United States Department of Agriculture

Soil Conservation Service

In cooperation with New Hampshire Agricultural Experiment Station

Soil Survey of Hillsborough County New Hampshire

Western Part

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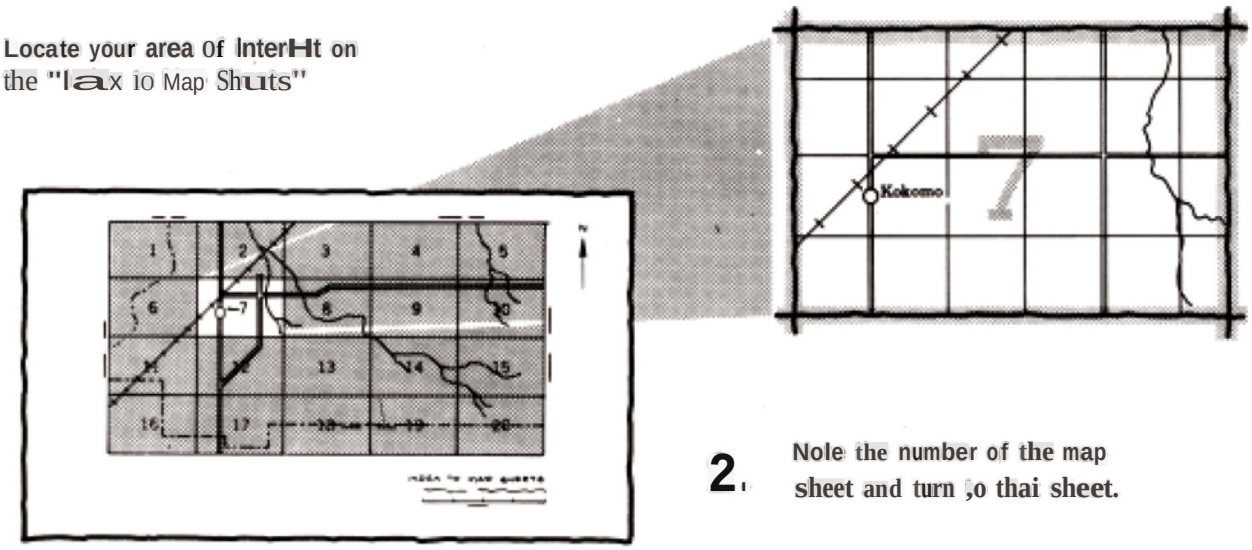

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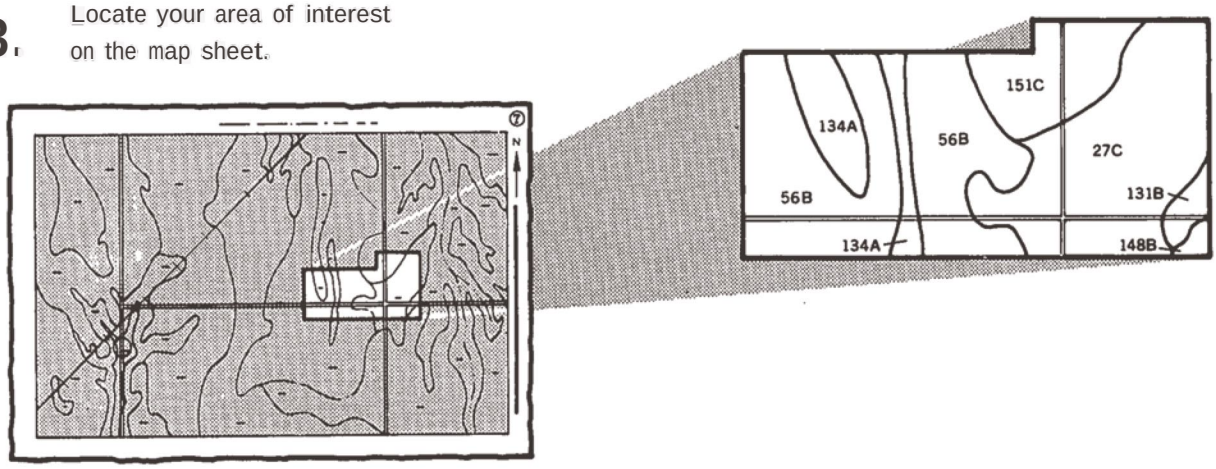
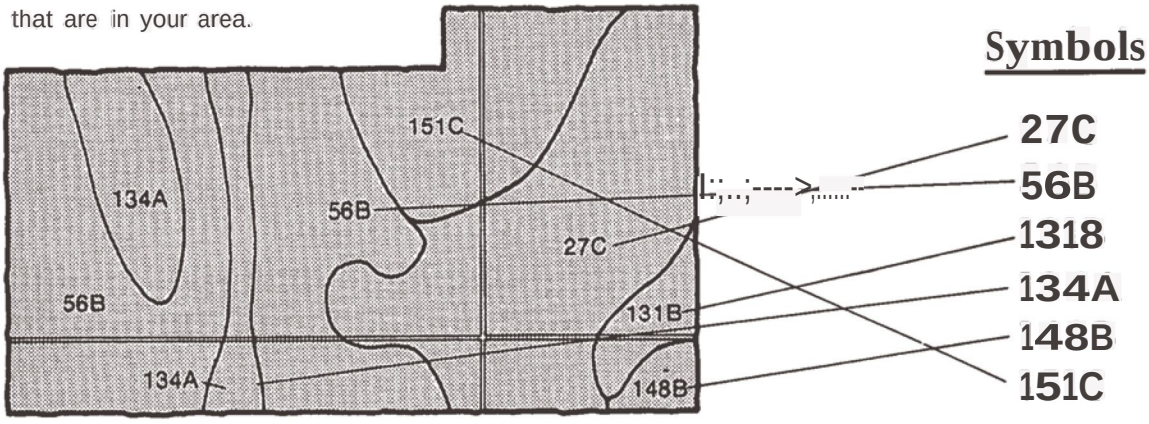
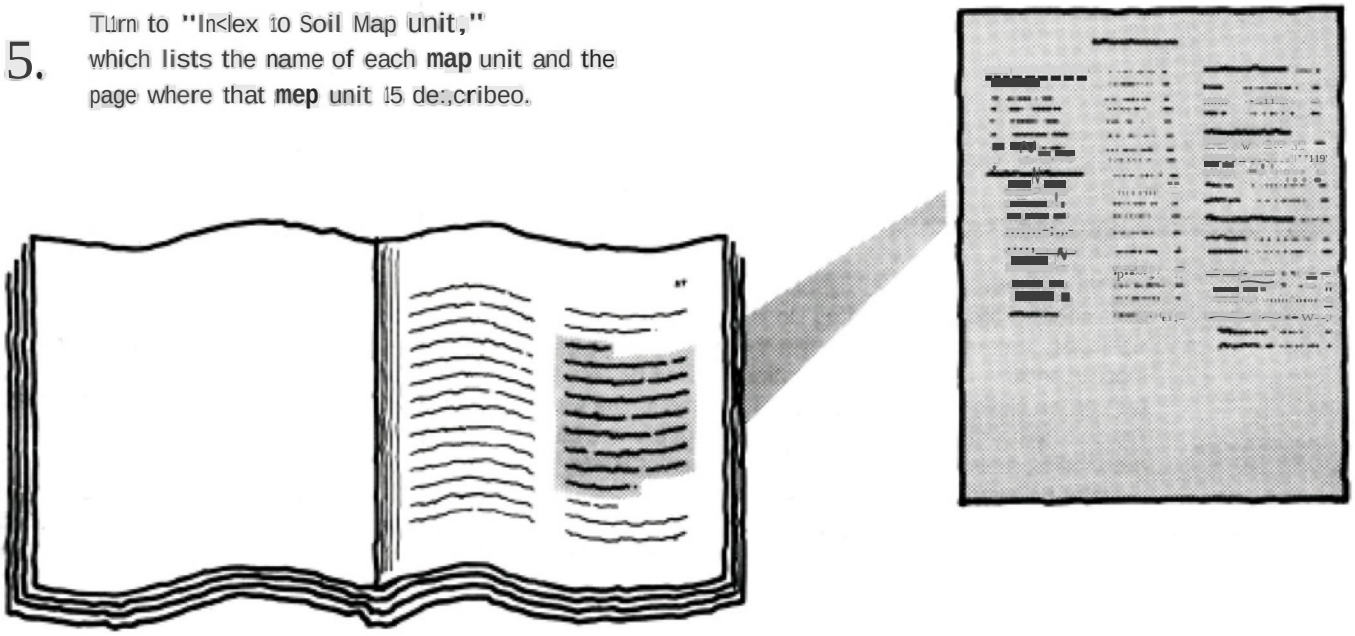


4. List the map unit symbols that are in your area.

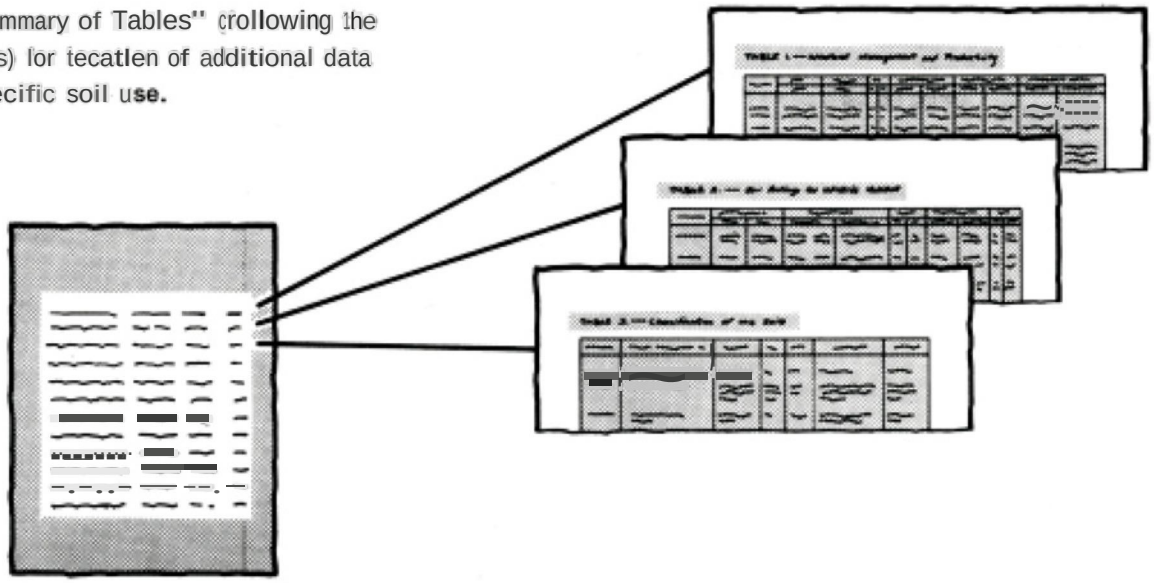


THIS SOIL SURVEY

5. Turn to "Index to Soil Map unit," 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 soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in 1982. Soil names and descriptions were approved in 1983. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This survey was made by the Soil Conservation Service in cooperation with the New Hampshire Agricultural Experiment Station. It is part of the technical assistance furnished to the Hillsborough County Conservation District. Part of the funding for this survey was provided by local units of government.

'Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

This soil survey supersedes the soil survey of Hillsborough County published in 1953.

Cover: Bulldlng site development In an area of Monadnock stony fine sandy loam, 8 to 15 percent slopes, In **Temple.**

Contents

Soil Series

Issued October 1985

Index to Map Units

Summary of Tables

Foreword

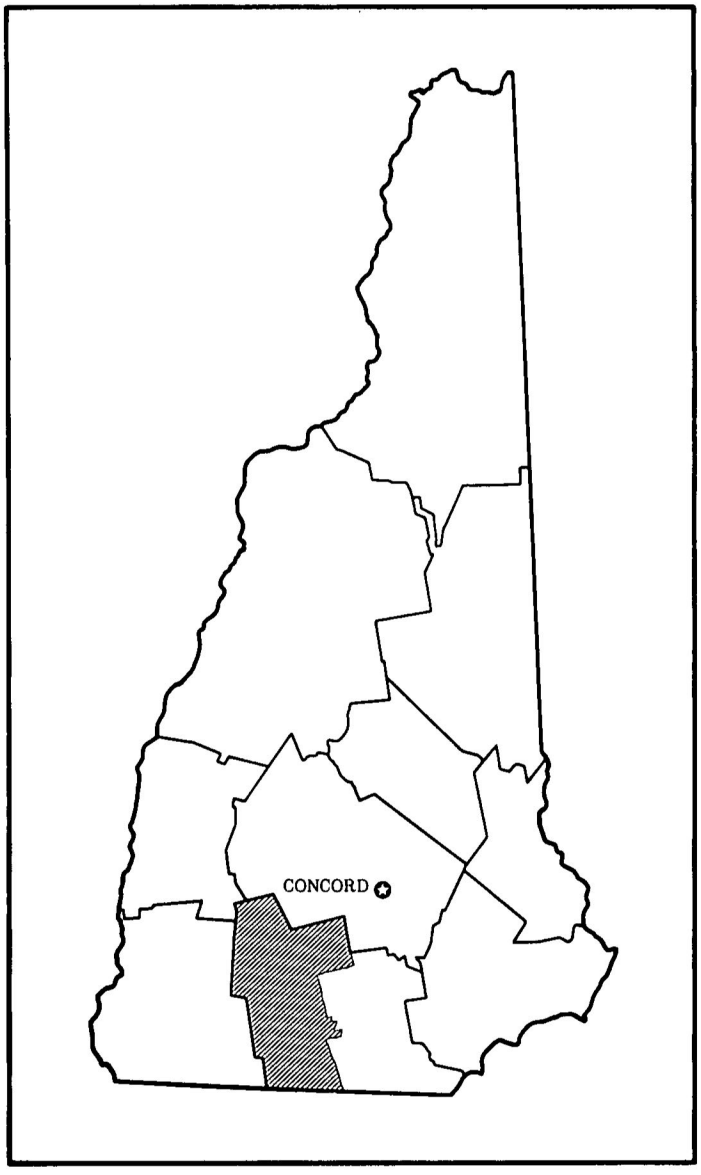
This soil survey contains information that can be used in land-planning programs in Hillsborough County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as 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 soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

David L. Mussulman
State Conservationist
Soil Conservation Service



Location of Hliisborough County, Western **Part,** In New Hampshire.

Soil Survey of Hillsborough County New Hampshire, Western Part

By John F. Handler, Soil Conservation Service

Fieldwork by Richard W. Bond and John F. Handler,
Soil Conservation Service

Other participants in the fieldwork were Geoffrey W. Coombs,
Carl E. Dellinger, Gary S. Domian, James P. Gove,
Edward F. Hutchinson, Russell J. Kelsea, and Gerald L. Rosenberg,
Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
In cooperation with
New Hampshire Agricultural Experiment Station

Hillsborough County, Western Part, is in the south-central part of New Hampshire. It is bounded on the north by Merrimack County, on the east by Hillsborough County, Eastern Part, on the west by Cheshire and Sullivan Counties, and on the south by the Commonwealth of Massachusetts. The total area of Hillsborough County, Western Part, is 302,734 acres, or about 473 square miles. This survey supersedes the soil survey of Hillsborough County published in December 1953 *(12)* and the interim soil reports provided for individual towns in the survey area. This survey updates the earlier one, provides additional information, and contains larger scale maps that show the soils in greater detail.

The landscape in the survey area is hilly and is characterized by large areas of loamy soils that have numerous stones on the surface. The highest elevation in the survey area is 2,278 feet above sea level, at the summit of the North Pack Monadnock Mountain, in Greenfield. The lowest elevation is 310 feet, where the Souhegan River crosses the eastern boundary of the survey area, in Wilton.

Hillsborough County, Western Part, is mainly rural. In 1980 its population was 26,989. Employment is mainly in light industry that manufactures wood products, ball bearings, paper, and light bulbs. Dairy farming has decreased in importance in recent years because of economic conditions, but additional land is being cleared for apple orchards. Several sawmills are in the survey area.

General Nature of the Survey Area

Richard W. Bond, soil scientist, Soil Conservation Service, helped to prepare this section.

In this section, the chief natural and cultural factors that affect soil use are discussed.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In Hillsborough County, New Hampshire, Western Part, winters are cold and summers are warm and have

occasional hot spells. The mountains are markedly cooler than the main agricultural areas in the low lying areas. Precipitation is well distributed throughout the year and is nearly always adequate for all crops. In winter, snows occur frequently, occasionally as blizzards, and cover the ground much of the time.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Peterborough in the period 1951 to 1979. 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 23 degrees F, and the average daily minimum temperature is 14 degrees. The lowest temperature on record, which occurred at Peterborough on January 14, 1957, is -23 degrees. In summer the average temperature is 66 degrees, and the average daily maximum temperature is 78 degrees. The highest recorded temperature, which occurred at Peterborough on August 5, 1955, is 96 degrees.

Growing degree days are shown in table 1. They 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.

The total annual precipitation is 44 inches. Of this, 22 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 17 inches. The heaviest 1-day rainfall during the period of record was 5.08 inches at Peterborough on September 12, 1960. Thunderstorms occur on about 20 days each year, and most occur in summer.

The average seasonal snowfall is 88 inches. The greatest snow depth at any one time during the period of record was 53 inches. On an average of 61 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 75 percent. The sun shines 65 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 12 miles per hour, in spring.

Geology

The soils of Hillsborough County, Western Part, are underlain by metamorphic and igneous rocks. These rocks are 365 to 400 million years old and belong to the Devonian Period. The metamorphic rocks are the Littleton Formation, which consists of gray, coarse-grained mica schist.

In the northwestern corner of the survey area, the igneous rocks called Kinsman Quartz Monzonite intruded through the Littleton Formation (3). Kinsman Quartz Monzonite underlies parts of the towns of Windsor, Hillsborough, Antrim, Hancock, Peterborough, and Weare. Kinsman Quartz Monzonite is resistant to weathering; thus, large boulders are scattered on the surface of many thousands of acres in these towns. The boulders range in size from 2 feet in diameter to the size of an automobile. Scattered throughout Kinsman Quartz Monzonite are crystals of white feldspar, some of which are as much as 3 inches long.

The soils of the survey area formed in glacial deposits that overlie bedrock. About 14,000 years ago, a great ice sheet, or glacier, covered all of the New England States. The ice sheet started forming in Canada and advanced southward as the climate grew colder. At its peak, the ice sheet in Hillsborough County was as much as 1 mile thick. It scraped the surface of the ground and picked up stones and boulders, crushing and mixing them. In many places, it rounded off the tops of hills and mountains, forming drumlins.

When the climate started to warm again, the glacier began to melt and dropped the debris it was carrying over the landscape. This debris, or glacial till, now forms a mantle averaging 20 feet in thickness on uplands in the survey area. Glacial till covers most of Hillsborough County, Western Part, and many soils developed in it. In some places the bedrock is exposed, particularly on mountaintops.

In river valleys the water from the melting glacier flowed rapidly, carrying huge quantities of sand and gravel. The sand and gravel were deposited along the sides of the glacial river valleys on terraces, or on the bottoms of these valleys on outwash plains. The sandy and gravelly soils formed in this material.

There has been little change in most of the landscape since the glacier melted, about 12,000 years ago. Since that time, minor amounts of deposition have occurred on flood plains, and deposition and accumulation of organic material have occurred in some wet areas.

Information about the geology and the glacial history of the survey area can be found in several studies *(6,* 7). Table 18 shows the relationship among parent material, landscape position, dominant texture, and drainage of the soils in the survey area.

Physiography

Hillsborough County, Western Part, is in the New England Upland section of the New England province. The survey area consists of hills and low mountains underlain by gneiss, schist, granite, and quartz monzonite (5). Between the rolling ground moraines and hills there are scattered ponds and lakes, such as Otter Lake in Greenfield and Haunted Lake in Francestown.

The Contoocook River flows northward through the central part of the survey area.

Drainage and Water Supplies

Hillsborough County, Western Part, is drained by several river systems. The western and northwestern parts of the survey area are drained by the Contoocook River, the northeastern part is drained by the Piscataquog River, and the southern and eastern parts are drained by the Souhegan River. All these rivers flow into the Merrimack River.

Municipal water supplies are obtained from both surface and ground water sources. Hillsborough, Peterborough, Wilton, Greenville, and Hancock are supplied by surface water systems of lakes and ponds. Francestown and Bennington are supplied by wells drilled into saturated sand and gravel deposits. Many of the smaller communities that do not have municipal water systems are supplied by individual wells.

