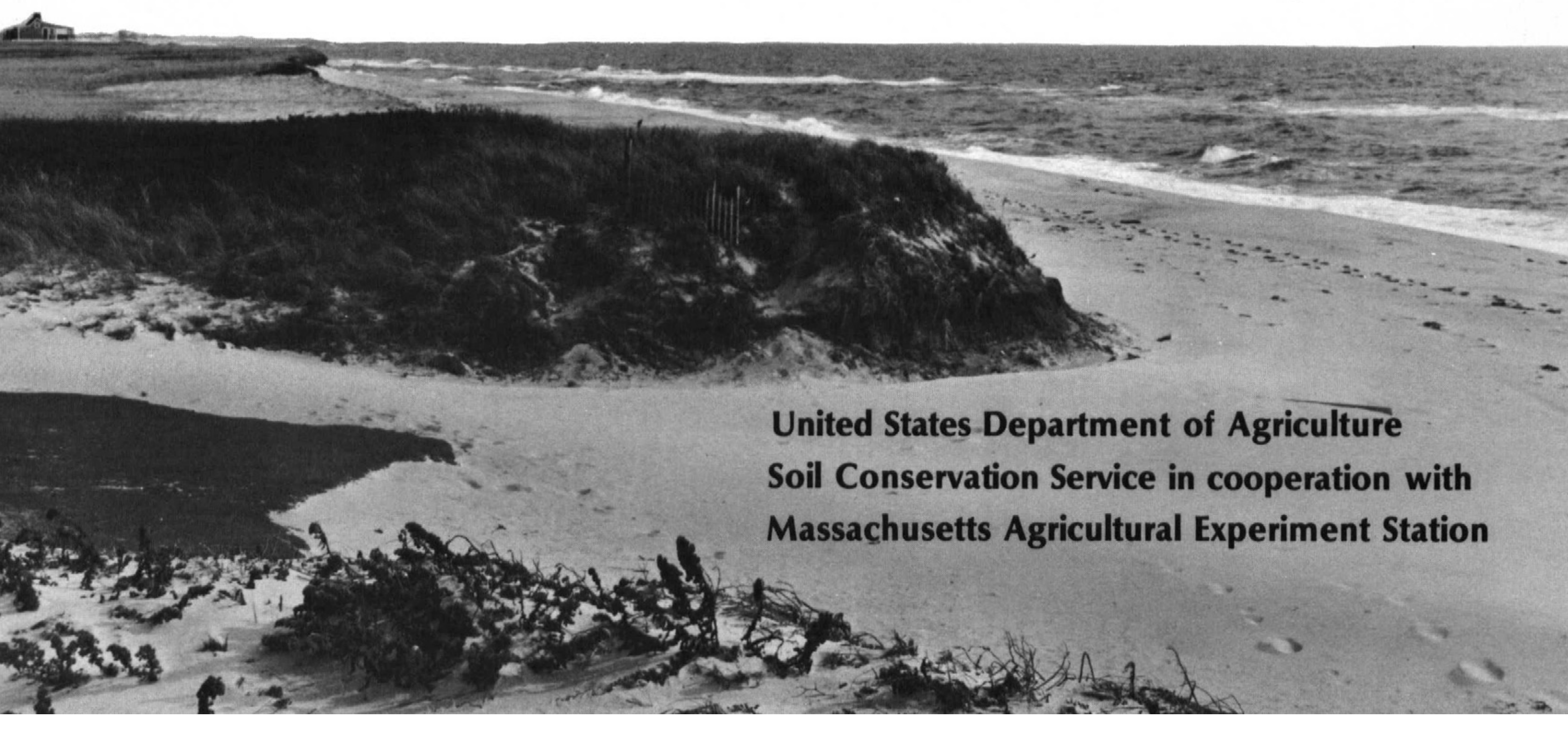
Soil survey of

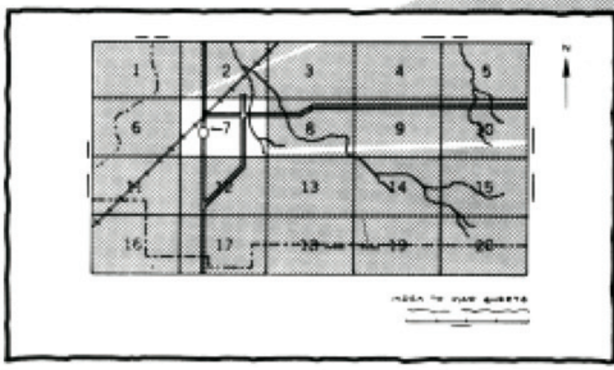
Nantucket County Massachusetts

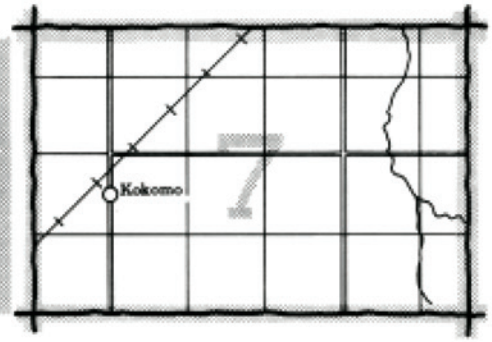


United States Department of Agriculture
Soil Conservation Service in cooperation with
Massachusetts Agricultural Experiment Station

HOW TO USE

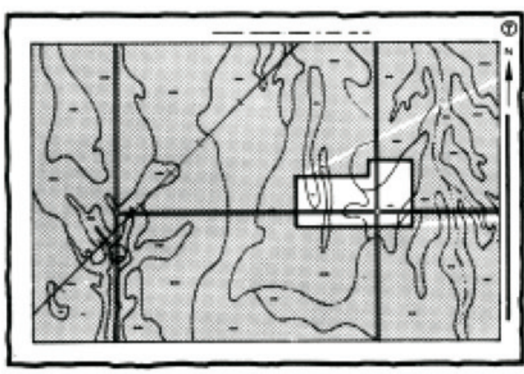
1. Locate your area of interest on the "Index to Map Sheets"

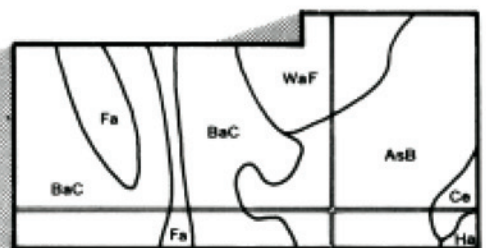




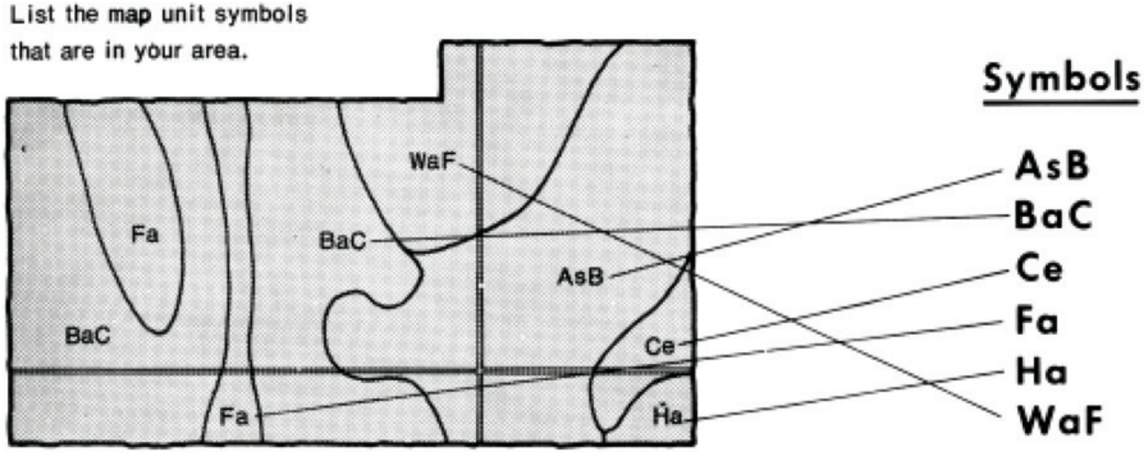
2. Note the number of the map sheet and turn to that sheet.

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



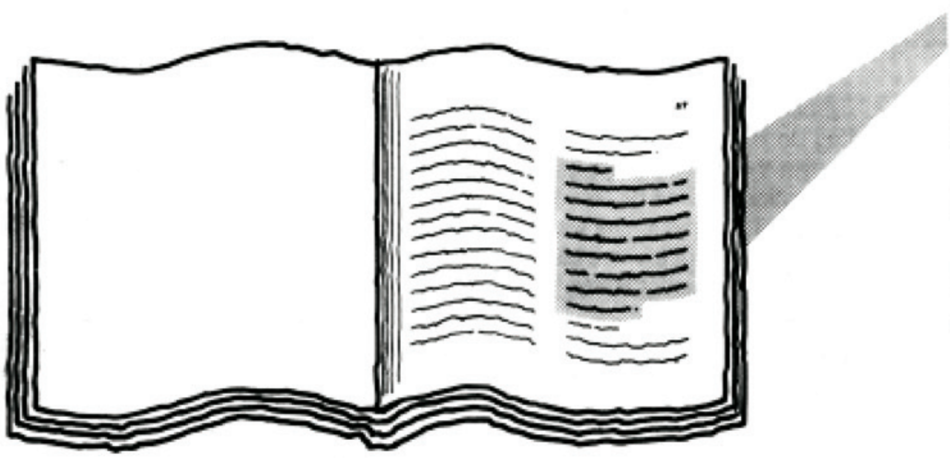


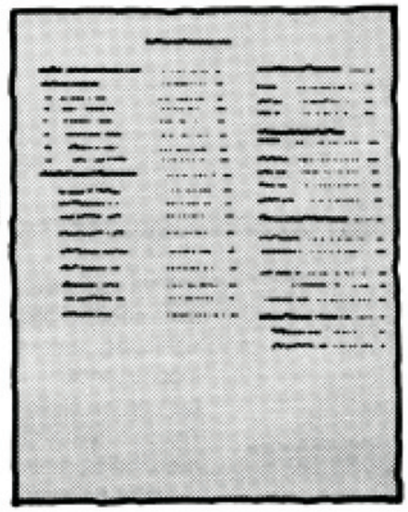
4. List the map unit symbols that are in your area.



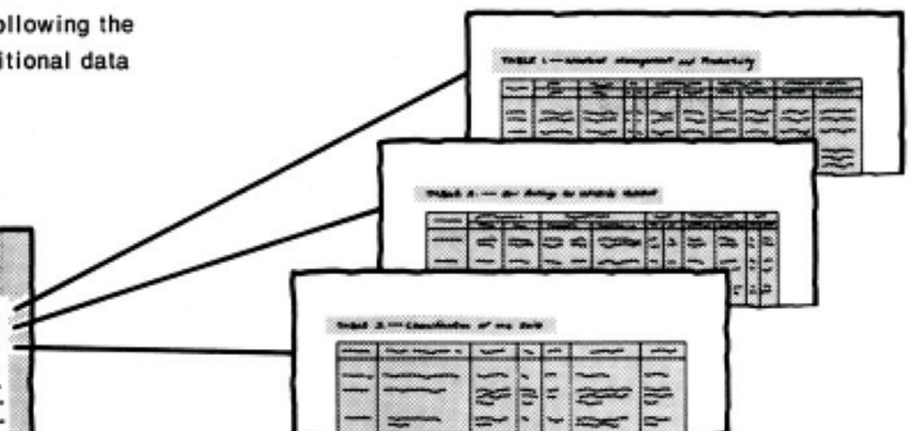
THIS SOIL SURVEY

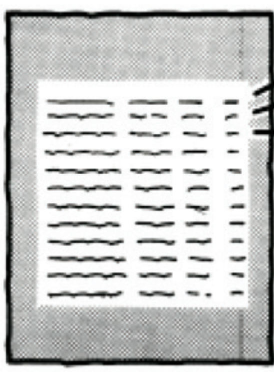
5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.





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.

Fieldwork for this soil survey was completed in 1974. Soil names and descriptions were approved in 1977. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1977. 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 Nantucket Conservation District. The Conservation Commission, Town of Nantucket, provided financial assistance.

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: This area is typical of the Nantucket County seashore. The areas that have vegetation are Udipsamments.

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Issued June 1979

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Summary of tables

Preface

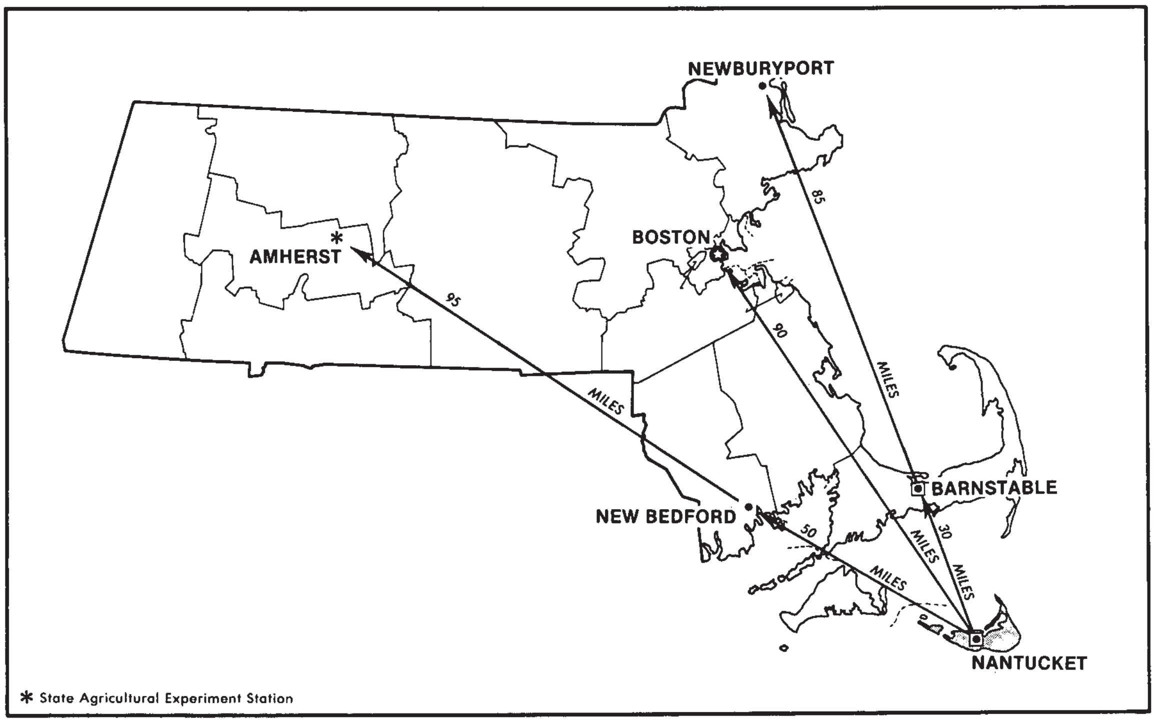
The Soil Survey of Nantucket County contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

This soil survey has been prepared for many different users. Farmers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the location of each kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This soil survey can be useful in the conservation, development, and productive use of soil, water, and other resources.



Location of Nantucket County in Massachusetts.

Soil Survey of Nantucket County, Massachusetts

By Karl H. Langlois, Jr., Soil Conservation Service

Fieldwork by John R. Mott and Bruce W. Thompson,
Soil Conservation Service

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

NANTUCKET COUNTY consists of four islands, the largest of which is Nantucket Island. The county is about 25 miles south of Cape Cod. It is 31,520 acres, or about 49 square miles. The population of the county in 1970 was 3,774. Elevation ranges from sea level to 108 feet above sea level.

The town of Nantucket was settled in 1641 (*4*). It was incorporated as the town of Sherburn in 1671, when Nantucket Island was a part of the New York Province. The island became a part of Massachusetts in 1692, and the name of the town was changed to Nantucket in 1795.

Farming, fishing, and raising sheep provided a livelihood for the early settlers. Fishing and whaling soon became the primary enterprises. The town of Nantucket was a major whaling port until the late 19th century.

Nantucket Island is one of the most popular summer recreational areas on the east coast. Much of the economy of the island is associated with the recreation industry.

Climate

In Nantucket County winters are cold and summers are warm. The start and the end of the warm period are affected by the moderating influence of the Atlantic Ocean. In winter the ground is frequently, but not continuously, covered with snow.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at Nantucket, Massachusetts, for the period 1951 to 1972. 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 33 degrees F, and the average daily minimum temperature is 26 degrees. The lowest temperature on record, which occurred at Nantucket on December 31, 1962, is -3 degrees. In summer the average temperature is 66 degrees, and the average daily maximum temperature is 72 degrees. The highest recorded temperature, which occurred on July 1, 1964, is 92 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 (40 degrees F). 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, 19 inches, or 45 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 15 inches. The heaviest 1-day rainfall during the period of record was 6.53 inches at Nantucket on May 25,1967. Thunderstorms occur on about 20 days each year, and most occur in summer.

Average seasonal snowfall is 34 inches. The greatest snow depth at any one time during the period of record was 20 inches. On the average, 8 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 70 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The percentage of possible sunshine is 50 in summer and 30 in winter. The prevailing wind is from the southwest. Average windspeed is highest, 23 miles per hour, in February.

Winter storms moving toward the northeast frequently bring rain and thawing and then snow and cold weather. In summer, sea breezes frequently moderate the temperature, particularly in coastal areas.

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 section "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.

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 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, associations that have a distinct pattern of soils and of relief and drainage. Each association is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one association can occur in others 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 association differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

Descriptions of soil associations

1. Udipsamments-Beaches-Pawcatuck association

Rolling, excessively drained to moderately well drained soils formed in windblown sand; nearly level beaches; and nearly level, very poorly drained, mucky soils formed in organic deposits

These soils are in areas that are near or adjacent to the ocean. The association makes up about 12 percent of the survey area and is about 50 percent Udipsamments, 25 percent Beaches, 15 percent Pawcatuck soils, and 10 percent minor soils (fig. 1).

Udipsamments consist of areas of gray or light gray sand that are exposed to the wind. The areas are generally separated from the ocean by areas of Beaches or Pawcatuck soils. Beaches are in long, narrow areas and generally do not support vegetation. Pawcatuck soils are in broad, nearly level areas and consist of mucky peat underlain by coarse sand.

The minor soils in this association are excessively drained, sandy Evesboro soils and well drained, loamy Riverhead soils. They are in areas at slightly higher elevations, are adjacent to the inland side of areas of Udipsamments, and are in small, islandlike areas surrounded by Pawcatuck soils.

Most areas in this association are poorly suited to crops and pasture or as building sites. The areas are suited to some recreational uses and wildlife habitat. Most areas are used for recreation.

These soils are mostly in natural vegetation. Most uses of the Pawcatuck soils are limited by the high content of organic material and by tidal inundation. Udipsamments in many areas support sparse, fragile vegetation and when disturbed are subject to soil blowing. Road cuts and trails are difficult to vegetate.

2. Evesboro association

Nearly level and gently sloping, excessively drained, sandy soils formed in outwash deposits

These soils are on gently sloping knolls and in nearly level areas. The association makes up about 42 percent of the survey area and is about 85 percent Evesboro soils and 15 percent minor soils (fig. 2).

Evesboro soils have a surface layer of dark gray sand and a subsoil of yellowish brown loamy sand and sand. The minor soils in this association are nearly level, well drained, loamy Riverhead soils in small areas and very poorly drained Medisaprists and very poorly drained, sandy Berryland Variant soils in narrow drainageways.

