandy loam; massive; very firm, brittle; 50 percent rock fragments; strongly acid.

The fragipan is at a depth of about 20 to 36 inches. Rock fragment content is about 5 to 25 percent in the solum and 15 to 50 percent in the Cx horizon. The solum is loam to sandy loam. In unlimed areas, reaction in the subsoil and substratum is strongly acid to slightly acid.

The A1 horizon has value of 2 or 3 and chroma of 1 to 3.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 or 6. A few, small yellowish brown mottles are in some pedons in the upper few inches of the fragipan, or just above it.

The Cx horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4. It is sandy loam or fine sandy loam.

Pipestone series

The Pipestone series consists of sandy, mixed, mesic Entic Haplaquods. These soils are deep and somewhat poorly drained. They formed in sandy glacial outwash. They have a grayish brown fine sand A2 horizon, a dark reddish brown and dark yellowish brown fine sand B horizon, and a light olive brown fine sand C horizon. Pipestone soils are on glacial outwash plains. Slopes range from 0 to 3 percent.

Pipestone soils formed in the same kind of material as the well drained Windsor soils, the poorly drained Wareham soils, and the very poorly drained Scarboro soils. They are on the same landscape as the Merrimac, Sudbury, and Walpole soils that do not have a spodic horizon.

Typical pedon of Pipestone loamy fine sand, in Easton, in woods north of Maple Street, about 2,200 feet southwest of junction of Maple Street and Norton Street:

O11—6 to 4 inches; loose leaves, needles, and twigs.

O12—4 inches to 0; matted and partially decomposed needles, leaves, and twigs.

A1—0 to 4 inches; black (10YR 2/1) loamy fine sand; moderate medium granular structure; friable; many roots; extremely acid; abrupt wavy boundary.

A2—4 to 8 inches; grayish brown (10YR 5/2) fine sand; common coarse distinct dark gray (5YR 4/1) mottles; single grained; loose; many roots; extremely acid; clear irregular boundary.

B21hir—8 to 15 inches; dark reddish brown (5YR 3/2) fine sand; weak medium granular structure; friable; few fine and medium roots; extremely acid; clear wavy boundary.

B22hir—15 to 23 inches; dark yellowish brown (10YR 4/4) fine sand; few fine distinct strong brown (7.5YR 5/8) mottles; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

C—23 to 60 inches; light olive brown (2.5Y 5/4) fine sand; few fine distinct strong brown (7.5YR 5/8) mottles; single grained; loose; few fine roots in upper 10 inches; very strongly acid.

The solum ranges from 20 to 30 inches in thickness. In unlimed areas, reaction is extremely acid to strongly acid in the upper part of the solum and very strongly acid to medium acid in the lower part and in the C horizon.

The A2 horizon is 3 to 10 inches thick. It has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 1 or 2.

The B2 horizon is sand or fine sand. It has hue of 10YR, 7.5YR, or 5YR, and value and chroma of 2 to 6.

The C horizon is sand or fine sand. It has hue of 10YR or 2.5Y.

Raynham series

The Raynham series consists of coarse-silty, mixed, nonacid, mesic Aeric Haplaquepts. These soils are deep and poorly drained. They formed in lacustrine deposits. They have a mottled, yellowish brown and grayish brown silt loam B horizon and a mottled, light brownish gray silt loam C horizon. In the survey area Raynham soils are somewhat more acid in the substratum than is defined for the series. The Raynham soils are in nearly level areas or depressions. Slopes range from 0 to 3 percent.

The Raynham soils formed in the same kind of material as the well drained Unadilla soils, the moderately well drained Scio soils, and the very poorly drained Birdsall soils. They are associated on the landscape with the Walpole Variant soils that are fine sandy loam or sandy loam in the upper part of the solum.

Typical pedon of Raynham silt loam, in Rehoboth, in woods 500 feet north of Providence Street, 0.4 mile west of Pleasant Street:

O1—2 inches to 0; loose and mottled leaves and twigs.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many roots; strongly acid; abrupt smooth boundary.

B21—4 to 13 inches; yellowish brown (10YR 5/4) silt loam; many medium and coarse distinct dark yellowish brown (10YR 4/4) and light olive gray (5Y 6/2) mottles; weak medium granular structure; friable; few roots; strongly acid; abrupt smooth boundary.

B22—13 to 23 inches; grayish brown (2.5Y 5/2) silt loam; many medium and coarse distinct yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) mottles; massive; friable; strongly acid; abrupt smooth boundary.

C—23 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; many medium and coarse distinct reddish brown (5YR 4/4) and dark reddish brown (5YR 3/4) mottles; massive; friable; strongly acid.

The solum ranges from 18 to 30 inches in thickness. Reaction is very strongly acid to strongly acid in the solum and strongly acid in the substratum.

The A1 horizon has hue of 10YR to 2.5Y, value of 3 or 4, and chroma of 1 or 2.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. It is silt loam or very fine sandy loam. The B and C horizons are mottled throughout.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 1 or 2. It is silt, silt loam, or very fine sandy loam. It is massive or has thin platy structure. In some pedons, thin strata of sand and gravel are in the lower part of the B horizon and in the C horizon.

Ridgebury series

The Ridgebury series consists of coarse-loamy, mixed, mesic Aeric Fragiaquepts. These soils are deep, nearly level to gently sloping, and poorly drained. They formed in loamy glacial till. They have a mottled, grayish brown fine sandy loam B horizon and a very fine mottled, olive gravelly sandy loam fragipan. The Ridgebury soils are on glaciated uplands. Slopes range from 0 to 8 percent.

The Ridgebury soils formed in the same kind of material as the well drained Paxton soils, the moderately well drained Woodbridge soils, and the very poorly drained Whitman soils.

Typical pedon of Ridgebury fine sandy loam, in an area of Ridgebury extremely stony fine sandy loam, 0 to 3 percent slopes, 75 feet east of Route 123 in Easton, about 400 feet north of Norton Street:

O2—2 inches to 0; black (10YR 2/1) decomposed organic material.

A1—0 to 3 inches; very dark gray (10YR 3/1) fine sandy loam; moderate, medium granular structure; very friable; many roots; 10 percent gravel; very strongly acid; abrupt wavy boundary.

Bg—3 to 20 inches; grayish brown (10YR 5/2) fine sandy loam; common medium and coarse distinct yellowish brown (10YR 5/4), strong brown (7.5YR 5/8) and light brownish gray (2.5Y 6/2) mottles; massive; friable; common roots; 15 percent coarse fragments; strongly acid; abrupt wavy boundary.

C1x—20 to 28 inches; olive (5Y 5/3) gravelly sandy loam; many coarse distinct gray (N 5/0), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/8) mottles; massive; very firm, brittle; 20 percent coarse fragments; strongly acid; clear wavy boundary.

C2x—28 to 60 inches; olive (5Y 5/4) gravelly sandy loam; many medium and coarse distinct yellowish red (5YR 5/8), strong brown (7.5YR 5/8), and light olive gray (5Y 6/2) mottles; massive; very firm, brittle; 30 percent coarse fragments; medium acid.

The fragipan is at a depth of 10 to 25 inches. Reaction is strongly acid or very strongly acid in the solum and strongly acid or medium acid in the C horizon. Coarse fragment content is 5 to 35 percent throughout the soil.

The A1 horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma 2 or less.

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. The B horizon has common or many, prominent or distinct yellowish brown, strong brown, or gray mottles. It is friable or very friable. It generally is fine sandy loam, but in places it is sandy loam, gravelly fine sandy loam, and gravelly sandy loam.

The C horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 4. It generally is gravelly sandy loam, but in places it is gravelly fine sandy loam, sandy loam, fine sandy loam, and coarse sandy loam. This horizon has weak or moderate platy structure or is massive. It is very firm or extremely firm.

Scarboro series

The Scarboro series consists of sandy, mixed, mesic Histic Humaquepts. The soils are deep and very poorly drained. They formed in sandy glacial outwash. They have a black organic layer over black and gray loamy fine sand and loamy sand A1 and A2 horizons and a mottled, dark grayish brown loamy sand and sand C horizon. The Scarboro soils are in nearly level areas and depressions on outwash plains and terraces. Slopes are less than 3 percent.

The Scarboro soils formed in the same kind of material as the poorly drained Wareham soils and the moderately well drained Deerfield soils.

Typical pedon Scarboro mucky loamy fine sand, in Easton, 750 feet southeast of Hall Street, 1,000 feet southwest of the Easton-West Bridgewater town line:

O1—6 to 4 inches; loose leaves and twigs over matted leaves and twigs.

O2—4 inches to 0; black (10YR 2/1) decomposed organic material; moderate medium granular structure; very friable; many roots; very strongly acid; abrupt smooth boundary.

A1—0 to 6 inches; black (10YR 2/1) mucky loamy fine sand; moderate medium granular structure; very friable; common roots; very strongly acid; abrupt smooth boundary.

A2g—6 to 12 inches; gray (5Y 5/1) loamy sand; single grained; loose; strongly acid; clear smooth boundary.

C1g—12 to 30 inches; dark grayish brown (10YR 4/2) loamy sand; common coarse prominent light brownish gray (2.5Y 6/2), light olive brown (2.5Y 5/6), and strong brown (7.5YR 5/6) mottles; single grained; loose; strongly acid; clear smooth boundary.

C2g—30 to 60 inches; dark grayish brown (2.5Y 4/2) sand; many coarse prominent light gray (2.5Y 7/2), light olive brown (2.5Y 5/6), and strong brown (7.5YR 5/8) mottles; single grained; loose; strongly acid.

The solum ranges from 10 to 30 inches in thickness. Coarse fragment content is less than 10 percent. Reaction is medium acid to strongly acid.

The O horizon is 5 to 12 inches thick. The organic matter is undecomposed or partly decomposed in the upper part and more than 75 percent decomposed in the lower part.

The A1 horizon has hue of 10YR, value of 2, and chroma of 0 or 1.

The A2g horizon has hue of 10YR, 2.5Y, or 5Y; value of 4 to 7; and chroma of 0 or 1. It has a few mottles in some pedons. It generally is loamy sand, but in places it is loamy fine sand and sand.

The C horizon has hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 2 or less. It has common light gray or strong brown mottles. It is loamy sand or sand.

Scio series

The Scio series consists of coarse-silty, mixed, mesic Aquic Dystrochrepts. These soils are deep and moderately well drained. They formed in medium textured lacustrine sediment. They have a mottled, yellowish brown and light olive brown silt loam B horizon and a mottled, grayish brown silt loam C horizon. The Scio soils are mostly along the Taunton River in Taunton and Raynham. Slopes range from 0 to 8 percent but are dominantly 0 to 3 percent.

The Scio soils formed in the same kind of material and are associated with the well drained Unadilla soils, the poorly drained Raynham soils, and the very poorly drained Birdsall soils. They are on the landscape with the gravelly Merrimac and Sudbury soils.

Typical pedon of Scio silt loam, 0 to 3 percent slopes, in South Easton, east of abandoned railroad bed about 0.5 mile north of old railroad grade crossing on Route 106:

Ap—0 to 8 inches; dark brown (10YR 4/3) silt loam; weak medium granular structure; very friable; many roots; strongly acid; abrupt smooth boundary.

B21—8 to 16 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common roots; strongly acid; abrupt wavy boundary.

B22—16 to 26 inches; light olive brown (2.5Y 5/4) silt loam; many coarse distinct yellowish brown (10YR 5/4) and grayish brown (10YR 5/2) mottles; common coarse prominent reddish brown (5YR 4/4) streaks; massive; firm; strongly acid; clear wavy boundary.

C—26 to 66 inches; grayish brown (2.5Y 5/2) silt loam; many medium prominent reddish brown (5YR 4/4) mottles; massive; firm; strongly acid.

The solum is 20 to 30 inches thick. In unlimed areas, it is medium acid to very strongly acid throughout the pedon.

The Ap horizon has hue of 10YR, value of 2 or 4, and chroma of 2 or 3.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. The B horizon is very fine sandy loam or silt loam. The B22 horizon has common or many, prominent or distinct, red, brown, and gray mottles.

The C horizon is silt loam or very fine sand. It has hue of 10YR, 2.5Y, or 5Y; value of 5 or 6; and chroma of 1 to 3.

Sudbury series

The Sudbury series consists of sandy, mixed, mesic Aquic Dystrochrepts. These soils are deep, level to gently sloping, and moderately well drained. They are brown and yellowish brown fine sandy loam in the upper part of the B horizon and mottled, yellowish brown sandy loam in the lower part of the B horizon. They have a mottled, yellowish brown or light olive brown, stratified sand and gravel C horizon. They formed in glacial outwash. The Sudbury soils are on outwash plains and at the base of uplands. Slopes range from 0 to 8 percent.

The Sudbury soils formed in the same kind of material as the somewhat excessively drained Merrimac soils and the poorly drained Walpole soils. They are closely associated with the very poorly drained Scarboro soils.

Typical pedon of Sudbury fine sandy loam, 0 to 3 percent slopes, in Raynham, 50 feet west of Route 25 about 0.8 mile south of Pleasant Street:

O1—1 inch to 0; loose leaves over matted leaves.

Ap—0 to 6 inches; dark brown (7.5YR 3/2) fine sandy loam; weak medium granular structure; very friable; many fine roots; 5 percent fine and coarse gravel; strongly acid; clear smooth boundary.

B21—6 to 10 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; common roots; 5 percent fine and coarse gravel; strongly acid; clear wavy boundary.

B22—10 to 17 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; very friable; few roots; 10 percent fine and coarse gravel; strongly acid; clear smooth boundary.

B23—17 to 22 inches; yellowish brown (10YR 5/6) gravelly sandy loam; common medium distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) mottles; massive; very friable; few roots; 25 percent fine and coarse gravel; strongly acid; clear smooth boundary.

IIC1—22 to 29 inches; light olive brown (2.5Y 5/4) loamy fine sand; many medium and coarse distinct strong brown (7.5YR 5/8) mottles; massive; very friable; few roots; medium acid; abrupt smooth boundary.

IIIC2—29 to 40 inches; yellowish brown (10YR 5/4) gravelly loamy sand; many medium distinct strong brown (7.5YR 5/8) and grayish brown (2.5Y 5/2) mottles; single grained; loose; 35 percent fine and coarse gravel; medium acid; abrupt wavy boundary.

IIIC3—40 to 60 inches; light olive brown (2.5Y 5/4) gravelly coarse sand; many medium distinct strong brown (7.5YR 5/8) and grayish brown (2.5Y 5/2) mottles; single grained; loose; 45 percent fine and coarse gravel; medium acid.

Thickness of solum and depth to stratified sand and gravel range from 18 to 30 inches. Depth to mottling ranges from 15 to 24 inches. Coarse fragment content of the A and B horizons ranges from 0 to 30 percent. Coarse fragment content in layers of the C horizon ranges from 0 to 70 percent. In unlimed areas, reaction ranges from extremely acid to medium acid.

The Ap horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4.

The B horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 to 8. It is fine sandy loam or sandy loam or their gravelly analogs.

The C horizon has hue of 10YR, 2.5Y or 5Y; value of 5; and chroma of 2 to 4. It is loamy fine sand to very gravelly coarse sand and has stratified layers of sand, gravel, and cobblestones.

Udorthents

The Udorthents consist of areas of mineral soils that have been drastically altered by grading and cut-and-fill operations in construction of highways, schools, shopping centers, and industrial parks. Udorthents are along major highways and around schools, factories, and shopping centers. Slopes in areas of Udorthents are related to use of these soils. Slopes of cut-and-fill areas range from about 15 to 100 percent. Slopes graded for new highways range from 0 to 15 percent, and those used for schools, industrial parks, or shopping centers are less than 5 percent.

Udorthents are commonly near Agawam, Charlton, Hinckley, Merrimac, Ninigret, Paxton, Sudbury, Windsor, and Woodbridge soils.

These soils are too variable for a typical pedon to be described.

In excavated areas the soil material ranges from loose sand and gravel to stony and bouldery, firm, loamy material. In filled areas the soil material ranges from very gravelly sand to silt loam. The depth to bedrock in excavated areas generally ranges from a few inches to more than 5 feet. The depth to bedrock in areas of fill is generally more than 5 feet. Udorthents are extremely acid to medium acid.

Unadilla series

The Unadilla series consists of coarse-silty, mixed, mesic Typic Dystrochrepts. These soils are deep and well drained. They formed in lacustrine deposits of silt or very fine sand. They have a yellowish brown very fine sandy loam B horizon and a yellowish brown loamy very fine sand C horizon. The Unadilla soils are mostly along the Taunton River. Slopes range from 0 to 8 percent.

The Unadilla soils formed in the same kind of material as the moderately well drained Scio soils, the poorly drained Raynham soils, and the very poorly drained Birdsall soils. They are associated on the landscape with the gravelly Merrimac and Sudbury soils.

Typical pedon of Unadilla very fine sandy loam, 0 to 3 percent slopes, in Taunton, on the west bank of Taunton River about 2,000 feet north of Three Mile River:

Ap—0 to 7 inches; dark brown (10YR 3/3) very fine sandy loam; weak fine granular structure; very friable; many roots; very strongly acid; abrupt smooth boundary.

B21—7 to 14 inches; yellowish brown (10YR 5/6) very fine sandy loam; massive; very friable; common roots; strongly acid; abrupt smooth boundary.

B22—14 to 28 inches; yellowish brown (10YR 5/6) very fine sandy loam; massive; very friable; few roots; strongly acid; abrupt smooth boundary.

C—28 to 60 inches; yellowish brown (10YR 5/4) loamy very fine sand; massive; very friable; very few roots; strongly acid.

The solum ranges from 20 to 40 inches in thickness. It is silt loam or very fine sandy loam. In unlimed areas, it is very strongly acid to medium acid.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6.

The C horizon has hue of 10YR, 2.5Y, or 5Y; value of 4 or 5; and chroma of 2 to 4. It is silt loam, very fine sandy loam, or loamy very fine sand.

Walpole series

The Walpole series consists of sandy, mixed, mesic Aeric Haplaquepts. These soils are deep, level or nearly level, and poorly drained. They formed in sandy and gravelly glacial outwash material. They have a mottled, brown and grayish brown sandy loam B horizon and a mottled, pale olive gravelly loamy coarse sand IIC horizon. The Walpole soils are in pockets and depressions on outwash plains and terraces. Slopes are less than 3 percent.

The Walpole soils formed in the same kind of material as the moderately well drained Sudbury soils and the somewhat excessively drained Merrimac soils.

Typical pedon of Walpole fine sandy loam, in Rehoboth, 11,250 feet east of Barney Avenue, 0.8 mile north of Interstate 195:

O2—2 inches to 0; black (10YR 2/1) decomposed organic material.