Farming

Statistics on farming are available only on a county basis; thus, the statistics in this section apply to all of Hillsborough County. The statistics are from the 1974 and 1978 Censuses of Agriculture *(15, 16)*.

The most common types of farms in the county are dairy farms, apple orchards, and vegetable farms. About 10 percent of the land in the county currently is in farm use. Farming continues to be an important land use in the county. However, between 1969 and 1978 about 12,000 acres in farm use was converted to urban use.

In 1978, there were 390 farms in the county. Of this total 233 farms produced hay, 58 farms produced apples, 54 farms produced corn silage, and 50 farms produced vegetables. The average size of a farm was 146 acres.

About 10,275 acres in the county was used for hay. Alfalfa and clover were the most commonly grown legumes.

There are about 100,000 apple trees in the county. In recent years the number of orchards has decreased, but the number of apple trees has increased by more than 9 percent. Nearly half of the apple trees are grown on semidwarf rootstocks. The McIntosh, Delicious, and Cortland varieties are the most commonly grown. Most of the commercial orchards are in the towns of Lyndeborough and Wilton.

In 1978, 2,058 acres was used for vegetable production. Sweet corn, squash, tomatoes, and cabbage are the most commonly grown vegetables. The largest vegetable farms are in the Merrimack River Valley, particularly around the towns of Litchfield, Hudson, and Hollis.

Manufacturing, Transportation, and Schools

Wood products, ball bearings, specialty paper, and light bulbs are manufactured in Hillsborough County, Western Part. Textiles and textile machinery also are made here.

The survey area has a network of federal, state, and local roads. Most roads are maintained throughout the year. There is rail freight service between Wilton and Bennington. A private airport is in West Deering.

Education through high school is available throughout Hillsborough County, Western Part. Each regional high school serves several communities. Nathaniel Hawthorne College is in Antrim.

Trends in Soil Use

In the 19th century, Hillsborough County, Western Part, was a farming region. Farming was at its peak about 1875, when as much as 70 percent of the land in some towns was cleared and used for pasture or crops. In 1976, 88 percent of the survey area was used as woodland.

Between 1974 and 1978 the number of farms in the entire county increased slightly, from 353 to 390 farms. This is the first time in many years that the number of farms has increased. However, the average size of a farm in the county has decreased from 178 to 146 acres.

Since 1960 the population of Hillsborough County, Western Part, has been growing at a rapid rate. Between 1960 and 1980 the population increased 60 percent to 26,989. The fastest growing communities are Deering, Bennington, Sharon, Mason, and Weare. The survey area is expected to continue to grow in the future.

The industry and commerce in the survey area are located mainly in the Contoocook River Valley, in the town of Wilton, and along the major highways between towns.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other

living organisms and has not been changed by other biologic activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind or segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept or model of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

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

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map 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 soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Soil Descriptions

1. Colton-Adams-Naumburg

Ve,y deep, nearly level to ve,y steep, excessively drained, somewhat poorly drained, and poorly drained, sandy soils; on outwash plains and terraces

These soils are on outwash plains and terraces in the valleys of major rivers and streams (fig. 1).

This map unit makes up about 13 percent of the survey area. It is about 50 percent Colton soils, 15 percent Adams soils, 10 percent Naumburg soils, and 25 percent minor soils.

Colton soils are excessively drained, nearly level to very steep soils that formed in sandy and gravelly glacial outwash. They are on the higher parts of the landscape.

Adams soils are excessively drained, nearly level to very steep soils that formed in sandy glacial outwash. They are on the higher parts of the landscape.

Naumburg soils are poorly drained and somewhat poorly drained, nearly level and gently sloping soils that formed in sandy glacial outwash. The seasonal high water table is between the surface and a depth of 1 1/2 feet during wet periods. These soils are in depressions on outwash plains and terraces.

The minor soils are mainly the Croghan, Chocorua, Rumney, Ondawa, Podunk, and Searsport soils. The moderately well drained Croghan soils are in depressions. The very poorly drained Chocorua and Searsport soils are in nearly level swampy areas. The well drained Ondawa soils, the moderately well drained Podunk soils, and the poorly drained Rumney soils are on flood plains.

Many areas of this map unit are used for urban development. The centers of Peterborough, Hancock, Bennington, Greenfield, and Wilton are in this unit.

Colton and Adams soils are suited to urban development, but these soils are a poor filter for onsite sewage disposal because permeability is rapid. Droughtiness and low fertility are limitations for farming. Colton soils are a good source of sand and gravel, and Adams soils are a good source of sand. On Naumburg soils, the seasonal high water table is a limitation for most uses.

2. Marlow-Peru

Ve,y deep, nearly level to steep, well drained and moderately well drained, compact, loamy soils; on uplands

These soils are on smooth, oval-shaped hills called drumlins (fig. 2).

This map unit makes up about 35 percent of the survey area. It is about 65 percent Marlow soils, 10 percent Peru soils, and 25 percent minor soils.

Marlow soils are well drained, gently sloping to steep soils that formed in loamy glacial till over compact glacial till. They are on the higher parts of the landscape.

Peru soils are moderately well drained, nearly level to strongly sloping soils that formed in loamy glacial till over compact glacial till. The seasonal high water table is at a depth of 1 to 2 feet during wet periods. These soils are on side slopes of drumlins and in depressions.

The minor soils are Becket, Pillsbury, Peacham, Skerry, Monadnock, Tunbridge, and Lyman soils. The somewhat excessively drained Lyman soils and the well drained Tunbridge soils are on hilltops and ridgetops. The well drained Becket and Monadnock soils are on the higher parts of the landscape. The moderately well drained Skerry soils are in depressions. The poorly drained and somewhat poorly drained Pillsbury soils and the very poorly drained Peacham soils are in depressions and drainageways.

Most areas of this map unit are covered by forest of mixed hardwoods and conifers. Areas that are cleared of trees and surface stones are used for farming.

Surface stones, permeability in the substratum, the seasonal high water table, and slope are limitations for most urban and farm uses. Cleared areas are suited to hay, pasture, and apple orchards.

3. Monadnock-Lyme

Ve,y deep, nearly level to steep, well drained and poorly drained, loamy soils; on uplands

These soils are in rolling and hilly uplands areas.

This map unit makes up about 24 percent of the survey area. It is about 65 percent Monadnock soils, 10 percent Lyme soils, and 25 percent minor soils.

Monadnock soils are well drained, gently sloping to steep soils that formed in loamy glacial till over sandy glacial till. They are on the higher parts of the landscape.

Lyme soils are poorly drained, nearly level and gently sloping soils that formed in loamy glacial till. The seasonal high water table is between the surface and a depth of 1 1/2 feet during wet periods. These soils are in depressions and drainageways.

The minor soils are the Marlow, Becket, Lyman, Ossipee, Tunbridge, and Skerry soils. The well drained Marlow and Becket soils are on the higher parts of the landscape. The somewhat excessively drained Lyman soils and the well drained Tunbridge soils are on hilltops and ridgetops. The very poorly drained Ossipee soils are in nearly level swampy areas. The moderately well drained Skerry soils are on slopes above the Lyme soils.

Most areas of this map unit are covered by forest of mixed hardwoods and conifers. Some areas that have been cleared of trees and surface stones are used for hay and pasture. Slope, surface stones, and the seasonal high water table are limitations for most urban uses.

4. Monadnock-Lyman-Tunbrldge

Ve,y deep to shallow, gently sloping to steep, well

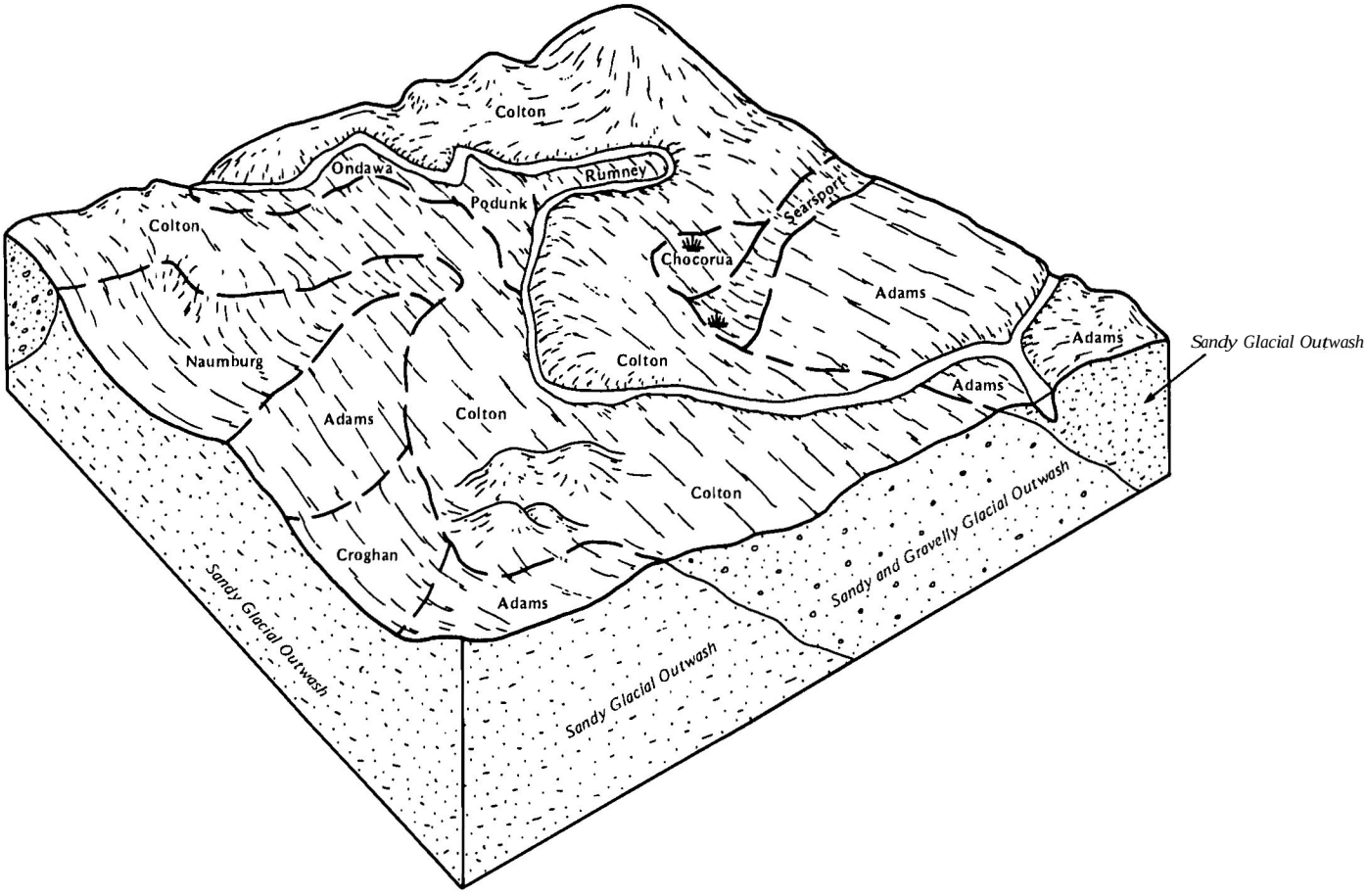


Figure 1.—Typlcal landscape pattern of soils and parent material In the Colton-Adams-Naumburg association.