Most areas of this association are poorly suited to crops, pasture, recreation, and wildlife habitat. The areas are well suited to use as building sites, but the sides of excavations are unstable and commonly collapse and the soils are porous, causing a hazard of pollution to ground water from septic systems or landfills.

3. Medisaprists-Berryland Variant association

Nearly level, very poorly drained, mucky soils formed in organic deposits; sandy soils formed in outwash deposits

These soils are in large, broad areas and small, saucer-shaped areas surrounded by other soils. The association makes up about 11 percent of the survey area and is about 40 percent Medisaprists, 20 percent Berryland Variant soils, and 40 percent minor soils (fig. 3).

Medisaprists are nearly level or depressional and consist of deep, well decomposed organic material. Berryland Variant soils are in small, irregularly shaped depressional areas. The soils have a surface layer of black loamy sand. The subsoil has a thin, dark reddish brown, very firm layer in the upper part and is yellowish red gravelly sand in the lower part.

Minor soils in this association are excessively drained, sandy Evesboro and Plymouth soils on knolls and moderately well drained, sandy Klej soils, somewhat poorly drained, loamy Pompton soils, and moderately well drained, loamy Woodbridge soils in small, irregularly shaped, slightly convex areas.

Most areas of this association are poorly suited to crops, pasture, or recreation or use for building sites. The soils are well suited to wetland wildlife habitat. Areas of Medisaprists where a layer of sand has been added to the surface are well suited to and are used for cranberries.

The use of these soils for buildings, roads, and septic tank absorption fields is limited by a seasonal high water table and high organic matter content. Many areas are difficult to drain because of a lack of suitable outlets.

4. Plymouth-Evesboro association

Gently sloping to moderately steep, excessively drained, sandy soils formed in glacial till and in outwash deposits

These soils are on small knolls, on long, narrow ridges, and in nearly level areas. The association makes up about 19 percent of the survey area and is about 80 percent Plymouth and Evesboro soils and 20 percent minor soils (fig. 4).

The Plymouth and Evesboro soils are intricately mixed on the landscape. Plymouth soils have a surface layer of very dark grayish brown loamy sand and a subsoil of yellowish brown sand. Evesboro soils have a surface layer of dark gray sand and a subsoil of yellowish brown loamy sand and sand.

Minor soils in this map unit are well drained Riverhead and Nantucket soils on small, gently sloping knolls and very poorly drained Medisaprists and very poorly drained, sandy Berryland Variant soils in narrow drainageways and saucer-shaped depressions.

Most areas in this association are poorly suited to crops, pasture, recreation, or wildlife habitat. The soils are well suited to most urban uses.

The lower slopes of these soils have essentially no limitations for use as building sites, but the sides of excavations in the soils generally slough or cave in and the porous substratum causes a hazard of ground-water pollution from septic systems and sanitary landfills. Slope is a limitation in many areas.

5. Riverhead-Katama association

Nearly level, well drained, loamy soils formed in outwash deposits

These soils are in large, broad, nearly level areas. The association makes up about 9 percent of the survey area and is about 60 percent Riverhead soils, 20 percent Katama soils, and 20 percent minor soils (fig. 5).

The Riverhead soils are in slightly convex areas. They have a surface layer of dark reddish brown sandy loam and a subsoil of dark reddish brown sandy loam and gravelly sandy loam. The Katama soils are in nearly level areas. They have a surface layer of black fine sandy loam and a subsoil of olive brown sand.

Minor soils in this map unit include excessively drained, sandy Evesboro soils and areas of Beaches.

Most areas in this association are well suited to wildlife habitat, recreation, and most other nonfarm uses. The soils are suited to crops, hay, and pasture.

The soils in this association have essentially no limitations for use as building sites, but the sides of excavations in these soils generally slough or cave in and the porous substratum causes a hazard of ground-water pollution from septic systems and sanitary landfills.

6. Riverhead-Nantucket-Woodbridge Variant association

Gently sloping and nearly level, well drained and moderately well drained, loamy soils formed in outwash deposits and in glacial till

These soils are on knolls, ridges, and gently sloping areas. The association includes many pockets of moderately well drained to very poorly drained soils. The association makes up about 7 percent of the survey area and is about 60 percent Riverhead and Nantucket soils, 15 percent Woodbridge Variant soils, and 25 percent minor soils (fig. 6).

The Riverhead and Nantucket soils are intricately mixed on the landscape. Riverhead soils have a surface layer of dark reddish brown sandy loam and a subsoil of dark reddish brown sandy loam and gravelly sandy loam. Nantucket soils have a surface layer of very dark grayish brown sandy loam and a subsoil of yellowish brown sandy loam. Woodbridge Variant soils are nearly level or are in shallow depressions. They have a surface layer of dark brown loam and a subsoil of brown clay loam and loam.

Minor soils in this association are Klej and Pompton soils in small, nearly level areas and very poorly drained Berryland Variant soils in small depressions.

Most areas in this association are suited to crops, pasture, and most nonfarm uses, especially to recreation and wildlife habitat.

The Riverhead and Nantucket soils have few limitations for use as building sites. A seasonal high water table in the Woodbridge Variant soils limits use for building sites.

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 a profile that is 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. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. The Plymouth series, for example, was named for the town of Plymouth in Plymouth County.

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, Evesboro sand, 3 to 8 percent slopes, is one of several phases within the Evesboro series.

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

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. Riverhead-Nantucket complex, 3 to 8 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because there is little value in separating them. The pattern and proportion of the soils are not uniform. An area shown on the map has at least one of the dominant (named) soils or may have all of them. Klej and Pompton soils is an undifferentiated group in this survey area.

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 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.

Ba—Beaches. This unit consists of nearly level areas adjacent to the ocean. Wind and wave erosion continuously change the shape and size of the areas. Most areas of Beaches are covered with water during high tides or storms and have no vegetation.

Beaches are mainly composed of sand derived from quartz. Some areas are a mixture of sand and gravel or sand, gravel, and cobblestones.

This unit is suitable for some recreational uses but is poorly suited to most other uses. Capability subclass not assigned.

Be—Berryland Variant loamy sand. This nearly level, very poorly drained soil is along the borders of swamps; in the bottoms of closed depressions near the coast at levels just above the high tide mark; and in depressions, drainageways, and broad, low areas. The areas are long and narrow in the drainageways and irregularly shaped elsewhere. They range from 3 to 50 acres. Slopes are smooth and mainly range from 200 to 1,000 feet long.

Typically, the surface layer is black loamy sand about 8 inches thick. The subsurface layer is gray sand about 12 inches thick. The subsoil is about 22 inches thick. The upper 5 inches of the subsoil is black and dark reddish brown, firm loamy sand; the lower 17 inches is dark yellowish brown and yellowish red, loose, mottled very gravelly sand. The substratum is brown very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Medisaprists and Pompton soils. Also included are a few areas of soils where the subsoil and substratum are clay, soils that are steeper than this Berryland soil, and soils that have a surface layer of black muck. Included soils make up about 15 percent of this unit.

The permeability of this soil is mainly moderately rapid, but a 2-inch layer at a depth of about 20 inches is very slowly permeable. Available water capacity is low. The soil has a seasonal high water table within a depth of 2 feet in winter and spring. The seasonal high water table impedes root growth in spring.

Most areas of this soil are covered with woody plants. The soil is suitable for wetland wildlife habitat but is poorly suited to most other nonfarm uses.

Wetness makes this soil poorly suited to crops, hay, or pasture. Surface drainage, diversions, tile drainage, or a combination of these helps to remove water. Undrained areas provide a limited amount of pasture in late summer. The main management concern for pasture is the prevention of overgrazing, which causes surface compaction and reduces the hardiness and density of plants.

Berryland Variant soils are limited for use as sites for buildings or septic tank absorption fields or for roads and streets by the seasonal high water table and a thin cemented layer at a depth of about 20 inches. Areas used for dwellings need to be drained, but the cemented pan makes the installation of drainage systems difficult and most areas do not have suitable outlets. Capability subclass Vw.

ChB—Chilmark sandy loam, 3 to 8 percent slopes. This gently sloping, well drained soil is on toe slopes and side slopes. The areas of this soil are irregular in shape and range from 3 to 25 acres. Slopes are smooth and undulating and are mainly 200 to 1,000 feet long.

Typically, the surface layer is very dark grayish brown sandy loam about 10 inches thick. The subsoil is about 26 inches thick. The upper 21 inches is dark yellowish brown, light olive brown, and yellowish brown, friable sandy loam. The lower 5 inches of the subsoil and the entire substratum, to a depth of 60 inches or more, is multicolored layers of sandy clay loam, silty clay loam, silty clay, and clay.

Included with this soil in mapping are small areas of Evesboro, Nantucket, Plymouth, and Woodbridge Variant soils. Also included are areas of soils that have slopes of less than 3 percent or more than 8 percent. Included soils make up about 15 percent of this unit.

The permeability of this soil is moderately rapid in the surface layer and upper part of the subsoil and slow in the lower part of the subsoil and in the substratum. Available water capacity is moderate.

Grass covers many areas of this soil. Some areas are covered with woody plants. The soil is well suited to openland wildlife habitat and has fair suitability for most other nonfarm uses.

This soil is well suited to crops, hay, and pasture. Erosion is the main hazard for these uses. Erosion can be reduced by using minimum tillage and crop rotation, by farming on the contour, or by using a combination of these practices.

This Chilmark soil has essentially no limitations for use as building sites. Low strength limits use for local roads and streets, and the design of roads needs to include a base material suitable for supporting vehicular traffic. The use of the soil for septic tank absorption fields is limited by the slow permeability in the subsoil and substratum. Increasing the size of the typical absorption area helps to overcome this limitation. Capability subclass IIe.

Du—Dumps. This unit consists of undulating areas that are irregular in shape and that range from 2 to 15 acres.

Dumps are low areas and excavations that have been filled with trash. The fill material includes sand, gravel, rock, wood, and bricks. Some areas are covered with a thin layer of soil material. Dumps are typically devoid of vegetation, but some older areas have scattered bushes, grass, and weeds.

The characteristics of these areas are so variable that onsite investigation is needed to determine the potentials and limitations for any proposed land use. Capability subclass is not assigned.

EvA—Evesboro sand, 0 to 3 percent slopes. This nearly level, excessively drained soil is in smooth, irregularly shaped areas that range from 20 to 500 acres.

Typically the surface layer is dark gray sand about 6 inches thick. The subsoil is about 20 inches thick. The upper 14 inches of the subsoil is brown and yellowish brown, loose loamy sand; the lower 6 inches is yellowish brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Udipsamments, rolling, and Katama, Klej, and Riverhead soils. Also included are areas of wind-deposited sand from nearby sand dunes and a few areas of soils that have slopes of more than 3 percent. Included soils make up about 15 percent of this unit.

The permeability of this soil is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is low.

Many areas of this soil are covered with native grass, and some areas are idle land that was once pastured. A few areas are covered with woody plants. The soil is poorly suited to openland wildlife habitat or woodland wildlife habitat but is well suited to most other nonfarm uses.

Drought and soil blowing make this soil poorly suited to crops, hay, or pasture. Irrigation helps to overcome the drought limitation, and maintaining a plant cover and using crop residue help prevent soil blowing.

This Evesboro soil has essentially no limitations as a site for buildings or for local roads and streets; however, the sides of excavations in this soil are unstable and steep excavations commonly collapse. The soil has few limitations for septic tank absorption fields, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass VIIs.

EvB—Evesboro sand, 3 to 8 percent slopes. This gently sloping, excessively drained soil is in irregularly shaped areas that range from 20 to 300 acres. Slopes are smooth and are commonly 500 to 1,000 feet long.

Typically, the surface layer is dark gray sand about 6 inches thick. The subsoil is about 20 inches thick. The upper 14 inches of the subsoil is brown and yellowish brown, loose loamy sand; the lower 6 inches is yellowish brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Udipsamments, rolling, and Klej and Riverhead soils. Also included are areas of wind-deposited sand from nearby sand dunes and a few areas of soils that have slopes of less than 3 percent or more than 8 percent. Included soils make up about 15 percent of this unit.

The permeability of this soil is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is low.

Many areas of this soil are covered with native grass, and some areas are idle land that was once pastured. A few areas are covered with woody plants. The soil is poorly suited to openland wildlife habitat and woodland wildlife habitat. It is well suited to most other nonfarm uses.

Drought and soil blowing make this soil poorly suited to crops, hay, or pasture. Irrigation helps overcome the drought limitation, and maintaining a plant cover helps prevent soil blowing.

This Evesboro soil has essentially no limitations as a site for buildings or for local roads and streets; however, the sides of excavations in this soil are unstable and steep excavations commonly collapse. The soil has few limitations for septic tank absorption fields, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass VIIs.

EvC—Evesboro sand, 8 to 15 percent slopes. This moderately sloping, excessively drained soil is in irregularly shaped areas that range from 20 to 140 acres. Slopes are convex or concave and are 100 to 500 feet long.

Typically, the surface layer is dark gray sand about 5 inches thick. The subsoil is about 20 inches thick. The upper 14 inches of the subsoil is brown and yellowish brown, loose loamy sand; the lower 6 inches is yellowish brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Udipsamments, rolling, and Klej and Riverhead soils. Also included are small areas of wind-deposited sand from nearby sand dunes. Included soils make up about 15 percent of this unit.

The permeability of this soil is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is low.

Many areas of this soil are covered with native grass, and some areas are idle land that was once pastured. A few areas are covered with woody plants. The soil is poorly suited to openland wildlife habitat and woodland wildlife habitat. It is suitable for most other nonfarm uses.

Drought and soil blowing make this soil poorly suited to crops, hay, or pasture. Maintaining a plant cover helps prevent soil blowing.

Slope is the main limitation of this soil for most urban and nonfarm uses. Building sites need reshaping or special design to overcome the slope limitation. Sides of excavations in this soil are unstable, and the steeper excavations commonly collapse. Roads and streets need to be designed to reduce steep grades and to avoid deep cuts on which a plant cover is difficult to maintain. Placing absorption fields on the contour helps reduce seepage at the base of the slope, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass VIIs.

ExB—Evesboro sand, 3 to 8 percent slopes, overblown. This gently sloping, excessively drained soil is in an irregularly shaped area. Slopes are smooth and range from 200 to 1,000 feet long.

Typically, the surface layer is wind-deposited very dark gray and gray sand 18 inches thick. The next layer is dark gray sand about 6 inches thick. The subsoil is about 18 inches thick. It is dark brown loamy sand in the upper part and yellowish brown sand in the lower part. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of

Udipsamments, rolling; Evesboro sand, 3 to 8 percent slopes; and Plymouth and Riverhead soils. Also included are areas of soils that have slopes of less than 3 percent or more than 8 percent. Included soils make up about 15 percent of this unit.

The permeability of this soil is rapid above the substratum and very rapid in the substratum. Available water capacity is low.

Most areas of this soil are covered with sparse native grass. The soil is poorly suited to openland wildlife habitat or woodland wildlife habitat but is suitable for most other nonfarm uses.

Drought and soil blowing make this soil poorly suited to crops, hay, or pasture. Maintaining a plant cover helps prevent soil blowing.

This Evesboro soil has essentially no limitations as a site for buildings or for local roads and streets; however, the sides of excavations in this soil are unstable and steep excavations commonly collapse. The soil has few limitations for septic tank absorption fields, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass VIIs.

KaA—Katama sandy loam, 0 to 3 percent slopes. This nearly level, well drained soil is in smooth areas that are irregular in shape and range from 20 to 200 acres.

Typically, the surface layer is black and reddish brown sandy loam 16 inches thick (fig. 7). The subsoil is about 18 inches thick. The upper 4 inches of the subsoil is dark yellowish brown, friable gravelly sandy loam; the lower 14 inches is olive brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Riverhead and Evesboro soils and Udipsamments, rolling. Also included are areas of wind-deposited sand from nearby sand dunes. Included soils make up about 15 percent of this unit.

The permeability of this soil is moderately rapid in the surface layer and subsoil and moderately rapid or rapid in the substratum. Available water capacity is moderate.

Most areas of this soil are in idle farmland or grassland. The soil is well suited to openland wildlife habitat and most other nonfarm uses.

This soil is suitable for crops, hay, and pasture, but drought in summer limits the soil for these uses. Irrigation helps overcome the drought limitation.

This Katama soil has essentially no limitations as a site for buildings or for local roads and streets; however, the sides of excavations in this soil are unstable and steep excavations commonly collapse. The soil has few limitations for septic tank absorption fields, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass IIs.

KaB—Katama sandy loam, 3 to 8 percent slopes. This gently sloping, well drained soil is on the sides of old drainageways. Slopes are smooth or undulating and mainly are 10 to 100 feet long.

Typically, the surface layer is black and dark reddish brown sandy loam 10 inches thick. The subsoil is 18 inches thick. The upper 4 inches of the subsoil is dark yellowish brown, friable gravelly sandy loam; the lower 14 inches is olive brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Riverhead and Evesboro soils and Udipsamments, rolling. Also included are areas of wind-deposited sand from nearby sand dunes. Included soils make up about 15 percent of this unit.

The permeability of this soil is moderately rapid in the surface layer and subsoil and moderately rapid or rapid in the substratum. Available water capacity is moderate.

Most areas of this soil are in idle farmland or grassland. The soil is well suited to openland wildlife habitat and most other nonfarm uses.

This soil is suitable for crops, hay, and pasture. Drought in summer is the main limitation for these uses, and erosion is a hazard. Irrigation helps overcome the drought limitation. Maintaining a plant cover and using crop residue and contour farming help to reduce erosion.

This Katama soil has essentially no limitations as a site for buildings or for local roads and streets; however, the sides of excavations in this soil are unstable and steep excavations commonly collapse. The soil has few limitations for septic tank absorption fields, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass IIs.

Kp—Klej and Pompton soils. This unit consists of nearly level soils in shallow depressions and drainageways, on broad outwash plains, and in low lying areas near streams and ponds. The areas are irregularly shaped and range from 3 to 50 acres. These areas consist of moderately well drained Klej soils or somewhat poorly drained Pompton soils or both. The soils were mapped together because there are no major differences in their use and management. About 45 percent of the total acreage of this unit is Klej soils, 40 percent is Pompton soils, and 15 percent is other soils.

Typically, the Klej soils have a surface layer of black loamy sand about 3 inches thick. The subsoil is 38 inches thick. The upper 19 inches is friable, dark brown and reddish brown loamy sand; the middle 4 inches is strong brown, mottled, very friable sand; and the lower 15 inches is red, mottled, loose sand. The substratum extends to a depth of 60 inches. It is light olive brown, mottled sand in the upper part; light olive brown, mottled sandy loam in the middle part; and light olive brown, mottled sandy clay loam in the lower part.

Typically, the Pompton soils have a surface layer of dark brown fine sandy loam about 5 inches thick. The subsurface layer is dark gray sandy loam about 5 inches thick. The subsoil is about 20 inches thick. It is dark yellowish brown and light olive brown, friable sandy loam that is mottled in the lower part. The substratum is light olive brown gravelly sand to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Berryland Variant, Evesboro, Plymouth, and Riverhead soils. Also included in areas of Klej soils are soils with slopes of more than 3 percent, areas of soils where the upper part of the subsoil is sandy loam, and areas of soils with silt and clay in the substratum. In a few places the subsoil of the Pompton soils is loamy sand. Included soils make up about 15 percent of this unit.