A1—0 to 3 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; very friable; many roots; 5 percent gravel; very strongly acid; clear wavy boundary.

B21—3 to 20 inches; brown (10YR 5/3) sandy loam; many medium distinct strong brown (7.5YR 5/8) and light olive gray (5Y 6/2) mottles; massive; very friable; few roots; 10 percent gravel; very strongly acid; clear wavy boundary.

B22—20 to 26 inches; grayish brown (2.5Y 5/2) sandy loam; many medium distinct strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2) mottles; massive; friable; 15 percent gravel; strongly acid; clear wavy boundary.

IIC—26 to 60 inches; pale olive (5Y 6/4) gravelly loamy coarse sand; many medium and coarse distinct prominent strong brown (7.5YR 5/8) and light olive gray (5Y 6/2) mottles; single grained; loose; 35 percent gravel; strongly acid.

The solum ranges from 18 to 28 inches in thickness. Coarse fragment content is 0 to 25 percent in the solum and 0 to 50 percent in the C horizon. The soil is medium acid to very strongly acid throughout.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The B21 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 3. It generally is sandy loam, but in places it is fine sandy loam. The B21 horizon has common or many, medium and coarse, prominent or distinct mottles ranging from strong brown to light gray. It has weak, fine or medium granular structure or is massive. The B22 horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 or 2. It is sandy loam of fine sandy loam.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. It commonly is gravelly loamy sand, but in places it is gravelly sand and sand.

Walpole Variant

The Walpole Variant consists of coarse-loamy, mixed, acid, mesic Aeric Haplaquepts. These soils are deep, level and nearly level, and poorly drained. They formed in lacustrine and deltaic deposits. They have a mottled, brown and light brownish gray fine sandy loam B horizon and a light olive gray loamy very fine sand IIC horizon.

The Walpole Variant soils are in depressions on old lake beds. Slopes are less than 3 percent.

The Walpole Variant soils formed in the same kind of material as the moderately well drained Amostown soils. They are closely associated with the silty Unadilla, Scio, Raynham, and Birdsall soils.

Typical pedon of Walpole Variant fine sandy loam, in Rehoboth, 50 feet east of Palmer River, about 1 mile north of the Rehoboth-Swansea town line:

O1—5 to 2 inches; loose leaves and twigs.

O2—2 inches to 0; black (10YR 2/1) decomposed organic matter.

A1—0 to 3 inches; black (10YR 2/1) fine sandy loam; moderate medium granular structure; very friable; many roots; very strongly acid; abrupt smooth boundary.

B21—3 to 12 inches; brown (10YR 5/3) fine sandy loam; many medium and coarse distinct strong brown (7.5YR 5/8) and light brownish gray (2.5Y 6/2) mottles; massive; very friable; common roots; strongly acid; clear wavy boundary.

B22—12 to 28 inches; light brownish gray (2.5Y 6/2) fine sandy loam; many medium and coarse distinct yellowish brown (10YR 5/6) and light olive gray (5Y 6/2) mottles; massive; friable; strongly acid; abrupt wavy boundary.

IIC—28 to 60 inches; light olive gray (5Y 6/2) loamy very fine sand; many medium and coarse distinct strong brown (7.5YR 5/6) and light gray (5Y 7/2) mottles; massive; very firm in place, firm when removed; strongly acid.

Thickness of the solum and depth to contrasting material ranges from 20 to 30 inches. Reaction is strongly acid or very strongly acid throughout the soil.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The B horizon has hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 1 to 3. It is fine sandy loam or sandy loam. It has common or many, medium or coarse, distinct or prominent mottles.

The C horizon has hue of 2.5Y or 5Y, value of 5 or 6, and chroma of 1 or 2. It is mainly loamy very fine sand, but in places it is very fine sand, very fine sandy loam, and silt loam. It has many, medium and coarse, distinct or prominent mottles. The C horizon in some pedons has thin lenses of fine or medium sand.

Wareham series

The Wareham series consists of mixed, mesic Humaqueptic Psammaquents. These soils are deep, level or nearly level, and poorly drained. They formed in sandy glacial outwash. They have a mottled, yellowish brown loamy coarse sand B horizon and a mottled, light brownish gray loamy coarse sand and pale olive coarse sand C horizon. The Wareham soils are in pockets and depressions on outwash plains. Slopes are less than 3 percent.

The Wareham soils are closely associated with the excessively drained Windsor soils, the moderately well drained Deerfield soils, and the very poorly drained Scarboro soils.

Typical pedon of Wareham loamy sand, in Easton, 0.6 mile west of intersection of Route 24 and 123, one hundred feet north of Route 123:

O2—1 inch to 0; black (10YR 2/2) decomposed organic material.
A1—0 to 6 inches; very dark grayish brown (10YR 3/2) loamy sand; weak medium granular structure; very friable; many roots; very strongly acid; abrupt wavy boundary.
B—6 to 16 inches; yellowish brown (10YR 5/4) loamy coarse sand; common medium prominent yellowish red (5YR 5/6) and light brownish gray (10YR 6/2) mottles; single grained; loose; common roots; very strongly acid; clear wavy boundary.
C1—16 to 36 inches; light brownish gray (2.5Y 6/2) loamy coarse sand; common medium and coarse distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) mottles; single grained; loose; very few roots; very strongly acid; clear wavy boundary.
C2—36 to 60 inches; pale olive (5Y 6/3) coarse sand; many medium and coarse prominent brown (7.5YR 5/2) and light olive brown (2.5Y 5/6) mottles; single grained; loose; strongly acid.

Reaction is strongly acid to extremely acid throughout the pedon. Coarse fragment content in the upper part of soil is 0 to 10 percent and in the lower part 0 to 30 percent.

The A1 horizon have hue of 10YR, value of 3 or less, and chroma of 2 or less.

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 or 3. The C horizon is sand, loamy sand, coarse sand, and loamy coarse sand. It has common or many, medium or coarse, distinct or prominent yellowish red to light olive gray mottles.

Westbrook series

The Westbrook series consists of euic, mesic Typic Sulfihemists. These soils are deep and very poorly drained. They formed in organic material from partly decomposed salt-tolerant herbaceous plants, over silty sediment. They have a dark grayish brown mucky peat and very dark brown muck O horizon and a gray silt loam C horizon. The Westbrook soils are in tidal marshes and are subject to inundation twice daily by salt water. Slopes are less than 3 percent.

They formed in organic material as did the Medisaprists, but Medisaprists formed in well decomposed organic material and are not flooded by salt water as are the Westbrook soils.

Typical pedon of Westbrook mucky peat in Dighton, 100 feet east of Route 138, 0.35 mile north of Somerset town line:

Oe1—0 to 7 inches; dark grayish brown (10YR 4/2) mucky peat, 80 percent fiber, 40 percent rubbed; very dense mat of roots; nonsticky, nonplastic; many large and fine roots; medium acid; clear smooth boundary.
Oe2—7 to 24 inches; dark grayish brown (10YR 4/2) mucky peat, 80 percent fiber, 35 percent rubbed; dense mat of roots; nonsticky; nonplastic; neutral; clear smooth boundary.
Oa—24 to 35 inches; very dark brown (10YR 2/2) muck, 30 percent fiber, 15 percent rubbed; massive; nonsticky, nonplastic; neutral; abrupt smooth boundary.
IIC—35 to 60 inches; gray (5Y 5/1) silt loam; massive; nonsticky; slightly plastic; neutral

The organic deposits range from 16 to 51 inches in thickness. Reaction is strongly acid to neutral. Thin layers of silty material are common in the organic material.

The surface tier has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 2 or less. It has an estimated unrubbed fiber content of 50 to 80 percent. It has a rubbed fiber content of 25 to 40 percent.

The subsurface tier has hue of 10YR, 2.5Y, or 5Y; value of 2 to 5; and chroma of 3 or less. It has an estimated unrubbed fiber content of 20 to 85 percent and a rubbed fiber content of 15 to 40 percent.

The IIC horizon has hue of 10YR, 2.5Y, 5Y, or 5GY; value of 2 to 5; and chroma of 2 or less. It is silt loam or very fine sandy loam.

Whitman series

The Whitman series consists of coarse-loamy, mixed, mesic Typic Fragiaquepts. These soils are deep, level or nearly level, and very poorly drained. They formed in loamy glacial till. They have a black fine sandy loam A horizon. They have a gray to light gray C horizon that is gravelly sandy loam in the upper 30 inches and gravelly loamy sand in the lower part. In the C horizon, below a depth of 17 inches, they have a very firm, mottled fragipan. The Whitman soils are in depressions and drainageways in glaciated uplands. Slopes are less than 3 percent.

The Whitman soils formed in the same kind of material as the well drained Paxton soils and the moderately well drained Woodbridge soils.

Typical pedon of Whitman fine sandy loam, in Easton, 50 feet north of Prospect Street, about 0.5 mile southwest of Route 106:

O1—3 inches to 0; loose and matted leaves.
A1—0 to 8 inches; black (10YR 2/1) fine sandy loam; moderate medium granular structure; very friable; many roots; 5 to 10 percent gravel; very strongly acid; abrupt smooth boundary.
C1g—8 to 17 inches; light gray (5Y 6/1) gravelly sandy loam; few fine faint yellowish red (5YR 5/8) mottles; massive; friable; few roots in upper 4 to 6 inches; 25 to 30 percent coarse fragments; very strongly acid; clear smooth boundary.
C2xg—17 to 31 inches; gray (5Y 5/1) gravelly sandy loam; common medium and coarse distinct strong brown (7.5YR 5/6) mottles; massive; very firm, brittle; 25 to 30 percent coarse fragments; very strongly acid; clear smooth boundary.
C3xq—31 to 60 inches; gray (5Y 5/1) gravelly loamy sand; many medium and coarse prominent strong brown (7.5YR 5/8) mottles; massive; very firm, brittle; 25 to 30 percent coarse fragments; strongly acid.

The fragipan is at a depth of 15 to 25 inches. Coarse fragment content is 5 to 35 percent. Stones and boulders are on the surface and throughout the soil. Reaction is medium acid to very strongly acid.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 2 or less. It has weak or moderate, fine or medium granular structure.

The C1g horizon has hue of 2.5Y or 5Y, value of 5 or 6, and chroma of 1 or less. It has few or no mottles. It is mainly gravelly sandy loam, but in places it is sandy loam, fine sandy loam, and gravelly fine sandy loam. The Cx horizon has hue of 2.5Y or 5Y; value of 4, 5, or 6; and chroma of 2 or less. Texture in the upper part of the Cx horizon is gravelly sandy loam or sandy loam; in the lower part it is mainly gravelly loamy sand, but in places the lower part is gravelly sandy loam. The Cx horizon is very firm or extremely firm.

Windsor series

The Windsor series consists of mixed, mesic, Typic Udipsamments. These soils are deep, nearly level to moderately steep, and excessively drained. They formed

in sandy glacial outwash. They have a strong brown loamy sand and yellowish brown sand B horizon and a light olive brown sand C horizon. The Windsor soils are on glacial outwash plains. Slopes range from 0 to 25 percent.

The Windsor soils formed in the same kind of material as the poorly drained Wareham soils, the moderaterly well drained Deerfield soils, and the very poorly drained Scarboro soils. They are closely associated with the well drained Agawam soils, the moderately well drained Ninigret soils, and the poorly drained Walpole soils.

Typical pedon of Windsor loamy sand, 0 to 3 percent slopes, in Taunton, 75 feet south of Crane Street, 1,000 feet east of Bassett Street:

Ap1—0 to 5 inches; dark brown (10YR 3/3) loamy sand; weak fine granular structure; very friable; many roots; less than 5 percent gravel; very strongly acid; abrupt wavy boundary.

Ap2—5 to 8 inches; dark yellowish brown (10YR 4/4) loamy sand; massive; very friable; common roots; less than 5 percent gravel; very strongly acid; clear smooth boundary.

B21—8 to 22 inches; strong brown (7.5YR 4/6) loamy sand; massive; very friable; few roots; less than 5 percent gravel; very strongly acid; gradual smooth boundary.

B22—22 to 30 inches; yellowish brown (10YR 5/6) sand; single grained; loose; less than 5 percent gravel; strongly acid; gradual smooth boundary.

C—30 to 68 inches; light olive brown (2.5Y 5/4) sand; single grained; loose; 5 percent gravel; strongly acid.

The solum ranges from 20 to 32 inches in thickness. It is generally free of gravel, but in places it is as much as 5 percent gravel. Reaction is strongly acid or very strongly acid throughout the pedon.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4.

The B21 horizon has hue of 10YR or 7.5YR and value and chroma of 4 to 6. This horizon is mainly sand, but in places it is loamy fine sand. The B22 horizon has hue of 10YR or 2.5Y, value of 5 or 6 and chroma of 2 to 6.

The C horizon has hue of 10YR, 2.5Y, or 5Y; value of 5 to 7; and chroma of 2 to 4. It is sand or fine sand and has 0 to 10 percent gravel content.

Woodbridge series

The Woodbridge series consists of coarse-loamy, mixed, mesic Typic Fragiochrepts. These soils are deep, nearly level to gently sloping, and moderately well drained. These soils formed in glacial till. They have a dark yellowish brown and mottled, yellowish brown sandy loam B horizon and a mottled, light brownish gray, very firm gravelly sandy loam C horizon. The Woodbridge soils are on drumloids and on sloping areas on glaciated uplands. Slopes range from 0 to 8 percent.

Woodbridge soils formed in the same kind of material as the well drained Paxton soils, the poorly drained Ridgebury soils, and the very poorly drained Whitman soils. They are closely associated with the well drained Charlton soils.

Typical pedon of Woodbridge very stony fine sandy loam, 0 to 8 percent slopes, in Taunton, 0.25 mile west of Staples Street, 3,000 feet south of Caswell Street:

Ap—0 to 8 inches; dark brown (10YR 3/3) fine sandy loam; moderate medium granular structure; very friable; many roots; 10 percent rock fragments; very strongly acid; abrupt smooth boundary.

B21—8 to 16 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; very friable; many roots; 15 percent gravel; very strongly acid; clear wavy boundary.

B22—16 to 30 inches; yellowish brown (10YR 5/6) sandy loam; common medium and coarse prominent brown to dark brown (7.5YR 4/4) and brownish yellow (10YR 6/8) mottles; massive; very friable; common roots; 15 percent gravel; strongly acid; clear wavy boundary.

Cx—30 to 62 inches; light brownish gray (2.5Y 6/3) gravelly sandy loam that has high percentage of coarse and very coarse sand; common medium and coarse prominent yellowish red (5YR 5/6), brownish yellow (10YR 6/8), and light olive gray (5Y 6/2) mottles; massive; very firm, brittle; 25 percent gravel; strongly acid.

The fragipan is at a depth of 16 to 36 inches. Coarse fragment content is 5 to 30 percent throughout the soil. Reaction is medium acid to very strongly acid throughout.

The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3.

The B21 horizon has hue of 10YR; value of 3 to 5; and chroma of 4 to 6. The B horizon is mainly sandy loam, but in places it is fine sandy loam, gravelly fine sandy loam, and gravelly sandy loam. The B horizon has weak fine granular structure or is massive. The B22 horizon has hue of 10YR, and value and chroma of 4 to 6. The B22 horizon has common or many, medium or coarse, prominent or distinct mottles.

The Cx horizon has hue of 2.5Y of 5Y, value of 4 to 6, and chroma of 2 to 4. It is mainly gravelly sandy loam, but in places it is coarse sandy loam and fine sandy loam. It has weak or moderate, thin or medium platy structure, or is massive. The Cx horizon is firm or very firm and brittle. It has common or many, medium and coarse, prominent or distinct mottles.

Classification

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil Taxonomy" (*6*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 17, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol.* An example is Inceptisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis 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 of a suborder indicates the order. An example is Ochrept (*Ochr*, meaning pale color, plus *ept*, from Inceptisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Dystrochrepts (*Dystr*, meaning low base saturation, plus *ochrept*, the suborder of Inceptisols that have light colored surfaces).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Dystrochrepts.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is coarse-loamy, mixed, mesic, Typic Dystrochrepts.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Table 17 shows the classification of each soil series in the survey area according to the current classification system. The placement of some soil series, particularly in families, may change as more information becomes available.

References

(1) Allan, P. F., L. E. Garland , and R. Dugan. 1963. Rating northeastern soils for their suitability for wildlife habitat. 28th North Am. Wildl. Nat. Resour. Cont. Wildl. Manage. Inst., pp. 247-261, illus.

(2) American Association of State Highway [and Transportation] Officials. 1970. Standard specifications for highway materials and methods of sampling and testing. Ed. 10, 2 vol., illus.

(3) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(4) United States Department of Agriculture. 1951. Soil survey manual. U. S. Dep. Agric. Handb. 18, 503 pp., illus. [Supplements replacing pp. 173-188 issued May 1962]

(5) United States Department of Agriculture, 1971. Massachusetts Water Resources Study - Present Land Use, 62 pp.

(6) United States Department of Agriculture. 1975. Soil Taxonomy: a basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv. U. S. Dep. Agric. Handb. 436, 754 pp., illus.

Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly 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—

	Inches
Very low	less than 2.4
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	More than 5.2

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

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

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Compressible. Excessive decrease in volume of soft soil under load.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Deferred grazing. A delay in grazing until range plants have reached a specified stage of growth. Grazing is deferred in order to increase the vigor of forage and to allow desirable plants to produce seed. Contrasts with continuous grazing and rotation grazing.

Depth to rock. Bedrock at a depth that adversely affects the specified use.

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 but may be caused by the sudden deepening of channels or the blocking of drainage outlets. 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, rocky, or shallow. Some are steep. 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. Some are so steep that much of the water they receive is lost as runoff. 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. Well drained soils are commonly medium textured. 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 mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

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. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

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 for 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. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

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 commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Drumloid. An oval hill or ridge of glacial drift whose shape resembles that of a drumlin but is less regular and symmetrical.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake. The rapid movement of water into the soil.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action. Freezing and thawing of soil moisture. Frost action can damage structures and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

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

Glacial till (geology). Unassorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes by water originating mainly from the melting of glacial ice. Many are interbedded or laminated.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Green manure (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer; fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does

not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Irrigation. Application of water to soils to assist in production of crops. A common method of irrigation is—

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Kame (geology). An irregular, short ridge or hill of stratified glacial drift.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is greater than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20 percent.

Munsell notation. A designation of color by degrees of the three single variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

Outwash, glacial. Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by water that originated mainly from the melting of glacial ice. Glacial outwash is commonly in valleys on landforms known as valley trains, outwash terraces, eskers, kame terraces, kames, outwash fans, or deltas.