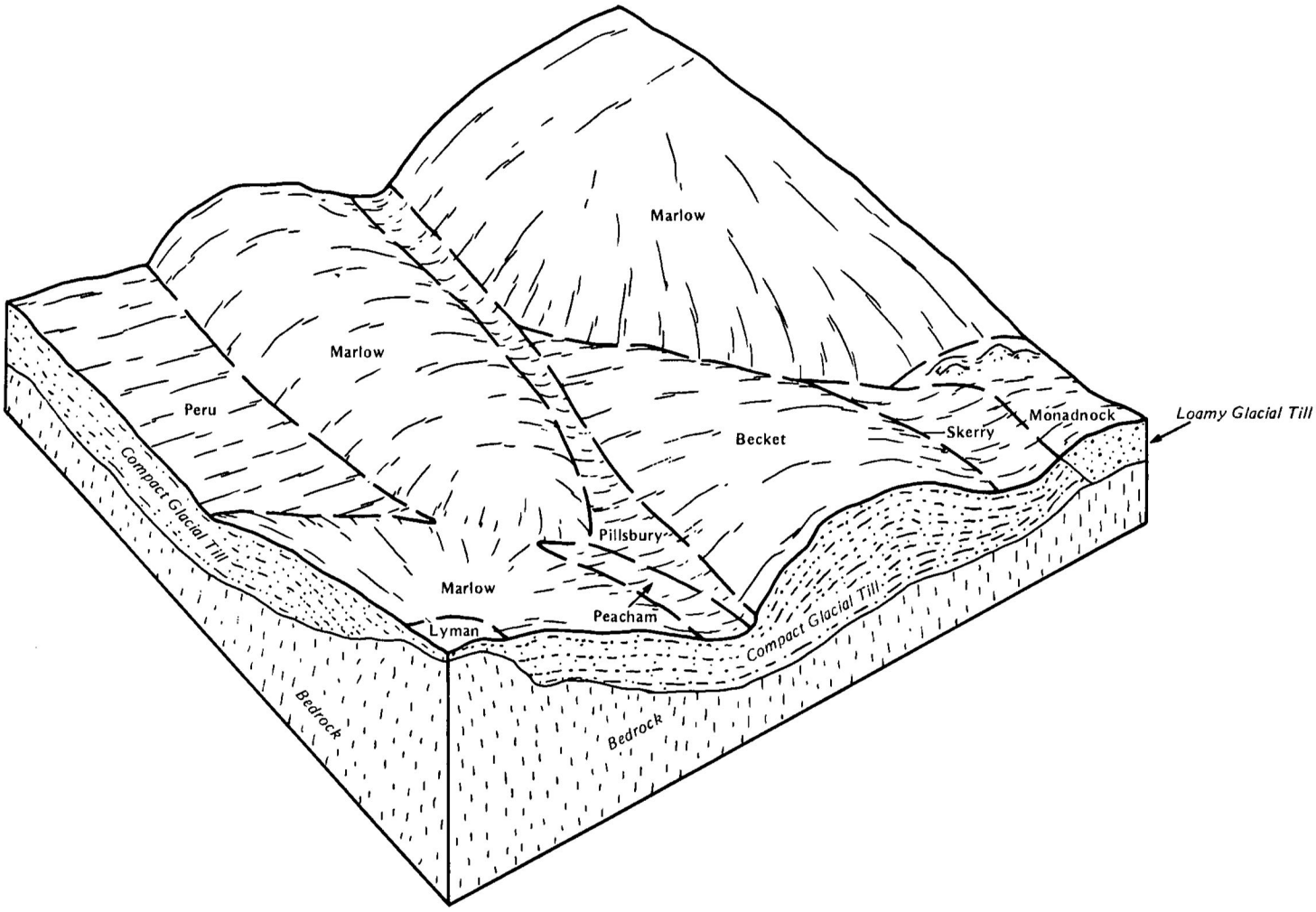


Figure 2.—Typical landscape pattern of soils and parent material in the Marlow-Peru association.

drained and somewhat excessively drained, loamy soils; on uplands

These soils are in mountainous areas.

This map unit makes up about 28 percent of the survey area. It is about 35 percent Monadnock soils, 20 percent Lyman soils, 20 percent Tunbridge soils, and 25 percent minor soils.

Monadnock soils are well drained soils that formed in loamy glacial till over sandy glacial till. They are on hillsides, sides of ridges, and mountainsides.

Lyman soils are somewhat excessively drained, shallow soils that formed in a thin layer of loamy glacial till over bedrock. They are on hilltops, ridgetops, and mountaintops.

Tunbridge soils are well drained, moderately deep soils that formed in loamy glacial till over bedrock. They are on hilltops and the upper slopes on ridges and mountains.

The minor soils are the Marlow, Skerry, Lyme, Greenwood, and Ossipee soils. The well drained Marlow soils are on side slopes of drumlins. The moderately well drained Skerry soils and the poorly drained Lyme soils are in depressions and drainageways. The very poorly drained Greenwood and Ossipee soils are in nearly level swampy areas. Areas of rock outcrop are scattered throughout the unit.

Most areas of this unit are covered by forests of mixed conifers and hardwoods. Some areas, such as those in Miller State Park, are used for recreation. Depth to bedrock, slope, and surface stones are limitations for most farm and urban uses.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Marlow stony loam, 3 to 8 percent slopes, is one of several phases in the Marlow series.

Some map units are made up of two or more major soils. These map units are called soil complexes.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Tunbridge-Lyman-Monadnock complex, stony, 3 to 8 percent slopes, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, gravel, is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

Soil Descriptions

15—Searsport muck. This soil is nearly level and very poorly drained. It is in depressions on terraces and outwash plains. Slopes range from 0 to 3 percent. Areas are irregular in shape and range from 3 to 35 acres.

Typically, the surface layer is black decomposed muck to a depth of 8 inches. The substratum is mottled, gray sand and coarse sand to a depth of 60 inches or more. A few areas have gravel in the substratum.

Included with this soil in mapping are small areas of Naumburg soils on slightly higher parts of the landscape and scattered small areas of Chocorua soils. The included soils make up about 10 percent of the map unit.

Permeability of this Searsport soil is rapid in the surface layer and rapid to very rapid in the substratum. The available water capacity is low. Depth to bedrock is more than 60 inches. In most years the water table ranges between 12 inches above the surface and a depth of 12 inches below the surface from September through July. Potential frost action is moderate.

Most areas of this soil are wooded.

This soil generally is not suited to farming because of the seasonal high water table.

This soil is suited to moisture-tolerant conifers and to red maple. Potential productivity is low. The seasonal high water table is a limitation to forest management and to logging operations. The equipment limitation can be overcome by operating logging equipment during the drier parts of the year.

The seasonal high water table is a limitation to use of this soil for building site development and as sites for

septic tank absorption fields, sewage lagoons, and recreation development.

This soil is a probable source of sand for use in construction.

This soil is suited to use as habitat for wetland wildlife. In most areas wetland plants and shallow water areas can be established, improved, or maintained, but moderately intensive management is needed for satisfactory results. In the flattest areas of this soil, wetland plants and shallow water areas can be more easily established, improved, or maintained, and there are few or no limitations to management.

This soil is in capability subclass VIIw.

22A—Colton loamy sand, 0 to 3 percent slopes. This soil is nearly level and excessively drained. It is on terraces and outwash plains. Areas of the soil are irregular in shape, and range from 5 to 150 acres.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer is 1 inch of decomposed leaf litter. The subsurface layer is dark gray loamy sand about 2 inches thick. The subsoil, to a depth of 23 inches, is strong brown gravelly loamy sand. The substratum, to a depth of 60 inches or more, is yellowish brown extremely gravelly sand in the upper part and light olive brown very gravelly sand in the lower part.

Included with this soil in mapping are small areas of Croghan soils in slight depressions and scattered small areas of Adams soils. Also included are a few areas where stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Colton soil is rapid or very rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is very low. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded. Some areas are used for residential, commercial, or industrial development or for pasture (fig. 3).

Droughtiness is a limitation to use of this soil for row crops, hay, and pasture. Irrigation and applications of fertilizers are needed for most crops. Adding manure, mulching, and mixing crop residue into the soil help to maintain the organic matter content.

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is moderate. The rate of seedling mortality is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized or by using special site preparation, such as bedding or furrowing. There are few limitations to most other forest management practices and to logging operations.

There are few limitations to use of this soil for many types of building site development. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope. For lawns and landscaping, droughtiness can be overcome by applying fertilizers, mulching, and sprinkling.

If this soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of gravel and sand for use in construction.

There are few limitations to use of this soil as sites for most recreation uses. Small stones or gravel, unless removed from the surface, are a limitation for playgrounds.

This soil is in capability subclass IIIs.

22B—Colton loamy sand, 3 to 8 percent slopes. This soil is gently sloping and excessively drained. It is on terraces and outwash plains. Areas of the soil are irregular in shape, and range from 5 to 150 acres.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer is 1 inch of decomposed leaf litter. The subsurface layer is dark gray loamy sand about 2 inches thick. The subsoil, to a depth of 23 inches, is strong brown gravelly loamy sand. The substratum, to a depth of 60 inches or more, is yellowish brown extremely gravelly sand in the upper part and light olive brown very gravelly sand in the lower part.