The permeability of the Klej soils is rapid or very rapid. Available water capacity is low. The Klej soils have a seasonal high water table at a depth of 1.5 to 2 feet in winter and spring. The seasonal high water table restricts root growth in spring.

The permeability of the Pompton soils is moderate or moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum. Available water capacity is moderate The Pompton soils have a seasonal high water table at a depth of 1 to 2 feet in winter and spring. The seasonal high water table restricts root growth in spring.

Many areas of these soils are covered with woody vegetation. Some are covered with grass. The soils in this unit are suitable for openland wildlife habitat and woodland wildlife habitat but are poorly suited to most other nonfarm uses.

The soils in this unit are suited to crops, hay, and pasture but are limited by wetness. Surface drainage, diversions, tile drainage, or a combination of these practices helps remove water from the soils. Insufficient rainfall in summer causes drought, and irrigation is needed. The main management concern for pasture is the prevention of overgrazing, which causes surface compaction and reduces the hardiness and density of plants.

The seasonal high water table in these soils is the main limitation for most nonfarm uses, including building sites, roads and streets, and septic tank absorption fields. Areas used for building sites or roads and streets need to be drained. These soils have a moderate or high frost action potential; replacing the upper layer of the soil with a more suitable base material helps to prevent damage caused by frost action. Capability subclass IIIw.

ME—Medisaprists. These nearly level, very poorly drained soils are in depressional areas and potholes and in areas adjacent to open bodies of freshwater (fig. 8). Some areas have water ponded on the surface during most of the year. Areas are roughly circular or irregularly shaped and range from 2 to 100 acres.

The material in areas of Medisaprists is variable. Most areas have 16 inches to more than 60 inches of organic material that is commonly black muck. The organic material generally is highly decomposed.

Included with these soils in mapping are areas where the organic material has a very high fiber content and areas of Berryland Variant soils on slight rises. Inclusions make up about 15 percent of the unit.

The permeability of these soils is moderate or moderately rapid. Available water capacity is high. A seasonal high water table at a depth of less than 1 foot in fall, winter, and spring restricts root growth.

Most areas of these soils are covered with trees and shrubs. A few areas are covered with shrubs and grass. The soils are well suited to cranberries and wetland wildlife habitat but are poorly suited to most nonfarm uses.

When drained, these soils are suitable for crops. The seasonal high water table makes the soils poorly suited to hay and pasture and is the main limitation for farming. Surface drainage or open ditches or both help to remove water from the soil, but the soils subside when drained.

Medisaprists are limited for use as sites for buildings or for roads and streets by the seasonal high water table and the low strength of the organic material. Septic tank absorption fields in these soils generally do not function properly because of the seasonal high water table. Capability subclass not assigned.

MS—Medisaprists, sandy surface. These nearly level, very poorly drained soils are in depressional areas and potholes. Areas are roughly circular or oblong and range from 2 to 60 acres.

The material in these soils is variable. Many areas have 3 to 12 inches of gray sand on the surface that has been added to provide a rooting medium for cranberries. Beneath the sandy surface most areas have 16 inches to more than 60 inches of organic material that is typically black muck. The organic material generally is highly decomposed.

Included with these soils in mapping are areas where the organic material has a very high fiber content and areas of Medisaprists. These inclusions make up about 20 percent of the unit. Also included are small areas of Berryland Variant soils on slight rises. These make up about 10 percent of the unit.

The permeability of these soils is rapid in the sandy surface and moderate or moderately rapid in the organic material. Available water capacity is high. In some areas the seasonal high water table is at a depth of less than 1 foot in fall, winter, and spring, and it restricts root growth.

Most areas of these soils are used for cranberries, and the soils are well suited to that use. A few areas are covered with shrubs. The soils are suitable for wetland wildlife habitat but are poorly suited to most other nonfarm uses.

When drained, these soils are suited to crops and hay (fig. 9). The soils are poorly suited to pasture. Wetness is the main farming management concern, although most areas have been drained. Surface drainage or open ditches or both help remove water from the soils, but the soils subside when drained.

The seasonal high water table and the low strength of the organic material limit the use of these soils as sites for buildings or roads and streets. The seasonal high water table makes the use of the soils for septic tank absorption fields unfeasible. Capability subclass not assigned.

Pa—Pawcatuck mucky peat. This nearly level, very poorly drained soil is in very shallow depressions in tidal marshes. Most areas have random open ditches which allow tidal water to recede quickly. Areas of this soil are irregular in shape and range from 3 to 50 acres.

Typically, the surface layer is olive gray, dark brown, and dark olive gray mucky peat 45 inches thick. The substratum is gray sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of soils with less than 16 inches of mucky peat, soils that have a substratum of silt loam, and soils where the mucky peat is more than 60 inches thick. Included soils make up about 15 percent of this unit.

The permeability of this soil ranges from moderate to rapid in the surface layer and is very rapid in the substratum. The soil is inundated by saltwater during high tide. Root growth is restricted to the upper 20 inches because of the frequent fluctuation of the water level.

Areas of this soil are mainly covered with salt-tolerant grasses. The soil is well suited to wetland wildlife habitat but is poorly suited to most other nonfarm uses.

The saltwater and high tides make this soil poorly suited to crops, hay, and pasture. The grasses on this soil can be harvested and are suitable for hay.

The saltwater, high tides, and low strength of the surface layer of the soil make the soil unsuitable for use as sites for dwellings, roads and streets, or septic tank absorption fields. Capability subclass VIIIw.

Pb—Pits. These areas are on outwash plains and till plains. They are irregular in shape, range from 3 to 50 feet deep, and have steep sides. In most areas the floor is nearly level, and some contain small pools of water. Many areas have stones and boulders on the pit floor. Areas of this unit range from 2 to 20 acres.

Pits are areas from which sand and gravel has been removed for construction purposes. In a few areas small mounds of spoil are along the sides of the pit.

Pits are typically devoid of vegetation, but some older areas have scattered bushes, grass, and weeds. The characteristics of the areas are so variable that onsite investigation is needed to determine the potentials and limitations for any proposed land use. Capability subclass not assigned.

PcB—Plymouth-Evesboro complex, 3 to 8 percent slopes. This unit consists of undulating, excessively drained soils on side slopes, on ridges, and in depressions. The areas are irregular in shape, and slopes are typically 100 to 500 feet in length. Areas of this unit range from 5 to 200 acres and are about 50 percent Plymouth soils, 35 percent Evesboro soils, and 15 percent other soils. The Plymouth and Evesboro soils are so intricately mixed that it was not practical to map them separately.

Typically, the Plymouth soils have a surface layer of very dark grayish brown loamy sand about 1 inch thick. The subsoil is 23 inches thick. The upper 5 inches of the subsoil is brown, loose loamy coarse sand; the middle 5 inches is strong brown, loose coarse sand; and the lower 13 inches is yellowish brown, loose sand. The substratum is pale brown gravelly sand to a depth of 60 inches or more.

Typically, the Evesboro soils have a surface layer of dark gray sand about 6 inches thick. The subsoil is about 20 inches thick. The upper 14 inches of the subsoil is brown and yellowish brown, loose loamy sand; the lower 6 inches is yellowish brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with these soils in mapping are areas where almost half of the soil material consists of gravel and cobblestones. Also included are areas with slopes of less than 3 percent or more than 8 percent. The permeability of these soils is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is low.

Many areas of the soils in this complex are covered with woody vegetation. Some areas are farmed. The soils are poorly suited to openland wildlife habitat and well suited to most other nonfarm uses.

Drought and soil blowing make the soils in this complex poorly suited to crops, hay, and pasture. Irrigation helps overcome the drought limitation, and use of a plant cover and returning crop residue to the soil help prevent soil blowing.

These soils have essentially no limitations as a site for buildings or for local roads and streets; however, the sides of excavations in the soils are unstable and steep excavations commonly collapse. The soils have few limitations for septic tank absorption fields, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass VIs.

PcC—Plymouth-Evesboro complex, 8 to 15 percent slopes. This unit consists of rolling, excessively drained soils on ridges. Slopes are convex and range from 50 to 500 feet in length. Areas of this unit are long and narrow or irregular in shape and range from 5 to 200 acres. The areas are about 50 percent Plymouth soils, 35 percent Evesboro soils, and 15 percent other soils. The Plymouth and Evesboro soils are so intricately mixed that it was not practical to map them separately.

Typically, the Plymouth soils have a surface layer of very dark grayish brown loamy sand about 1 inch thick. The subsoil is 23 inches thick. The upper 5 inches of the subsoil is brown, loose loamy coarse sand; the middle 5 inches is strong brown, loose coarse sand; and the lower 13 inches is yellowish brown, loose sand. The substratum is pale brown gravelly sand to a depth of 60 inches or more.

Typically, the Evesboro soils have a surface layer of dark gray sand about 6 inches thick. The subsoil is about 20 inches thick. The upper 14 inches of the subsoil is brown and yellowish brown, loose loamy sand; the lower 6 inches is yellowish brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with these soils in mapping are areas where almost half of the soil material consists of gravel and cobblestones. Also included are areas with slopes of less than 8 percent or more than 15 percent.

The permeability of these soils is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is low.

Most areas of these soils are covered with woody vegetation. A few areas are farmed. The soils are poorly suited to openland wildlife habitat and are suitable for most other nonfarm uses.

Drought and soil blowing make the soils in this complex poorly suited to crops, hay, and pasture. Use of a plant cover helps prevent soil blowing.

Slope is the main limitation of these soils for use as sites for buildings, roads and streets, and septic tank absorption fields. Areas used for building sites need reshaping, and special design is needed for the buildings. The sides of excavations in these soils are unstable, and the steeper sides commonly collapse. Roads and streets require special design to avoid deep cuts, on which it is difficult to establish plant cover. Placing septic tank absorption fields on the contour helps reduce seepage at the base of the slope, but seepage of the effluent through the substratum causes a hazard of ground-water contamination. Capability subclass VIs.

PcD—Plymouth-Evesboro complex, 15 to 25 percent slopes. This unit consists of hilly, excessively drained soils in long and narrow or roughly circular areas. Slopes are convex and range from 50 to 300 feet in length. Areas of this unit range from 5 to 300 acres and are about 65 percent Plymouth soils, 25 percent Evesboro soils, and 10 percent other soils. The Plymouth and Evesboro soils are so intricately mixed that it was not practical to map them separately.

Typically, the Plymouth soils have a surface layer of very dark grayish brown loamy sand about 1 inch thick. The subsoil is 23 inches thick. The upper 5 inches of the subsoil is brown, loose loamy coarse sand; the middle 5 inches is strong brown, loose coarse sand; and the lower 13 inches is yellowish brown, loose sand. The substratum is pale brown gravelly sand to a depth of 60 inches or more.

Typically, the Evesboro soils have a surface layer of dark gray sand about 6 inches thick. The subsoil is about 20 inches thick. The upper 14 inches of the subsoil is brown and yellowish brown, loose loamy sand; the lower 6 inches is yellowish brown, loose sand. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with these soils in mapping are areas where almost half of the soil material consists of gravel and cobblestones. Also included are areas of soils with slopes of less than 15 percent or more than 25 percent.

The permeability of these soils is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is low.

Most areas of the soils in this complex are covered with woody vegetation. The soils are poorly suited to openland wildlife habitat but are suitable for most other nonfarm uses.

Drought and soil blowing make the soils in this complex poorly suited to crops, hay, and pasture. Maintaining a plant cover helps to prevent soil blowing.

Slope is the main limitation of these soils for use as sites for buildings, roads and streets, and septic tank absorption fields. Special design is needed for building sites, but the sides of excavations in these soils are unstable and the steeper sides commonly collapse. Special design is needed for roads and streets to avoid deep cuts, on which plant cover is difficult to maintain. Placing septic tank absorption fields on the contour helps reduce seepage at the base of the slope, but seepage of effluent through the substratum causes a hazard of ground-water contamination. Capability subclass VIs.

Rd—Ridgebury Variant silty clay loam. This nearly level, poorly drained soil is in irregularly shaped, depressional areas and in long, narrow areas in drainageways. The areas range from 3 to 50 acres.

Typically, the surface layer is dark gray silty clay loam. The subsoil is about 15 inches thick. The upper 4 inches of the subsoil is grayish brown, mottled, firm silty clay; the lower 11 inches is light olive gray, mottled, firm clay loam. The substratum is gray, mottled clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Medisaprists and Woodbridge Variant soils. Also included are areas of soils that have more brown in the subsoil than this Ridgebury Variant soil, soils where the subsoil is sandy loam, and soils with slopes of as much as 8 percent. Included soils make up about 15 percent of the unit.

The permeability of this soil is very slow. Available water capacity is high. The soil has a seasonal high water table at a depth of less than 1.5 feet in winter and spring. The seasonal high water table restricts root growth in spring.

Most areas of this soil are covered with woody vegetation. The soil is suitable for wetland wildlife habitat and woodland wildlife habitat. It is poorly suited to most other nonfarm uses.

This soil is suited to crops, hay, and pasture. Wetness is the main limitation for these uses. Surface drainage, diversions, open ditches, tile drainage, or a combination of these practices helps remove water from the soil. Overgrazing or grazing when the soil is wet causes compaction of the surface layer and reduces the hardiness and density of plants.

The seasonal high water table and high frost action potential of this soil are the main limitations for its use as sites for buildings or roads and streets. Drainage is needed for building sites and along roads, but suitable outlets are not available in most areas. Special building design is commonly needed to prevent structural damage from frost action, and replacing the upper layer of the soil with a more suitable base material is needed to use the soil as a site for roads and streets. The high water table and very slow permeability make the soil generally unsuitable for septic tank absorption fields. Capability subclass IVw.

ReA—Riverhead sandy loam, 0 to 3 percent slopes. This nearly level, well drained soil is in irregularly shaped, convex areas on broad outwash plains. The areas range from 5 to 250 acres.

Typically, the surface layer is dark reddish brown sandy loam about 4 inches thick. The subsoil is 26 inches thick. The upper 15 inches of the subsoil is dark reddish brown, very friable sandy loam; the lower 11 inches is dark brown, friable gravelly sandy loam. The substratum is light yellowish brown, stratified sand and gravel to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Katama, Evesboro, Klej, and Tisbury soils that make up about 15 percent of the unit.

The permeability of this soil is moderately rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is moderate.

Most areas of this soil are in idle farmland or native grasses. A few areas are covered with woody vegetation, and some areas are farmed. This soil is suitable for openland wildlife habitat, woodland wildlife habitat, and most other nonfarm uses.

The soil is suited to crops, hay, and pasture. Drought in summer is the main limitation for these uses. Irrigation helps overcome the drought limitation.

This Riverhead soil has essentially no limitations for use as a building site; however, sides of excavations in this soil are unstable and the steeper sides generally collapse. A moderate frost action potential limits use of the soil for roads and streets. Replacing the upper layer of the soil with suitable base material helps prevent damage caused by frost action. The soil has few limitations for septic tank absorption fields, but seepage of effluent through the substratum causes a hazard of ground-water pollution. Capability subclass IIs.

ReB—Riverhead sandy loam, 3 to 8 percent slopes. This gently sloping, well drained soil is in irregularly shaped, convex areas on broad outwash plains. Slopes are smooth and are mainly 400 to 800 feet long. Areas of the soil range from 5 to 100 acres.

Typically, the surface layer is dark reddish brown sandy loam about 4 inches thick. The subsoil is 26 inches thick. The upper 15 inches of the subsoil is dark reddish brown, very friable sandy loam; the lower 11 inches is dark brown, friable gravelly sandy loam. The substratum is light yellowish brown, stratified sand and gravel to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Katama, Evesboro, and Klej soils. Also included are areas of soils with slopes of more than 8 percent. Included soils make up about 15 percent of this unit.

The permeability of this soil is moderately rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is moderate.

Most areas of this soil are in idle farmland or native grasses. A few areas are covered with woody vegetation, and some areas are farmed. The soil is well suited to openland wildlife habitat, woodland wildlife habitat, and most other nonfarm uses.

This soil is suited to crops, hay, and pasture. Drought in summer is the main limitation, and erosion is a hazard for these uses. Irrigation helps overcome the drought limitation. Use of a plant cover, contour farming, and returning crop residue to the soil help prevent erosion.

This Riverhead soil has essentially no limitations for use as a building site; however, sides of excavations in this soil are unstable and the steeper sides generally collapse. A moderate frost action potential limits use of the soil for roads and streets. Replacing the upper layer of the soil with suitable base material helps prevent damage caused by frost action. The soil has few limitations for septic tank absorption fields, but seepage of effluent through the substratum causes a hazard of ground-water pollution. Capability subclass IIs.

RfB—Riverhead-Nantucket complex, 3 to 8 percent slopes. This unit consists of gently sloping, well drained soils in irregularly shaped areas. Slopes are convex. Areas of this unit range from 5 to 200 acres and are about 40 percent Riverhead soils, 40 percent Nantucket soils, and 20 percent other soils. The Riverhead and Nantucket soils are so intricately mixed that it was not practical to map them separately.

Typically, the Riverhead soils have a surface layer of dark reddish brown sandy loam about 4 inches thick. The subsoil is 26 inches thick. The upper 15 inches of the subsoil is dark reddish brown, very friable sandy loam; the lower 11 inches is dark brown, friable gravelly sandy loam. The substratum is light yellowish brown, stratified sand and gravel to a depth of 60 inches or more.

Typically, the Nantucket soils have a surface layer of very dark grayish brown sandy loam about 6 inches thick. The subsoil is 23 inches thick. The upper 4 inches of the subsoil is brown, friable sandy loam; the middle 13 inches is yellowish brown, friable or firm sandy loam; and the lower 6 inches is light olive brown, firm loam. The substratum is light olive brown sandy clay loam to a depth of 60 inches or more.

Included with these soils in mapping are areas of Evesboro soils, areas of soils with slopes of more than 8 percent, and a few areas of soils with mottles in the lower part of the subsoil.

The permeability of the Riverhead soils is moderately rapid in the surface layer and subsoil and very rapid in the substratum. The permeability of the Nantucket soils is moderate or moderately rapid in the surface layer and subsoil and moderately slow in the substratum. Available water capacity of these soils is moderate. Root development in the Nantucket soils is restricted to a depth of about 29 inches.

Most areas of the soils in this complex are covered with woody vegetation. Some areas are used for crops, hay, and pasture. The soils are well suited to farming, openland wildlife habitat, and woodland wildlife habitat. The soils are suitable for most other nonfarm uses.

Drought in summer is the main limitation, and erosion is a hazard for the use of the soils in this complex. Irrigation helps overcome the drought limitation. Maintaining a plant cover, contour farming, and using crop residue help prevent erosion.

The soils in this complex have essentially no limitations for use as building sites; however, the sides of excavations in the Riverhead soils are unstable and the steeper sides commonly collapse. A moderate frost action potential limits use of the soils for roads and streets. Replacing the upper layer of the soils with a suitable base material helps prevent damage caused by frost action. The moderately slow permeability in the substratum of the Nantucket soils is a limitation for septic tank absorption fields; increasing the size of the absorption area helps overcome this limitation. The seepage of effluent through the substratum in the Riverhead soils causes a hazard of ground-water contamination. Capability subclass IIs.

Ta—Tisbury very fine sandy loam. This nearly level, moderately well drained soil is in oval or irregularly shaped, convex areas. The areas range from 5 to 10 acres.

Typically, the surface layer is dark grayish brown very fine sandy loam about 5 inches thick. The subsoil is firm very fine sandy loam about 15 inches thick. The upper 5 inches of the subsoil is dark brown, the next 6 inches is yellowish brown, and the lower 4 inches is light yellowish brown and is mottled. The substratum consists of bands of yellow and strong brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils that do not have mottles in the subsoil. These soils make up 10 to 25 percent of this unit.