Outwash plain. A land form of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Pan. A compact, dense layer in a soil. A pan impedes the movement of water and the growth of roots. The word "pan" is commonly combined with other words that more explicitly indicate the nature of the layer; for example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

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

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

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 *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the basis of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

Piping. Moving water of subsurface tunnels or pipelike cavities in the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Poorly graded. Refers to soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground be-

fore reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Slow intake. The slow movement of water into the soil.

Slow refill. The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones. Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the process of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use or management.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or " very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Till plain. An extensive flat to undulating area underlain by glacial till.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial melt water. In nonglaciated regions, alluvium deposited by heavily loaded streams emerging from hills or mountains and spreading sediments onto the lowland as a series of adjacent alluvial fans.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but the limited geographic soil area does not justify creation of a new series.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within 1 year; specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by melt water streams, in a glacial lake or other body of still water in front of a glacier.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Illustrations

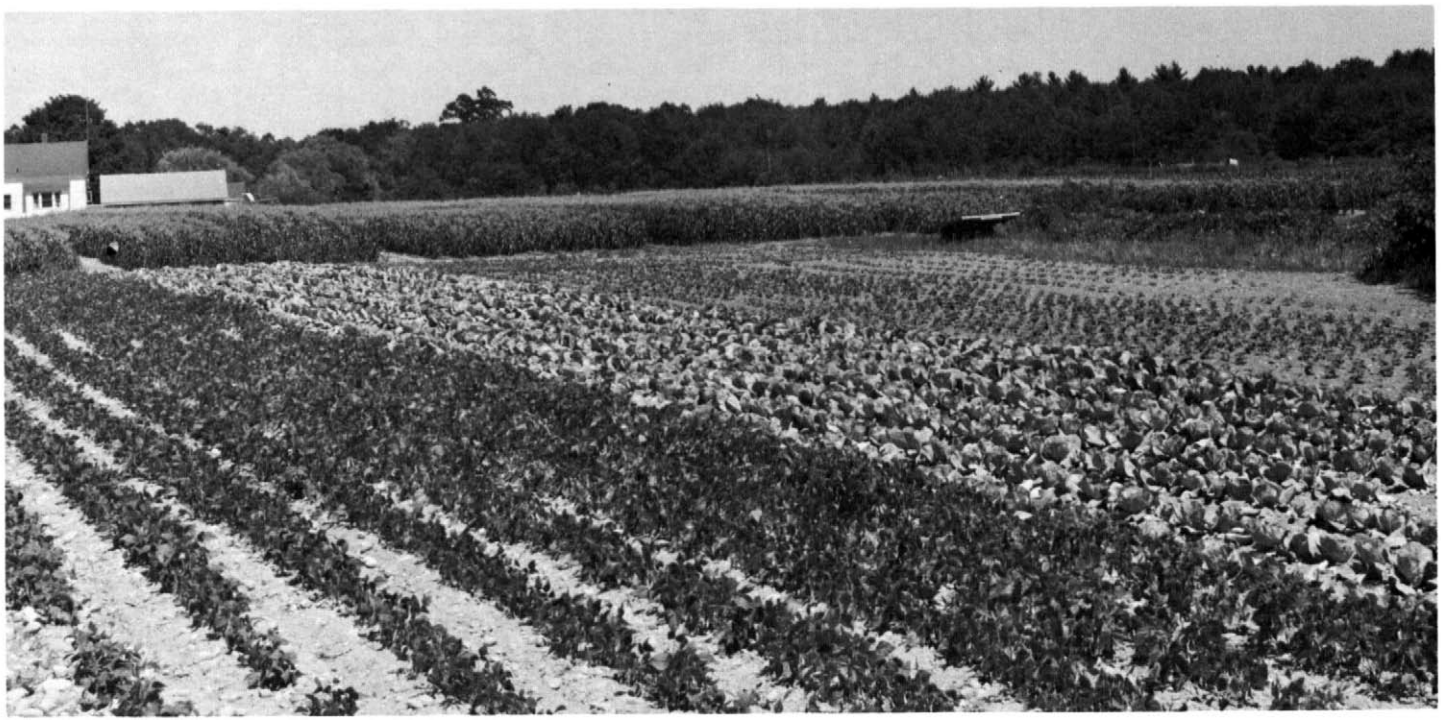


Figure 1.—Truck crops on Hinckley sandy loam, 0 to 3 percent slopes. Irrigation and good farming practices help to overcome drouthiness.

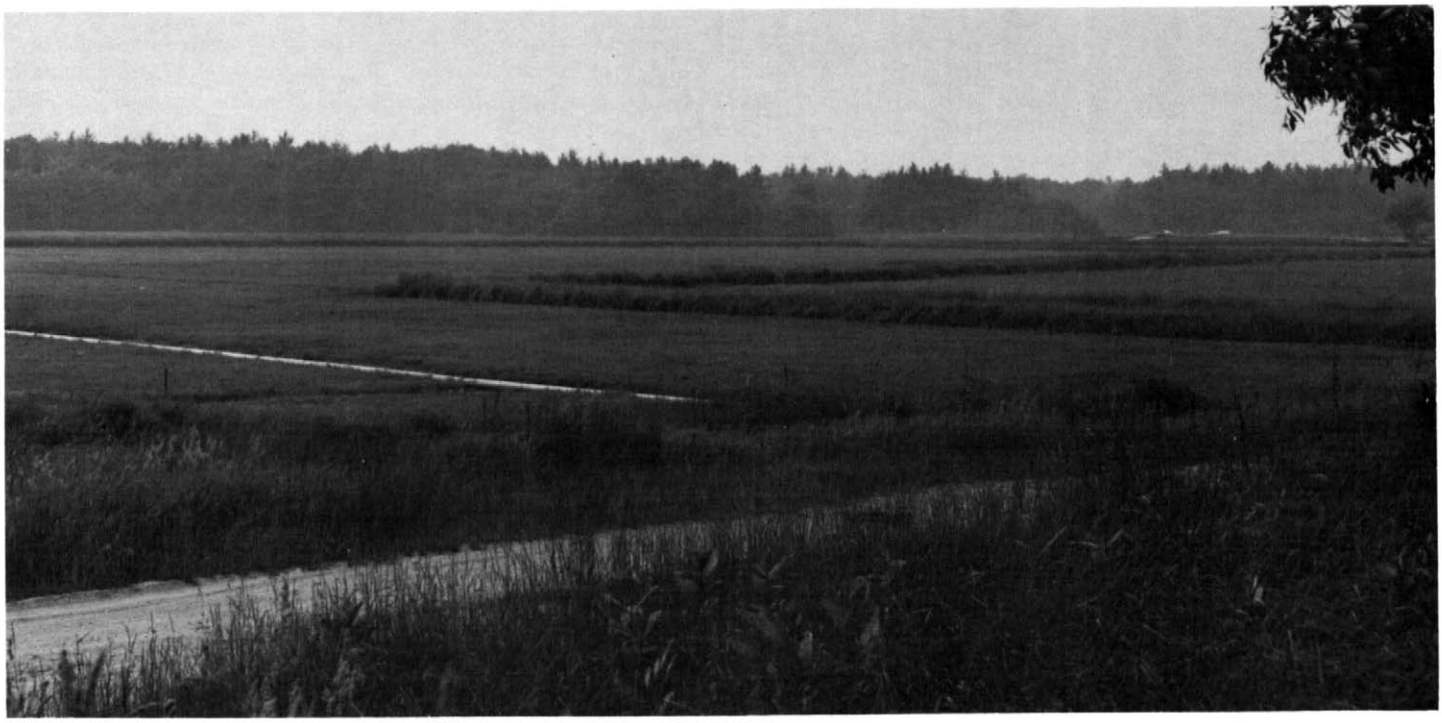


Figure 2.—Cranberry bog on Medisaprists, sandy surface. Network of ditches is used to flood and drain the bog.

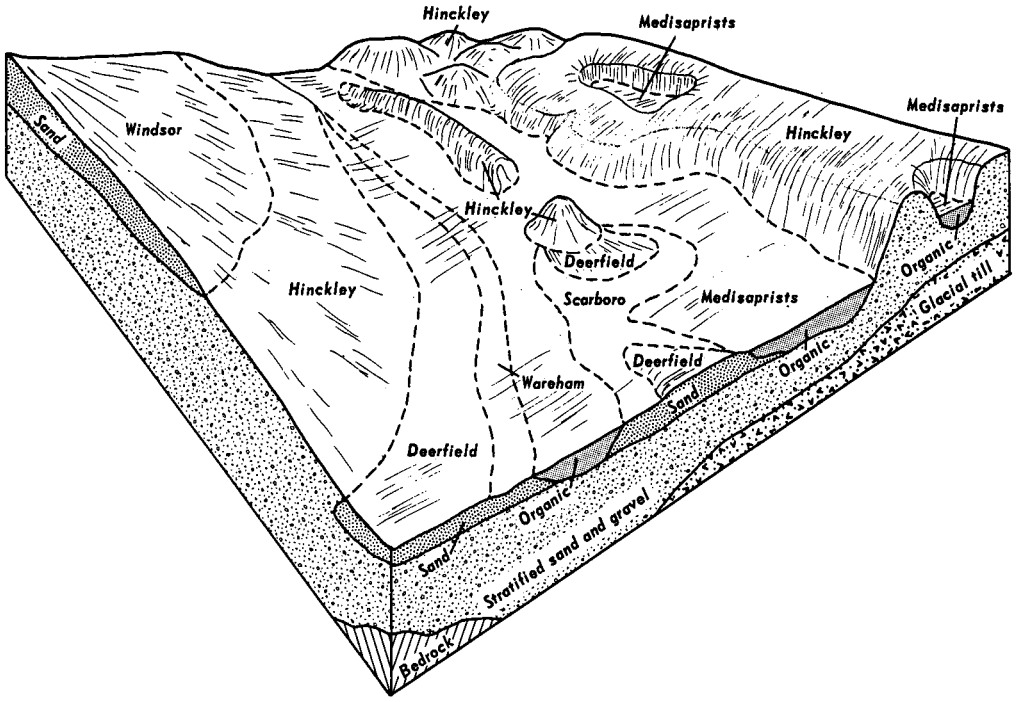


Figure 3.—Relationship of soils to topography and underlying material in Hinckley-Medisaprists-Windsor map unit.

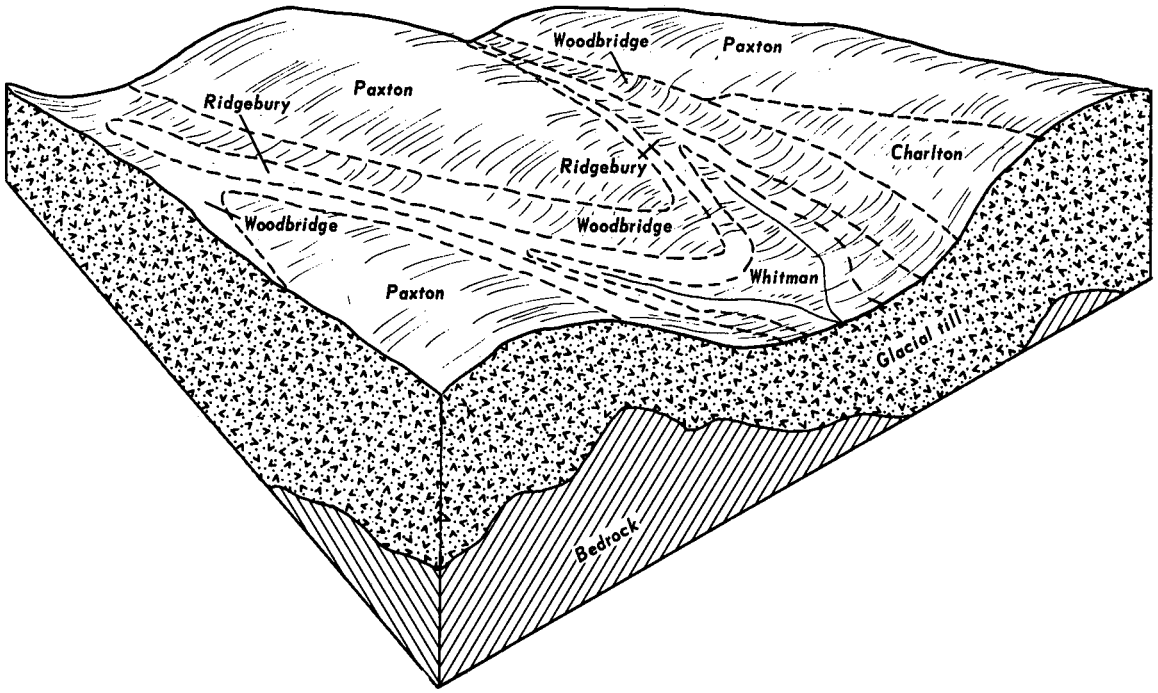


Figure 4.—Relationship of soils to topography and underlying material in Paxton-Woodbridge-Ridgebury map unit.

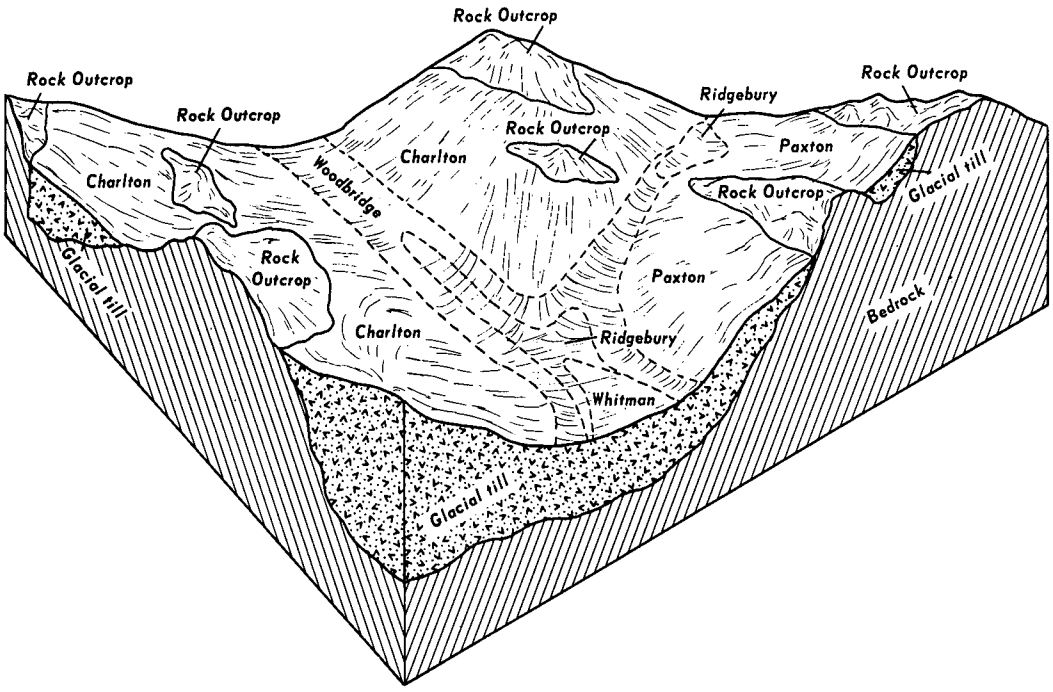


Figure 5.—Relationship of soils to topography and underlying material in Charlton-Rock outcrop-Paxton map unit.

Figure 6.—Homesite next to rock outcrop. Imaginative planning has turned this potential liability into an asset.

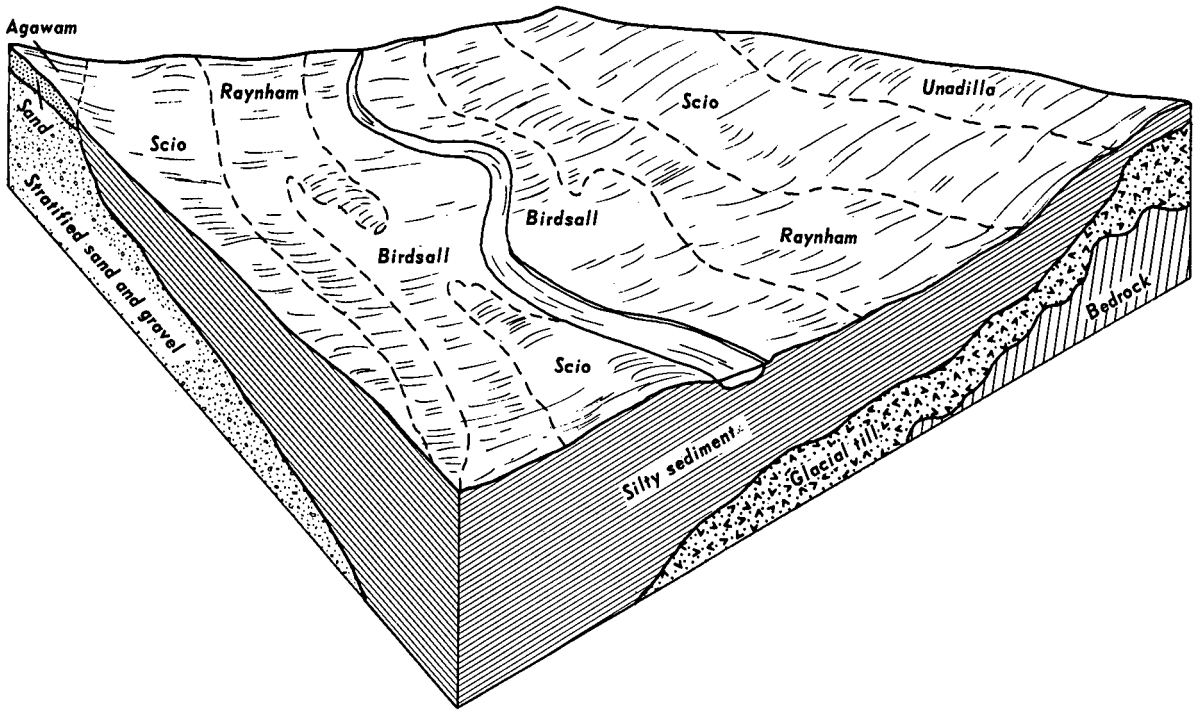


Figure 7.—Relationship of soils to topography and underlying material in Raynham-Scio-Birdsall map unit.