Included with this soil in mapping are small areas of Croghan soils in slight depressions and scattered small areas of Adams soils. Also included are a few areas where stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Colton soil is rapid or very rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is very low. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded. Some areas are used for residential, commercial, or industrial development.

Droughtiness is a limitation to use of this soil for row crops, hay, and pasture. Irrigation and applications of fertilizers are needed for most crops. Adding manure, mulching, and mixing crop residue into the soil help to maintain the organic matter content.

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is moderate. The rate of seedling mortality is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized or by using special site preparation, such as bedding or furrowing. There are few limitations to most other forest management practices and to logging operations.

Figure 3.—Pasture In an area of Colton loamy sand, 0 to 3 percent slopes, In the foreground, and In an area of Ondawa fine sandy loam, In the middle ground.

There are few limitations to use of this soil for most types of building site development. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope. For small commercial buildings, slope can be overcome by cutting and shaping the slope. For lawns and landscaping, droughtiness can be overcome by applying fertilizers, mulching, and sprinkling.

If this soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of gravel and sand for use in construction.

There are few limitations to use of this soil as sites for camp and picnic areas and paths and trails. Slope and small stones are limitations for playgrounds. These limitations can be overcome respectively by cutting and shaping the slope and by removing gravel and small stones.

This soil is in capability subclass IIIs.

22C—Colton loamy sand, 8 to 15 percent slopes. This soil is strongly sloping and excessively drained. It is on terraces and outwash plains. Areas of the soil are irregular in shape, and range from 5 to 75 acres.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer is 1 inch of decomposed leaf litter. The subsurface layer is dark gray loamy sand about 2 inches thick. The subsoil, to a depth of 23 inches, is strong brown gravelly loamy sand. The substratum, to a depth of 60 inches or more, is yellowish brown extremely gravelly sand in the upper part and light olive brown very gravelly sand in the lower part.

Included with this soil in mapping are scattered small areas of Adams soils and Colton soils that have slopes of 3 to 8 percent or 15 to 50 percent. Also included are

a few areas where stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Colton soil is rapid or very rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is very low. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded. Some areas are used for residential and industrial development.

Droughtiness is a limitation to use of this soil for row crops, hay, and pasture. The soil is better suited to grass-legume hay and pasture than to row crops because erosion is a hazard. Irrigation is needed for most row crops and for the establishment and maintenance of a grass cover. Growing grasses and legumes, stripcropping, and using cover crops help to control erosion. Fertilizers quickly leach through this soil and need to be re-applied frequently.

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is moderate. The seedling mortality rate is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized or by using special site preparation, such as bedding or furrowing. There are few limitations to most other forest management practices or to logging operations.

Slope is a limitation to use of this soil for many types of building site development. This limitation can be overcome by careful planning and layout of the site and by cutting and shaping the slope. Cutbanks of some shallow excavations cave in unless shored up or cut back to a more stable slope. For lawns and lar.:Iscaping, droughtiness can be overcome by applying fertilizers, mulching, and sprinkling.

If this soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of gravel and sand for use in construction.

Slope is a limitation to use of this soil as sites for camp and picnic areas. This limitation can be overcome by careful design and layout of the sites and by cutting and shaping the slope. There are few limitations for paths and trails.

This soil is in capability subclass IVs.

22E—Colton loamy sand, 15 to 50 percent slopes. This soil is moderately steep to very steep and excessively drained. It is on terrace escarpments, eskers, and kames. Areas of the soil are long and narrow or irregular in shape, and range from 10 to 40 acres.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer is 1 inch of decomposed leaf litter. The subsurface layer is dark gray loamy sand about 2 inches thick. The subsoil, to a depth of 23 inches, is strong brown gravelly loamy sand. The substratum, to a depth of 60 inches or more, is yellowish brown extremely gravelly sand in the upper part and light olive brown very gravelly sand in the lower part. In some areas the content of stones and cobblestones throughout the soil is as much as 15 percent.

Included with this soil in mapping are scattered small areas of Adams soils and Colton soils that have slopes of 50 to 75 percent. Also included are some areas where stones that are 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Colton soil is rapid or very rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is very low. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded.

This soil is not suited to row crops, hay, or improved pasture because of droughtiness and slope.

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is moderate. The seedling mortality rate is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized. Slope is a limitation for logging equipment. Erosion is a moderate hazard on skid trails and logging roads because of slope. Laying out these logging roads and trails on the contour helps to control erosion and permits easier and safer operation of the equipment.

Slope is a limitation to use of this soil for building site development and as sites for recreation development, septic tank absorption fields, and sewage lagoons.

This soil is a probable source of sand and gravel for use in construction (fig. 4).

This soil is in capability subclass VIIs.

27B—Groveton very fine sandy loam, 0 to 5 percent slopes. This nearly level to gently sloping, well drained soil is on outwash plains and terraces in the major stream valleys. Areas of the soil are elongated or are irregularly shaped, and range from 2 to 30 acres.

Typically, the surface layer is dark brown very fine sandy loam about 1 inch thick. The subsoil, to a depth of 33 inches, is strong brown very fine sandy loam in the upper part, yellowish brown very fine sandy loam in the middle part, and light yellowish brown very fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive gray fine sand. In some areas the substratum has layers of silt and silt loam.

Included with this soil in mapping are small areas of Madawaska soils in low spots and scattered small areas

Figure 4.—Many cubic yards of gravel have been removed from this pit in Colton loamy sand, 15 to 50 percent slopes.

of Adams soils and soils that have slopes of 5 to 15 percent. The included soils make up about 15 percent of the map unit.

Permeability of this Groveton soil is moderate in the surface layer and subsoil and moderate to moderately rapid in the substratum. The available water capacity is high. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most of the acreage of this soil is used for hay, pasture, or cultivated crops. A few areas are wooded.

This soil is well suited to hay, pasture, and cultivated crops and is suited to truck crops. Crops respond well to lime and fertilizers. Erosion is a hazard if this soil is used for truck and cultivated crops. Stripcropping, contour farming, using conservation tillage, and including grasses and legumes in the cropping system help to control erosion.

This soil is well suited to most species of trees. Potential productivity is moderately high. There are few limitations to most forest management practices and to logging operations.

There are few limitations to use of this soil for most types of building site development. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope.

There are few limitations to use of this soil as sites for septic tank absorption fields. Seepage is a limitation for sewage lagoons.

This soil is a probable source of sand for use in construction.

This soil is in capability subclass IIe.

28B—Madawaska fine sandy loam, 0 to 5 percent slopes. This soil is nearly level to gently sloping and moderately well drained. It is in slight depressions on terraces and outwash plains. Areas of the soil are irregularly shaped, and range from 5 to 20 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam about 4 inches thick. The subsoil, to a

depth of 32 inches, is brown fine sandy loam in the upper part; mottled, yellowish brown fine sandy loam in the middle part; and mottled, light olive brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive brown, stratified loamy sand and sand. In some areas the soil has layers of silt and silt loam.

Included with this soil in mapping are small areas of Adams soils on the higher parts of the landscape and scattered small areas of Croghan soils, poorly drained soils, and sells that have slopes of 5 to 15 percent. The included soils make up about 20 percent of the map unit.

Permeability of this Madawaska soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is high. Depth to bedrock is more than 60 inches. In most years the seasonal water table is at a depth of 1 1/2 to 3 feet from November through May. Potential frost action is high.

Many areas of this soil are wooded or idle. A few areas are used for hay.

This soil is suited to corn, small grains, and grasses and legumes. In undrained areas the seasonal high water table restricts the choice of crops and delays cultivation in spring. Drainage permits earlier tillage in spring and an increased choice of crops. Installing open ditches, tile drains, and diversions helps to improve drainage. If the soil is drained and is protected from erosion, it can be cropped continuously. Crop residue and manure mixed into the plow layer improve the soil tilth and help to maintain the organic matter content.

This soil is well suited to most species of trees. Productivity is moderately high. There are few limitations to most forest management practices and to logging operations.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can be overcome by installing a drainage system. For local roads and streets, the high potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. Cutbanks of some shallow excavations cave in unless shored up or cut back to a more stable slope.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. If the soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of sand for use in construction.

The seasonal high water table is a limitation to use of this soil as sites for recreation uses. For camp and picnic areas and playground development, this limitation can be overcome by installing a drainage system.

This soil is in **capability** subclass IIw.

36A—Adams loamy sand, 0 to 3 percent slopes. This soil is nearly level and excessively drained. It is on terraces and outwash plains. Areas of the soil are irregularly shaped, and range from 5 to 200 acres.

Typically, the surface layer is dark brown loamy sand about 9 inches thick. The subsoil, to a depth of 29 inches, is dark brown loamy sand in the upper part and yellowish brown loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is yellowish brown sand. In some areas the substratum has thin strata of silt.

Included with this soil in mapping are small areas of Croghan soils in shallow depressions and scattered small areas of Colton soils and Adams soils that have slopes of 3 to 8 percent. The included soils make up about 15 percent of the map unit.

Permeability of this Adams soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded or idle. Some areas in the larger towns are used for residential, commercial, and industrial development.

Droughtiness is a limitation to use of this soil for row crops, hay, and pasture. Irrigation and applications of fertilizer are needed for most crops. Manuring, mulching, and mixing crop residue into the soil help to maintain the organic matter content. If these practices are used, the soil is suited to such specialty crops as strawberries (fig. 5).

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is low. The rate of seedling mortality is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized, or by using special site preparation, such as bedding or furrowing. There are few or no limitations to most other types of forest management or to logging operations.

There are few limitations to use of this soil for many types of building site development. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope. For lawns and landscaping, droughtiness can be overcome by applying fertilizers, mulching, and sprinkling.

If this soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of sand for use in construction.

There are few limitations to use of this soil as sites for recreation development.

This soil is in capability subclass IIIs.

36B—Adams loamy sand, 3 to 8 percent slopes. This soil is gently sloping and excessively drained. It is

Figure 5.—Strawberries on Adams loamy sand, 0 to 3 percent slopes. The organic matter content of this soil needs to be maintained by manuring, mulching, and mixing crop residue into the soil.

on terraces and outwash plains (fig. 10). Areas of the soil are irregularly shaped, and range from 5 to 60 acres.

Typically, the surface layer is dark brown loamy sand about 9 inches thick. The subsoil, to a depth of 29 inches, is dark brown loamy sand in the upper part and yellowish brown loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is yellowish brown sand. In some areas the substratum has thin strata of silt.