The permeability of this soil is moderate in the surface layer and subsoil and rapid or very rapid in the substratum. Available water capacity is moderate. The soil has a seasonal high water table at a depth of 1.5 to 3.5 feet in winter and spring. The seasonal high water table restricts root growth in spring.

Most areas of this soil are covered with woody vegetation. The soil is suitable for openland wildlife habitat and woodland wildlife habitat. It is poorly suited to most other nonfarm uses.

The soil is well suited to crops, hay, and pasture. Wetness is the main limitation of the soil for these uses. Surface drainage, diversions, or both help remove water from the soil. The main management concern for pasture is the prevention of overgrazing, which causes surface compaction and reduces the hardiness and density of plants.

The seasonal high water table limits the use of this Tisbury soil as sites for buildings or septic tank absorption fields. Areas used for dwellings need to be drained. The sides of excavations in this soil are unstable, and the steeper sides generally cave in. The use of this soil for roads and streets is limited by a high frost action potential. Replacing the upper layer of the soil with a suitable base material helps prevent damage caused by frost action. Capability subclass IIw.

UAC—Udipsamments, rolling. These rolling, excessively drained to moderately well drained soils are on sand dunes and in troughs between dune ridges. The soils are in narrow strips that parallel the ocean, are on spits, and are in offshore areas, some of which are connected to the main island. The areas range from 3 to 200 acres. Slopes are short and steep.

Most areas of these soils are gray or light gray sand. A few concave areas have faint mottles at a depth of more than 2 feet.

Included with these soils in mapping are areas with a thin, dark gray to black surface layer and small, narrow areas of Beaches. These inclusions make up about 20 percent of the unit.

The permeability of these soils is rapid. Available water capacity is low.

Most areas of these soils have been stabilized by volunteer stands of vegetation which ranges from a very sparse beach grass to dense thickets of Atlantic white-cedar. The vegetation is generally fragile and unable to withstand vehicular traffic and heavy foot traffic (fig. 10). Exposed areas revegetate slowly and are subject to soil blowing.

The soils are poorly suited to most uses but are suitable for some types of recreation. Capability subclass not assigned.

WaA—Woodbridge Variant loam, 0 to 3 percent slopes. This moderately well drained soil is in nearly level areas and shallow depressions. Areas are irregular in shape and range from 3 to 50 acres.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is 28 inches thick. In sequence downward, it is 4 inches of brown, friable loam; 5 inches of light olive brown, friable sandy clay loam; 7 inches of brown, mottled, firm clay loam; and 12 inches of strong brown, mottled, firm loam. The substratum extends to a depth of 60 inches or more. It is strong brown, mottled very fine sandy loam in the upper part and light olive brown, mottled silty clay loam in the lower part.

Included with this soil in mapping are a few areas of soils that have more gray in the subsoil than this Woodbridge Variant soil and a few areas of soils that have mottles in the upper part of the subsoil. Included soils make up about 15 percent of the unit.

The permeability of this soil is moderate in the upper part of the subsoil and very slow in the lower part of the subsoil and in the substratum. Available water capacity is high. The soil has a seasonal high water table at a depth of 1.5 to 2.5 feet in winter and spring. The seasonal high water table restricts root growth in spring.

Most areas of this soil are covered with woody vegetation. The soil is suitable for openland wildlife habitat and woodland wildlife habitat. It is poorly suited to most other nonfarm uses.

This soil is well suited to crops, hay, and pasture. Wetness is the main limitation of the soil for these uses. Surface drainage, diversions, tile drainage, or a combination of these practices helps remove water from the soil. Overgrazing or grazing when the soil is wet causes compaction of the surface layer and reduces the hardiness and density of plants.

The seasonal high water table and a high frost action potential limit this soil for use as building sites. Areas used for dwellings need to be drained, and foundations need special design to prevent structural damage caused by frost action. The high frost action potential also limits the use of the soil for roads and streets. Replacing the upper layer of the soil with a suitable base material helps prevent damage caused by frost action. The use of the soil for septic tank absorption fields is limited by the seasonal high water table and by the very slow permeability in the lower part of the soil. Capability subclass IIw.

WaB—Woodbridge Variant loam, 3 to 8 percent slopes. This gently sloping moderately well drained soil is on convex slopes. Areas are irregular in shape and range from 3 to 75 acres.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is 28 inches thick. In sequence downward, it is 4 inches of brown, friable loam; 5 inches of light olive brown, friable sandy clay loam; 7 inches of brown, mottled, firm clay loam; and 12 inches of strong brown, mottled, firm loam. The substratum extends to a depth of 60 inches or more. It is strong brown, mottled very fine sandy loam in the upper part and light olive brown, mottled silty clay loam in the lower part.

Included with this soil in mapping are a few areas that have more gray in the subsoil than this Woodbridge Variant soil and a few areas of soils that have mottles in the upper part of the subsoil. Included soils make up about 15 percent of the unit.

The permeability of this soil is moderate in the upper part of the subsoil and very slow in the lower part of the subsoil and in the substratum. Available water capacity is high. The soil has a seasonal high water table at a depth of 1.5 to 2.5 feet in winter and spring. The seasonal high water table restricts root growth in spring.

Most areas of this soil are covered with woody vegetation. The soil is suitable for openland wildlife habitat and woodland wildlife habitat. It is poorly suited to most other nonfarm uses.

This soil is well suited to crops, hay, and pasture. Wetness is the main limitation, and erosion is a hazard for these uses. Surface drainage, diversions, tile drainage, or a combination of these practices helps remove water from the soil. Overgrazing or grazing when the soil is wet causes compaction of the surface layer and reduces the hardiness and density of plants.

The seasonal high water table and a high frost action potential limit this soil for use as building sites. Areas used for dwellings need to be drained, and foundations need special design to prevent structural damage caused by frost action. The use of the soil for roads and streets is limited by the frost action potential. Replacing the upper layer of the soil with a suitable base material helps prevent damage caused by frost action. The use of this soil for septic tank absorption fields is limited by the seasonal high water table and by the very slow permeability in the lower part of the soil. Capability subclass IIw.

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, for 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

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 are discussed and the system of land capability classification used by the Soil Conservation Service is explained.

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.

In 1974 Nantucket County had six farms and 1,044 acres of farmland, 216 acres of which was irrigated (*7*). Of the farmland, 276 acres was used for cropland and 768 acres for pasture, woodland, and other uses. Cranberries, vegetables, horticultural products, beef cattle, and poultry were the main products. The county had a decrease of 11 farms and 3,500 acres of farmland between 1950 and 1974.

The scarcity of arable land and the sandy subsoil of the soils limit Nantucket County as a farming area. Further, the cold winds off the ocean delay the planting of many crops and extend the growing season of some crops into late summer or early fall. The small year-round population of the county precludes a local market for crops harvested at the end of a late growing season, and products not consumed locally must be shipped to other markets. Cranberries, for example, are shipped to the mainland.

Erosion by the wind is a hazard on the sandy soils, especially where they are not protected by vegetation. Soil blowing occurs along some of the unimproved roads and on bare sandy areas near beaches. Soil blowing in areas of cultivated crops causes damage to young crops and can be prevented by planting windbreaks of grain.

Waves during major storms cause erosion of escarpments near beaches. Water erosion other than that caused by ocean waves is a management concern on less than 100 acres of land in the county.

A *high water table* is a limitation of several soils in the survey area. Some soils, for example, Medisaprists and Pawcatuck, Ridgebury Variant, and Berryland Variant soils, are naturally so wet that the production of most field crops common to the area is generally not feasible. These soils are poorly drained and have a water table in winter and spring that is at the surface or less than 2 feet below the surface.

Other soils with a seasonal high water table include somewhat poorly drained Pompton soils and moderately well drained Klej, Woodbridge Variant, and Tisbury soils. These soils have a water table in the winter and spring of most years that is 1 to 3.5 feet below the surface. The water table in these soils generally limits the use of equipment in early spring or during wet periods. These soils can be drained if suitable outlets are available.

Surface drainage, diversion, tile drains, or a combination of these helps to overcome the limitation of a high water table. The use of moisture-tolerant or late-season crops is also effective.

Fertility is naturally low in soils of the survey area. Most of these soils also are naturally strongly acid or very strongly acid and are low in available phosphorus and potash. The application of lime is required to raise the pH value sufficiently for crops that require slightly acid or neutral soils. 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.

Tilth affects seed germination and infiltration of water into the soil. Soils with good tilth are granular and porous. Most of the soils on Nantucket Island have granular structure, are very friable, and generally have good tilth. Regular additions of organic matter, including crop residue, help to maintain soil structure, soil tilth, and water infiltration.

The *special crops* grown commercially in the survey area are cranberries, vegetables, and flowers. Cranberries are grown only on the very poorly drained organic soils. The most common vegetables grown are sweet corn, tomatoes, squash, snap beans, cabbage, peas, lettuce, and carrots. Deep, friable soils that have good natural drainage are especially well suited for vegetables and flowers. In the survey area these include the Chilmark, Katama, Nantucket, Riverhead, and Tisbury soils.

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 forest trees or for engineering purposes.

In the capability system, all kinds of soil are grouped at two levels: capability class and subclass. 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. 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; 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, woodland, wildlife habitat, or recreation.

The capability subclass is identified in the description of each soil map unit in the section "Soil maps for detailed planning."

Engineering

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.

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 5 shows, for each kind of soil, the degree and kind of limitations for building site development; table 6, for sanitary facilities; and table 8, for water management. Table 7 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 5. 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, or large stones. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil layers 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 5 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 5 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 6 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 6 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 layers, the surface layer 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 original surface layer 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 7 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 surface 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 11 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 7 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. 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 11.

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 surface layer 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 layer is generally preferred for topsoil because of its organic-matter content. This layer is designated as the A1 or Ap horizon 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 8 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.

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 8 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.

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.

Recreation

The most popular forms of recreation on Nantucket Island are swimming and sunbathing on the beaches of the island. Fishing in the surf, bird watching, bicycling, golfing, hunting, and sailing are also popular activities.

The soils of the survey area are rated in table 9 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 9 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 6, and interpretations for dwellings without basements and for local roads and streets, given in table 5.

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.

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

Robert W. Franzen, biologist, Soil Conservation Service, assisted in preparing this section.

Waterfowl and shorebirds are a significant part of the wildlife on Nantucket Island. Many miles of freshwater and ocean shoreline provide an abundance of nesting sites. Species of waterfowl that nest on the island include black duck, mallard, wood duck, green winged teal, Canada geese, and mute swan. Wintering species of waterfowl include black duck, mallard, baldpate, scaup, goldeneye, bufflehead, oldsquaw, scoter, eider, merganser, redhead, Canada geese, and brant.

The white-tailed deer is the only big game animal on the island. The most common game animal is the eastern cottontail rabbit, for which the island provides a nearly ideal habitat. Other game animals are the bobwhite quail, western black-tailed jackrabbit, varying hare, woodcock, and ring-necked pheasant.

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. 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 (*1*).

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 10, 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, buckwheat, oats, and rye.

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, bromegrass, and clover.

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, sweet clover, and pokeberry.

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 scrub oak, cherry, hawthorn, and blueberry. 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 pitch pine, red pine, white pine, and eastern redcedar.

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, cattail, arrowhead, and cordgrass 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, horned lark, field sparrow, eastern cottontail rabbit, and meadow vole.

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 woodcock, thrushes, varying hare, woodpeckers, deer mice, and white-tailed deer.

Wetland habitat consists of open, marshy or swampy, shallow water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, mute swan, snapping turtle, and northern water snake.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the 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 11 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 11 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 11 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.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The estimated classification, without group index numbers, is given in table 11. Also in table 11 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 12 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.

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 13 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 snow melts 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 13 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.

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.

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.

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 (*5*). 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 map units, of each soil series are described in the section "Soil maps for detailed planning."

Berryland Variant

The Berryland Variant consists of sandy, siliceous, mesic, ortstein Typic Haplaquods. These deep, very poorly drained soils are on outwash plains and coastal plains. The soils formed in sandy outwash or coastal plain sediments. Slopes range from 0 to 3 percent.

Berryland Variant soils are similar to Klej, Pompton, and Ridgebury Variant soils and commonly are near Pompton soils. The Berryland Variant soils have a firm spodic horizon that is not typical of these similar soils and are grayer in the upper part of the solum than the Klej, Pompton, or Ridgebury Variant soils. Berryland Variant soils have more sand in the subsoil than Pompton soils and are in lower areas. Berryland Variant soils have more sand and less clay in the solum than Ridgebury Variant soils.

Typical pedon of Berryland Variant loamy sand, in a depressional area south of Milestone Road, near the dump west of Siasconset:

O2—1 inch to 0, very dusky red (2.5YR 2/2) muck; weak very fine granular structure; very friable; extremely acid; abrupt smooth boundary.

A1—0 to 8 inches, black (5YR 2/1) loamy sand; weak fine granular structure; friable; many clean white sand grains; extremely acid; abrupt wavy boundary.

A21—8 to 12 inches, mottled very dark gray (5YR 3/1) and light gray (N 7/0) sand; single grain; loose; extremely acid; abrupt wavy boundary.

A22g—12 to 20 inches, gray (5Y 6/1) sand; single grain; loose; extremely acid; abrupt wavy boundary.

B21h—20 to 22 inches, black (10YR 2/1) loamy sand; massive; firm; extremely acid; abrupt wavy boundary.

B22hir—22 to 25 inches, dark reddish brown (2.5YR 2/4) loamy sand; massive; very firm; extremely acid; abrupt smooth boundary.

IIC1—25 to 30 inches, dark yellowish brown (10YR 4/4) very gravelly sand; few coarse prominent light yellowish brown (2.5Y 6/4) and yellowish brown (10YR 5/6) mottles; single grain loose; 50 percent coarse fragments; very strongly acid; abrupt smooth boundary.

IIIB23ir—30 to 42 inches, yellowish red (5YR 5/8) very gravelly sand; few medium prominent dark yellowish brown (10YR 3/4) mottles; single grain; loose; 50 percent coarse fragments; very strongly acid; abrupt smooth boundary.

IIIC2—42 to 60 inches, brown (7.5YR 5/4) very gravelly sand; single grain; loose; 50 percent coarse fragments; very strongly acid.

The thickness of the solum ranges from 24 to 40 inches. The solum generally contains less than 5 percent gravel, but the underlying sediments are as much as 55 percent gravel. The solum is very strongly acid or extremely acid.

The A1 horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. It is loamy sand or sand. The A2 horizon is neutral or has hue of 5YR to 5Y, value of 3 to 7, and chroma of 0 to 2. It is fine sand or sand.

The B horizon has hue of 2.5YR to 10YR, value of 2 to 5, and chroma of 1 to 8.

The C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It ranges from very gravelly sand to sand.

Chilmark series

The Chilmark series consists of fine-loamy, mixed, mesic Typic Hapludults. These deep, well drained soils are on uplands. The soils formed in a mantle of sandy loam material and underlying glacial till. Slopes range from 3 to 8 percent.

Chilmark soils are similar to Nantucket and Riverhead soils and in many places are near these soils. Chilmark soils have an argillic horizon which the Nantucket and Riverhead soils do not have. Chilmark soils do not have a fragipan typical of the Nantucket soils.

Typical pedon of Chilmark sandy loam, 3 to 8 percent slopes, in an idle field, 0.8 mile southwest of the intersection of Milestone Road and Nobadeer Road:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) sandy loam; weak medium granular structure and weak medium subangular blocky structure; friable; many roots; medium acid; abrupt wavy boundary.

B21—10 to 16 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; friable; many fine roots; medium acid; clear smooth boundary.

B22t—16 to 27 inches; light olive brown (2.5Y 5/6) sandy loam; weak medium subangular blocky structure; friable; common fine roots; common thin patchy clay coats on sand grains; many clay bridges between sand grains; medium acid; clear smooth boundary.

B23t—27 to 31 inches; yellowish brown (10YR 5/4) sandy loam; weak medium angular blocky structure; friable, slightly sticky, nonplastic; few fine roots; common thin clay coats on sand grains; clay bridges between most sand grains; medium acid; abrupt smooth boundary.

IIB24t—31 to 36 inches; variegated reddish brown (5YR 4/4), yellowish red (5YR 5/6 and 5/8), olive gray (5Y 5/2), olive (5Y 5/3 and 5/4), and light olive gray (5Y 6/2) poorly mixed or folded thin strata of sandy clay loam, silty clay loam, silty clay, and clay; weak coarse prismatic structure parting to moderate coarse angular blocky; extremely firm, very sticky, very plastic; moderate clay films on most ped faces and in some pores; 5 percent subrounded gravel less than 2 inches in diameter; medium acid; clear smooth boundary.

IIC—36 to 60 inches; variegated reddish brown (5YR 4/4), yellowish red (5YR 5/6 and 5/8), olive gray (5Y 5/2), olive (5Y 5/3 and 5/4), and light olive gray (5Y 6/2) poorly mixed or folded thin strata of sandy clay loam, silty clay loam, silty clay, and clay; massive; extremely firm, very sticky, very plastic; 5 percent subrounded gravel less than 2 inches in diameter; medium acid.

The thickness of the solum ranges from 25 to 44 inches. Rock fragements generally make up less than 5 percent of the solum, but the content ranges from 0 to 10 percent. Reaction throughout the soil is strongly acid or medium acid.

The A horizon has hue of 10YR to 5YR, value of 3, and chroma of 1 to 3. It is loamy sand or sandy loam.

The B21 and B22t horizons have hue of 7.5YR to 2.5Y, value of 4 or 5 and chroma of 4 or 6. The B23t horizon has hue of 10YR, value of 5, and chroma of 4 or 6. The IIB24t horizon has hue of 2.5YR to 5Y, value of 4 to 7, and chroma of 1 to 8.

The IIC horizon has hue of 2.5YR to 5Y, value of 4 to 7, and chroma of 1 to 8.

Evesboro series

The Evesboro series consists of mesic, coated Typic Quartzipsamments. These deep, excessively drained soils are on glacial outwash plains. The soils formed in acid glaciofluvial deposits. Slopes range from 0 to 25 percent.

Evesboro soils are similar to Katama, Klej, and Plymouth soils and in many places are near Klej and Plymouth soils. Evesboro soils have a grayer, thinner surface layer than the Katama soils. They do not have the mottles of the Klej soils and are at higher positions. Evesboro soils have less coarse sand and gravel than the Plymouth soils.

Typical pedon of Evesboro sand, 0 to 3 percent slopes, at the foot of the west slope to Phillips Run, south of Milestone Road:

O1—1 inch to 0, very dark brown (10YR 2/2) decomposed organic matter; very strongly acid.

A1—0 to 6 inches; dark gray (10YR 4/1) sand; single grain; loose; many fine and medium roots; less than 5 percent rock fragments; extremely acid; abrupt smooth boundary.

B21—6 to 11 inches; brown (7.5YR 4/4) loamy sand; single grain; loose; many fine and medium roots; less than 5 percent rock fragments; extremely acid; abrupt wavy boundary.

B22—11 to 20 inches; yellowish brown (10YR 5/6) loamy sand; single grain; loose; few fine and medium roots; less than 5 percent rock fragments; extremely acid; clear smooth boundary.

B23—20 to 26 inches; yellowish brown (10YR 5/4) sand; single grain; loose; few fine and medium roots; less than 5 percent rock fragments; extremely acid; clear smooth boundary.