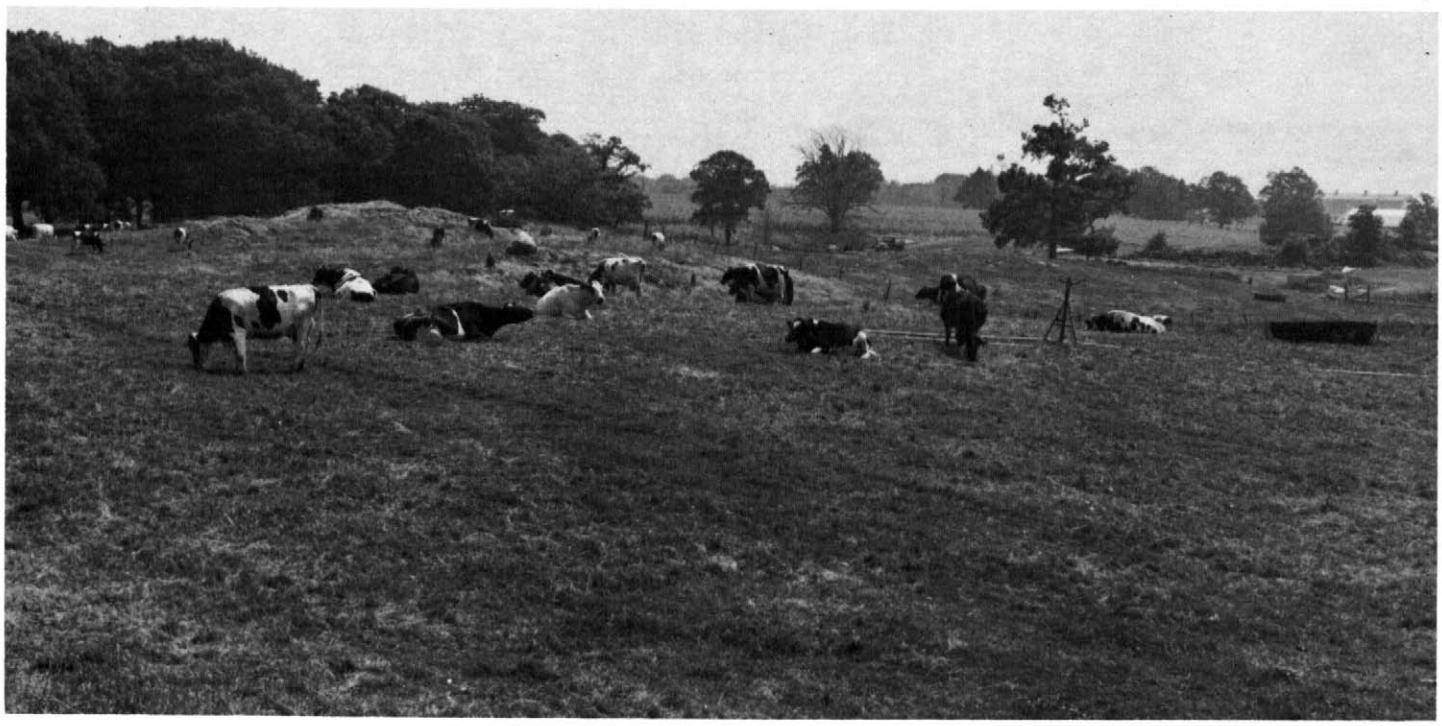


Figure 8.—Improved pasture on Charlton-Paxton fine sandy loams, rocky, 3 to 8 percent slopes.

Figure 9.—Alfalfa-grass hay on Deerfield loamy sand.

Figure 10.—Lettuce on Paxton fine sandy loam, 3 to 8 percent slopes. The soil commonly provides adequate water for most crops.

Figure 11.—Silage corn on Paxton fine sandy loam, 3 to 8 percent slopes.

Figure 12.—Strawberries on Paxton fine sandy loam, 3 to 8 percent slopes. The soil is in Capability subclass IIe.

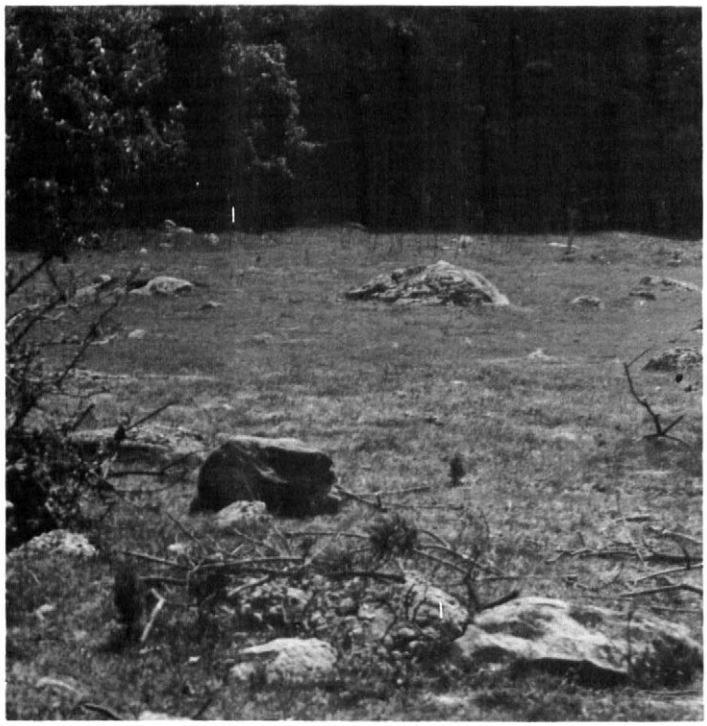


Figure 13.—Unimproved pasture on Woodbridge extremely stony fine sandy loam, 0 to 8 percent slopes. Stones on the surface prevent use of most machinery. The soil is in Capability subclass VIIs.

Figure 14.—White pine is an important commercial species.

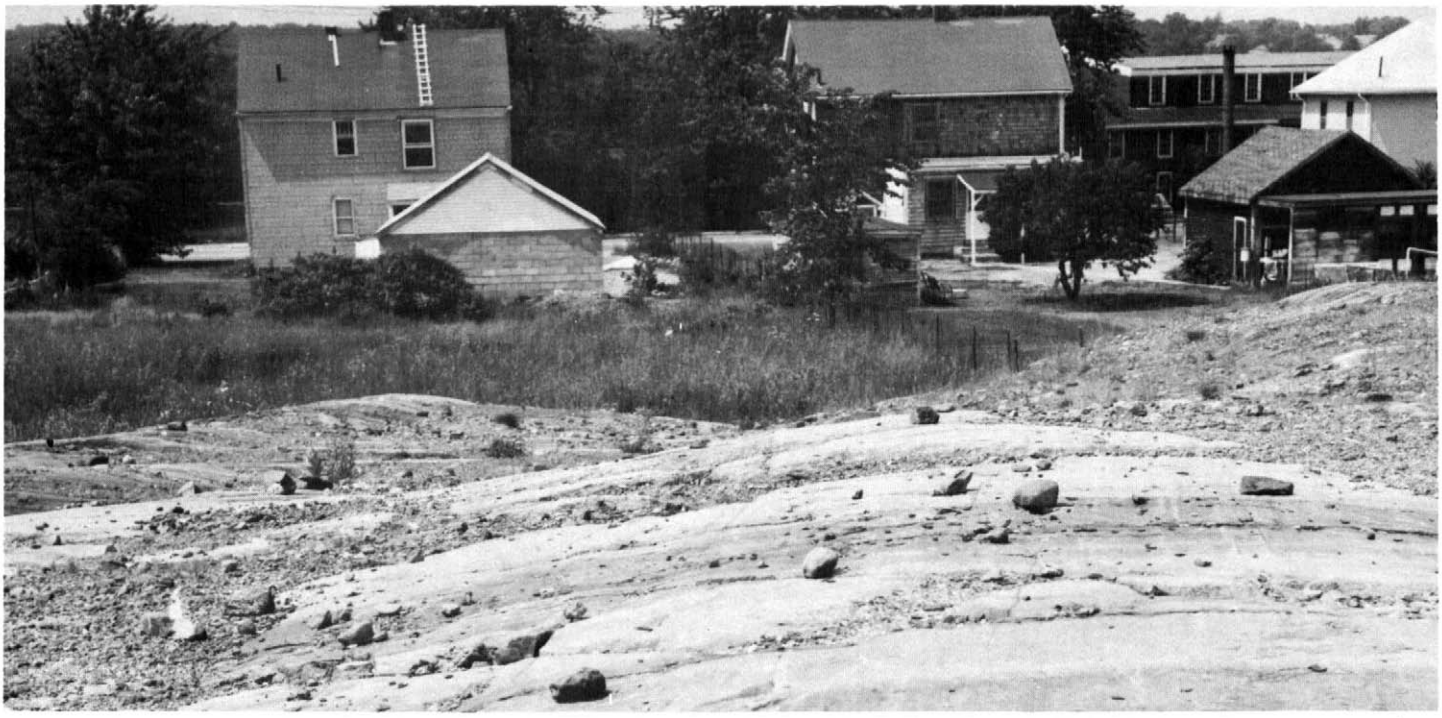


Figure 15.—Bedrock at shallow depth is a homesite limitation that is difficult to overcome.

Figure 16.—Stratification in glacial outwash. Soil formed in this material is generally a good source of sand or gravel.

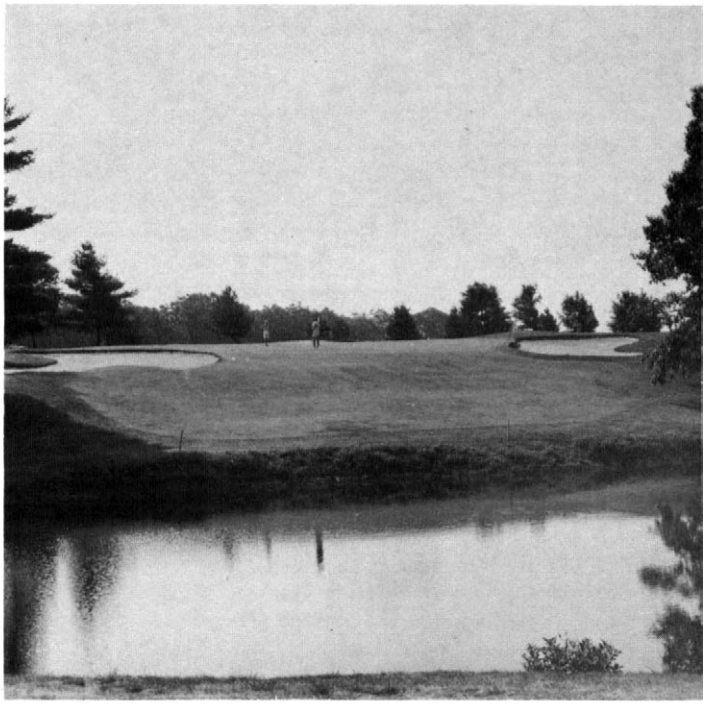


Figure 17.—Golf course on Windsor loamy sand, 3 to 8 percent slopes. The pond serves as a hazard and supplies irrigation water for greens and fairways.

Figure 18.—Recreational development on Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes.

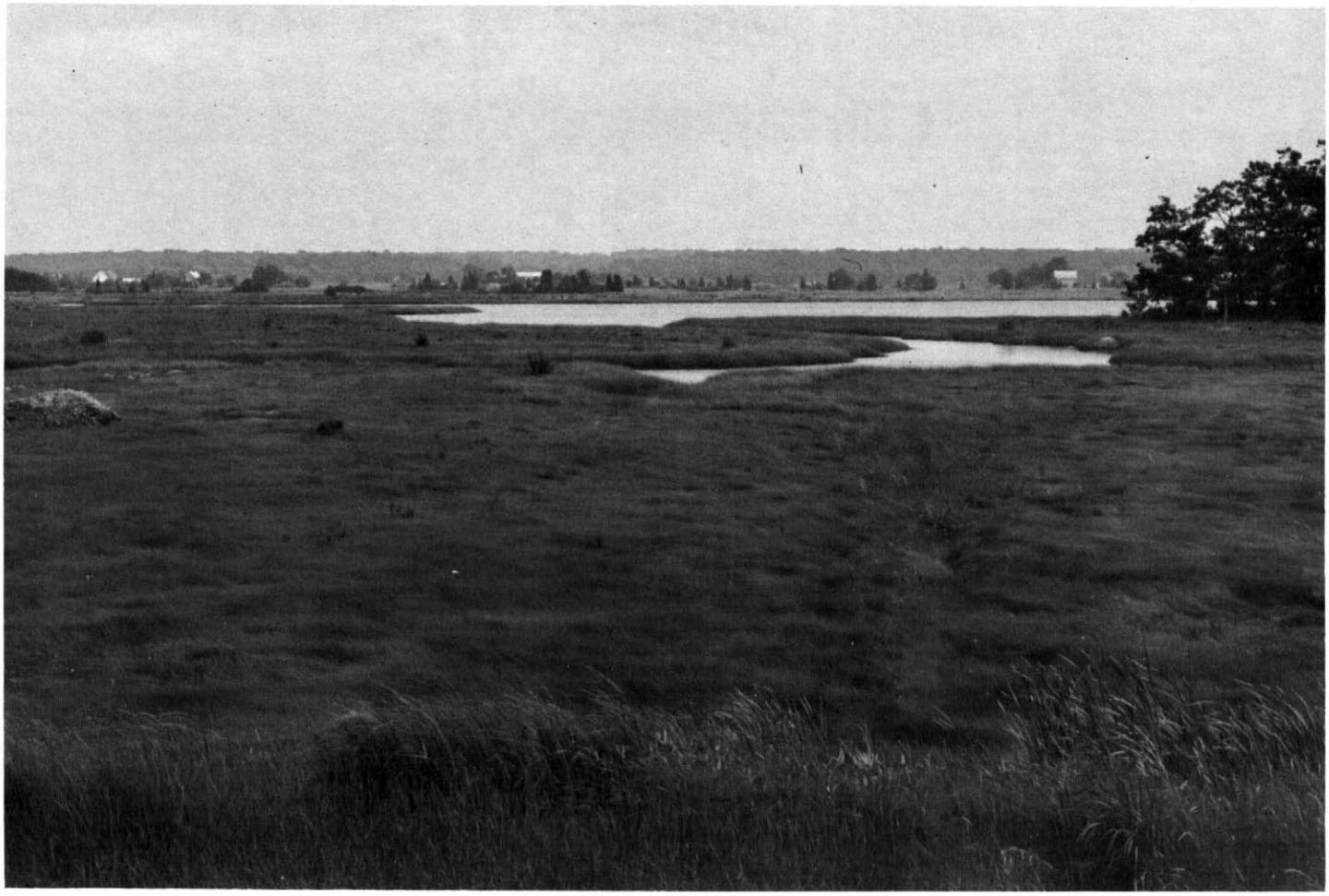


Figure 19.—Tidal marsh on Westbrook mucky peat is the habitat of many littoral plants and animals.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION DATA

Month	Temperature[1]						Precipitation[1]				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[2]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	36.8	17.3	27.1	58	-10	15	3.14	1.65	4.35	6	9.7
February	38.9	19.2	29.1	60	-6	12	3.72	2.43	4.88	7	10.9
March	45.7	26.8	36.2	69	5	35	3.76	2.45	4.94	7	8.4
April	57.8	35.1	46.5	82	19	209	3.89	2.49	5.15	7	.7
May	68.3	44.1	56.2	89	28	502	3.64	1.73	5.20	6	.0
June	77.2	54.3	65.8	94	36	774	2.91	1.24	4.25	6	.0
July	82.0	60.2	71.1	95	44	964	3.28	1.38	4.82	5	.0
August	80.3	58.2	69.3	91	40	908	4.37	2.57	5.96	6	.0
September	73.1	50.8	62.0	90	29	660	3.76	1.83	5.33	5	.0
October	63.8	40.0	52.0	82	20	372	3.50	2.12	4.73	5	.0
November	51.7	31.9	41.8	72	12	110	4.58	2.88	6.11	7	.3
December	40.6	21.7	31.2	63	-4	35	4.55	2.49	6.23	8	7.7
Year	59.7	38.3	49.0	96	-12	4,596	45.10	37.65	52.21	75	37.7

[1]Recorded in the period 1951-73 at Taunton, Mass.

[2]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

Probability	Minimum temperature[1]		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 24	May 12	May 28
2 years in 10 later than--	April 19	May 6	May 23
5 years in 10 later than--	April 9	April 24	May 14
First freezing temperature in fall:			
1 year in 10 earlier than--	October 11	September 29	September 13
2 years in 10 earlier than--	October 16	October 3	September 19
5 years in 10 earlier than--	October 26	October 11	September 30

[1]Recorded in the period 1951-73 at Taunton, Mass.