Included with this soil in mapping are small areas of Croghan soils in shallow depressions and scattered small areas of Colton soils and Adams soils that have slopes of 0 to 3 percent or 8 to 15 percent. The included soils make up about 15 percent of the map unit.

Permeability of this Adams soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Depth to bedrock generally is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded or idle. Some areas in the larger towns are used for residential, commercial, or industrial development.

Droughtiness is a limitation to use of this soil for row crops, hay, and pasture. Irrigation and applications of fertilizers are needed for most crops. Adding manure, mulching, and mixing crop residue into the soil help to maintain the organic matter content.

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is low. The rate of seedling mortality is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized or by using special site preparation, such as bedding or furrowing. There are few or no limitations to most other types of forest management or to logging operations.

There are few limitations to use of this soil for most types of building site development. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope. For small commercial buildings, slope can be overcome by cutting and shaping. For lawns and landscaping, droughtiness can be overcome by applying fertilizers, mulching, and sprinkling.

If this soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of sand for use in construction.

There are few limitations to use of this soil as sites for most types of recreation development. For playgrounds, slope can be overcome by cutting and shaping the slope.

This soil is in capability subclass IIIs.

36C—Adams loamy sand, 8 to 15 percent slopes. This soil is excessively drained and strongly sloping. It is on terraces and outwash plains. Areas of the soil are irregularly shaped, and range from 5 to 20 acres.

Typically, the surface layer is dark brown loamy sand about 9 inches thick. The subsoil, to a depth of 29 inches, is dark brown loamy sand in the upper part and yellowish brown loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is yellowish brown sand. In some areas the surface layer and subsoil are fine sandy loam or sandy loam. In other areas the substratum has thin strata of silt.

Included with this soil in mapping are scattered small areas of Colton soils and Adams soils that have slopes of 3 to 8 percent or 15 to 50 percent. The included soils make up about 15 percent of the map unit.

Permeability of this Adams soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded or idle. Some areas in the larger towns are used for residential development.

This soil is better suited to drought-resistant grass-legume hay or pasture than to row crops. Irrigation is needed for most row crops and for a grass cover. Erosion is a moderate hazard. Growing grasses and legumes, stripcropping, and using cover crops help to control erosion. Fertilizer leaches quickly through the soil and frequently needs to be re-applied.

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is low. The rate of seedling mortality is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized or by using special site preparation, such as bedding or furrowing. There are few limitations to most other types of forest management or to logging operations.

Slope is a limitation to use of this soil for many types of building site development. For dwellings with or without basements, small commercial buildings, and local roads and streets, this limitation can be overcome by cutting and shaping the slopes and by careful planning and layout of the sites. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope. For lawns and landscaping, droughtiness can be overcome by applying fertilizers, mulching, and sprinkling.

If this soil is used as sites for septic tank absorption fields or sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum. Slope is a limitation for sewage lagoons.

This soil is a probable source of sand for use in construction.

Slope is a limitation to use of this soil as sites for camp and picnic areas. This limitation can be overcome by careful design and layout of the sites and by cutting and shaping the slope. There are few limitations for paths and trails.

This soil is in capability subclass IVs.

36E—Adams loamy sand, 15 to 50 percent slopes. This soil is moderately steep to very steep and excessively drained. It is on terrace escarpments. Areas of the soil are long and narrow or irregular in shape, and range from 10 to 40 acres.

Typically, the surface layer is dark brown loamy sand about 9 inches thick. The subsoil, to a depth of 29 inches, is dark brown loamy sand in the upper part and yellowish brown loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is yellowish brown sand.

Included with this soil in mapping are small areas of Colton soils and Adams soils that have slopes of 50 to 75 percent. The included soils make up about 10 percent of the map unit.

Permeability of this Adams soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded.

This soil is not suited to row crops, hay, or improved pasture because of slope.

This soil is better suited to drought-tolerant conifers than to hardwoods. Potential productivity is low. The rate

of seedling mortality is high because of droughtiness. The rate can be decreased by using special planting stock that is larger than usual or is containerized. Slope is a limitation to the use of logging equipment. Erosion is a moderate hazard because of slope. Laying out logging roads and skid trails on the contour helps to control erosion and permits easier and safer use of equipment.

Slope is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields and sewage lagoons.

This soil is a probable source of sand for use in construction.

Slope is a limitation to use of this soil as sites for all types of recreation development.

This soil is in capability subclass VIIs.

568—Becket fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on hillcrests and at the base of slopes on hilly uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape, and range from 4 to 30 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam about 8 inches thick. The subsoil, to a depth of 32 inches, is dark reddish brown gravelly fine sandy loam in the upper part, yellowish brown gravelly fine sandy loam in the middle part, and olive yellow gravelly loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is light brownish gray, firm very gravelly loamy sand. In some areas the substratum in the upper part is friable.

Included with this soil in mapping are small areas of Peru and Skerry soils in slight depressions and scattered small areas of Marlow soils and Becket soils that have slopes of 8 to 15 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Becket soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most areas of this soil are used for pasture, orchards, or hay.

This soil is better suited to hay and pasture or to use as orchards than to row crops because erosion is a hazard. If the soil is used for row crops, stripcropping, contour farming, and including grasses and legumes in the cropping system help to control erosion. Tile drains can be used in some orchards to eliminate isolated seep spots and to improve access of equipment throughout the year.

This soil is well suited to most species of trees. Potential productivity is moderate. There are few limitations to most forest management practices and to logging operations. Operating logging equipment during wet periods increases the hazard of erosion on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can usually be overcome by installing a drainage system. For roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Seepage and slope are limitations for sewage lagoons.

This soil is a probable source of sand and gravel for use in construction.

The seasonal high water table is a limitation for camp and picnic areas and paths and trails. This limitation can be overcome by installing a drainage system.

The soil is in capability subclass IIe.

SSC—Becket fine sandy loam, 8 to 15 percent slopes. This soil is strongly sloping and well drained. It is on hilltops and side slopes on uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape and range from 4 to 30 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam about 8 inches thick. The subsoil, to a depth of 32 inches, is dark reddish brown gravelly fine sandy loam in the upper part, yellowish brown gravelly fine sandy loam in the middle part, and olive yellow gravelly loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is light brownish gray, firm very gravelly loamy sand. In some areas the substratum in the upper part is friable.

Included with this soil in mapping are areas of Skerry and Peru soils in slight depressions and scattered areas of Marlow and Tunbridge soils. Also included are soils that have slopes of 3 to 8 percent or 15 to 25 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Becket soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most of the acreage of this soil is used for pasture or hay or as orchards.

This soil is better suited to hay and pasture and to use as orchards than to row crops because erosion is a hazard. If the soil is used for row crops, stripcropping, contour farming, and including grasses and legumes in the cropping system help to control erosion. Tile drains can be used in some orchards to eliminate isolated seep spots and to improve access of equipment throughout the year.

This soil is well suited to most species of trees. Potential productivity is moderate. There are few limitations to most forest management practices and to logging operations. Operating logging equipment during wet periods increases the hazard of erosion on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table and slope are limitations to use of this soil for all types of building site development. The seasonal high water table can be overcome by installing a drainage system. Slope can be overcome by cutting and shaping the slope and by careful planning and layout of the site. For roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Slope is a limitation for sewage lagoons. This limitation can be overcome by cutting and shaping the slope.

This soil is a probable source of sand and gravel for use in construction.

The seasonal high water table is a limitation to use of this soil as a site for camp and picnic areas and for paths and trails. This limitation can generally be overcome by installing a drainage system. For camp and picnic areas, slope can be overcome by cutting and shaping the slope and by special design and layout of the areas.

This soil is in capability subclass IIIe.

57B—Becket stony fine sandy loam, 3 to ℮ percent slopes. This soil is gently sloping and well drained. It is on hillcrests, on ridges, and at the base of slopes on hilly uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape, and range from 5 to 50 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 4 inches of very dark grayish brown fine sandy loam. The subsoil, to a depth of 32 inches, is dark reddish brown gravelly fine sandy loam in the upper part, yellowish brown gravelly fine sandy loam in the middle part, and olive yellow gravelly loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is light brownish gray, firm very gravelly loamy sand. In some areas the substratum in the upper part is not firm.

Included with this soil in mapping are small areas of Peru, Pillsbury, and Skerry soils in depressions and scattered small areas of Tunbridge soils. Also included are areas that have slopes of 0 to 3 percent or 8 to 15 percent. Also included are areas where stones less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Becket soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the root zone. The seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most of the acreage of this soil is in woodland. Some areas are used as unimproved pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are a limitation for hay and pasture. The stones interfere with cultivation and harvesting machinery. If the surface is cleared of stones, the soil is suited to row crops, pasture, and hay.

This soil is suited to most species of trees. Potential productivity is moderate. There are few limitations to most forest management practices and to logging operations. The hazard of erosion on logging roads and skid trails is increased if logging equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table is a limitation to use of this soil for all types of building site development. This limitation can be overcome by installing a drainage system. For roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. Stones, unless removed, are a limitation for lawns and landscaping.

This soil is a probable source of sand and gravel for use in construction.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Seepage and slope are limitations for sewage lagoons.

This soil is in capability subclass VIs.

57C-,-Becket stony fine sandy loam, 8 to 15 percent slopes. This soil is strongly sloping and well drained. It is on hilltops and side slopes on hilly uplands. Many of the hills are smooth-sided, oval-shaped hills

called drumlins. Areas of the soil are long and narrow in shape, and range from 5 to 50 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 4 inches of very dark grayish brown fine sandy loam. The subsoil, to a depth of 32 inches, is dark reddish brown gravelly fine sandy loam in the upper part, yellowish brown gravelly fine sandy loam in the middle part, and olive yellow gravelly loamy sand in the lower part. The firm substratum, to a depth of 60 inches or more, is light brownish gray very gravelly loamy sand. In some areas the substratum in the upper part is not firm.

Included with this soil in mapping are small areas of Skerry, Peru, and Pillsbury soils in depressions and scattered small areas of Tunbridge soils. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Becket soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the root zone. The seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most of the acreage of this soil is wooded. A few areas are used as unimproved pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are also a limitation for hay and pasture. The stones interfere with cultivation and harvesting machinery. If the surface is cleared of stones, the soil is suited to row crops, hay, and pasture.