C—26 to 60 inches; light yellowish brown (2.5Y 6/4) sand; single grain; loose; less than 5 percent coarse fragments; extremely acid.

The thickness of the solum ranges from 24 to 36 inches. Reaction throughout the soil ranges from extremely acid to strongly acid.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is loamy sand or sand.

The B21 horizon has hue of 7.5YR to 10YR, value of 3 to 5, and chroma of 4 or 6. The B22 and B23 horizons have hue of 10YR, value of 4 to 6, and chroma of 4 or 6. The horizons are loamy sand or sand in the upper part and sand in the lower part.

The C horizon has hue of 10YR to 2.5Y, value of 5 or 6, and chroma of 4 or 6. It is sand or gravelly sand.

Katama series

The Katama series consists of sandy, mixed, mesic Typic Haplumbrepts. These deep, well drained soils are on outwash plains. They formed in acid outwash deposits. Slopes range from 0 to 8 percent.

Katama soils are similar to Evesboro and Riverhead soils and in many places are near Riverhead soils. Katama soils have a darker, thicker surface layer than the Evesboro soils and a thicker surface layer than the Riverhead soils.

Typical pedon of Katama fine sandy loam, 0 to 3 percent slopes, in an idle area, 100 feet southeast of Macy's Lane, 1.25 miles southwest of the intersection of Macy's Lane and Old South Road:

A11—0 to 2 inches, black (5YR 2/1) sandy loam; weak fine and very fine granular structure; very friable; many fine and medium roots; many clean white sand grains; extremely acid; abrupt wavy boundary.

A12—2 to 16 inches, dark reddish brown (5YR 3/2) sandy loam; weak fine subangular blocky structure and weak fine granular structure; friable; many fine and medium roots; most sand grains bridged and nearly completely coated with material probably of high organic content; very strongly acid; abrupt wavy boundary.

B21—16 to 20 inches, dark yellowish brown (10YR 4/4) gravelly sandy loam; weak medium granular structure; friable; common fine and medium roots; 40 percent gravel less than 2 inches diameter, half of which is smaller than 0.25 inch in diameter, consisting of smooth rounded pebbles of mixed mineralogy; most sand grains are bridged and coated and many pebbles are sparsely coated with material probably of high organic content; strongly acid; clear smooth boundary.

B22—20 to 34 inches, olive brown (2.5Y 4/4) sand; single grain; loose; few fine and medium roots in upper part, very few roots in lower part; few patchy coats and few bridges on sand grains; strongly acid; clear smooth boundary.

C—34 to 60 inches, light yellowish brown (2.5Y 6/4) sand; single grain; loose; strongly acid.

The thickness of the solum ranges from 23 to 42 inches. Rounded gravel mainly makes up less than 10 percent of the solum but is 25 to 50 percent of the B21 horizon. Sand grains in the A12, B21, and B22 horizons are coated and bridged with material that looks like colloidal films when moist. This material has hue of 5YR, value of 2 or 3, and chroma of 2 when moist. When dry it looses its colloidal appearance and has hue of 10YR, value of 4 or 5, and chroma of 3.

The A11 horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1. Clean white quartz sand makes up 20 to 50 percent of the horizon. The A12 horizon has hue of 5YR to 10YR and value and chroma of 2 or 3. The A horizon is fine sandy loam or sandy loam.

The B21 horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. It ranges from gravelly coarse sandy loam to gravelly sandy loam. The B22 horizon has hue of 2.5Y or 10YR and value and chroma of 4.

The C horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 3 or 4.

Klej series

The Klej series consists of mesic, coated Aquic Quartzipsamments. These deep, moderately well drained soils are on outwash plains. They formed in acid outwash and in lacustrine and moraine deposits. Slopes range from 0 to 3 percent.

Klej soils are similar to Berryland Variant, Evesboro, and Tisbury soils and in many places are near Evesboro soils. Klej soils do not have the firm spodic horizon of the Berryland Variant soils and are browner in the upper part of the solum. Klej soils have mottles which the Evesboro soils do not have, and they are in lower areas. Klej soils have more sand in the upper part of the solum than Tisbury soils.

Typical pedon of Klej loamy sand, in an area of Klej and Pompton soils, about 30 feet north of the intersection of two dirt roads, about 500 feet south of Gibbs Pond:

O2—1 inch to 0, dark reddish brown (5YR 2/2) muck (sapric material); weak fine and medium granular structure; very friable; extremely acid; abrupt smooth boundary.

A1—0 to 3 inches, black (5YR 2/1) loamy sand; single grain; loose; 15 percent clean white sand grains; extremely acid; abrupt wavy boundary.

B21h—3 to 7 inches, very dark brown (10YR 2/2) loamy sand; weak fine and granular structure; very friable; extremely acid; abrupt wavy boundary.

B22ir—7 to 10 inches, dark reddish brown (5YR 3/3) loamy sand; weak very fine granular structure; friable; very strongly acid; abrupt wavy boundary.

B23—10 to 17 inches, dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure parting to weak medium granular; friable; extremely acid; abrupt smooth boundary.

B24—17 to 22 inches, reddish brown (5YR 4/4) loamy sand; weak very fine granular structure; friable; few clay bridges and patchy clay films; extremely acid; abrupt smooth boundary.

B25—22 to 26 inches, strong brown (7.5YR 5/6) sand; many medium prominent yellowish brown (10YR 5/6) and dark red (2.5YR 3/6) mottles; strong coarse subangular blocky structure; sand grains have thin clay films, few clay bridges, some iron coats; firm to very friable; very strongly acid; abrupt smooth boundary.

B26—26 to 41 inches, red (5YR 4/8) grading to yellowish red (5YR 4/8) sand; many coarse prominent dark yellowish brown (10YR 3/4) sand grains; single grain; loose; very strongly acid; abrupt smooth boundary.

C1—41 to 52 inches, light olive brown (2.5Y 5/4) sand; many coarse prominent dark red (10R 3/6) mottles; single grain; loose; very strongly acid; abrupt smooth boundary.

IIC2—52 to 56 inches, light olive brown (2.5Y 5/4) sandy loam; many coarse distinct reddish gray (5Y 5/2) and few common prominent yellowish red (5YR 4/8) mottles; massive; slightly sticky, firm; many clay bridges; very strongly acid; abrupt smooth boundary.

IIIC3—56 to 60 inches, light olive brown (2.5Y 5/4) sandy clay loam; many coarse prominent olive (5Y 5/3) and dark red (2.5YR 3/6) mottles; massive; very sticky, firm; many coats and bridges; very strongly acid.

The depth to loamy material ranges from 40 to 60 inches. Reaction throughout the soil is extremely acid to strongly acid.

The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3. It is loamy sand, fine sand, or loamy fine sand.

The B horizon has hue of 5YR to 2.5Y, value of 2 to 5, and chroma of 2 to 8. Some pedons do not have a Bh or Bir horizon. Some pedons have iron staining or banding. The B horizon is loamy sand, sand, or fine sand.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4 and is mottled. The C1 horizon is loamy sand, sand, or fine sand. The texture of the IIC and IIIC horizons is variable and ranges from sandy loam to sandy clay.

In this survey area, the Klej soils are a taxadjunct because they do not have mottles with chroma of 2 or less within a depth of 40 inches and they have a redder hue and lower value than is defined in the range for the series. These differences have no appreciable effect on the use and management of the soils.

Medisaprists

Medisaprists consist of deep, very poorly drained soils on outwash plains, till plains, and moraines. The soils formed in plant debris that accumulated under water. They are in depressional areas adjacent to mineral soils. Slopes are less than 1 percent.

Medisaprists are similar to Pawcatuck soils. They do not have the high sulfur content of the Pawcatuck soils, and they have fewer fibers.

Areas mapped as Medisaprists are so variable that a typical pedon is not given.

The depth of organic material coincides with the depth to mineral material and ranges from 16 to more than 60 inches. Coarse fragments consisting of tree stumps, trunks, stems, and branches make up 0 to 30 percent of the soil. Reaction of the soil ranges from extremely acid to slightly acid.

The surface tier in many areas has hue of 10YR, value of 2 or 3, and chroma of 1 or 2 and is sapric material. In a few areas it is pale green or reddish brown hemic material. In places man has added 3 to 12 inches of sand to the surface. The sandy surface has hue of 2.5Y or 5Y, value of 3 to 6, and chroma of 1 or 2.

The subsurface and bottom tiers have hue of 10YR, value of 2 or 3, and chroma of 1 or 2. They typically are sapric material but in some pedons are hemic.

Some pedons have underlying mineral material within a depth of 60 inches that is strongly gleyed outwash, glacial till, lacustrine sediments, or marine sediments.

Nantucket series

The Nantucket series consists of coarse-loamy mixed, mesic Typic Fragiochrepts. These deep, well drained soils are on glacial uplands. The soils formed in acid loamy glacial till. Slopes range from 3 to 8 percent.

Nantucket soils are similar to and generally near Chilmark and Riverhead soils. Nantucket soils have a fragipan which the Chilmark and Riverhead soils do not have. Nantucket soils do not have the argillic horizon typical of the Chilmark soils. Nantucket soils have less sand and gravel in the substratum than the Riverhead soils and are at slightly higher positions.

Typical pedon of Nantucket sandy loam, in an area of Riverhead-Nantucket complex, 3 to 8 percent slopes, 2,000 feet southeast of the intersection of Bartlett Farm Road and Hummock Pond Road, in a road cut on a private road:

Ap—0 to 6 inches, very dark grayish brown (10YR 3/2) sandy loam; weak fine and very fine granular structure; very friable; 5 percent coarse fragments; many fine roots; very strongly acid; abrupt smooth boundary.

B21—6 to 10 inches, dark brown (10YR 4/3) sandy loam; weak fine and very fine granular structure; friable; 5 percent coarse fragments; many fine roots; very strongly acid; clear smooth boundary.

B22—10 to 16 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable; 5 percent coarse fragments; common fine roots; very strongly acid; clear smooth boundary.

B23—16 to 23 inches, yellowish brown (10YR 5/6) sandy loam; weak thin platy structure; firm; 5 percent coarse fragments; few fine roots; very strongly acid; clear smooth boundary.

B24—23 to 29 inches, light olive brown (2.5Y 5/4) loam; weak medium and thick platy structure; firm, slightly sticky, nonplastic; 5 percent coarse fragments; very few fine roots; common clay bridges between sand grains; thin patchy clay films on ped surfaces; very strongly acid abrupt smooth boundary.

IICx—29 to 60 inches, light olive brown (2.5Y 5/4) sandy clay loam; weak medium and thick platy structure in the upper 8 inches, massive below; firm and brittle, sticky, nonplastic; 10 percent coarse fragments; few clay films in pores in upper part; very strongly acid.

The thickness of the solum ranges from 20 to 34 inches. The profile is 0 to 10 percent gravel that consists of subrounded pebbles less than 2 inches in diameter.

The A horizon has hue of 7.5YR or 10YR, value of 3, and chroma of 2 or 3. It is sandy loam, fine sandy loam, or loamy sand. An A2 horizon is in many wooded areas and has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 or 2.

The B horizon has hue of 5YR to 5Y, value of 4 or 5, and chroma of 3 to 6. It is fine sandy loam, sandy loam, or loam.

The IICx horizon has hue of 2.5Y or 5Y, value of 5, and chroma of 4 or 6. It is loam, sandy loam, or sandy clay loam.

Pawcatuck series

The Pawcatuck series consists of euic, mesic Typic Sulfihemists. These deep, very poorly drained soils are in tidal marshes that are inundated by saltwater twice daily. The soils formed in organic material over sand. There is no slope.

Pawcatuck soils are similar to Medisaprists and in most places are adjacent to Udipsamments. Pawcatuck soils have more fibers and a higher sulfur content than

Medisaprists, have more organic material and less sand than Udipsamments, and are in a lower position than Udipsamments.

Typical pedon of Pawcatuck mucky peat, 200 feet north of a boat landing at the head of Polpis Harbor, about 0.4 mile northwest of the junction of Wauwinet Road and Polpis Road:

Oe1—0 to 7 inches, olive gray (5Y 4/2) mucky peat; 80 percent fiber, 50 percent rubbed; dense mass of roots, stems, and leaves; massive; herbaceous fibers; 2 percent clean white sand grains; neutral; clear, wavy boundary.

Oe2—7 to 15 inches, dark brown (10YR 3/3) mucky peat; 90 percent fiber, 40 percent rubbed; massive; herbaceous fibers; 2 percent clean white sand grains; neutral; clear, wavy boundary.

Oe3—15 to 21 inches, dark olive gray (5Y 3/2) mucky peat; 80 percent fiber, 45 percent rubbed; massive; herbaceous fibers; 2 percent clean white sand grains; neutral; gradual smooth boundary.

Oe4—21 to 45 inches, olive gray (5Y 4/2) mucky peat; 80 percent fiber, 35 percent rubbed; massive; herbaceous fibers; 2 percent clean white sand grains except for 1-inch-thick layer of coarse sand at 24 inches; neutral; abrupt smooth boundary.

IIC—45 to 60 inches, gray (5Y 5/1) sand; single grain; loose; neutral.

The thickness of the organic layer ranges from 16 to 51 inches, corresponding closely to the depth to underlying sand. Thin layers of mineral material are common in the organic material.

The surface tier has hue of 10YR to 5Y, value of 2 to 4, and chroma of 1 or 2. The fiber content is 75 to 90 percent and 20 to 50 percent rubbed.

The subsurface and bottom tiers have hue of 10YR to 5Y, value of 2 to 5, and chroma of 2 or 3. The fiber content is 50 to 90 percent and 20 to 50 percent rubbed.

The IIC horizon is neutral or has hue of 10YR to 5Y, value of 2 to 7, and chroma of 0 to 3. It is loamy fine sand, sand, or fine sand.

Plymouth series

The Plymouth series consists of mixed, mesic Typic Udipsamments. These deep, excessively drained soils are on glacial uplands. They formed in sandy glacial till. Slopes range from 3 to 25 percent.

Plymouth soils are similar to Evesboro soils and in many places are near Evesboro and Riverhead soils. Plymouth soils have more coarse sand and gravel than Evesboro soils and are at higher positions and have more sand in the solum than the Riverhead soils.

Typical pedon of Plymouth loamy sand, in an area of Plymouth-Evesboro complex, 8 to 15 percent slopes, in a pit 50 feet north of Polpis Road, 300 feet west of Sesachacha Pond:

A1—0 to 1 inch; very dark grayish brown (10YR 3/2) loamy sand; single grain; loose; many fine and medium roots; extremely acid; abrupt wavy boundary.

B21—1 to 6 inches, brown (10YR 4/4) loamy coarse sand; single grain; loose; many fine and medium roots; extremely acid; clear wavy boundary.

B22—6 to 11 inches, strong brown (7.5YR 5/6) coarse sand; single grain; loose; many fine and medium roots; strongly acid; clear wavy boundary.

B3—11 to 24 inches, yellowish brown (10YR 5/6) sand; single grain; loose; very few medium roots; 15 percent coarse fragments; strongly acid; abrupt smooth boundary.

C—24 to 60 inches, pale brown (10YR 6/3) to very pale brown (10YR 7/3) gravelly sand; single grain; loose; very few medium roots in the upper part; 25 percent coarse fragments; strongly acid.

The thickness of the solum ranges from 20 to 36 inches. Coarse fragments make up 2 to 20 percent of the solum and 20 to 30 percent of the substratum. Reaction throughout the soil ranges from strongly acid to extremely acid.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chorma of 1 to 3. A thin A2 horizon is in some pedons and has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 3. The A horizon is sand or loamy sand.

The B horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is loamy coarse sand, coarse sand, or sand.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6.

Pompton series

The Pompton series consists of coarse-loamy, mixed, mesic Aquic Dystrochrepts. These deep, somewhat poorly drained soils are on outwash plains. The soils formed in acid outwash deposits. Slopes range from 0 to 3 percent.

Pompton soils are similar to Berryland Variant and Woodbridge Variant soils and in many places are near Berryland Variant soils. Pompton soils have less sand in the subsoil and are in higher areas than the Berryland Variant soils. They have more sand in the solum than the Woodbridge Variant soils.

Typical pedon of Pompton fine sandy loam, in an area of Klej and Pompton soils, in a drainageway 1,100 feet northwest of the radio tower and 4,200 feet south of the intersection of Bartlett Farm Road and Hummock Pond Road:

A1—0 to 5 inches, dark brown (7.5YR 3/2) fine sandy loam; weak fine granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

A2—5 to 10 inches, dark gray (10YR 4/1) sandy loam; weak fine granular structure; friable; many fine roots; very strongly acid; abrupt wavy boundary.

B22—10 to 16 inches, dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; friable; many fine roots; strongly acid; clear smooth boundary.

B23—16 to 30 inches, light olive brown (2.5Y 5/4) sandy loam; few fine prominent yellowish red (5YR 5/8) and grayish brown (2.5Y 5/2) mottles; weak coarse prismatic structure; friable; few fine roots in the upper part; strongly acid; abrupt smooth boundary.

IIC—30 to 60 inches, light olive brown (2.5Y 5/4) gravelly sand; 40 percent gravel smaller than 0.5 inch in diameter; loose; strongly acid.

The thickness of the solum ranges from 24 to 36 inches. Coarse fragments make up 0 to 25 percent in the solum and 0 to 50 percent of the C horizon. Reaction throughout the soil is extremely acid to strongly acid.

The A1 horizon has hue of 7.5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The A2 horizon has hue of 7.5YR to 10YR, value of 2 to 6, and chroma of 1 or 2. The A horizon is fine sandy loam or sandy loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 or 6 and is mottled above a depth of 24 inches. It is fine sandy loam, sandy loam, or their gravelly analogs.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 3 or 4. It is stratified sand, coarse sand, or their gravelly analogs.

Ridgebury Variant

The Ridgebury Variant consists of fine, mixed, acid, mesic Typic Haplaquepts. These deep, poorly drained soils are on uplands. The soils formed in acid, clayey glacial till. Slopes range from 0 to 3 percent.

Ridgebury Variant soils are similar to Berryland Variant and Woodbridge Variant soils and in many places are near Woodbridge Variant soils. Ridgebury Variant soils have more clay and less sand in the solum than the Berryland Variant or Woodbridge Variant soils. Ridgebury Variant soils are in lower areas than the Woodbridge Variant soils.

Typical pedon of Ridgebury Variant silty clay loam, along a fire break 20 feet south of its intersection with a dirt road in The Woods, and 400 feet southeast of the junction of the dirt road and Ram Pasture Road:

A1—0 to 7 inches, dark gray (N 4/0) silty clay loam; many fine prominent strong brown (7.5YR 5/8) and light brownish gray (2.5Y 6/2) mottles; weak fine and medium granular structure; friable, plastic, sticky; extremely acid; abrupt smooth boundary.

B21g—7 to 11 inches, grayish brown (10YR 5/2) silty clay; many medium prominent light brownish gray (2.5Y 6/2) and reddish yellow (7.5YR 6/8) mottles; weak medium angular blocky structure; firm, very plastic, sticky; extremely acid; clear smooth boundary.

B22g—11 to 22 inches, light olive gray (5Y 6/2) clay loam; few medium prominent reddish yellow (7.5YR 6/8) and gray (5Y 6/1) mottles; massive; firm, very plastic, sticky; extremely acid; clear smooth boundary.

C—22 to 60 inches, gray (5Y 6/1) clay; many coarse prominent strong brown (7.5YR 5/8) mottles; massive; very firm, very plastic, very sticky; extremely acid.