TABLE 3.--GROWING SEASON LENGTH

Probability	Daily minimum temperature during growing season[1]		
	Higher than 24°F	Higher than 28°F	Higher than 32°F
	Days	Days	Days
9 years in 10	179	148	117
8 years in 10	186	155	124
5 years in 10	200	169	139
2 years in 10	213	183	153
1 year in 10	221	191	161

[1]Recorded in the period 1951-73 at Taunton, Mass.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AgA	Agawam fine sandy loam, 0 to 3 percent slopes	394	0.2
AgB	Agawam fine sandy loam, 3 to 8 percent slopes	196	0.1
AmA	Amostown fine sandy loam, 0 to 5 percent slopes	169	0.1
Bd	Birdsall silt loam	1,492	0.8
CoB	Charlton-Paxton fine sandy loams, 3 to 8 percent slopes	992	0.5
CpB	Charlton-Paxton very stony fine sandy loams, 0 to 8 percent slopes	6,090	3.2
CpC	Charlton-Paxton very stony fine sandy loams, 8 to 15 percent slopes	900	0.5
CsB	Charlton-Paxton extremely stony fine sandy loams, 0 to 8 percent slopes	4,766	2.5
CsC	Charlton-Paxton extremely stony fine sandy loams, 8 to 15 percent slopes	1,359	0.7
CtB	Charlton-Paxton fine sandy loams, rocky, 3 to 8 percent slopes	438	0.2
CtC	Charlton-Paxton fine sandy loams, rocky, 8 to 15 percent slopes	824	0.4
CtD	Charlton-Paxton fine sandy loams, rocky, 15 to 25 percent slopes	228	0.1
CuC	Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes	2,194	1.2
CuE	Charlton-Rock outcrop-Paxton complex, 15 to 35 percent slopes	834	0.4
De	Deerfield loamy sand	6,619	3.5
Du	Dumps	132	0.1
HfA	Hinckley sandy loam, 0 to 3 percent slopes	4,141	2.2
HfB	Hinckley sandy loam, 3 to 8 percent slopes	16,577	8.6
HfC	Hinckley sandy loam, 8 to 15 percent slopes	5,702	3.0
HfD	Hinckley sandy loam, 15 to 25 percent slopes	1,648	0.9
HfE	Hinckley sandy loam, 25 to 35 percent slopes	442	0.2
HsB	Hinckley very stony sandy loam, 3 to 8 percent slopes	804	0.4
HsC	Hinckley very stony sandy loam, 8 to 15 percent slopes	194	0.1
MB	Medisaprists, sandy surface	370	0.2
MC	Medisaprists, deep	15,474	8.1
MD	Medisaprists, shallow	6,684	3.5
MeA	Merrimac fine sandy loam, 0 to 3 percent slopes	1,404	0.7
MeB	Merrimac fine sandy loam, 3 to 8 percent slopes	1,651	0.9
MeC	Merrimac fine sandy loam, 8 to 15 percent slopes	227	0.1
Ng	Ninigret fine sandy loam	313	0.2
PaB	Paxton fine sandy loam, 3 to 8 percent slopes	3,077	1.6
PaC	Paxton fine sandy loam, 8 to 15 percent slopes	390	0.2
PbB	Paxton very stony fine sandy loam, 0 to 8 percent slopes	10,783	5.7
PbC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	1,376	0.7
PbD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	167	0.1
PcB	Paxton extremely stony fine sandy loam, 0 to 8 percent slopes	3,406	1.8
PcC	Paxton extremely stony fine sandy loam, 8 to 15 percent slopes	490	0.3
Pe	Pipestone loamy fine sand	708	0.4
Pg	Pits, gravel	2,983	1.6
Ra	Raynham silt loam	1,391	0.7
RdA	Ridgebury fine sandy loam, 0 to 3 percent slopes	561	0.3
RdB	Ridgebury fine sandy loam, 3 to 8 percent slopes	174	0.1
ReA	Ridgebury extremely stony fine sandy loam, 0 to 3 percent slopes	4,896	2.6
ReB	Ridgebury extremely stony fine sandy loam, 3 to 8 percent slopes	2,681	1.4
Sb	Scarboro mucky loamy fine sand	10,858	5.7
ScA	Scio silt loam, 0 to 3 percent slopes	865	0.5
ScB	Scio silt loam, 3 to 8 percent slopes	347	0.2
StA	Sudbury fine sandy loam, 0 to 3 percent slopes	2,811	1.5
StB	Sudbury fine sandy loam, 3 to 8 percent slopes	1,063	0.6
UD	Udorthents, smoothed	2,185	1.2
UnA	Unadilla very fine sandy loam, 0 to 3 percent slopes	159	0.1
UnB	Unadilla very fine sandy loam, 3 to 8 percent slopes	227	0.1
Ur	Urban land	5,267	2.8
Wa	Walpole fine sandy loam	1,187	0.6
Wb	Walpole Variant fine sandy loam	296	0.2
Wc	Wareham loamy sand	1,621	0.9
WD	Westbrook mucky peat	678	0.4
Wg	Whitman fine sandy loam	260	0.1
Wh	Whitman extremely stony fine sandy loam	12,336	6.4
WnA	Windsor loamy sand, 0 to 3 percent slopes	5,035	2.7
WnB	Windsor loamy sand, 3 to 8 percent slopes	9,661	5.1
WnC	Windsor loamy sand, 8 to 15 percent slopes	1,281	0.7
WnD	Windsor loamy sand, 15 to 25 percent slopes	371	0.2
WrA	Woodbridge fine sandy loam, 0 to 3 percent slopes	847	0.4
WrB	Woodbridge fine sandy loam, 3 to 8 percent slopes	920	0.5
WsB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	5,285	2.8
WtB	Woodbridge extremely stony fine sandy loam, 0 to 8 percent slopes	8,497	4.5
	Water	1,402	0.7
	Total	189,800	100.0

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Estimates were made in 1976. Absence of a yield indicates that the soil is not suited to the crop or the crop is generally not grown on the soil]

Soil name and map symbol	Corn silage	Alfalfa hay	Grass-legume hay	Grass hay	Pasture
	Ton	Ton	Ton	Ton	AUM[1]
AgA---- Agawam	24	5	4.0	3.5	8.5
AgB---- Agawam	24	5	4.0	3.5	8.5
AmA---- Amostown	22	4.0	3.5	3.5	7.6
Bd---- Birdsall	---	---	---	---	---
CoB---- Charlton	24	4.8	4.3	4.0	9.0
CpB, CpC, CsB, CsC---- Charlton	---	---	---	---	5.0
CtB, CtC, CtD, CuC, CuE---- Charlton	---	---	---	---	---
De---- Deerfield	16	3.5	3.0	3.0	6.5
Du[2]. Dumps					
HfA, HfB---- Hinckley	12	2.5	2.0	---	4.8
HfC---- Hinckley	---	---	---	---	---
HfD---- Hinckley	---	---	---	---	---
HfE---- Hinckley	---	---	---	---	---
HsB---- Hinckley	---	---	---	---	5.0
HsC---- Hinckley	---	---	---	---	4.5
MB, MC, MD---- Medisaprists	---	---	---	---	---
MeA, MeB---- Merrimac	18	4.0	3.0	2.5	7.6
MeC---- Merrimac	16	4.0	3.0	2.5	7.6
Ng---- Ninigret	22	4.0	3.5	4.0	7.7

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass-legume hay	Grass hay	Pasture
	Ton	Ton	Ton	Ton	AUM[1]
PaB---- Paxton	24	4.5	4.0	4.0	8.5
PaC---- Paxton	22	4.5	4.0	4.0	8.5
PbB, PbC, PbD---- Paxton	---	---	---	---	5.0
PcB, PcC---- Paxton	---	---	---	---	---
Pe---- Pipestone	12	---	3.0	3.0	6.5
Pg[2]. Pits					
Ra---- Raynham	18	---	3.5	4.0	6.5
RdA, RdB---- Ridgebury	16	---	3.5	4.0	6.5
ReA, ReB---- Ridgebury	---	---	---	---	---
Sb---- Scarboro	---	---	---	---	---
ScA---- Scio	22	4.5	3.5	3.5	8.5
ScB---- Scio	22	4.5	3.5	3.5	8.5
StA, StB---- Sudbury	18	3.5	4.0	4.0	7.6
UD. Udorthents					
UnA---- Unadilla	21	4.5	3.5	3.5	8.5
UnB---- Unadilla	21	4.5	3.5	3.5	8.5
Ur[2] Urban land					
Wa---- Walpole	18	---	3.0	3.0	5.5
Wb---- Walpole Variant	18	---	3.0	3.0	5.5
Wc---- Wareham	16	---	2.5	3.0	5.5
WD---- Westbrook	---	---	---	---	---
Wg, Wh---- Whitman	---	---	---	---	---
WnA, WnB---- Windsor	14	3.0	2.5	2.0	5.5
WnC---- Windsor	12	3.0	2.5	2.0	5.5

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass-legume hay	Grass hay	Pasture
	Ton	Ton	Ton	Ton	AUM[1]
WnD---------- Windsor	---	2.5	2.0	---	5.0
WrA---------- Woodbridge	24	4.0	4.0	4.0	8.0
WrB---------- Woodbridge	24	4.0	4.0	4.0	8.0
WsB---------- Woodbridge	---	---	---	---	5.0
WtB---------- Woodbridge	---	---	---	---	---

[1]Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.
[2]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	553	---	---	---
II	14,882	4,839	6,988	3,055
III	46,259	617	10,228	35,414
IV	9,312	---	2,329	6,983
V	11,118	---	11,118	---
VI	30,600	---	1,492	29,108
VII	64,442	---	22,258	41,901
VIII	678	---	678	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
AgA, AgB---------- Agawam	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Red pine---------- Northern red oak----	70 70 65	Eastern white pine, red pine, white spruce, Norway spruce.
AmA---------- Amostown	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak----	75 70	Eastern white pine, white spruce, red pine, eastern hemlock.
Bd---------- Birdsall	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	50 50	Not generally planted to trees.
CoB[1], CpB[1], CpC[1]: Charlton----------	4o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Red pine---------- Red maple---------- Shagbark hickory----	65 65 70 55 55	Eastern white pine, red pine, white spruce, eastern hemlock, tamarack.
Paxton----------	3o	Slight	Slight	Slight	Slight	Northern red oak---- Red pine---------- Eastern white pine--	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.
CsB[1], CsC[1]: Charlton----------	4x	Slight	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Red pine---------- Red maple---------- Shagbark hickory----	65 65 70 55 55	Eastern white pine, red pine, white spruce, eastern hemlock, tamarack.
Paxton----------	3x	Slight	Moderate	Slight	Slight	Northern red oak---- Red pine---------- Eastern white pine--	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.
CtB[1], CtC[1]: Charlton----------	4o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Red pine---------- Red maple---------- Shagbark hickory----	65 65 70 55 55	Eastern white pine, red pine, white spruce, eastern hemlock,
Paxton----------	3o	Slight	Slight	Slight	Slight	Northern red oak---- Red pine---------- Eastern white pine--	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.
CtD[1]: Charlton----------	4r	Slight	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Red pine---------- Red maple---------- Shagbark hickory----	65 65 70 55 55	Eastern white pine, red pine, white spruce, eastern hemlock, tamarack.
Paxton----------	3r	Slight	Moderate	Slight	Slight	Northern red oak---- Red pine---------- Eastern white pine--	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
CuC[1]:								
Charlton	4x	Slight	Moderate	Slight	Slight	Northern red oak Eastern white pine Red pine Red maple Shagbark hickory	65 65 70 55 55	Eastern white pine, red pine, white spruce, eastern hemlock, tamarack.
Rock outcrop.								
Paxton	3x	Slight	Moderate	Slight	Slight	Northern red oak Red pine Eastern white pine	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.
CuE[1]:								
Charlton	4x	Slight	Moderate	Slight	Slight	Northern red oak Eastern white pine Red pine Red maple Shagbark hickory	65 65 70 55 55	Eastern white pine, red pine, white spruce, eastern hemlock, tamarack.
Rock outcrop.								
Paxton	3x	Slight	Moderate	Slight	Slight	Northern red oak Red pine Eastern white pine	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.
De Deerfield	4o	Slight	Slight	Slight	Slight	Eastern white pine Northern red oak	65 55	Eastern white pine, red pine, European larch.
HfA, HfB, HfC Hinckley	5s	Slight	Slight	Severe	Slight	Northern red oak Eastern white pine Red pine	49 60 58	Eastern white pine, red pine, European larch.
HfD, HfE Hinckley	5s	Slight	Moderate	Severe	Slight	Northern red oak Eastern white pine Red pine	49 60 58	Eastern white pine, red pine, European larch.
HsB, HsC Hinckley	5s	Slight	Slight	Severe	Slight	Northern red oak Eastern white pine Red pine	49 60 58	Eastern white pine, red pine, European larch.
MeA, MeB, MeC Merrimac	4s	Slight	Slight	Moderate	Slight	Northern red oak Eastern white pine	51 64	Eastern white pine, red pine.
Ng Ninigret	3o	Slight	Slight	Slight	Slight	Red pine Eastern white pine	71 75	Eastern white pine, white spruce.
PaB, PaC, PbB, PbC Paxton	3o	Slight	Slight	Slight	Slight	Northern red oak Red pine Eastern white pine	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.
PbD Paxton	3r	Slight	Moderate	Slight	Slight	Northern red oak Red pine Eastern white pine	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
PcB, PcC---------- Paxton	3x	Slight	Moderate	Slight	Slight	Northern red oak---- Red pine---------- Eastern white pine--	65 67 66	Red pine, eastern white pine, Norway spruce, European larch.
Pe---------- Pipestone	3s	Slight	Moderate	Severe	Slight	Northern red oak---- Shagbark hickory---- White ash---------- Swamp white oak-----	--- --- --- ---	White spruce, eastern white pine, Norway spruce.
Ra---------- Raynham	4w	Slight	Severe	Severe	Severe	Eastern white pine-- White spruce--------	65 55	Eastern white pine, white spruce, Atlantic white-cedar.
RdA, RdB---------- Ridgebury	4w	Slight	Severe	Severe	Severe	Northern red oak---- Eastern white pine--	57 63	Eastern white pine, white spruce.
ReA, ReB---------- Ridgebury	4x	Slight	Severe	Severe	Severe	Northern red oak---- Eastern white pine--	57 63	Eastern white pine, white spruce.
Sb---------- Scarboro	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	55 55	Atlantic white-cedar.
ScA, ScB---------- Scio	2o	Slight	Slight	Slight	Slight	Northern red oak---- White ash----------	75 ---	European larch, eastern white pine, red pine.
StA, StB---------- Sudbury	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak----	60 45	Eastern white pine, red pine, European larch, white spruce, Norway spruce.
UnA, UnB---------- Unadilla	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- White ash----------	75 --- ---	Eastern white pine, Norway spruce, European larch, red pine, white spruce.
Wa---------- Walpole	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	68 75	Eastern white pine, white spruce, Atlantic white-cedar, Norway spruce.
Wb---------- Walpole Variant	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	68 75	Eastern white pine, white spruce, Norway spruce.
Wc---------- Wareham	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	65 65	Eastern white pine.
Wg---------- Whitman	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	56 55	Not generally planted to trees.
Wh---------- Whitman	5x	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	56 44	Not generally planted to trees.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
WnA, WnB, WnC----- Windsor	5s	Slight	Slight	Severe	Slight	Eastern white pine-- Northern red oak---- Red pine----------	57 52 61	Eastern white pine, red pine.
WnD----------- Windsor	5s	Slight	Moderate	Severe	Slight	Eastern white pine-- Northern red oak---- Red pine----------	57 52 61	Eastern white pine, red pine.
WrA, WrB----------- Woodbridge	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine----------	67 72 65	Eastern white pine, red pine, European larch.
WsB----------- Woodbridge	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine----------	67 72 65	Eastern white pine, red pine, European larch.
WtB----------- Woodbridge	3x	Slight	Moderate	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine----------	67 72 65	Eastern white pine, red pine, European larch.

[1]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AgA Agawam	Slight	Slight	Slight	Slight	Slight	Slight.
AgB Agawam	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
AmA Amostown	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, low strength.	Slight.
Bd Birdsall	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
CoB[1]: Charlton	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Paxton	Moderate: wetness.	Moderate: frost action.	Moderate: wetness.	Moderate: frost action.	Moderate: frost action.	Moderate: small stones.
CpB[1]: Charlton	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones, slope.	Slight	Moderate: large stones.
Paxton	Moderate: wetness, large stones.	Moderate: frost action, large stones.	Moderate: wetness, large stones.	Moderate: frost action.	Moderate: frost action.	Moderate: large stones.
CpC[1]: Charlton	Moderate: large stones, slope.	Moderate: large stones, slope.	Moderate: large stones, slope.	Severe: slope.	Moderate: slope.	Moderate: large stones.
Paxton	Moderate: wetness, large stones.	Moderate: frost action, large stones, slope.	Moderate: wetness, large stones, slope.	Severe: slope.	Moderate: frost action, slope.	Moderate: large stones.
CsB[1]: Charlton	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Moderate: large stones.	Severe: large stones.
Paxton	Severe: large stones.	Severe: large stones.	Severe: wetness, large stones.	Severe: large stones.	Moderate: frost action, large stones.	Severe: large stones.
CsC[1]: Charlton	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Moderate: large stones.	Severe: large stones.
Paxton	Severe: large stones.	Severe: large stones.	Severe: wetness, large stones.	Severe: slope, large stones.	Moderate: frost action, large stones.	Severe: large stones.
CtB[1]: Charlton	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones, slope.	Slight	Moderate: large stones.
Paxton	Moderate: wetness, large stones.	Moderate: frost action, large stones.	Moderate: wetness, large stones.	Moderate: frost action, large stones, slope.	Moderate: frost action.	Moderate: large stones.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CtC[1]:						
Charlton	Moderate: large stones, slope.	Moderate: large stones, slope.	Moderate: large stones, slope.	Severe: slope.	Moderate: slope.	Moderate: large stones.
Paxton	Moderate: wetness, large stones, slope.	Moderate: frost action.	Moderate: wetness, large stones.	Severe: slope.	Moderate: frost action.	Moderate: large stones.
CtD[1]:						
Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CuC[1]:						
Charlton	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: slope.	Moderate: large stones.	Severe: large stones.
Rock outcrop.						
Paxton	Severe: large stones.	Severe: large stones.	Severe: wetness, large stones.	Severe: slope.	Moderate: frost action.	Severe: large stones.
CuE[1]:						
Charlton	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope.	Severe: slope, large stones.
Rock outcrop.						
Paxton	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, wetness, large stones.	Severe: slope.	Severe: slope.	Severe: slope, large stones.
De	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: frost action.	Severe: too sandy.
Deerfield						
Du[1]						
Dumps						
HfA	Severe: small stones, cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
Hinckley						
HfB	Severe: small stones, cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
Hinckley						
HfC	Severe: small stones, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Hinckley						
HfD, HfE	Severe: slope, small stones, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hinckley						
HsB	Severe: small stones, cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Slight	Severe: large stones.
Hinckley						
HsC	Severe: small stones, cutbanks cave.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope.	Severe: large stones.
Hinckley						
MB, MC, MD						
Medisaprists						
MeA	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
Merrimac						

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MeB--- Merrimac	Severe: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Slight---	Slight.
MeC--- Merrimac	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Ng--- Ninigret	Severe: wetness.	Moderate: wetness, frost action.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: frost action.	Slight.
PaB--- Paxton	Moderate: wetness.	Moderate: frost action.	Moderate: wetness.	Moderate: frost action, slope.	Moderate: frost action.	Moderate: small stones.
PaC--- Paxton	Moderate: wetness.	Moderate: frost action.	Moderate: wetness.	Severe: slope.	Moderate: frost action.	Moderate: small stones.
PbB--- Paxton	Moderate: wetness, large stones.	Moderate: frost action, large stones.	Moderate: wetness, large stones.	Moderate: frost action, large stones.	Moderate: frost action.	Moderate: large stones.
PbC--- Paxton	Moderate: wetness, large stones.	Moderate: frost action, large stones.	Moderate: wetness, large stones.	Severe: slope.	Moderate: frost action.	Moderate: large stones.
PbD--- Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PcB--- Paxton	Severe: large stones.	Severe: large stones.	Severe: wetness, large stones.	Severe: large stones.	Moderate: frost action.	Severe: large stones.
PcC--- Paxton	Severe: large stones.	Severe: large stones.	Severe: wetness, large stones.	Severe: slope, large stones.	Moderate: frost action.	Severe: large stones.
Pe--- Pipestone	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Severe: wetness.
Pg[1]. Pits						
Ra--- Raynham	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: frost action, wetness.	Moderate: wetness.
RdA, RdB--- Ridgebury	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
ReA, ReB--- Ridgebury	Severe: large stones, wetness.	Severe: large stones, wetness, frost action.	Severe: large stones, wetness.	Severe: large stones, wetness, frost action.	Severe: wetness, frost action.	Severe: large stones, wetness.
Sb--- Scarboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
ScA--- Scio	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Slight.
ScB--- Scio	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Slight.
StA, StB--- Sudbury	Severe: wetness, cutbanks cave, small stones.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Slight.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
UD. Udorthents						
UnA Unadilla	Slight	Slight	Slight	Slight	Moderate: low strength.	Slight.
UnB Unadilla	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Ur[1]. Urban land						
Wa Walpole	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
Wb Walpole Variant	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
Wc Wareham	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.
WD Westbrook	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: floods, wetness, excess humus.	Severe: wetness, low strength, floods.	Severe: wetness, floods, excess salt.
Wg, Wh Whitman	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
WnA Windsor	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: too sandy, droughty.
WnB Windsor	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: too sandy, droughty.
WnC Windsor	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: too sandy, droughty.
WnD Windsor	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, too sandy, droughty.
WrA, WrB Woodbridge	Severe: wetness.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Slight.
WsB Woodbridge	Severe: wetness.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Moderate: large stones.
WtB Woodbridge	Severe: wetness, large stones.	Severe: frost action, large stones.	Severe: wetness, large stones.	Severe: frost action, large stones.	Severe: frost action.	Severe: large stones.