This soil is suited to most species of trees. Potential productivity is moderate. There are few limitations to most forest management practices or to logging operations. However, the hazard of erosion on logging roads and skid trails is increased if logging equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table and slope are limitations to use of this soil for building site development. The seasonal high water table can be overcome by installing a drainage system. Slope can be overcome by cutting and shaping the slope and by careful design and layout of the site. For roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. Stones, unless removed when the slopes are altered, are a limitation for lawns and landscaping.

This soil is a probable source of sand and gravel for use in construction.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Slope is a severe limitation for sewage lagoons. Slope can be overcome by cutting and shaping the slope.

Stones on the surface, the seasonal high water table, and slope are limitations to use of this soil as sites for camp and picnic areas. Stones on the surface can be overcome by clearing the surface of stones. The seasonal high water table can be overcome by installing a drainage system. Slope can be overcome by cutting and shaping the slopes and by careful design and layout of the sites. Wetness is a limitation for paths and trails.

This soil is in capability subclass Vis.

57D—Becket stony fine sandy loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on side slopes on hilly uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape, and range from 5 to 35 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 4 inches of very dark grayish brown fine sandy loam. The subsoil, to a depth of 32 inches, is dark reddish brown gravelly fine sandy loam in the upper part, yellowish brown gravelly fine sandy loam in the middle part, and olive yellow gravelly loamy sand in the lower part. The substratum, to a depth of 60 inches or more, is light brownish gray, firm very gravelly loamy sand. In some areas the substratum in the upper part is not firm.

Included with this soil in mapping are scattered small areas of Tunbridge soils and soils that have slopes of 25 to 35 percent. Also included are some areas where stones that are less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Becket soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the root zone. The seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most areas of this soil are used as woodland. Some areas are used as unimproved pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are also a limitation for hay and pasture.

This soil is suited to most species of trees. Potential productivity is moderate. There are few limitations to

most forest management practices. Slope is a limitation to equipment operation. The hazard of erosion on logging roads and skid trails is increased if logging equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion and permits easier and safer operation of the equipment.

Slope is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and most types of recreation development.

This soil is a probable source of sand and gravel for use in construction.

This soil is in capability subclass Vis.

76B—Marlow loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on hillcrests and at the base of slopes on uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow or irregular in shape, and range from 5 to 30 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil, to a depth of 24 inches, is yellowish brown fine sandy loam in the upper part, light olive brown fine sandy loam in the middle part, and olive sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive brown, very firm fine sandy loam.

Included with this soil in mapping are small areas of Peru soils in slight depressions, scattered small areas of Becket soils, and scattered areas of soils that have slopes of 0 to 3 percent or 8 to 15 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Marlow soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The very firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock generally is more than 60 inches. Potential frost action is moderate.

Most areas of this soil are used for hay and pasture or as orchards. Some areas are used for residential development.

This soil is suited to hay and pasture or to use as apple orchards. Erosion is a hazard if the soil is used for row crops. Stripcropping, contour farming, and including grasses and legumes in the cropping system help to control erosion. Tile drains can be used in some orchards to eliminate isolated seep spots and to improve access of equipment throughout the year.

This soil is well suited to most species of trees. Potential productivity is moderately high. There are few limitations to most forest management practices and to logging operations. Operating logging equipment during wet periods increases the hazard of erosion on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation generally can be overcome by installing a drainage system. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Seepage and slope are limitations for sewage lagoons. Slope can be overcome by cutting and shaping the slope.

The seasonal high water table is a limitation to use of this soil as sites for camp and picnic areas and playgrounds. This limitation can be overcome by installing a drainage system. Slope and small stones on the surface are also limitations for playgrounds. These limitations can be overcome respectively by cutting and shaping the slope and by clearing the surface of stones. There are few limitations for paths and trails.

This soil is in capability subclass IIe.

76C—Marlow loam, 8 to 15 percent slopes. This soil is strongly sloping and well drained. It is on hilltops and side slopes on uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape, and range from 5 to 30 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil, to a depth of 24 inches, is yellowish brown fine sandy loam in the upper part, light olive brown fine sandy loam in the middle part, and olive sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive brown, very firm fine sandy loam.

Included with this soil in mapping are small areas of Peru soils in slight depressions, scattered small areas of Becket and Tunbridge soils, and scattered areas of soils that have slopes of 3 to 8 percent or 15 to 25 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Marlow soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The very firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock generally is more than 60 inches. Potential frost action is moderate.

Most of the acreage is used for hay or pasture or as orchards (fig. 6).

This soil is better suited to hay and pasture and as orchards than to row crops because erosion is a hazard. If the soil is used for row crops, stripcropping, contour farming, and using grasses and legumes in the cropping system help to control erosion. Tile drainage can be used in some orchards to eliminate isolated seep spots and to improve access of equipment throughout the year.

This soil is well suited to most species of trees. Potential productivity is moderately high. There are few limitations to most forest management practices and to logging operations. Operating logging equipment during wet periods increases the erosion hazard on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table and slope are limitations to use of this soil for most types of building site development. These limitations can be overcome respectively by installing a drainage system and by cutting and shaping the slope. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Slope is a limitation for sewage lagoons. This limitation can be overcome by cutting and shaping the slope.

The seasonal high water table and slope are limitations to use of this soil as sites for camp and picnic areas. These limitations can be overcome respectively by installing a drainage system and by careful planning and layout of the individual sites and by cutting and shaping the slope. There are few limitations for paths and trails.

This soil is in capability subclass IIIe.

76D—Marlow loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on side slopes on hilly uplands. Many of the hills are smooth-

Figure 6.—A grass cover helps control erosion in areas that are used for orchards. The soil is Marlow loam, 8 to 15 percent slopes.

sided, oval-shaped hills called drumlins (fig. 7). Areas of the soil are long and narrow in shape, and range from 10 to 50 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil, to a depth of 24 inches, is yellowish brown fine sandy loam in the upper part, light olive brown fine sandy loam in the middle part, and olive sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive brown, very firm fine sandy loam.

Included with this soil in mapping are scattered small areas of Marlow soils that have slopes of 25 to 35 percent and areas of Becket and Tunbridge soils. Also included are some areas where a few stones are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Marlow soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The very firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock generally is more than 60 inches. Potential frost action is moderate.

Most of the acreage of this soil is used for pasture or hay. Some areas are used as woodland.

This soil is poorly suited to row crops because of slope and the erosion hazard. Slope and the erosion hazard are also limitations for hay and pasture. Stripcropping and using grasses and legumes in the cropping system help to control erosion.

This soil is well suited to most species of trees. Potential productivity is moderately high. There are few limitations to most forest management practices. Slope is a limitation to equipment operation. The erosion hazard on logging roads and skid trails is increased if logging equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion and permits easier and safer operation of the equipment.

Slope is a limitation to use of this soil for building site development and as sites for septic tank absorption fields, sewage lagoons, and most types of recreation development.

Figure 7.—The smooth-sided hill in the background is a drumlin. The soil on the drumlin is Marlow loam, 15 to 25 percent slopes.

This soil is in capability subclass IVe.

77B—Marlow stony loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on hillcrests and at the base of slopes on hilly uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape, and range from 5 to 50 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 5 inches of dark brown loam. The subsoil, to a depth of 24 inches, is yellowish brown fine sandy loam in the upper part, light olive brown fine sandy loam in the middle part, and olive sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive brown, very firm fine sandy loam.

Included with this soil in mapping are small areas of Peru and Pillsbury soils in slight depressions and scattered small areas of Tunbridge soils. Also included are areas of Marlow soils that have slopes of 0 to 3 percent or 8 to 15 percent. Also included are some areas where stones that are less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Marlow soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The very firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most of the acreage of this soil is used as woodland. A few areas are used as unimproved pasture. Some areas are used for residential development.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are also a limitation for hay and pasture. The stones interfere with cultivation and harvesting machinery. If the surface is cleared of stones, the soil is suited to row crops, hay, and pasture.

This soil is well suited to most species of trees. Potential productivity is moderately high. There are few limitations to most forest management practices and to logging operations. However, the erosion hazard on logging roads and skid trails is increased if logging equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can generally be overcome by installing a drainage system. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. Stones, unless removed, are a limitation for lawns and landscaping.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Seepage and slope are limitations for sewage lagoons. Slope can be overcome by cutting and shaping the slope. Surface stones, unless removed, are a limitation to use of this soil as sites for camp and picnic areas and playgrounds. There are few limitations for paths and trails.

This soil is in capability subclass VIs.

77C—Marlow stony loam, 8 to 15 percent slopes. This soil is strongly sloping and well drained. It is on hilltops and side slopes on uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape and range from 5 to 30 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 1 inch of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 5 inches of dark brown loam. The subsoil, to a depth of 24 inches, is yellowish brown fine sandy loam in the upper part, light olive brown fine sandy loam in the middle part, and olive sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive brown, very firm fine sandy loam.

Included with this soil in mapping are scattered small areas of Becket and Tunbridge soils and small areas of Peru soils in slight depressions. Also included are small areas of Marlow soils that have slopes of 3 to 8 percent or 15 to 35 percent. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Marlow soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most of the acreage of this soil is used as woodland. A few areas are used as unimproved pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are also a limitation for pasture and hay. The stones interfere with cultivation and harvesting machinery. If the surface is cleared of stones, the soil is suited to row crops, hay, and pasture.

This soil is well suited to most species of trees. Potential productivity is moderately high. There are few limitations to most forest management practices and to logging operations. The erosion hazard on logging roads

and skid trails is increased if logging equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion.

Slope and the seasonal high water table are limitations to use of this soil for building site development. Slope can be overcome by cutting and shaping the slope and by careful design and layout of the sites. The seasonal high water table can be overcome by installing a drainage system. For roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. Stones, unless removed when the slopes are altered, are a limitation for lawns and landscaping.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Slope is a limitation for sewage lagoons. This limitation can be overcome by cutting and shaping the slope.

Stones on the surface and slope are limitations to use of this soil as sites for camp and picnic areas. Stones on the surface can be overcome by removing the stones. Slope can be overcome by cutting and shaping the slope and by careful design and layout of the sites. There are few limitations for paths and trails.

This soil is in capability subclass Vis.