The thickness of the solum ranges from 20 to 30 inches. The solum is less than 10 percent gravel that is typically rounded pebbles about 0.25 inch in diameter. Reaction of the solum ranges from strongly acid to extremely acid.

The A horizon is neutral or has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 0 to 4. It is silt loam or silty clay loam.

The B21g horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 and is prominently mottled. It ranges from sandy clay loam to silty clay. The B22g horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 1 or 2 and is prominently mottled. It is clay loam or clay.

The C horizon has hue of 2.5Y or 5Y, value of 5 to 7, and chroma of 1 or 2 and is prominently mottled. It is mainly clay but ranges from silty clay loam.

Riverhead series

The Riverhead series consists of coarse-loamy, mixed, mesic Typic Dystrochrepts. These deep, well drained soils are on outwash plains. The soils formed in acid glacial outwash deposits. Slopes range from 0 to 8 percent.

Riverhead soils are similar to Chilmark, Katama, and Nantucket soils and in many places are near the Katama, Nantucket, and Plymouth soils. Riverhead soils do not have the argillic horizon which the Chilmark soils have. Riverhead soils have a thinner surface layer than the Katama soils. Riverhead soils do not have a fragipan typical of the Nantucket soils, have more sand and gravel in the substratum, and are at slightly lower positions. Riverhead soils have less sand in the solum than the Plymouth soils and are at lower positions.

Typical pedon of Riverhead sandy loam, 0 to 3 percent slopes, 150 feet west of Macy's Lane and 0.6 mile south of the Nantucket Airport terminal:

A1—0 to 4 inches, dark reddish brown (5YR 2/2) sandy loam; weak fine and medium granular structure; very friable; many roots; extremely acid; abrupt smooth boundary.

B21—4 to 6 inches, dark reddish brown (5YR 3/3) sandy loam; weak medium subangular blocky structure; friable; common roots; very strongly acid; clear smooth boundary.

B22—6 to 19 inches, dark reddish brown (5YR 3/4) sandy loam; weak medium subangular blocky structure; very friable; common roots; very strongly acid; clear smooth boundary.

IIB23—19 to 30 inches, dark brown (10YR 4/3) gravelly sandy loam; weak medium subangular blocky structure; friable; few roots; 40 percent gravel; strongly acid; abrupt smooth boundary.

IIIC—30 to 60 inches, light yellowish brown (2.5Y 6/4) stratified sand and gravel; single grain; loose; 35 percent gravel less than 0.75 inch in diameter; strongly acid.

The thickness of the solum ranges from 22 to 36 inches. The solum is 2 to 35 percent gravel. Reaction of the soil ranges from strongly acid to extremely acid.

The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3. It is fine sandy loam, sandy loam, or loam.

The B horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 6. It is fine sandy loam, sandy loam, or gravelly sandy loam.

The C horizon has hue of 7.5YR, to 2.5Y, value of 4 to 6, and chroma of 3 to 8.

Tisbury series

The Tisbury series consists of coarse-silty over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts. These deep, moderately well drained soils are on outwash plains. The soils formed in acid glacial outwash deposits. Slopes range from 0 to 3 percent.

Tisbury soils are similar to Klej soils. They have less sand in the upper part of the solum than Klej soils.

Typical pedon of Tisbury very fine sandy loam, in a pit 1 mile northeast of the intersection of Polpis Road and Milestone Road and 100 feet south of Polpis Road:

Ap—0 to 5 inches, dark grayish brown (10YR 4/2) very fine sandy loam; weak medium granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

B21—5 to 10 inches, brown (10YR 4/3) very fine sandy loam; weak medium angular blocky structure; firm; many fine roots; strongly acid; clear smooth boundary.

B22—10 to 16 inches, yellowish brown (10YR 5/4) very fine sandy loam; weak thick platy structure; firm; few fine roots; strongly acid; gradual smooth boundary.

B23—16 to 20 inches, light yellowish brown (10YR 6/4) very fine sandy loam; many medium prominent yellowish red (5YR 5/8) and gray (5Y 6/1) mottles; weak coarse subangular blocky structure; firm; strongly acid; abrupt smooth boundary.

IC—20 to 60 inches, bands of yellow (2.5Y 7/6) and strong brown (7.5YR 5/8) gravelly sand; single grain; loose; strongly acid.

The depth of the solum corresponds closely to the depth of stratified sand and gravel and ranges from 18 to 36 inches. Reaction of the soil is extremely acid to strongly acid. The solum is silt loam or very fine sandy loam.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3.

The B21 horizon has hue of 7.5YR or 10YR, value of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. The lower part of the B horizon is mottled.

The IIC horizon has hue of 2.5Y or 5Y, value of 4 to 7, and chroma of 3 to 8. Color patterns range from variegation to bands to mottling. The IIC horizon is gravelly sand or stratified sand and gravel.

Udipsamments

Udipsamments consist of deep, excessively drained to moderately well drained soils in areas of wind-deposited sand from nearby coastal beaches.

Udipsamments are similar to Evesboro soils but are grayer.

Areas mapped as Udipsamments are so variable that a typical pedon is not given. Generally, Udipsamments consist of gray or light gray sand. A few concave areas have faint mottles below a depth of 2 feet. A few areas have thin, dark bands which were a surface layer but are covered with wind-deposited sand.

Woodbridge Variant

The Woodbridge Variant consists of fine-loamy, mixed, mesic Aquic Dystrochrepts. These deep, moderately well drained soils are on uplands. The soils formed in acid glacial till. Slopes range from 0 to 8 percent.

Woodbridge Variant soils are similar to Pompton and Ridgebury Variant soils and in many places are near Ridgebury Variant soils. Woodbridge Variant soils have less sand in the solum than Pompton soils and have more sand and less clay in the solum than the Ridgebury Variant soils and are in slightly higher areas.

Typical pedon of Woodbridge Variant loam, 3 to 8 percent slopes, 20 feet north of a dirt road in The Woods and about 800 feet northwest of the junction of the dirt road and Ram Pasture Road:

A11—0 to 3 inches, dark brown (7.5YR 4/2) loam; moderate fine and medium granular structure; very friable; many fine medium and coarse roots; extremely acid; abrupt smooth boundary.

A12—3 to 9 inches, dark brown (10YR 4/3) loam; weak medium subangluar blocky structure; friable; many medium roots; very strongly acid; clear wavy boundary.

B21—9 to 13 inches, brown (10YR 5/3) loam; weak coarse subangular blocky structure; friable; few medium roots; very strongly acid; clear smooth boundary.

B22—13 to 18 inches, light olive brown (2.5Y 5/4) sandy clay loam; common coarse prominent strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; friable; few fine and very fine roots; very strongly acid; gradual wavy boundary.

B23—18 to 25 inches, brown (10YR 5/3) clay loam; common coarse prominent strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2) mottles; moderate medium prismatic structure parting to weak medium subangular blocky; firm; few fine and very fine roots; very strongly acid; gradual wavy boundary.

B24—25 to 37 inches, strong brown (7.5YR 5/6) loam; common medium prominent gray (2.5Y 6/1) mottles and few fine faint strong brown (7.5YR 5/8) mottles; weak moderate prismatic structure parting to weak medium subangular blocky; firm; few fine and very fine roots; very strongly acid; gradual wavy boundary.

C1—37 to 45 inches, strong brown (7.5YR 5/6) very fine sandy loam; common medium prominent gray (2.5Y 6/1) mottles and few fine faint strong brown (7.5YR 5/8) mottles; massive; firm; very strongly acid; gradual wavy boundary.

C2—45 to 60 inches, light olive brown (2.5Y 5/4) silty clay loam; common medium prominent yellowish brown (10YR 5/8) mottles and common medium faint gray (2.5Y 6/1) mottles; massive; firm; very strongly acid.

The thickness of the solum ranges from about 24 to 38 inches and corresponds closely with the depth to firm glacial till. The soil is less than 10 percent rock fragments that mainly consist of rounded gravel less than 0.25 inch in diameter. The reaction of unlimed pedons ranges from strongly acid to extremely acid.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. It is loam or silt loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. The lower part of the B horizon has common, medium or coarse, prominent mottles. The upper part of the B horizon is silt loam, loam, or sandy clay loam. The lower part is loam or clay loam and is firm or very firm.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 or 6 and is mottled. It ranges from silty clay to very fine sandy loam.

Classification of the soils

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 14, 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 Entisol.

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 Psamment (*Psamm*, meaning sand, plus *ent*, from Entisol).

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 Udipsamments (*Udi*, meaning humid, plus *Psamments*, the suborder of Entisols that are sandy).

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 Udipsamments.

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 mixed, mesic Typic Udipsamments.

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.

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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.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

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

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

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.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

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.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

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.

Contour stripcropping (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cutbanks cave. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Depth to rock. Bedrock at a depth that adversely affects the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

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."

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Excess salts. Excess water soluble salts. Excessive salts restrict the growth of most plants.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

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.

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.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

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.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered, but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

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.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Drip.—Application of water directly to the root zone of plants by means of applicators (orrices, emitters, porous tubing, perforated pipe, etc.) operated under low pressure. The applicators may be placed on or below the surface of the ground.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

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.

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.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous areas. Areas that have little or no natural soil, are too nearly inaccessible for orderly examination, or cannot otherwise be feasibly classified.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moderately fine textured (moderately heavy textured) soil. Clay loam, sandy clay loam, and silty clay 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.

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.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture.

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 bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in 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.

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.

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 before 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.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

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.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

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

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.

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

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

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

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.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

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.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Unstable fill. Risk of caving or sloughing in banks of fill material.

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.

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, 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

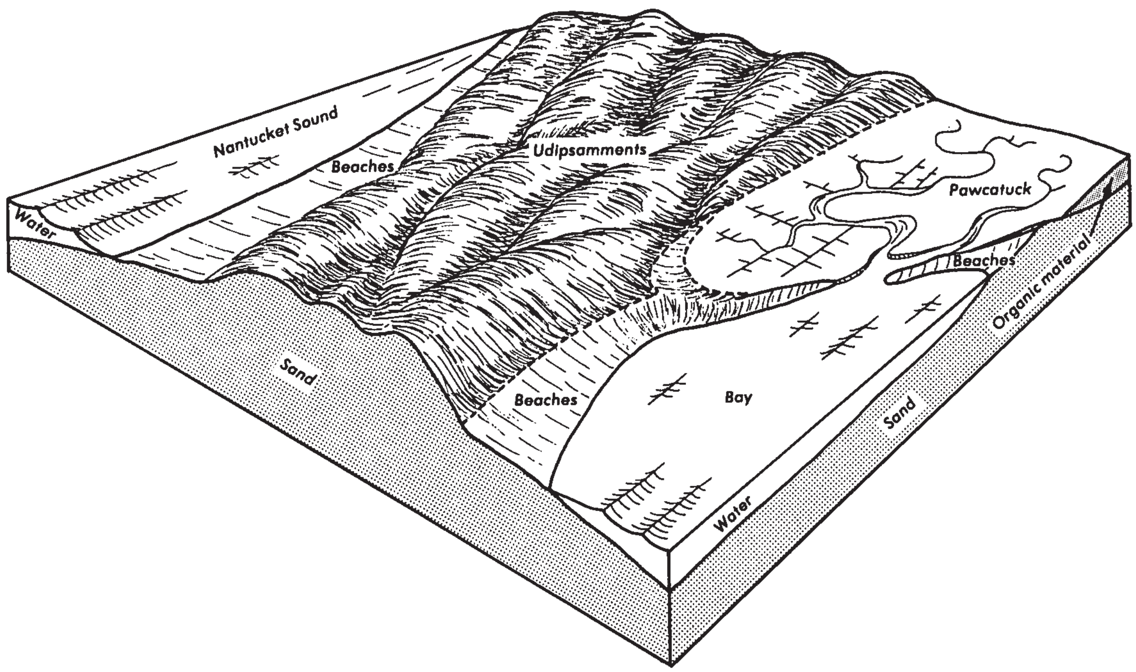

Figure 1.—A typical area of soils and parent material in the Udipsamments-Beaches-Pawcatuck association.

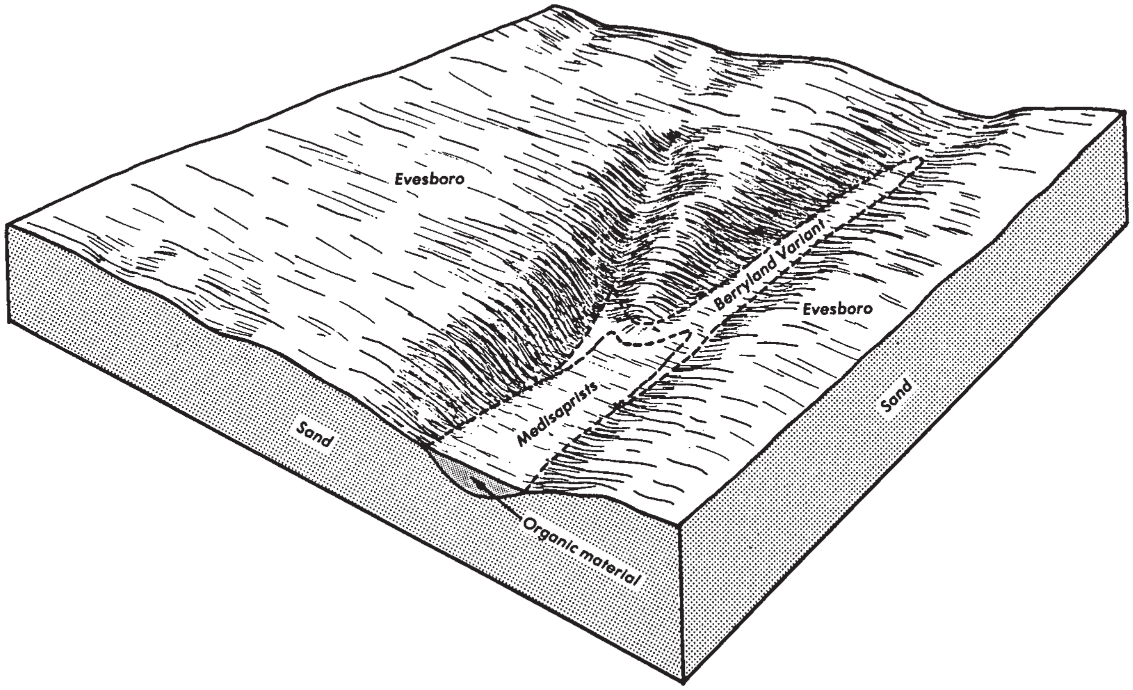

Figure 2.—A typical area of soils and parent material in the Evesboro association.

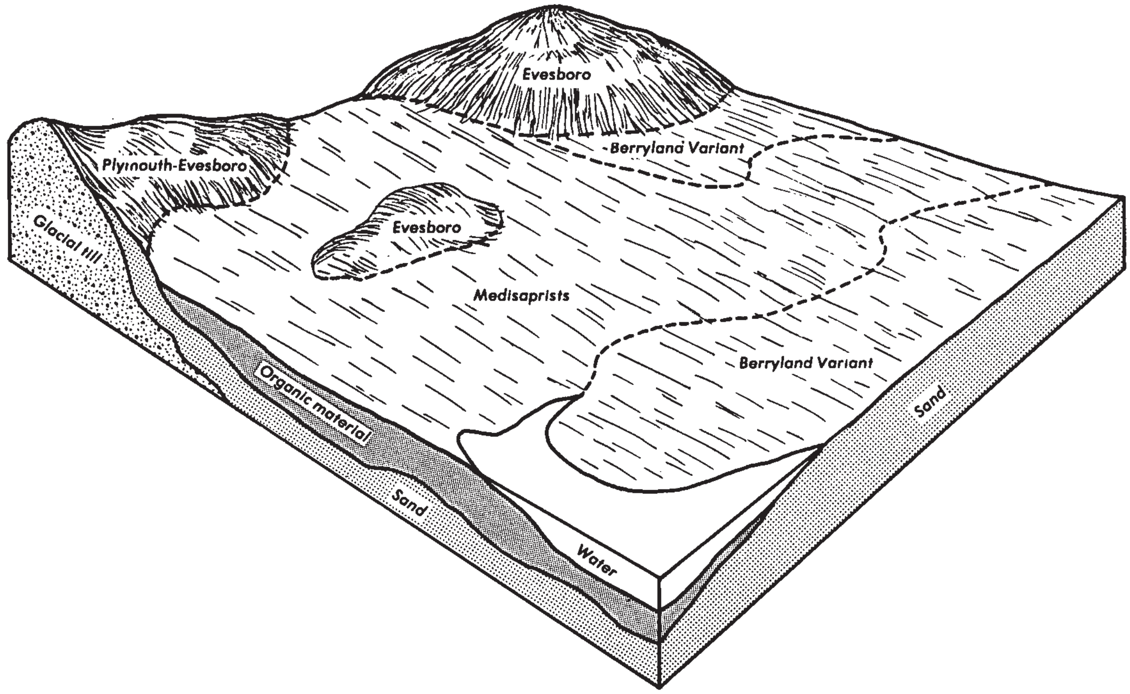

Figure 3.—A typical area of soils and parent material in the Medisaprists-Berryland Variant association.

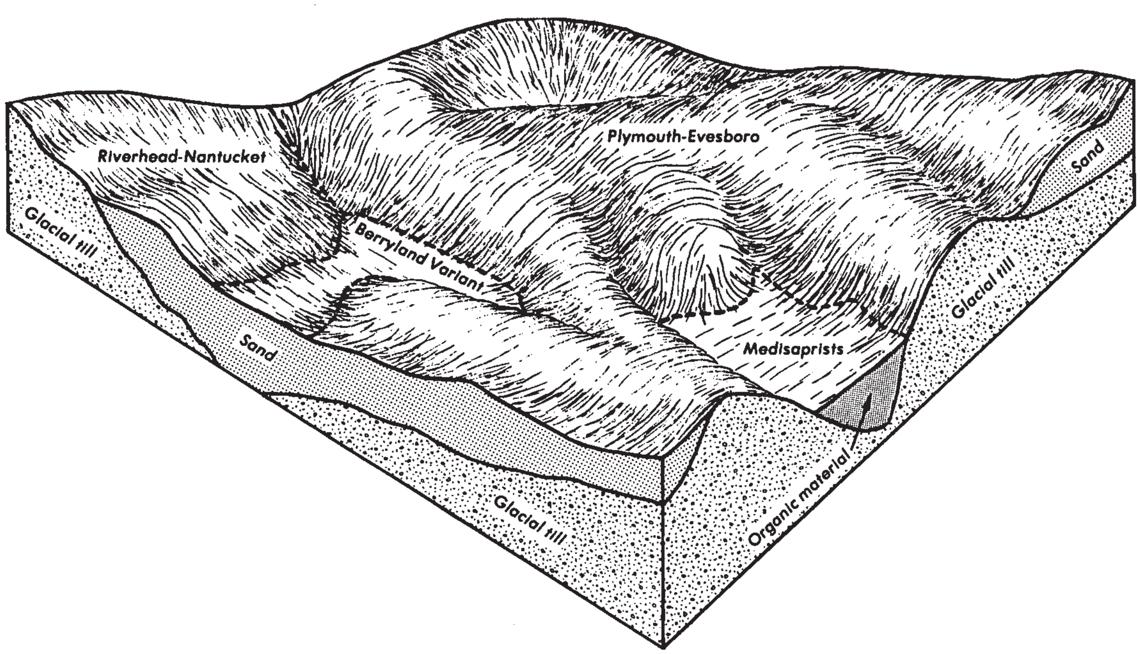

Figure 4.—A typical pattern of soils and parent material in the Plymouth-Evesboro association.