[1]See description of the map unit for composition and behavior of characteristics of the map unit.

TABLE 9.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," and "fair." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AgA, AgB Agawam	Slight[1]	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
AmA Amostown	Severe: wetness, percs slowly.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Good.
Bd Birdsall	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
CoB[2]: Charlton	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
Paxton	Severe: percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: small stones.
CpB[2]: Charlton	Moderate: large stones.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: large stones.
Paxton	Severe: percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: large stones.
CpC[2]: Charlton	Moderate: large stones.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: large stones, slope.
Paxton	Severe: percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: large stones.
CsB[2]: Charlton	Severe: large stones.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: large stones.
Paxton	Severe: percs slowly.	Moderate: large stones.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones.
CsC[2]: Charlton	Severe: large stones.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: large stones.
Paxton	Severe: percs slowly.	Severe: slope.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones.
CtB[2]: Charlton	Moderate: large stones.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: large stones.
Paxton	Severe: percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: large stones.
CtC[2]: Charlton	Moderate: large stones.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: large stones, slope.

See footnotes at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CtC[2]: Paxton	Severe: percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: large stones.
CtD[2]: Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage, slope.	Poor: slope.
Paxton	Severe: slope, percs slowly.	Severe: slope.	Severe: wetness.	Severe: slope, wetness.	Poor: slope.
CuC[2]: Charlton	Severe: large stones.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: large stones.
Rock outcrop.					
Paxton	Severe: percs slowly.	Severe: slope.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones.
CuE[2]: Charlton	Severe: slope, large stones.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Rock outcrop.					
Paxton	Severe: slope, percs slowly.	Severe: slope.	Severe: slope, wetness, large stones.	Severe: slope, wetness.	Poor: slope, large stones.
De Deerfield	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: thin layer, area reclaim.
Du[2] Dumps					
HfA, HfB Hinckley	Slight[1]	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
HfC Hinckley	Moderate[1]: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
HfD Hinckley	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Poor: slope, too sandy.
HfE Hinckley	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, too sandy.
HsB Hinckley	Moderate: large stones.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
HsC Hinckley	Moderate: slope, large stones.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
MB, MC, MD[2]. Medisaprists					
MeA, MeB Merrimac	Slight[1]	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: thin layer, area reclaim.

See footnotes at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MeC--- Merrimac	Moderate[1]: slope.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: thin layer, area reclaim.
Ng--- Ninigret	Severe: wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Fair: thin layer, area reclaim.
PaB--- Paxton	Severe: percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: small stones.
PaC--- Paxton	Severe: percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: small stones.
PbB--- Paxton	Severe: percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: large stones.
PbC--- Paxton	Severe: percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: large stones.
PbD--- Paxton	Severe: slope.	Severe: slope.	Severe: wetness.	Severe: slope, wetness.	Poor: slope.
PcB--- Paxton	Severe: percs slowly, large stones.	Moderate: large stones.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones.
PcC--- Paxton	Severe: percs slowly, large stones.	Severe: slope.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones.
Pe--- Pipestone	Severe: wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Poor: too sandy, seepage.
Pg[2] Pits					
Ra--- Raynham	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
RdA--- Ridgebury	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
RdB--- Ridgebury	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
ReA, ReB--- Ridgebury	Severe: large stones, percs slowly, wetness.	Moderate: large stones.	Severe: wetness, large stones.	Severe: wetness.	Poor: wetness, large stones.
Sb--- Scarboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
ScA--- Scio	Severe: wetness.	Moderate: seepage.	Severe: seepage, wetness.	Severe: seepage, wetness.	Good.
ScB--- Scio	Severe: wetness.	Moderate: slope, seepage.	Severe: seepage, wetness.	Severe: seepage, wetness.	Good.
StA, StB--- Sudbury	Severe: wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Poor: thin layer, area reclaim.

See footnotes at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
UD[2] Udorthents					
UnA---- Unadilla	Slight----	Slight----	Slight----	Slight----	Good.
UnB---- Unadilla	Slight----	Moderate: slope.	Slight----	Slight----	Good.
Ur[2] Urban land					
Wa---- Walpole	Severe: wetness.	Severe: wetness, seepage.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
Wb---- Walpole Variant	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness, thin layer.
Wc---- Wareham	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
WD---- Westbrook	Severe: wetness, floods.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods.	Poor: excess humus, wetness.
Wg, Wh---- Whitman	Severe: wetness, percs slowly.	Moderate: small stones.	Severe: wetness.	Severe: wetness.	Poor: wetness.
WnA, WnB---- Windsor	Slight[1] ----	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
WnC---- Windsor	Moderate[1]: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
WnD---- Windsor	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Poor: slope, too sandy.
WrA, WrB---- Woodbridge	Severe: percs slowly, wetness.	Moderate: small stones.	Severe: wetness.	Severe: wetness.	Fair: small stones.
WsB---- Woodbridge	Severe: percs slowly, wetness.	Moderate: large stones.	Severe: wetness.	Severe: wetness.	Fair: large stones.
WtB---- Woodbridge	Severe: percs slowly, wetness.	Severe: large stones.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones.

[1]Excessive permeability in places allows pollution of ground water.
[2]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AgA, AgB Agawam	Good	Good	Good	Good.
AmA Amostown	Fair: frost action, low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Bd Birdsall	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
CoB[1]: Charlton	Good	Unsuited: excess fines.	Poor: excess fines.	Fair: small stones.
Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones.
CpB[1], CpC[1]: Charlton	Good	Unsuited: excess fines.	Poor: excess fines.	Poor: large stones.
Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
CsB[1], CsC[1]: Charlton	Fair: large stones.	Unsuited: excess fines.	Poor: excess fines.	Poor: large stones.
Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
CtB[1], CtC[1]: Charlton	Good	Unsuited: excess fines.	Poor: excess fines.	Poor: large stones.
Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
CtD[1]: Charlton	Fair: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: large stones, slope.
Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
CuC[1]: Charlton	Fair: large stones.	Unsuited: excess fines.	Poor: excess fines.	Poor: large stones.
Rock outcrop.				
Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
CuE[1]: Charlton	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: large stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CuE[1]: Paxton	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
De Deerfield	Good	Good	Unsuited: excess fines.	Poor: too sandy.
Du[1]. Dumps				
HfA, HfB, HfC Hinckley	Good	Good	Good	Poor: too sandy, area reclaim.
HfD Hinckley	Fair: slope.	Good	Good	Poor: slope, too sandy, area reclaim.
HfE Hinckley	Poor: slope.	Good	Good	Poor: slope, too sandy, area reclaim.
HsB, HsC Hinckley	Fair: large stones.	Good	Good	Poor: large stones, too sandy.
MB, MC, MD[1] Medisaprists				
MeA, MeB Merrimac	Good	Good	Good	Fair: thin layer, area reclaim.
MeC Merrimac	Good	Good	Good	Fair: slope, thin layer, area reclaim.
Ng Ninigret	Fair: frost action.	Good	Fair: excess fines.	Good.
PaB, PaC Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
PbB, PbC Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
PbD Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
PcB, PcC Paxton	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
Pe Pipestone	Poor: wetness.	Good	Unsuited: excess fines.	Poor: wetness.
Pg[1] Pits				
Ra Raynham	Poor: frost action, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
RdA, RdB Ridgebury	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, small stones.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
ReA, ReB---------- Ridgebury	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, large stones.
Sb---------- Scarboro	Poor: wetness.	Good----------	Poor: excess fines.	Poor: wetness, too sandy.
ScA, ScB---------- Scio	Fair: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Good.
StA, StB---------- Sudbury	Fair: wetness.	Good----------	Good----------	Fair: small stones, area reclaim.
UD[1]. Udorthents				
UnA, UnB---------- Unadilla	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Ur[1]. Urban land				
Wa---------- Walpole	Poor: wetness.	Fair: excess fines.	Fair: excess fines.	Poor: wetness.
Wb---------- Walpole Variant	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Wc---------- Wareham	Poor: wetness.	Fair: excess fines.	Unsuited: excess fines.	Poor: wetness, too sandy
WD---------- Westbrook	Poor: excess humus, wetness.	Unsuited: excess humus.	Unsuited: excess humus.	Poor: wetness, excess salt.
Wg, Wh---------- Whitman	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
WnA, WnB, WnC---------- Windsor	Good----------	Good----------	Poor: excess fines.	Poor: too sandy.
WnD---------- Windsor	Fair: slope.	Good----------	Poor: excess fines.	Poor: slope, too sandy.
WrA, WrB---------- Woodbridge	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones.
WsB, WtB---------- Woodbridge	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.

[1]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AgA, AgB---------- Agawam	Seepage, slope.	No water-------	Not needed-----	Slope, erodes easily, seepage.	Slope, erodes easily.	Slope, erodes easily.
AmA---------- Amostown	Seepage--------	Slow refill----	Favorable------	Fast intake, seepage.	Not needed-----	Favorable.
Bd---------- Birdsall	Favorable------	Slow refill----	Poor outlets---	Not needed-----	Not needed-----	Wetness, rooting depth, erodes easily.
CoB[1]: Charlton---------	Seepage, slope.	No water-------	Not needed-----	Seepage, slope.	Slope----------	Slope.
Paxton----------	Favorable, slope.	No water-------	Not needed-----	Rooting depth, erodes easily.	Percs slowly, erodes easily.	Percs slowly, slope, erodes easily.
CpB[1], CpC[1], CsB[1], CsC[1], CtB[1], CtC[1], CtD[1]: Charlton--------	Seepage, slope.	No water-------	Not needed-----	Seepage, large stones, slope.	Large stones, slope.	Large stones, slope.
Paxton----------	Favorable, slope.	No water-------	Not needed-----	Rooting depth, erodes easily, large stones.	Large stones, percs slowly.	Large stones, percs slowly.
CuC[1], CuE[1]: Charlton---------	Seepage, slope.	No water-------	Not needed-----	Seepage, large stones, slope.	Large stones, slope.	Large stones, slope.
Rock outcrop.						
Paxton----------	Favorable, slope.	No water-------	Not needed-----	Rooting depth, erodes easily, large stones.	Large stones, percs slowly.	Large stones, percs slowly.
De---------- Deerfield	Slope, seepage.	Deep to water, cutbanks cave.	Slope, cutbanks cave.	Slope, seepage, fast intake.	Slope, too sandy.	Slope.
Du[1] Dumps						
HfA, HfB, HfC, HfD, HfE---------- Hinckley	Slope, seepage.	No water-------	Not needed-----	Slope, droughty, fast intake.	Slope, too sandy.	Slope, droughty.
HsB, HsC---------- Hinckley	Slope, seepage.	No water-------	Not needed-----	Slope, droughty, fast intake.	Slope, too sandy, large stones.	Slope, droughty, large stones.
MB, MC, MD[1]. Medisaprists						
MeA, MeB, MeC----- Merrimac	Slope, seepage.	No water-------	Not needed-----	Slope, fast intake, droughty.	Slope, too sandy.	Slope, droughty.
Ng---------- Ninigret	Slope, seepage.	Deep to water	Slope----------	Slope, wetness, seepage.	Slope, wetness.	Slope, wetness.
PaB, PaC---------- Paxton	Favorable, slope.	No water-------	Not needed-----	Rooting depth, erodes easily.	Percs slowly, erodes easily.	Percs slowly, slope, erodes easily.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PbB, PbC, PbD, PcB, PcC---- Paxton	Favorable, slope.	No water-------	Not needed-----	Rooting depth, erodes easily.	Large stones, percs slowly.	Large stones, percs slowly.
Pe---------- Pipestone	Seepage-------	Favorable------	Cutbanks cave	Fast intake, wetness, droughty.	Not needed-----	Droughty, wetness.
Pg[1]. Pits						
Ra---------- Raynham	Favorable------	Slow refill----	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
RdA, RdB---- Ridgebury	Slope----------	Slow refill----	Wetness, percs slowly, poor outlets.	Wetness--------	Wetness, percs slowly.	Wetness, percs slowly.
ReA, ReB---- Ridgebury	Slope----------	Large stones, slow refill.	Wetness, percs slowly.	Wetness--------	Wetness, large stones, percs slowly.	Wetness, large stones, percs slowly.
Sb---------- Scarboro	Seepage-------	Favorable------	Cutbanks cave, wetness.	Wetness--------	Wetness--------	Wetness.
ScA, ScB---- Scio	Seepage, slope.	Slow refill----	Cutbanks cave	Slope----------	Slope, erodes easily.	Slope, erodes easily.
StA, StB---- Sudbury	Slope, seepage.	Deep to water	Favorable------	Seepage, wetness, slope.	Slope, too sandy.	Wetness, slope.
UD[1]. Udorthents						
UnA, UnB---- Unadilla	Seepage-------	Deep to water	Not needed-----	Favorable------	Slope, erodes easily.	Erodes easily.
Ur[1]. Urban land						
Wa---------- Walpole	Seepage-------	Favorable------	Wetness--------	Wetness, seepage.	Wetness, piping.	Wetness.
Wb---------- Walpole Variant	Favorable------	Slow refill----	Poor outlets, wetness.	Wetness--------	Wetness--------	Wetness.
Wc---------- Wareham	Seepage-------	Favorable------	Cutbanks cave, wetness, poor outlets.	Wetness, seepage, fast intake.	Piping, wetness, too sandy.	Wetness.
WD---------- Westbrook	Excess humus, seepage.	Salty water----	Floods, wetness, excess salt.	Not needed-----	Not needed-----	Not needed.
Wg---------- Whitman	Favorable------	Favorable------	Wetness, percs slowly.	Wetness--------	Wetness, percs slowly.	Wetness, percs slowly.
Wh---------- Whitman	Favorable------	Large stones---	Wetness, percs slowly.	Wetness--------	Large stones, wetness, percs slowly.	Large stones, wetness, percs slowly.
WnA, WnB, WnC, WnD---- Windsor	Seepage, slope.	No water-------	Not needed-----	Droughty, fast intake, slope.	Piping, slope, too sandy.	Droughty, slope.
WrA, WrB---- Woodbridge	Slope----------	Deep to water	Percs slowly, slope.	Percs slowly, rooting depth.	Percs slowly, slope.	Percs slowly, slope.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
WsB, WtB---------- Woodbridge	Slope, large stones.	Deep to water, large stones.	Percs slowly, slope, large stones.	Percs slowly, large stones, rooting depth.	Percs slowly, slope, large stones.	Percs slowly, slope, large stones.

[1]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AgA Agawam	Slight	Slight	Slight	Slight	Slight.
AgB Agawam	Slight	Slight	Moderate: slope.	Slight	Slight.
AmA Amostown	Slight	Slight	Moderate: wetness.	Slight	Slight.
Bd Birdsall	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
CoB[1]: Charlton	Slight	Slight	Moderate: slope.	Slight	Slight.
Paxton	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight	Moderate: small stones.
CpB[1]: Charlton	Moderate: large stones.	Slight	Moderate: large stones, slope.	Moderate: large stones.	Moderate: large stones.
Paxton	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Moderate: large stones.	Moderate: large stones.
CpC[1]: Charlton	Moderate: large stones, slope.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Moderate: large stones.
Paxton	Moderate: percs slowly.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Moderate: large stones.
CsB[1]: Charlton	Severe: large stones.	Moderate: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
Paxton	Severe: large stones.	Moderate: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
CsC[1]: Charlton	Severe: large stones.	Moderate: large stones.	Severe: slope.	Severe: large stones.	Severe: large stones.
Paxton	Severe: large stones.	Moderate: large stones.	Severe: slope.	Severe: large stones.	Severe: large stones.
CtB[1]: Charlton	Moderate: large stones.	Slight	Moderate: large stones, slope.	Moderate: large stones.	Moderate: large stones.
Paxton	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Moderate: large stones.	Moderate: large stones.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CtC[1]:					
Charlton	Moderate: large stones, slope.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Moderate: large stones.
Paxton	Moderate: percs slowly.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Moderate: large stones.
CtD[1]:					
Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: large stones, slope.	Severe: slope.
Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: large stones, slope.	Severe: slope.
CuC[1]:					
Charlton	Severe: large stones.	Moderate: large stones.	Severe: slope.	Severe: large stones.	Severe: large stones.
Rock outcrop.					
Paxton	Severe: large stones.	Moderate: large stones.	Severe: slope.	Severe: large stones.	Severe: large stones.
CuE[1]:					
Charlton	Severe: slope, large stones.	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.
Rock outcrop.					
Paxton	Severe: slope, large stones.	Severe: slope.	Severe: slope	Severe: slope, large stones.	Severe: slope, large stones.
De Deerfield	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.
Du[1]. Dumps					
HfA Hinckley	Slight	Slight	Slight	Slight	Slight.
HfB Hinckley	Slight	Slight	Moderate: slope.	Slight	Slight.
HfC Hinckley	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
HfD Hinckley	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
HfE Hinckley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HsB Hinckley	Moderate: large stones.	Moderate: small stones.	Moderate: slope, large stones.	Moderate: large stones.	Severe: large stones.
HsC Hinckley	Moderate: slope, large stones.	Moderate: slope, small stones.	Severe: slope.	Moderate: large stones.	Severe: large stones.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MB, MC, MD [1]. Medisaprists					
MeA---- Merrimac	Slight----	Slight----	Slight----	Slight----	Slight.
MeB---- Merrimac	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
MeC---- Merrimac	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----	Moderate: slope.
Ng---- Ninigret	Slight----	Slight----	Moderate: wetness.	Slight----	Slight.
PaB---- Paxton	Moderate: percs slowly.	Slight----	Moderate: percs slowly.	Slight----	Moderate: small stones.
PaC---- Paxton	Moderate: percs slowly.	Moderate: slope.	Severe: slope.	Slight----	Moderate: small stones.
PbB---- Paxton	Moderate: percs slowly.	Slight----	Moderate: percs slowly.	Moderate: large stones.	Moderate: large stones.
PbC---- Paxton	Moderate: percs slowly.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Moderate: large stones.
PbD---- Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: large stones.	Severe: slope.
PcB---- Paxton	Severe: large stones.	Moderate: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
PcC---- Paxton	Severe: large stones.	Moderate: large stones.	Severe: slope, large stones.	Severe: large stones.	Severe: large stones.
Pe---- Pipestone	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, too sandy.	Severe: wetness.
Pg [1]. Pits					
Ra---- Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
RdA, RdB---- Ridgebury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
ReA, ReB---- Ridgebury	Severe: wetness.	Severe: wetness.	Severe: large stones, wetness.	Severe: wetness.	Severe: large stones, wetness.
Sb---- Scarboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
ScA---- Scio	Moderate: wetness.	Slight----	Moderate: wetness.	Moderate: wetness.	Slight.
ScB---- Scio	Moderate: wetness.	Slight----	Moderate: slope, wetness.	Moderate: wetness.	Slight.
StA---- Sudbury	Slight----	Slight----	Moderate: wetness.	Slight----	Slight.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
StB---- Sudbury	Slight----	Slight----	Moderate: slope, wetness.	Slight----	Slight.
UD[1]. Udorthents					
UnA---- Unadilla	Slight----	Slight----	Slight----	Slight----	Slight.
UnB---- Unadilla	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
Ur[1]. Urban land					
Wa---- Walpole	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wb---- Walpole Variant	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wc---- Wareham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.
WD---- Westbrook	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess salt.
Wg---- Whitman	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wh---- Whitman	Severe: large stones, wetness.	Severe: wetness.	Severe: large stones, wetness.	Severe: wetness.	Severe: wetness.
WnA, WnB---- Windsor	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.	Severe: too sandy, droughty.
WnC---- Windsor	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope, too sandy.	Moderate: too sandy.	Severe: too sandy, droughty.
WnD---- Windsor	Severe: slope.	Severe: slope.	Severe: slope, too sandy.	Moderate: too sandy.	Severe: slope, too sandy, droughty.
WrA, WrB---- Woodbridge	Moderate: percs slowly.	Slight----	Moderate: percs slowly.	Severe: slope.	Slight.
WsB---- Woodbridge	Moderate: percs slowly.	Slight----	Moderate: percs slowly.	Moderate: large stones.	Moderate: large stones.
WtB---- Woodbridge	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.