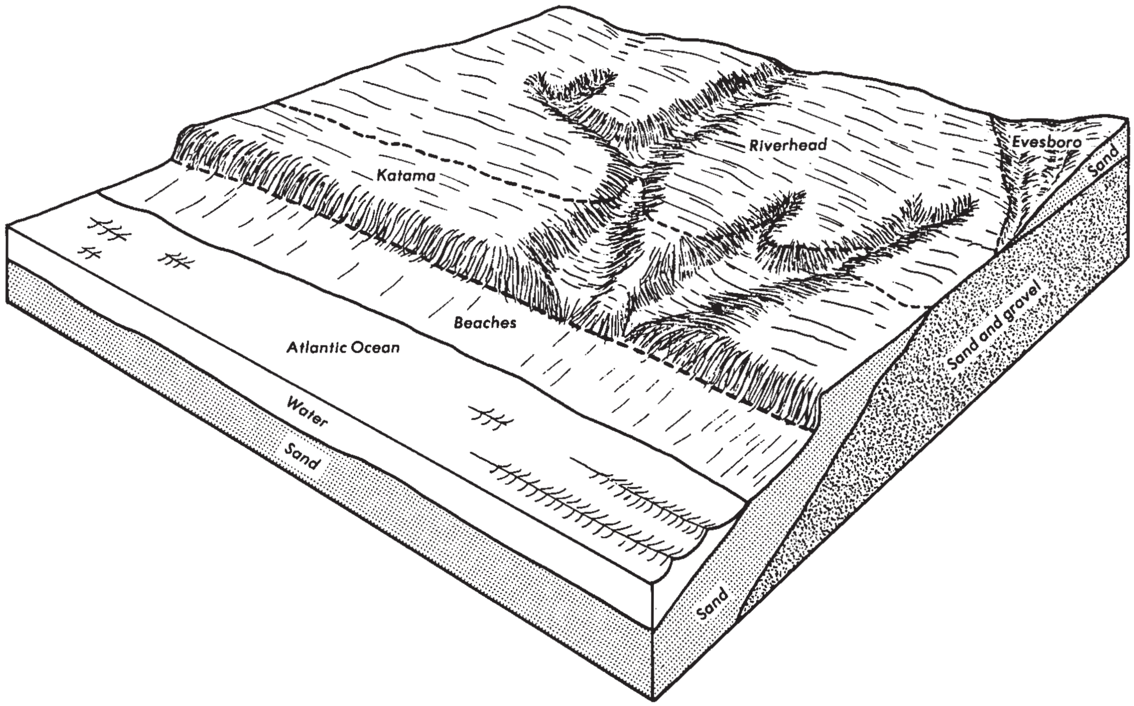

Figure 5.—A typical pattern of soils and parent material in the Riverhead-Katama association.

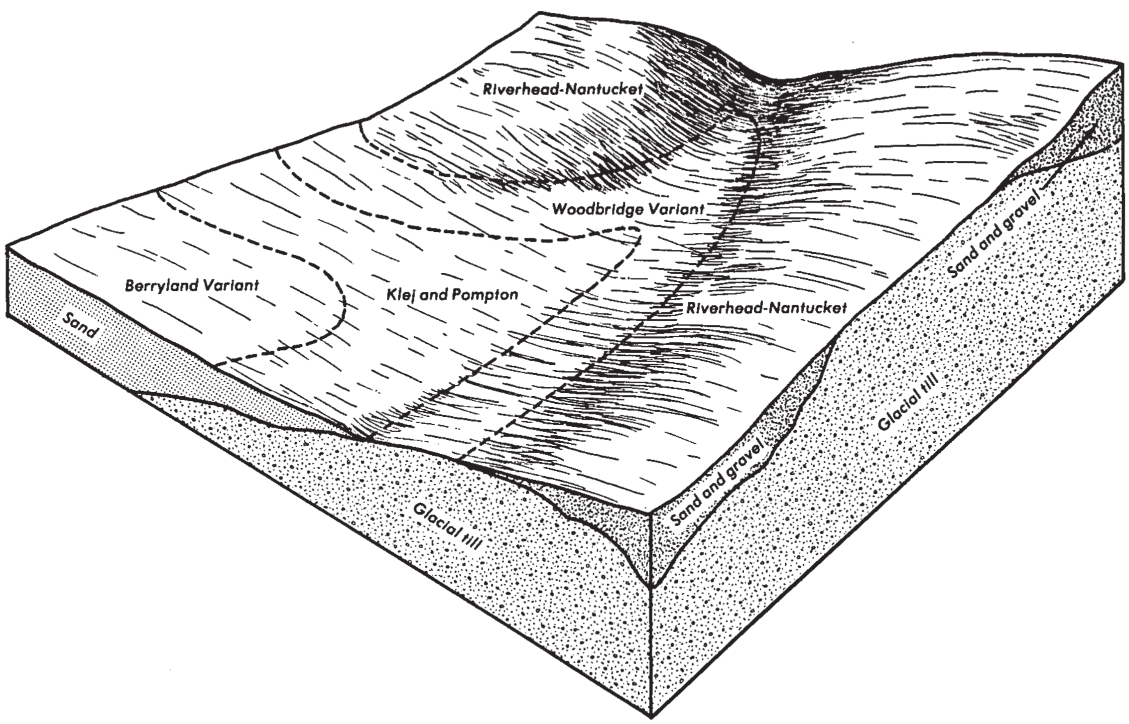

Figure 6.—A typical pattern of soils and parent material in the Riverhead-Nantucket-Woodbridge Variant association.

Figure 7.—An exposed area of Katama sandy loam, 0 to 3 percent slopes.

Figure 8.—An area of Medisaprists bordering the tributary to a freshwater lake.

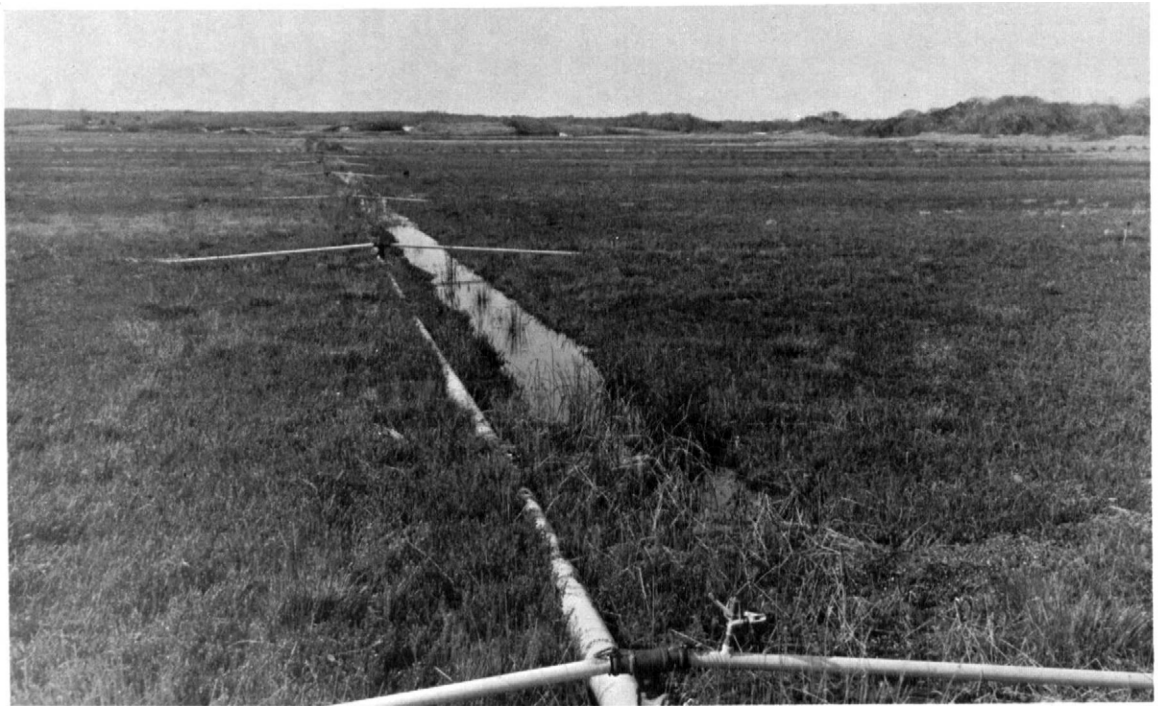

Figure 9.—This irrigated area of Medisaprists, sandy surface, is used for cranberries.

Figure 10.—Beach grass on an area of Udipsamments.

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION DATA

[Data were recorded in the period 1951-72 at Nantucket, Mass.]

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days[1]	Average	Less than--	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----	38.1	24.8	31.5	54	5	16	3.95	2.49	5.26	8	8.6
February---	38.3	25.1	31.7	53	4	8	4.19	2.91	5.35	7	9.8
March------	42.5	30.2	36.4	55	15	14	4.26	2.55	5.78	8	7.7
April------	50.6	37.1	43.9	68	25	134	3.68	2.27	4.93	7	.7
May--------	59.6	45.1	52.3	77	33	381	3.45	1.38	5.11	6	.0
June-------	68.4	54.1	61.3	87	43	639	2.00	.67	3.05	4	.0
July-------	74.5	60.8	67.7	87	51	859	2.81	.95	4.29	4	.0
August-----	74.2	60.7	67.5	85	47	853	3.75	1.98	5.19	6	.0
September--	69.4	55.4	62.4	82	41	672	3.62	1.24	5.52	5	.0
October----	61.4	47.2	54.3	74	29	443	3.36	1.92	4.52	6	.0
November---	52.0	39.0	45.6	67	21	175	4.38	2.81	5.79	8	.3
December---	42.7	29.3	36.0	57	9	57	4.49	2.76	6.03	8	7.0
Yearly:											
Average--	56.0	42.4	49.2	---	---	---	---	---	---	---	---
Extreme--	---	---	---	89	2	---	---	---	---	---	---
Total----	---	---	---	---	---	4,251	43.94	36.34	51.14	77	34.1

[1]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

[Data were recorded in the period 1951-72 at Nantucket, Mass.]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 8	April 24	May 7
2 years in 10 later than--	April 2	April 17	May 1
5 years in 10 later than--	March 23	April 5	April 19
First freezing temperature in fall:			
1 year in 10 earlier than--	November 5	October 30	October 17
2 years in 10 earlier than--	November 13	November 5	October 23
5 years in 10 earlier than--	November 27	November 16	November 5

TABLE 3.--GROWING SEASON LENGTH

[Data were recorded in the period 1951-72 at Nantucket, Mass.]

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	217	193	167
8 years in 10	228	204	178
5 years in 10	249	225	199
2 years in 10	270	246	220
1 year in 10	281	258	231

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ba	Beaches	1,281	4.1
Be	Berryland Variant loamy sand	920	2.9
ChB	Chilmark sandy loam, 3 to 8 percent slopes	93	0.3
Du	Dumps	37	0.1
EvA	Evesboro sand, 0 to 3 percent slopes	7,427	23.5
EvB	Evesboro sand, 3 to 8 percent slopes	4,849	15.4
EvC	Evesboro sand, 8 to 15 percent slopes	1,201	3.8
ExB	Evesboro sand, 3 to 8 percent slopes, overblown	266	0.8
KaA	Katama sandy loam, 0 to 3 percent slopes	526	1.7
KaB	Katama sandy loam, 3 to 8 percent slopes	83	0.3
Kp	Klej and Pompton soils	613	1.9
ME	Medisaprists	1,223	3.9
MS	Medisaprists, sandy surface	296	0.9
Pa	Pawcatuck mucky peat	811	2.6
Pb	Pits	59	0.2
PcB	Plymouth-Evesboro complex, 3 to 8 percent slopes	2,427	7.7
PcC	Plymouth-Evesboro complex, 8 to 15 percent slopes	1,793	5.7
PcD	Plymouth-Evesboro complex, 15 to 25 percent slopes	1,069	3.4
Rd	Ridgebury Variant silty clay loam	252	0.8
ReA	Riverhead sandy loam, 0 to 3 percent slopes	1,654	5.2
ReB	Riverhead sandy loam, 3 to 8 percent slopes	375	1.2
RfB	Riverhead-Nantucket complex, 3 to 8 percent slopes	1,406	4.5
Ta	Tisbury very fine sandy loam	122	0.4
UAC	Udipsamments, rolling	2,000	6.3
WaA	Woodbridge Variant loam, 0 to 3 percent slopes	180	0.6
WaB	Woodbridge Variant loam, 3 to 8 percent slopes	254	0.8
	Water (areas less than 40 acres)	303	1.0
	Total	31,520	100.0

TABLE 5.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See the 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
Ba*. Beaches						
Be. Berryland Variant	Severe: wetness, cemented pan.	Severe: wetness.	Severe: wetness, cemented pan.	Severe: wetness, cemented pan.	Severe: wetness, cemented pan.	Severe: wetness, too sandy.
ChB. Chilmark	Severe: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Du*. Dumps						
EvA. Evesboro	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: too sandy, droughty.
EvB. Evesboro	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: too sandy, droughty.
EvC. Evesboro	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: too sandy, droughty.
ExB. Evesboro	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: too sandy, droughty.
KaA. Katama	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
KaB. Katama	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
Kp*:						
Klej	Severe: wetness, cutbanks cave.	Moderate: frost action, wetness.	Severe: wetness.	Moderate: frost action, wetness.	Moderate: frost action, wetness.	Severe: too sandy.
Pompton	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, frost action.	Moderate: wetness.
ME*, MS*. Medisaprists						
Pa. Pawcatuck	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: floods, corrosive, excess humus.	Severe: wetness, low strength, floods.	Severe: wetness, floods, excess salt.
Pb*. Pits						
PcB*:						
Plymouth	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: too sandy.
Evesboro	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: too sandy, droughty.
PcC*:						
Plymouth	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: too sandy.

See footnote at end of table.

TABLE 5.--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
PcC*:						
Evesboro	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: too sandy, droughty.
PcD*:						
Plymouth	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, too sandy.
Evesboro	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, too sandy, droughty.
Rd Ridgebury Variant	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness, too clayey.
ReA Riverhead	Severe: cutbanks cave.	Moderate: frost action.	Slight	Moderate: frost action.	Moderate: frost action.	Slight.
ReB Riverhead	Severe: cutbanks cave.	Moderate: frost action.	Slight	Moderate: slope, frost action.	Moderate: frost action.	Slight.
RfB*:						
Riverhead	Severe: cutbanks cave.	Moderate: frost action.	Slight	Moderate: slope, frost action.	Moderate: frost action.	Slight.
Nantucket	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Ta Tisbury	Severe: wetness, small stones, cutbanks cave.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Slight.
UAC*. Udipsamments						
WaA, WaB Woodbridge Variant	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: frost action.	Slight.

* See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 6.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See the text for definitions of "slight," "moderate," "good," "fair," and other terms. 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
Ba*. Beaches					
Be Berryland Variant	Severe: wetness, cemented pan.	Severe: wetness, seepage, cemented pan.	Severe: wetness, seepage, cemented pan.	Severe: wetness, seepage.	Poor: wetness, too sandy.
ChB Chilmark	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Fair: thin layer.
Du*. Dumps					
EvA, EvB Evesboro	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
EvC Evesboro	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
ExB Evesboro	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
KaA, KaB Katama	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: area reclaim.
Kp*: Klej	Severe: wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Fair: too sandy.
Pompton	Severe: wetness.	Severe: wetness, seepage, floods.	Severe: wetness, seepage.	Severe: wetness, seepage.	Fair: thin layer.
ME*, MS*. Medisaprists					
Pa Pawcatuck	Severe: wetness, floods.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods.	Poor: excess humus, wetness.
Pb*. Pits					
PcB*: Plymouth	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy, thin layer.
Evesboro	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
PcC*: Plymouth	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope, too sandy, thin layer.

See footnote at end of table.

TABLE 6.--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
PcC*:					
Evesboro	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
PcD*:					
Plymouth	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Poor: slope.
Evesboro	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Poor: slope, too sandy.
Rd: Ridgebury Variant	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey, area reclaim.
ReA, ReB: Riverhead	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: thin layer, area reclaim.
RfB*:					
Riverhead	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: thin layer, area reclaim.
Nantucket	Severe: percs slowly.	Moderate: slope, seepage.	Slight	Slight	Fair: thin layer, area reclaim.
Ta: Tisbury	Severe: wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Fair: thin layer, area reclaim.
UAC*. Udipsamments					
WaA: Woodbridge Variant	Severe: wetness, percs slowly.	Slight	Moderate: wetness, too clayey.	Severe: wetness.	Poor: thin layer, area reclaim.
WaB: Woodbridge Variant	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness, too clayey.	Severe: wetness.	Fair: thin layer, too clayey.

* See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 7.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See the 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
Ba*. Beaches				
Be. Berryland Variant	Poor: wetness.	Poor: excess fines.	Poor: excess fines.	Poor: wetness, too sandy.
ChB. Chilmark	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Du*. Dumps				
EvA, EvB, EvC, ExB. Evesboro	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
KaA, KaB. Katama	Good	Good	Unsuited: excess fines.	Fair: thin layer.
Kp*:				
Klej	Fair: frost action.	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Pompton	Fair: frost action.	Unsuited: excess fines.	Fair: excess fines.	Fair: thin layer, small stones.
ME*, MS*. Medisaprists				
Pa. Pawcatuck	Poor: excess humus, wetness.	Poor: excess humus, excess fines.	Unsuited: excess fines, excess humus.	Poor: wetness, excess salt.
Pb*. Pits				
PcB*, PcC*:				
Plymouth	Good	Good	Good	Poor: too sandy.
Evesboro	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
PcD*:				
Plymouth	Fair: slope.	Good	Good	Poor: slope, too sandy.
Evesboro	Fair: slope.	Fair: excess fines.	Unsuited: excess fines.	Poor: slope, too sandy.
Rd. Ridgebury Variant	Poor: wetness, frost action, area reclaim.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, thin layer, area reclaim.
ReA, ReB. Riverhead	Good	Good	Poor: excess fines.	Good.
RfB*:				
Riverhead	Good	Good	Poor: excess fines.	Good.

See footnote at end of table.

TABLE 7.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
RfB*:				
Nantucket	Fair: excess fines, area reclaim.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, area reclaim.
Ta: Tisbury	Good	Good	Good	Fair: area reclaim.
UAC*. Udipsamments				
WaA, WaB: Woodbridge Variant	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.

* See the description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--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	Aquifer-fed excavated ponds	Drainage	Irrigation
Ba*. Beaches			
Be: Berryland Variant	Favorable	Wetness, cemented pan.	Wetness.
ChB: Chilmark	No water	Not needed	Slope, percs slowly.
Du*. Dumps			
EvA, EvB, EvC, ExB: Evesboro	No water	Not needed	Soil blowing.
KaA, KaB: Katama	No water	Not needed	Fast intake.
Kp*:			
Klej	Cutbanks cave	Cutbanks cave, frost action.	Wetness, fast intake, seepage.
Pompton	Seepage	Wetness	Slope, wetness, erodes easily.
ME*, MS*. Medisaprists			
Pa: Pawcatuck	Salty water	Floods, wetness, excess salt.	Floods, wetness, excess salt.
Pb*. Pits			
PcB*, PcC*, PcD*:			
Plymouth	No water	Not needed	Droughty, fast intake, seepage.
Evesboro	No water	Not needed	Soil blowing.
Rd: Ridgebury Variant	Slow refill	Wetness, percs slowly, poor outlets.	Wetness, slow intake.
ReA, ReB: Riverhead	No water	Not needed	Slope.
RfB*:			
Riverhead	No water	Not needed	Slope.
Nantucket	No water	Not needed	Slope, fast intake.
Ta: Tisbury	Deep to water	Wetness	Slope, wetness, seepage.
UAC*. Udipsamments			

See footnote at end of table.