[1] See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AgA---- Agawam	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AgB---- Agawam	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AmA---- Amostown	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Bd---- Birdsall	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
CoB[1]: Charlton----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Paxton----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CpB[1]: Charlton----	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
Paxton----	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
CpC[1]: Charlton----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Paxton----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
CsB[1]: Charlton----	Very poor.	Very poor.	Good	Good	Good	Poor	Very poor.	Poor	Fair	Very poor.
Paxton----	Very poor.	Very poor.	Good	Good	Good	Poor	Very poor.	Poor	Fair	Very poor.
CsC[1]: Charlton----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Paxton----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
CtB[1]: Charlton----	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
Paxton----	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
CtC[1], CtD[1]: Charlton----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Paxton----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
CuC[1], CuE[1]: Charlton	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.										
Paxton	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
De Deerfield	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Fair	Poor	Poor.
Du[1]. Dumps										
HfA, HfB, HfC, HfD Hinckley	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HfE Hinckley	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HsB, HsC Hinckley	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
MB, MC, MD[1]. Medisaprists										
MeA, MeB, MeC Merrimac	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Ng Ninigret	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PaB Paxton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PaC Paxton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PbB Paxton	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
PbC, PbD Paxton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
PcB Paxton	Very poor.	Very poor.	Good	Good	Good	Poor	Very poor.	Poor	Fair	Very poor.
PcC Paxton	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Pe Pipestone	Poor	Poor	Fair	Poor	Poor	Poor	Fair	Poor	Poor	Poor.
Pg[1]. Pits										
Ra Raynham	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
RdA Ridgebury	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
RdB Ridgebury	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
ReA Ridgebury	Very poor.	Very poor.	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
ReB---- Ridgebury	Very poor.	Very poor.	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Sb---- Scarboro	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
ScA---- Scio	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ScB---- Scio	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
StA---- Sudbury	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
StB----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UD[1]. Udorthents										
UnA, UnB---- Unadilla	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ur[1]. Urban land										
Wa---- Walpole	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Wb---- Walpole Variant	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Wc---- Wareham	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair.
WD---- Westbrook	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Wg---- Whitman	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Wh---- Whitman	Very poor.	Very poor.	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
WnA, WnB, WnC, WnD-- Windsor	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
WrA---- Woodbridge	Fair	Good	Good	Fair	Fair	Poor	Poor	Good	Fair	Poor.
WrB---- Woodbridge	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
WsB---- Woodbridge	Very poor.	Poor	Good	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
WtB---- Woodbridge	Very poor.	Very poor.	Good	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.

[1]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AgA, AgB---------- Agawam	0-10	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	85-100	40-65	---	---
	10-24	Fine sandy loam, very fine sandy loam, loam.	SM, ML	A-4	0	95-100	85-100	80-100	40-65	---	---
	24-32	Fine sandy loam	SM, SP-SM	A-2, A-3, A-4	0	90-100	85-100	75-95	5-45	---	---
	32-60	Fine sand, loamy fine sand, sand.	SP, SM	A-2, A-3	0	90-100	85-100	70-90	0-35	---	---
AmA---------- Amostown	0-9	Fine sandy loam	SM, ML	A-2, A-4	0	95-100	90-100	55-95	30-70	---	NP
	9-24	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	85-100	80-100	50-85	25-50	---	NP
	24-60	Stratified fine sand to silt.	ML, SM	A-4, A-2	0	100	100	65-100	25-90	---	NP
Bd---------- Birdsall	0-7	Silt loam-------	ML, OL, CL-ML	A-4	0	100	100	90-100	70-90	<30	NP-7
	7-21	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	90-100	70-90	<30	NP-7
	21-60	Stratified silt to very fine sand.	ML, CL-ML	A-4	0	100	95-100	90-100	70-90	<30	NP-7
CoB[1]:											
Charlton----------	0-2	Fine sandy loam	SM, ML	A-2, A-4	5-10	75-95	70-90	60-75	30-65	---	NP-5
	2-29	Fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-70	20-60	---	NP-3
	29-65	Gravelly sandy loam, gravelly fine sandy loam, loam.	SM	A-2, A-4	5-15	60-90	60-85	50-70	20-40	---	NP
Paxton----------	0-3	Fine sandy loam	SM, ML	A-2, A-4	0-10	80-95	75-90	60-85	30-65	<30	NP-10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	65-90	55-85	25-65	<30	NP-10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	60-85	55-75	20-60	<30	NP-10
CpB[1], CpC[1]:											
Charlton----------	0-2	Very stony fine sandy loam.	SM, ML	A-2, A-4	10-30	75-95	70-90	60-75	30-65	---	NP-5
	2-29	Fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-70	20-60	---	NP-3
	29-65	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	50-70	20-40	---	NP
Paxton----------	0-3	Very stony fine sandy loam.	SM, ML	A-2, A-4	5-20	80-95	75-90	60-85	30-65	<30	<10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	55-85	25-65	<30	<10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	55-75	20-60	<30	<10

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CsB[1], CsC[1]:											
Charlton	0-2	Extremely stony fine sandy loam.	SM, ML	A-2, A-4	15-35	75-95	70-90	60-75	30-65	---	NP-5
	2-29	Fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-70	20-60	---	NP-3
	29-65	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	50-70	20-40	---	NP
Paxton	0-3	Extremely stony fine sandy loam.	SM, ML	A-2, A-4	10-25	80-90	70-85	60-80	30-65	<30	<10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	55-85	25-65	<30	<10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	55-75	20-60	<30	<10
CtB[1], CtC[1], CtD[1]:											
Charlton	0-2	Very stony fine sandy loam.	SM, ML	A-2, A-4	10-30	75-95	70-90	60-75	30-65	---	NP-5
	2-29	Fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-70	20-60	---	NP-3
	29-65	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	50-70	20-40	---	NP
Paxton	0-3	Very stony fine sandy loam.	SM, ML	A-2, A-4	5-20	80-95	75-90	60-85	30-65	<30	<10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	55-85	25-65	<30	<10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	55-75	20-60	<30	<10
CuC[1], CuE[1]:											
Charlton	0-2	Extremely stony fine sandy loam.	SM, ML	A-2, A-4	15-35	75-95	70-90	60-75	30-65	---	NP-5
	2-29	Fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-70	20-60	---	NP-3
	29-65	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	50-70	20-40	---	NP
Rock outcrop.											
Paxton	0-3	Extremely stony fine sandy loam.	SM, ML	A-2, A-4	10-25	80-90	70-85	60-80	30-65	<30	<10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	55-85	25-65	<30	<10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	55-75	20-60	<30	<10

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
De---------- Deerfield	0-11	Loamy sand------	SP-SM, SM	A-1, A-2, A-3	0	95-100	80-100	40-75	5-30	---	NP
	11-26	Loamy sand, sand, coarse sand.	SM, SP-SM	A-1, A-2, A-3	0	95-100	80-100	40-75	5-30	---	NP
	26-60	Sand, fine sand, coarse sand.	SP, SM	A-1, A-2, A-3	0	95-100	65-100	30-75	3-30	---	NP
Du[1]. Dumps											
HfA, HfB, HfC, HfD, HfE---------- Hinckley	0-4	Sandy loam------	SM, ML, SW-SM	A-1, A-2, A-3, A-4	0-20	60-95	40-85	20-80	6-55	---	NP
	4-22	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand.	SM, GM, GW-GM	A-1, A-2, A-3	0-20	50-95	30-85	15-70	2-30	---	NP
	22-61	Stratified gravelly loamy fine sand to very cobbly coarse sand.	SP, SM, GP, GM	A-1, A-2	0-45	40-75	20-50	10-40	0-20	---	NP
HsB, HsC---------- Hinckley	0-4	Very stony sandy loam.	SM	A-1, A-2	5-15	70-95	55-90	30-65	15-35	---	NP
	4-22	Gravelly loamy sand, loamy coarse sand, gravelly coarse sand.	SM, SW, GM, GW	A-1, A-2, A-3	5-15	60-90	45-85	20-65	0-25	---	NP
	22-61	Very gravelly sand, gravelly coarse sand.	SW, GW, SW-SM, GW-GM	A-1, A-2	5-25	50-70	30-55	15-40	0-10	---	NP
MB, MC, MD[1]. Medisaprists											
MeA, MeB, MeC------ Merrimac	0-24	Fine sandy loam	SM, ML	A-2, A-4	0	85-95	70-90	40-85	20-55	<20	NP
	24-61	Stratified sand to very gravelly sand.	GP, SP, SP-SM, GP-GM	A-1	5-25	40-65	30-60	15-40	0-10	---	NP
Ng---------- Ninigret	0-6	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	70-95	40-65	<25	NP-3
	6-23	Fine sandy loam, sandy loam, loamy sand.	SM	A-2, A-4	0	95-100	90-100	65-85	20-50	---	NP
	23-63	Loamy sand, sand, gravelly sand.	SP, SM, GM, GP	A-1, A-2, A-3	0-10	60-100	45-100	25-75	0-30	---	NP
PaB, PaC---------- Paxton	0-3	Fine sandy loam	SM, ML	A-2, A-4	0-10	80-95	75-90	60-85	30-65	<30	NP-10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	65-90	55-85	25-65	<30	NP-10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	60-85	55-75	20-60	<30	NP-10
PbB, PbC, PbD------ Paxton	0-3	Very stony fine sandy loam.	SM, ML	A-2, A-4	5-20	80-95	75-90	60-85	30-65	<30	<10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	55-85	25-65	<30	<10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	55-75	20-60	<30	<10

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
PcB, PcC---------- Paxton	0-3	Extremely stony fine sandy loam.	SM, ML	A-2, A-4	10-25	80-90	70-85	60-80	30-65	<30	<10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	55-85	25-65	<30	<10
	30-57	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	55-75	20-60	<30	<10
Pe---------- Pipestone	0-8	Loamy sand------	SP, SM, SP-SM	A-2, A-3	0	95-100	90-100	60-80	0-20	---	NP
	8-23	Sand, loamy sand, fine sand.	SP-SM, SP, SM	A-2, A-3	0	95-100	90-100	60-80	0-15	---	NP
	23-60	Sand, fine sand	SP-SM, SP	A-3, A-2	0	95-100	90-100	50-80	0-10	---	NP
Pg[1]. Pits											
Ra---------- Raynham	0-4	Silt loam-------	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
	4-23	Silt loam, silt, very fine sandy loam.	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
	23-60	Silt loam, silt, very fine sandy loam.	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
RdA, RdB---------- Ridgebury	0-3	Fine sandy loam	SM, ML	A-1, A-2, A-4	0-15	80-100	75-95	40-90	20-70	---	NP
	3-20	Sandy loam, gravelly loam, fine sandy loam.	SM, GM, ML	A-1, A-2, A-4	0-15	65-95	55-90	40-80	20-60	---	NP
	20-60	Sandy loam, gravelly loam, fine sandy loam.	SM, GM, ML	A-1, A-2, A-4	0-15	65-95	55-90	35-80	20-60	---	NP
ReA, ReB---------- Ridgebury	0-3	Extremely stony fine sandy loam.	SM, ML	A-2, A-4	10-30	70-100	60-95	45-85	25-65	---	NP
	3-20	Sandy loam, gravelly loam, fine sandy loam.	SM, GM, ML	A-1, A-2, A-4	10-30	65-95	55-90	40-80	20-60	---	NP
	20-60	Sandy loam, gravelly loam, fine sandy loam.	SM, GM, ML	A-1, A-2, A-4	10-30	65-95	55-90	35-80	20-60	---	NP
Sb----------	0-6	Mucky loamy fine sand.	SM	A-2, A-4	0	90-100	80-100	65-95	25-50	---	NP
Scarboro	6-12	Loamy fine sand, loamy sand, sand.	SM, SP-SM	A-2	0	90-100	80-100	60-95	5-30	---	NP
	12-60	Loamy sand, sand	SM, SP	A-1, A-2	0	85-100	70-100	45-90	0-25	---	NP
ScA, ScB---------- Scio	0-8	Silt loam-------	ML	A-4	0	100	95-100	90-100	60-90	10-20	2-4
	8-26	Silt loam, very fine sandy loam.	ML	A-4	0	100	95-100	90-100	60-90	10-20	2-4
	26-66	Stratified very gravelly sand to silt loam.	ML, SM, SP	A-4, A-2, A-1	0	60-100	30-90	15-85	2-80	<10	NP-4

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
StA, StB---------- Sudbury	0-17	Fine sandy loam	SM, ML	A-2, A-3, A-4	0-5	85-100	60-100	40-90	20-55	<25	NP
	17-22	Sandy loam, fine sandy loam, gravelly sandy loam.	SM	A-2, A-3, A-4	0-5	85-100	60-100	40-80	20-50	<25	NP
	22-60	Stratified sand and gravel.	SP, SP-SM, GP, GP-GM	A-1	10-40	35-70	25-65	15-45	0-10	---	NP
uD[1]. Udorthents											
UnA, UnB---------- Unadilla	0-7	Very fine sandy loam.	ML	A-4	0	100	95-100	90-100	60-90	15-20	2-4
	7-28	Silt loam, very fine sandy loam.	ML	A-4	0	100	95-100	90-100	60-90	15-20	2-4
	28-60	Silt loam, very fine sandy loam, loamy very fine sand.	ML, SM	A-4	0	100	95-100	80-100	40-90	15-20	NP-4
Ur[1]. Urban land											
Wa---------- Walpole	0-3	Fine sandy loam	SM, OL	A-2, A-4	0-5	90-100	85-100	70-100	30-50	<25	NP-3
	3-26	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-2, A-4	0-5	85-100	60-100	40-95	25-50	---	NP
	26-60	Gravelly loamy sand, gravelly sand, sand.	SP, SM, GP, GM	A-1, A-2, A-3	0-20	55-100	50-100	25-90	0-25	---	NP
Wb---------- Walpole Variant	0-3	Fine sandy loam	SM, ML	A-2, A-4	0	90-100	85-100	60-85	35-55	15-25	NP-3
	3-12	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-100	50-85	25-55	---	NP
	12-28	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-100	50-85	25-55	---	NP
	28-60	Loamy very fine sand, very fine sandy loam, silt loam.	SM, ML	A-4	0	100	100	85-100	40-90	---	NP
Wc---------- Wareham	0-6	Loamy sand------	SM, SP-SM	A-1, A-2	0	85-100	75-100	40-85	10-35	---	---
	6-36	Loamy coarse sand, loamy fine sand, coarse sand.	SM, SP-SM	A-1, A-2, A-3	0	85-100	75-100	25-85	5-35	---	---
	36-60	Coarse sand, loamy sand, very gravelly sand.	SP, SM, GM, GP	A-1, A-2, A-3	0-3	50-100	25-100	10-75	0-30	---	---
WD---------- Westbrook	0-35	Hemic material	Pt	---	0	---	---	---	---	---	NP
	35-60	Silt loam, very fine sandy loam.	ML, CL-ML, OL	A-4	0	95-100	95-100	95-100	85-100	<25	NP-5
Wg---------- Whitman	0-8	Fine sandy loam	SM, ML, OL	A-2, A-4	0-10	85-95	70-90	55-90	25-55	---	NP
	8-17	Sandy loam to gravelly fine sandy loam.	SM	A-2, A-4	5-20	70-95	60-90	45-80	20-40	---	NP
	17-60	Gravelly loamy sand, sandy loam, gravelly sandy loam.	SM	A-1, A-2, A-4	5-20	65-95	60-90	40-80	15-40	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Wh Whitman	0-8	Extremely stony fine sandy loam.	SM, ML, OL	A-2, A-4	5-35	85-95	70-90	55-90	25-55	---	NP
	8-17	Sandy loam to gravelly fine sandy loam.	SM	A-2, A-4	5-20	70-95	60-90	45-80	20-40	---	NP
	17-60	Gravelly loamy sand, sandy loam, gravelly sandy loam.	SM	A-1, A-2, A-4	5-20	65-95	60-90	40-80	15-40	---	NP
WnA, WnB, WnC, WnD Windsor	0-8	Loamy sand	SM	A-1, A-2	0	95-100	85-100	35-85	20-35	---	NP
	8-30	Loamy sand, loamy fine sand, sand.	SP-SM, SM	A-1, A-2, A-3	0	95-100	85-100	45-95	10-30	---	NP
	30-68	Sand, fine sand	SP-SM, SM	A-1, A-2, A-3	0	90-100	75-100	40-95	5-20	---	NP
WrA, WrB Woodbridge	0-8	Fine sandy loam	SM, ML	A-2, A-4	0-10	85-95	70-90	60-85	30-65	<30	NP-10
	8-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC	A-2, A-4	0-15	75-95	65-90	55-85	25-60	<30	NP-10
	30-62	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC	A-2, A-4	5-15	70-90	60-90	50-85	25-60	<30	NP-10
WsB Woodbridge	0-8	Very stony fine sandy loam.	SM, ML	A-2, A-4	5-10	85-95	70-90	60-85	30-65	<30	NP-10
	8-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-10	75-95	65-90	55-85	25-60	<30	NP-10
	30-62	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-15	70-90	60-90	50-85	25-60	<30	NP-10
WtB Woodbridge	0-3	Extremely stony fine sandy loam.	SM, ML	A-2, A-4	5-15	85-95	70-90	60-85	30-65	<30	NP-10
	3-30	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-10	75-95	65-90	55-85	25-60	<30	NP-10
	30-62	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-15	70-90	60-90	50-85	25-60	<30	NP-10