TABLE 8.--WATER MANAGEMENT--Continued

Soil name and map symbol	Aquifer-fed excavated ponds	Drainage	Irrigation
WaA, WaB---------- Woodbridge Variant	Slow refill--------------------	Percs slowly-----------------	Percs slowly, wetness.

* See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See the 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
Ba*. Beaches					
Be Berryland Variant	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.
ChB Chilmark	Slight	Slight	Moderate: slope, percs slowly.	Slight	Slight.
Du*. Dumps					
EvA, EvB Evesboro	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, droughty.
EvC Evesboro	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: slope, too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, droughty.
ExB Evesboro	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, droughty.
KaA Katama	Slight	Slight	Slight	Slight	Slight.
KaB Katama	Slight	Slight	Moderate: slope.	Slight	Slight.
Kp*: Klej	Moderate: too sandy, wetness.	Moderate: too sandy.	Severe: too sandy, wetness.	Moderate: too sandy.	Severe: too sandy.
Pompton	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
ME*, MS*. Medisaprists					
Pa Pawcatuck	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.
Pb*. Pits					
PcB*: Plymouth	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Severe: too sandy.
Evesboro	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PcC*:					
Plymouth	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Severe: too sandy.
Evesboro	Severe: too sandy, dusty.	Severe: too sandy, dusty.	Severe: slope, too sandy, dusty.	Severe: too sandy, dusty.	Severe: too sandy, droughty.
PcD*:					
Plymouth	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.	Severe: slope, too sandy.
Evesboro	Severe: slope, too sandy, dusty.	Severe: slope, too sandy, dusty.	Severe: slope, too sandy, dusty.	Severe: too sandy, dusty.	Severe: slope, too sandy, droughty.
Rd Ridgebury Variant	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.
ReA Riverhead	Slight	Slight	Slight	Slight	Slight.
ReB Riverhead	Slight	Slight	Moderate: slope.	Slight	Slight.
RfB*:					
Riverhead	Slight	Slight	Moderate: slope.	Slight	Slight.
Nantucket	Slight	Slight	Moderate: slope.	Slight	Slight.
Ta Tisbury	Slight	Slight	Moderate: wetness.	Slight	Slight.
UAC*. Udipsamments					
WaA, WaB Woodbridge Variant	Severe: percs slowly.	Moderate: wetness.	Severe: percs slowly.	Slight	Slight.

* See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT POTENTIALS

[See the 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
Ba*. Beaches										
Be----------------- Berryland Variant	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
ChB----------------- Chilmark	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Du*. Dumps										
EvA, EvB----------- Evesboro	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
EvC----------------- Evesboro	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
ExB----------------- Evesboro	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
KaA, KaB----------- Katama	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Kp*:										
Klej---------------	Fair	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.
Pompton-----------	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
ME*, MS*. Medisaprists										
Pa------------------ Pawcatuck	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Pb*. Pits										
PcB*:										
Plymouth----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Evesboro----------	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
PcC*:										
Plymouth----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Evesboro----------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
PcD*:										
Plymouth----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Evesboro----------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Rd------------------ Ridgebury Variant	Very poor.	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.

See footnote at end of table.

TABLE 10.--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
ReA----------------- Riverhead	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ReB----------------- Riverhead	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
RfB*:										
Riverhead---------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Nantucket---------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ta----------------- Tisbury	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
UAC*. Udipsamments										
WaA---------------- Woodbridge Variant	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
WaB---------------- Woodbridge Variant	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 11.--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	
Ba*. Beaches											
Be---------- Berryland Variant	0-8	Loamy sand------	SP-SM, SM	A-1, A-2, A-3	0	95-100	90-100	45-75	5-30	---	NP**
	8-20	Sand, fine sand	SP-SM, SM	A-1, A-2, A-3	0	95-100	90-100	45-80	5-35	---	NP
	20-25	Loamy sand------	SM	A-1, A-2	0	95-100	90-100	45-75	15-30	---	NP
	25-60	Very gravelly sand, sand.	GP, GM, SP, SM	A-1, A-2, A-3	0	60-100	30-100	15-70	2-15	---	NP
ChB---------- Chilmark	0-16	Sandy loam------	SM, SP-SM	A-2, A-4, A-1	0-3	95-100	85-100	40-75	10-40	---	NP
	16-31	Sandy loam------	SM	A-2, A-4	0-3	95-100	85-100	50-70	25-40	---	NP
	31-60	Stratified sandy clay loam to clay.	SM, SC, ML, CL	A-4	0-3	95-100	95-100	80-100	35-95	12-26	2-10
Du*. Dumps											
EvA, EvB, EvC------ Evesboro	0-26	Sand------------	SP, SP-SM	A-1, A-2, A-3	0	90-100	85-100	50-90	0-12	---	NP
	26-60	Sand, gravelly sand, sandy loam.	SP, SM, SC	A-1, A-2, A-3, A-4	0	65-100	60-100	35-95	0-35	<30	NP-8
ExB---------- Evesboro	0-42	Sand------------	SP, SP-SM	A-1, A-2, A-3	0	90-100	85-100	50-90	0-12	---	NP
	42-60	Sand, gravelly sand, sandy loam.	SP, SM, SC	A-1, A-2, A-3, A-4	0	65-100	60-100	35-95	0-35	<30	NP-8
KaA, KaB----------- Katama	0-16	Sandy loam------	SM, ML	A-2-4, A-4	0	95-100	90-100	60-85	30-55	---	NP
	16-20	Gravelly coarse sandy loam, gravelly sandy loam.	SM, SP-SM	A-1, A-2	0	65-80	35-60	20-50	5-25	---	NP
	20-60	Sand------------	SP-SM	A-3, A-2-4	0	95-100	90-100	50-70	5-10	---	NP
Kp*:											
Klej--------------	0-22	Loamy sand------	SM	A-2, A-4	0	100	95-100	50-95	15-45	<20	NP
	22-52	Sand, fine sand	SP, SP-SM, SM	A-1, A-2	0	90-100	75-100	40-80	4-35	<20	NP
	52-60	Sandy loam, sandy clay loam, sandy clay.	SM, SC, ML, CL	A-2, A-4, A-6, A-7	0	90-100	75-100	45-95	20-60	<45	NP-18

See footnotes at end of table.

TABLE 11.--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	
Kp*:											
Pompton-----------	0-10	Fine sandy loam	SM, SC, SM-CL	A-4	0	85-95	85-95	65-75	35-50	20-30	3-10
	10-30	Fine sandy loam, sandy loam, gravelly sandy loam.	SM, SC, SM-CL	A-2, A-4	0	80-95	50-90	45-75	30-50	20-30	3-10
	30-60	Stratified gravelly loamy sand.	SM, GP-GM	A-1	0	35-80	20-80	20-40	5-15	<20	NP
ME*, MS*. Medisaprists											
Pa----------------- Pawcatuck	0-45	Hemic material	Pt	---	0	---	---	---	---	---	NP
	45-60	Loamy sand, loamy fine sand, sand.	SM, SP	A-2, A-3, A-4	0	90-100	80-100	75-95	0-45	---	NP
Pb*. Pits											
PcB*, PcC*, PcD*:											
Plymouth----------	0-6	Loamy sand------	SM, SP	A-1, A-2, A-3	0-5	75-100	70-95	35-65	2-30	---	NP
	6-24	Loamy coarse sand, loamy fine sand, gravelly loamy sand.	SM, SP	A-1, A-2, A-3	0-5	75-100	70-95	35-65	2-30	---	NP
	24-60	Gravelly sand, very gravelly sand, sand.	SW, GW, SP, GP	A-1	0-5	50-80	40-75	20-50	2-10	---	NP
Evesboro----------	0-26	Sand------------	SP, SP-SM	A-1, A-2, A-3	0	90-100	85-100	50-90	0-12	---	NP
	26-60	Sand, gravelly sand, sandy loam.	SP, SM, SC	A-1, A-2, A-3, A-4	0	65-100	60-100	35-95	0-35	<30	NP-8
Rd----------------- Ridgebury Variant	0-7	Silty clay loam	CL	A-4, A-6	0	90-100	85-100	75-100	60-95	25-40	10-20
	7-11	Silty clay, sandy clay loam.	SC, CL	A-4, A-5, A-6, A-7	0	90-100	85-100	70-100	30-95	25-50	10-25
	11-22	Clay loam, clay	CL	A-4, A-5, A-6, A-7	0	90-100	85-100	75-100	60-95	25-50	10-25
	22-60	Clay, silty clay loam.	CL	A-4, A-5, A-6, A-7	0	90-100	85-100	75-100	65-95	25-50	10-25
ReA, ReB----------- Riverhead	0-4	Sandy loam------	SM, ML	A-2, A-4	0-5	95-100	90-100	55-95	30-75	14-18	1-3
	4-30	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-4, A-1	0-5	65-100	60-95	40-80	20-45	14-18	1-3
	30-60	Stratified sand and gravel.	SP, SW, SP-SM	A-1	0-5	60-95	55-90	25-50	0-10	---	NP

See footnotes at end of table.

TABLE 11.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
RfB*:											
Riverhead	0-4	Sandy loam	SM, ML	A-2, A-4	0-5	95-100	90-100	55-95	30-75	14-18	1-3
	4-30	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-4, A-1	0-5	65-100	60-95	40-80	20-45	14-18	1-3
	30-60	Stratified sand and gravel.	SP, SW, SP-SM	A-1	0-5	60-95	55-90	25-50	0-10	---	NP
Nantucket	0-23	Sandy loam	SM	A-2-4, A-4, A-1	0	95-100	85-100	40-70	15-45	<15	NP-3
	23-29	Loam, fine sandy loam.	SM, ML, CL-ML, SM-SC	A-4	0	95-100	85-100	60-80	35-65	<20	NP-6
	29-60	Sandy clay loam, loam, sandy loam.	SM, SC, CL, ML	A-2-4, A-4	0	95-100	85-100	50-80	30-75	<21	NP-8
Ta Tisbury	0-10	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	70-95	<35	NP-7
	10-20	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	65-95	<25	NP-5
	20-60	Very gravelly sand, gravelly sand.	SP, GP	A-1	10-40	30-70	20-60	15-45	0-10	---	NP
UAC*. Udipsamments											
WaA, WaB Woodbridge Variant	0-9	Loam	CL, CL-ML	A-4, A-6	0	90-100	85-100	70-100	50-90	20-40	5-15
	9-13	Loam, silt loam	CL, CL-ML	A-4, A-6	0	90-100	85-100	70-100	50-90	20-40	5-15
	13-37	Sandy clay loam, clay loam, loam.	CL, SC	A-2, A-4, A-6, A-7	0	90-100	85-100	70-100	30-80	25-50	10-25
	37-60	Silty clay loam, very fine sandy loam.	CL, SM, ML	A-4, A-5, A-6, A-7	0	90-100	85-100	70-100	40-95	25-50	5-25

* See the description of the map unit for the composition and behavior characteristics of the map unit.
** NP means nonplastic.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more 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	Erosion factors K	Erosion factors T
	In	In/hr	In/in	pH			
Ba*. Beaches							
Be---------------- Berryland Variant	0-8	6.0-20	0.08-0.12	3.6-4.4	Low------------	0.17	3
	8-20	2.0-6.0	0.06-0.10	3.6-4.4	Low------------	0.17	
	20-25	<0.06	0.04-0.08	3.6-4.4	Low------------	0.10	
	25-30	2.0-6.0	0.04-0.10	4.5-5.0	Low------------	0.17	
	30-60	2.0-6.0	0.04-0.10	4.5-5.0	Low------------	0.17	
ChB--------------- Chilmark	0-16	2.0-6.0	0.07-0.23	4.5-6.0	Low------------	0.28	3
	16-31	2.0-6.0	0.12-0.18	4.5-6.0	Low------------	0.28	
	31-60	0.06-0.2	0.11-0.18	4.5-6.0	Low------------	0.24	
Du*. Dumps							
EvA, EvB, EvC----- Evesboro	0-26	6.0-20	0.04-0.09	3.6-5.0	Low------------	0.17	5
	26-60	>20	0.04-0.10	4.5-5.0	Low------------	0.17	
ExB--------------- Evesboro	0-42	6.0-20	0.04-0.09	3.6-5.0	Low------------	0.17	5
	42-60	>20	0.04-0.10	4.5-5.0	Low------------	0.17	
KaA, KaB---------- Katama	0-16	2.0-6.0	0.08-0.25	3.6-5.5	Low------------	0.17	3
	16-20	2.0-6.0	0.03-0.11	3.6-5.5	Low------------	0.43	
	20-60	2.0-20	0.02-0.08	3.6-5.5	Low------------	0.17	
Kp*:							
Klej-------------	0-26	6.0->20	0.06-0.11	3.6-5.0	Low------------	0.17	5
	26-52	6.0->20	0.06-0.08	3.6-5.0	Low------------	0.17	
	52-60	<0.6	0.11-0.17	3.6-5.0	Low------------	0.17	
Pompton----------	0-10	0.6-6.0	0.14-0.18	4.5-6.0	Low------------	0.24	3
	10-30	0.6-6.0	0.12-0.16	4.5-5.5	Low------------	0.24	
	30-60	>6.0	0.05-0.10	4.5-5.5	Low------------	0.20	
ME*, MS*. Medisaprists							
Pa---------------- Pawcatuck	0-45	0.6-20	0.18-0.35	5.1-7.3	Low------------	---	---
	45-60	>20	0.02-0.13	5.1-7.3	Low------------	0.17	
Pb*. Pits							
PcB*, PcC*, PcD*:							
Plymouth---------	0-6	6.0-20	0.04-0.08	4.5-5.5	Low------------	0.17	5
	6-24	6.0-20	0.03-0.07	4.5-5.5	Low------------	0.17	
	24-60	>20	0.02-0.03	4.5-5.5	Low------------	0.17	
Evesboro---------	0-26	6.0-20	0.04-0.09	3.6-5.0	Low------------	0.17	5
	26-60	>20	0.04-0.10	4.5-5.0	Low------------	0.17	
Rd---------------- Ridgebury Variant	0-7	0.2-2.0	0.14-0.30	3.6-4.4	Moderate--------	0.28	3
	7-11	<0.2	0.11-0.21	3.6-4.4	Moderate--------	0.49	
	11-22	<0.06	0.09-0.21	3.6-4.4	Moderate--------	0.49	
	22-60	<0.06	0.09-0.21	3.6-4.4	Moderate--------	0.49	
ReA, ReB---------- Riverhead	0-4	2.0-6.0	0.16-0.18	4.5-5.5	Low------------	0.28	3
	4-19	2.0-6.0	0.09-0.13	4.5-5.5	Low------------	0.24	
	19-30	2.0-6.0	0.04-0.13	4.5-5.5	Low------------	0.17	
	30-60	>20	0.02-0.04	4.5-7.3	Low------------	0.17	

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
RfB*:							
Riverhead-------	0-4	2.0-6.0	0.16-0.18	4.5-5.5	Low------------	0.28	3
	4-19	2.0-6.0	0.09-0.13	4.5-5.5	Low------------	0.24	
	19-30	2.0-6.0	0.04-0.13	4.5-5.5	Low------------	0.17	
	30-60	>20	0.02-0.04	4.5-7.3	Low------------	0.17	
Nantucket-------	0-23	0.6-6.0	0.08-0.23	4.5-5.0	Low------------	0.24	3
	23-29	0.6-2.0	0.06-0.20	4.5-5.0	Low------------	0.32	
	29-60	0.2-0.6	0.08-0.12	4.5-5.0	Low------------	0.28	
Ta--------------- Tisbury	0-10	0.6-2.0	0.15-0.24	4.5-6.0	Low------------	0.49	3
	10-20	0.6-2.0	0.13-0.24	4.5-6.0	Low------------	0.64	
	20-60	>6.0	0.01-0.06	4.5-6.0	Low------------	0.17	
UAC*. Udipsamments							
WaA, WaB--------- Woodbridge Variant	0-9	0.6-6.0	0.18-0.24	3.6-5.5	Low------------	0.28	3
	9-13	0.6-2.0	0.15-0.22	3.6-5.5	Low------------	0.28	
	13-37	<0.06	0.09-0.21	3.6-5.5	Moderate--------	0.49	
	37-60	<0.06	0.09-0.21	3.6-5.5	Moderate--------	0.49	

* See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 13.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months		Uncoated steel	Concrete
					Ft					
Ba*. Beaches										
Be. Berryland Variant	D	Rare to frequent.	Brief to long.	Jan-Jun	0-2.0	Apparent	Jan-Dec	Low	High	High.
ChB. Chilmark	C	None	---	---	>6.0	---	---	Moderate	High	Moderate.
Du*. Dumps										
EvA, EvB, EvC, ExB. Evesboro	A	None	---	---	>6.0	---	---	Low	Low	High.
KaA, KaB. Katama	B	None	---	---	>6.0	---	---	Low	Low	High.
Kp*:										
Klej	B	None	---	---	1.5-2.0	Apparent	Dec-Apr	Moderate	Low	High.
Pompton	B	Rare	---	---	1.0-2.0	Apparent	Oct-May	High	Moderate	High.
ME*, MS*. Medisaprists										
Pa. Pawcatuck	D	Frequent	Very brief	Jan-Dec	+1-0.0	Apparent	Jan-Dec	---	High	High.
Pb*. Pits										
PcB*, PcC*, PcD*:										
Plymouth	A	None	---	---	>6.0	---	---	Low	Low	High.
Evesboro	A	None	---	---	>6.0	---	---	Low	Low	High.
Rd. Ridgebury Variant	C	Rare to frequent.	Brief to long.	Jan-Jun	0-1.5	Apparent	Nov-Jun	High	High	High.
ReA, ReB. Riverhead	B	None	---	---	>6.0	---	---	Moderate	Low	High.
RfB*:										
Riverhead	B	None	---	---	>6.0	---	---	Moderate	Low	High.
Nantucket	C	None	---	---	>6.0	---	---	Moderate	Low	High.
Ta. Tisbury	B	None	---	---	1.5-3.5	Apparent	Nov-Apr	High	Low	Moderate.
UAC*. Udipsamments										
WaA, WaB. Woodbridge Variant	C	None	---	---	1.5-2.5	Apparent	Jan-Jun	High	High	High.

* See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 14.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Berryland Variant	Sandy, siliceous, mesic, ortstein Typic Haplaquods
Chilmark	Fine-loamy, mixed, mesic Typic Hapludults
Evesboro	Mesic, coated Typic Quartzipsamments
Katama	Sandy, mixed, mesic Typic Haplumbrepts
Klej	Mesic, coated Aquic Quartzipsamments
Nantucket	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Pawcatuck	Euic, mesic Typic Sulfihemists
Plymouth	Mixed, mesic Typic Udipsamments
Pompton	Coarse-loamy, mixed, mesic Aquic Dystrochrepts
Ridgebury Variant	Fine, mixed, acid, mesic Typic Haplaquepts
Riverhead	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Tisbury	Coarse-silty over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts
Woodbridge Variant	Fine-loamy, mixed, mesic Aquic Dystrochrepts

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