[1]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means greater than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
AgA, AgB----------	0-10	2.0-6.0	0.13-0.25	5.1-6.0	Low----------	Low--------	High------	0.28	3
Agawam	10-24	2.0-6.0	0.11-0.21	5.1-6.0	Low----------	Low--------	High------	0.43	
	24-32	2.0-20	0.11-0.18	5.1-6.0	Low----------	Low--------	High------	0.43	
	32-60	6.0-20	0.01-0.09	5.1-6.0	Low----------	Low--------	High------	0.17	
AmA----------	0-9	2.0-6.0	0.11-0.18	5.1-6.5	Low----------	Moderate	Moderate	0.28	3
Amostown	9-24	2.0-6.0	0.06-0.15	5.1-6.0	Low----------	Moderate	Moderate	0.28	
	24-60	0.06-2.0	0.09-0.21	5.1-7.3	Low----------	Moderate	Moderate	0.49	
Bd----------	0-7	0.2-2.0	0.17-0.30	4.5-6.0	Low----------	High------	High------	0.49	3
Birdsall	7-21	0.2-0.6	0.15-0.26	5.1-7.3	Low----------	High------	High------	0.49	
	21-60	0.06-0.2	0.15-0.26	5.1-7.3	Low----------	High------	High------	0.49	
CoB[1]:									
Charlton----------	0-2	0.6-6.0	0.08-0.23	4.5-6.0	Low----------	Low--------	High------	0.20	3
	2-29	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	Low--------	High------	0.43	
	29-65	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	Low--------	High------	0.43	
Paxton----------	0-3	0.6-6.0	0.08-0.23	4.5-5.5	Low----------	Low--------	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low----------	Low--------	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low----------	Low--------	Moderate	0.17	
CpB[1], CpC[1]:									
Charlton----------	0-2	0.6-6.0	0.08-0.23	4.5-6.0	Low----------	Low--------	High------	0.17	3
	2-29	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	Low--------	High------	0.43	
	29-65	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	Low--------	High------	0.43	
Paxton----------	0-3	0.6-6.0	0.08-0.23	4.5-5.5	Low----------	Low--------	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low----------	Low--------	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low----------	Low--------	Moderate	0.17	
CsB[1], CsC[1]:									
Charlton----------	0-2	0.6-6.0	0.05-0.15	4.5-6.0	Low----------	Low--------	High------	0.17	3
	2-29	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	Low--------	High------	0.43	
	29-65	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	Low--------	High------	0.43	
Paxton----------	0-3	0.6-6.0	0.05-0.15	4.5-5.5	Low----------	Low--------	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low----------	Low--------	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low----------	Low--------	Moderate	0.17	
CtB[1], CtC[1], CtD[1]:									
Charlton----------	0-2	0.6-6.0	0.08-0.23	4.5-6.0	Low----------	Low--------	High------	0.17	3
	2-29	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	Low--------	High------	0.43	
	29-65	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	Low--------	High------	0.43	
Paxton----------	0-3	0.6-6.0	0.08-0.23	4.5-5.5	Low----------	Low--------	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low----------	Low--------	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low----------	Low--------	Moderate	0.17	
CuC[1], CuE[1]:									
Charlton----------	0-2	0.6-6.0	0.05-0.15	4.5-6.0	Low----------	Low--------	High------	0.17	3
	2-29	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	Low--------	High------	0.43	
	29-65	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	Low--------	High------	0.43	
Rock outcrop.									
Paxton----------	0-3	0.6-6.0	0.05-0.15	4.5-5.5	Low----------	Low--------	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low----------	Low--------	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low----------	Low--------	Moderate	0.17	
De----------	0-11	6.0-20	0.07-0.13	4.5-6.0	Low----------	Low--------	High------	0.17	5
Deerfield	11-26	6.0-20	0.01-0.13	4.5-6.0	Low----------	Low--------	High------	0.15	
	26-60	>20	0.01-0.08	4.5-6.0	Low----------	Low--------	High------	0.15	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Du[1]. Dumps									
HfA, HfB, HfC, HfD, HfE									
Hinckley	0-4	6.0-20	0.03-0.23	3.6-6.0	Low	Low	High	0.17	3
	4-22	6.0-20	0.01-0.11	3.6-6.0	Low	Low	High	0.17	
	22-61	>20	0.01-0.06	3.6-6.0	Low	Low	High	0.15	
HsB, HsC									
Hinckley	0-4	6.0-20	0.03-0.17	3.6-6.0	Low	Low	High	0.17	3
	4-22	6.0-20	0.01-0.11	3.6-6.0	Low	Low	High	0.17	
	22-61	>20	0.01-0.06	3.6-6.0	Low	Low	High	0.15	
MB, MC, MD[1]. Medisaprists									
MeA, MeB, MeC									
Merrimac	0-24	2.0-6.0	0.12-0.22	3.6-6.0	Low	Low	High	0.17	3
	24-61	6.0-20.0	0.01-0.06	3.6-6.0	Low	Low	High	0.17	
Ng									
Ninigret	0-6	2.0-6.0	0.13-0.25	4.5-6.0	Low	Low	High	0.28	3
	6-23	2.0-6.0	0.06-0.18	4.5-6.0	Low	Low	High	0.43	
	23-63	6.0-20	0.01-0.13	4.5-6.0	Low	Low	High	0.17	
PaB, PaC									
Paxton	0-3	0.6-6.0	0.08-0.23	4.5-5.5	Low	Low	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low	Low	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low	Low	Moderate	0.17	
PbB, PbC, PbD									
Paxton	0-3	0.6-6.0	0.08-0.23	4.5-5.5	Low	Low	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low	Low	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low	Low	Moderate	0.17	
PcB, PcC									
Paxton	0-3	0.6-6.0	0.05-0.15	4.5-5.5	Low	Low	Moderate	0.24	3
	3-30	0.6-6.0	0.06-0.20	5.1-6.5	Low	Low	Moderate	0.43	
	30-57	0.06-0.6	0.05-0.12	5.1-6.5	Low	Low	Moderate	0.17	
Pe									
Pipestone	0-8	6.0-20	0.07-0.10	3.6-5.5	Low	Low	Moderate	0.17	5
	8-23	6.0-20	0.06-0.09	3.6-6.0	Low	Low	Moderate	0.17	
	23-60	>20	0.05-0.07	4.5-6.0	Low	Low	Moderate	0.17	
Pg[1]. Pits									
Ra									
Raynham	0-4	0.6-2.0	0.20-0.25	5.1-7.3	Low	High	Moderate	0.49	3
	4-23	0.2-2.0	0.18-0.22	4.6-5.5	Low	High	Moderate	0.64	
	23-60	0.06-0.2	0.18-0.22	5.1-5.5	Low	High	Moderate	0.64	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
RdA, RdB	0-3	0.6-6.0	0.06-0.24	4.5-5.5	Low	High	High	0.24	3
Ridgebury	3-20	0.6-6.0	0.04-0.20	4.5-5.5	Low	High	High	0.32	
	20-60	<0.2	---	5.1-6.0	Low	High	High	0.24	
ReA, ReB	0-3	0.6-6.0	0.06-0.24	4.5-5.5	Low	High	High	0.24	3
Ridgebury	3-20	0.6-6.0	0.04-0.20	4.5-5.5	Low	High	High	0.24	
	20-60	<0.2	---	5.1-6.0	Low	High	High	0.24	
Sb	0-6	2.0-6.0	0.07-0.23	4.5-6.0	Low	Moderate	High	---	---
Scarboro	6-12	6.0-20.0	0.01-0.13	4.5-6.0	Low	Moderate	High	---	
	12-60	6.0-20.0	0.01-0.13	4.5-6.0	Low	Moderate	High	---	
ScA, ScB	0-8	0.6-2.0	0.18-0.21	4.5-6.0	Low	Moderate	Moderate	0.49	3
Scio	8-26	0.6-2.0	0.17-0.20	4.5-6.0	Low	Moderate	Moderate	0.64	
	26-66	0.06-20	0.02-0.19	5.1-6.0	Low	Moderate	Moderate	0.64	
StA, StB	0-17	2.0-6.0	0.10-0.25	3.6-6.0	Low	Low	Moderate	0.17	3
Sudbury	17-22	2.0-6.0	0.07-0.18	3.6-6.0	Low	Low	Moderate	0.17	
	22-60	6.0-20	0.01-0.06	3.6-6.0	Low	Low	High	0.17	
UD[1].									
Udorthents									
UnA, UnB	0-7	0.6-2.0	0.18-0.21	4.5-6.0	Low	Low	Moderate	0.49	3
Unadilla	7-28	0.6-2.0	0.17-0.20	4.5-6.0	Low	Low	Moderate	0.64	
	28-60	0.06-20	0.02-0.19	5.1-7.8	Low	Low	Moderate	0.64	
Ur[1].									
Urban land									
Wa	0-3	2.0-6.0	0.10-0.23	4.5-6.0	Low	Low	High	0.20	3
Walpole	3-26	2.0-6.0	0.07-0.18	4.5-6.0	Low	Low	High	0.28	
	26-60	6.0-20	0.01-0.13	4.5-6.0	Low	Low	High	0.17	
Wb	0-3	2.0-6.0	0.10-0.23	4.5-5.5	Low	Low	High	0.20	3
Walpole Variant	3-12	2.0-6.0	0.10-0.15	4.5-5.5	Low	Low	High	0.28	
	12-28	2.0-6.0	0.10-0.15	4.5-5.5	Low	Low	High	0.28	
	28-60	0.06-2.0	0.05-0.20	4.5-5.5	Low	Low	High	0.49	
Wc	0-6	6.0-20	0.06-0.15	3.6-5.5	Low	Moderate	High	0.17	5
Wareham	6-36	6.0-20	0.01-0.13	3.6-5.5	Low	Moderate	High	0.17	
	36-60	6.0-20	0.01-0.10	3.6-5.5	Low	Moderate	High	0.17	
WD	0-35	0.6-20	0.18-0.35	5.1-7.3	Low	High	High	---	---
Westbrook	35-60	0.6-2.0	0.16-0.26	5.6-7.3	Low	High	High	0.64	
Wg, Wh	0-8	0.6-6.0	0.08-0.28	4.5-6.0	Low	High	High	0.24	3
Whitman	8-17	<0.2	---	4.5-6.0	Low	High	High	0.24	
	17-60	<0.2	---	4.5-6.0	Low	High	High	0.24	
WnA, WnB, WnC, WnD	0-8	6.0->20	0.08-0.12	4.5-5.5	Low	Low	High	0.17	5
Windsor	8-30	6.0->20	0.02-0.12	4.5-5.5	Low	Low	High	0.17	
	30-68	6.0->20	0.01-0.08	4.5-5.5	Low	Low	High	0.17	
WrA, WrB	0-8	0.6-6.0	0.08-0.23	5.1-6.0	Low	Moderate	Moderate	0.24	3
Woodbridge	8-30	0.6-6.0	0.06-0.20	4.5-6.0	Low	Moderate	Moderate	0.43	
	30-62	0.06-0.6	0.05-0.12	5.1-6.0	Low	Moderate	Moderate	0.17	
WsB	0-8	0.6-6.0	0.08-0.23	5.1-6.0	Low	Moderate	Moderate	0.24	3
Woodbridge	8-30	0.6-6.0	0.06-0.20	4.5-6.0	Low	Moderate	Moderate	0.43	
	30-62	0.06-0.6	0.05-0.12	5.1-6.0	Low	Moderate	Moderate	0.17	
WtB	0-3	0.6-6.0	0.08-0.23	5.1-6.0	Low	Moderate	Moderate	0.24	3
Woodbridge	3-30	0.6-6.0	0.06-0.20	4.5-6.0	Low	Moderate	Moderate	0.43	
	30-62	0.06-0.6	0.05-0.12	5.1-6.0	Low	Moderate	Moderate	0.17	

[1]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain such terms as "rare," "apparent," "brief," and "perched." The symbol < means less than; > means greater than. Absence of an entry indicates the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	
					Ft			In		
AgA, AgB---------- Agawam	B	None---------	---	---	3.0-10	Apparent	Jan-Mar	>60	---	Low.
AmA---------- Amostown	C	None---------	---	---	1.0-2.5	Apparent	Dec-Apr	>60	---	Moderate.
Bd---------- Birdsall	D	None---------	---	---	0-1.0	Apparent	Oct-Jul	>60	---	High.
CoB[1]:										
Charlton----------	B	None---------	---	---	3.0-6.0	Apparent	Jan-Apr	>60	---	Low.
Paxton----------	C	None---------	---	---	2.0	Perched	Nov-Mar	>60	---	Moderate.
CpB[1], CpC[1], CsB[1], CsC[1], CtB[1], CtC[1], CtD[1]:										
Charlton---------	B	None---------	---	---	3.0-6.0	Apparent	Jan-Apr	>60	---	Low.
Paxton----------	C	None---------	---	---	2.0	Perched	Nov-Mar	>60	---	Moderate.
CuC[1], CuE[1]:										
Charlton----------	B	None---------	---	---	3.0-6.0	Apparent	Jan-Apr	>60	---	Low.
Rock outcrop.										
Paxton----------	C	None---------	---	---	2.0	Perched	Nov-Mar	>60	---	Moderate.
De---------- Deerfield	B	None---------	---	---	1.0-3.0	Apparent	Dec-Apr	>60	---	Low.
Du[1]. Dumps										
HfA, HfB, HfC, HfD, HfE, HsB, HsC---------- Hinckley	A	None---------	---	---	>6.0	---	---	>60	---	Low.
MB, MC, MD[1]. Medisaprists										
MeA, MeB, MeC----- Merrimac	A	None---------	---	---	>6.0	---	---	>60	---	Low.
Ng---------- Ninigret	B	None---------	---	---	1.5-3.5	Apparent	Nov-Apr	>60	---	Moderate.
PaB, PaC---------- Paxton	C	None---------	---	---	2.0	Perched	Nov-Mar	>60	---	Moderate.
PbB, PbC, PbD, PcB, PcC---------- Paxton	C	None---------	---	---	2.0	Perched	Nov-Mar	>60	---	Moderate.
Pe---------- Pipestone	A	None---------	---	---	0.5-1.5	Apparent	Oct-Jun	>60	---	Moderate.
Pg[1]. Pits										
Ra---------- Raynham	C	None---------	---	---	0.5-2.0	Apparent	Nov-Jun	>60	---	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	
					Ft			In		
RdA, RdB, ReA, ReB---------- Ridgebury	C	None---------	---	---	0-1.5	Perched	Nov-May	>60	---	High.
Sb---------- Scarboro	D	Rare---------	---	---	0-1.0	Apparent	Jan-Dec	>60	---	High.
ScA, ScB---------- Scio	B	None---------	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High.
StA, StB---------- Sudbury	B	None---------	---	---	1.0-3.0	Apparent	Dec-Apr	>60	---	Moderate.
UD[1]. Udorthents										
UnA, UnB---------- Unadilla	B	None---------	---	---	>6.0	---	---	>60	---	Moderate.
Ur[1]. Urban land										
Wa---------- Walpole	C	None---------	---	---	0-1.0	Apparent	Nov-Apr	>60	---	High.
Wb---------- Walpole Variant	C	None---------	---	---	0-1.0	Apparent	Nov-Apr	>60	---	High.
Wc---------- Wareham	C	None---------	---	---	0-1.5	Apparent	Sep-Jun	>60	---	Moderate.
WD---------- Westbrook	D	Frequent-----	Very brief	Jan-Dec	+1-0.0	Apparent	Jan-Dec	>60	---	
Wg, Wh---------- Whitman	D	None---------	---	---	0.0-0.5	Perched	Sep-Jun	>60	---	High.
WnA, WnB, WnC, WnD---------- Windsor	A	None---------	---	---	>6.0	---	---	>60	---	Low.
WrA, WrB, WsB, WtB---------- Woodbridge	C	None---------	---	---	1.5-3.0	Perched	Nov-Mar	>60	---	High.

[1]See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

Soil name	Family or higher taxonomic class
Agawam	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Amostown	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Birdsall	Coarse-silty, mixed, nonacid, mesic Typic Humaquepts
Charlton	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Deerfield	Mixed, mesic Aquic Udipsamments
Hinckley	Sandy-skeletal, mixed, mesic Typic Udorthents
*Merrimac	Sandy, mixed, mesic Typic Dystrochrepts
Ninigret	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts
Paxton	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Pipestone	Sandy, mixed, mesic Entic Haplaquods
*Raynham	Coarse-silty, mixed, nonacid, mesic Aeric Haplaquepts
Ridgebury	Coarse-loamy, mixed, mesic Aeric Fragiaquepts
Scarboro	Sandy, mixed, mesic Histic Humaquepts
Scio	Coarse-silty, mixed, mesic Aquic Dystrochrepts
Sudbury	Sandy, mixed, mesic Aquic Dystrochrepts
Unadilla	Coarse-silty, mixed, mesic Typic Dystrochrepts
Walpole	Sandy, mixed, mesic Aeric Haplaquepts
Walpole Variant	Coarse-loamy, mixed, acid, mesic, Aeric Haplaquents
Wareham	Mixed, mesic Humaqueptic Psammaquents
Westbrook	Euic, mesic Typic Sulfihemists
Whitman	Coarse-loamy, mixed, mesic Typic Fragiaquepts
Windsor	Mixed, mesic Typic Udipsamments
Woodbridge	Coarse-loamy, mixed, mesic Typic Fragiochrepts

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978— 247-469/35

NRCS Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.