77D—Marlow stony loam, 15 to 35 percent slopes. This soil is moderately steep to steep and well drained. It is on side slopes on hilly uplands. Many of the hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape, and range from 5 to 50 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface is covered by about 1 inch of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 5 inches of dark brown loam. The subsoil, to a depth of 24 inches, is yellowish brown fine sandy loam in the upper part, light olive brown fine sandy loam in the middle part, and olive sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is light olive brown, very firm fine sandy loam.

Included with this soil in mapping are scattered small areas of Tunbridge and Becket soils and some areas where stones less than 5 feet apart are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Marlow soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The very firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through March. Depth to bedrock is more than 60 inches. Potential frost action is moderate.

Most areas of this soil are in woodland. A few areas are used as unimproved pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are a limitation for pasture and hay. If the surface is cleared of stones, the soil is suited to row crops, pasture, and hay.

This soil is well suited to most species of trees. Potential productivity is moderately high. There are few limitations to most forest management practices. Slope is a limitation to equipment operation. The erosion hazard on logging roads and skid trails is increased if equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion and permits easier and safer operation of the equipment.

Slope is a limitation to use of this soil for building site development and as sites for septic tank absorption fields, sewage lagoons, and most types of recreation development.

This soil is in capability subclass VIIs.

788—Peru loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is mainly in slight depressions on hilly uplands. Some of the soil areas are on smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow in shape, and range from 5 to 25 acres.

Typically, the surface layer is dark brown loam about 7 inches thick. The subsoil, to a depth of 20 inches, is yellowish red loam in the upper part, mottled, yellowish brown loam in the middle part, and mottled, light yellowish brown sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, olive gray sandy loam in the upper part, mottled, light brownish gray, firm sandy loam in the middle part, and olive, firm fine sandy loam in the lower part.

Included with this soil in mapping are scattered small areas of Skerry soils, small areas of Marlow soils on slightly higher parts on the landscape, and scattered small areas of soils that have slopes of 0 to 3 percent or 8 to 15 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Peru soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm part of the substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the firm part of the substratum from November through April. Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are used for hay or pasture. Some areas are used as woodland.

This soil is poorly suited to row crops. The seasonal high water table restricts the choice of crops and delays cultivation in spring. If tile drains or open ditches are installed, the soil is suited to row crops. Erosion is a hazard if the soil is used for cultivated crops. Contour

farming, stripcropping, maintaining a cover crop, and including grasses and legumes in the cropping system help to control erosion. The soil is suited to grasses and legumes that tolerate seasonal wetness. Mixing crop residue and manure into the plow layer improves the soil tilth and the organic matter content.

This soil is well suited to many hardwoods and conifers. Potential productivity is moderately high. Operating logging equipment during wet periods increases the hazard of erosion on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion. There are few limitations to most types of forest management practices.

The seasonal high water table is a limitation to use of this soil for shallow excavations, dwellings with or without basements, small commercial buildings, and lawns and landscaping. This limitation can be overcome by installing a drainage system. For small commercial buildings, slope can be overcome by cutting and shaping the slope. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability in the substratum are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Seepage and slope are limitations for sewage lagoons.

The seasonal high water table is a limitation to use of this soil as sites for many recreation uses. This limitation can be overcome by installing a drainage system. For playgrounds, slope can be overcome by cutting and shaping the slope, and small stones on the surface can be removed.

This soil is in capability subclass IIw.

798—Peru stony loam, 0 to 8 percent slopes. This soil is nearly level to gently sloping and moderately well drained. It is mainly in slight depressions on hilly uplands. Some areas of the soil are on smooth-sided, oval-shaped hills called drumlins. Areas of this soil are long and narrow in shape, and range from 5 to 75 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 2 inches of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 4 inches of dark brown loam. The subsoil, to a depth of 20 inches, is yellowish red loam in the upper part, mottled, yellowish brown loam in the middle part, and mottled, light yellowish brown sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, olive gray sandy loam in the upper part, mottled, light brownish gray, firm sandy loam in the middle part, and olive, firm fine sandy loam in the lower part.

Included with this soil in mapping are scattered small areas of Skerry soils, Marlow soils on slightly higher parts of the landscape, and Pillsbury soils in slight depressions. Also included are scattered small areas of soils that have slopes of 8 to 15 percent. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Peru soil is moderate in the surface layer and subsoil and slow or moderately slow in the firm part of the substratum. The available water capacity is moderate. The firm part of the substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the firm part of the substratum from November through April. Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are wooded. A few areas are used for pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are also a limitation for pasture and hay. The surface stones especially interfere with cultivation and harvesting machinery. If the surface is cleared of stones, the soil is suited to row crops, hay, and pasture.

This soil is well suited to many hardwoods and conifers. Potential productivity is moderately high. Operating logging equipment during wet periods increases the hazard of erosion on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion. There are few limitations to most types of forest management practices.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can be overcome by installing a drainage system. For small commercial buildings, slope can be overcome by cutting and shaping the slope. Installing a drainage system and removing the stones help in the establishment and maintenance of lawns and landscaping. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability in the substratum are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Seepage and slope are limitations for sewage lagoons. Slope can be overcome by cutting and shaping the slope.

This soil is well suited to use as habitat for woodland wildlife. Wild herbaceous plants, hardwoods, and conifers can be easily established, improved, and maintained. There are few or no limitations to management.

This soil is in capability subclass VIs.

79C—Peru stony loam, 8 to 15 percent slopes. This soil is strongly sloping and moderately well drained. It is mainly in broad depressions on hilly uplands. Some areas of the soil are on smooth-sided, oval-shaped hills called drumlins. Areas of this soil are long and narrow in shape, and range from 5 to 30 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 2 inches of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 4 inches of dark brown loam. The subsoil, to a depth of 20 inches, is yellowish red loam in the upper part, mottled, yellowish brown loam in the middle part, and mottled, light yellowish brown sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, olive gray sandy loam in the upper part, mottled, light brownish gray, firm sandy loam in the middle part, and olive, firm fine sandy loam in the lower part. In some areas the substratum is loamy sand.

Included with this soil in mapping are small areas of Marlow soils on slightly higher parts of the landscape and Pillsbury soils in shallow depressions. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up 10 percent of the map unit.

Permeability of this Peru soil is moderate in the surface layer and subsoil and slow or moderately slow in the firm part of the substratum. The available water capacity is moderate. The firm part of the substratum limits the depth of the root zone. The seasonal high water table is perched on the firm part of the substratum from November through April. Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are wooded. A few areas are used for pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface are also a limitation for pasture and hay. The stones interfere with cultivation and harvesting machinery.

This soil is well suited to many hardwoods and conifers. Potential productivity is moderately high. Operating logging equipment during wet periods increases the hazard of erosion on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion. There are few limitations to forest management.

The seasonal high water table, slope, potential frost action, and stones on the surface are limitations to use of this soil for building site development. The seasonal high water table can be overcome by installing a drainage system for excavations, dwellings with and without basements, small commercial buildings, and lawns and landscaping. Slope can be overcome by cutting and shaping. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. Removing the stones helps in the establishment and maintenance of lawns and landscaping.

The seasonal high water table and permeability in the substratum are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Slope and seepage are limitations for sewage lagoons. Slope can be overcome by cutting and shaping the slope.

Slope, stones on the surface, and the seasonal high water table are limitations to use of this soil as sites for recreation development. For camp and picnic areas, these limitations can be overcome respectively by cutting and shaping the slope, removing the stones, and installing a drainage system.

This soil is well suited to use as habitat for woodland wildlife. Wild herbaceous plants, hardwoods, and conifers can be easily established, improved, or maintained. There are few or no limitations to management.

This soil is in capability subclass Vis.

79D—Peru stony loam, 15 to 25 percent slopes. This soil is moderately steep and moderately well drained. It is mainly in slight depressions on hilly uplands. Some areas of the soil are on smooth-sided, oval-shaped hills called drumlins. Areas of this soil are long and narrow in shape, and range from 5 to 30 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by about 2 inches of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 4 inches of dark brown loam. The subsoil, to a depth of 20 inches, is yellowish red loam in the upper part, mottled, yellowish brown loam in the middle part, and mottled, light yellowish brown sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, olive gray sandy loam in the upper part, mottled, light brownish gray, firm sandy loam in the middle part, and olive, firm fine sandy loam in the lower part.

Included with this soil in mapping are scattered small areas of Skerry soils and small areas of Marlow soils on the slightly higher parts of the landscape. Also included are scattered small areas of soils that have slopes of 8 to 15 percent or 25 to 35 percent. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up 15 percent of the map unit.

Permeability of this Peru soil is moderate in the surface layer and subsoil and slow to moderately slow in the firm part of the substratum. The available water capacity is moderate. The firm part of the substratum limits the depth of the root zone. The seasonal high water table is perched on the firm part of the substratum

from November through April. Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are wooded. A few areas are used for pasture.

This soil generally is not suited to row crops because of stones on the surface. Stones on the surface are also a limitation for pasture and hay. The stones interfere especially with cultivation and harvesting machinery.

This soil is well suited to many hardwoods and conifers. Potential productivity is moderately high. Slope is a limitation to equipment operation. The erosion hazard on logging roads and skid trails is increased if equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion and permits easier and safer operation of the equipment. There are few limitations to most forest management practices.

Slope is a limitation to use of this soil for all types of building site development. The seasonal high water table is a limitation for shallow excavations and dwellings with basements.

The seasonal high water table, permeability in the substratum, and slope are limitations to use of this soil as sites for septic tank absorption fields. Slope is a limitation for sewage lagoons.

This soil is well suited to use as habitat for woodland wildlife. Wild herbaceous plants, hardwoods, and conifers can be easily established, improved, or maintained. There are few or no limitations to management.

This soil is in capability subclass Vis.

101—Ondawa fine sandy loam. This soil is nearly level and well drained. It is on flood plains. Areas of the soil are irregularly shaped, and range from 5 to 80 acres. Slopes range from 0 to 3 percent.

Typically, the surface layer is dark brown fine sandy loam about 10 inches thick. The subsoil, to a depth of 32 inches, is yellowish brown fine sandy loam in the upper part and light olive brown sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is olive yellow loamy sand in the upper part, light yellowish brown and olive yellow sand and coarse sand in the middle part, and brownish yellow sand in the lower part. In some areas the substratum has layers of gravel as much as 5 inches thick or is sandy loam or fine sandy loam. In other areas the surface layer and subsoil are sand or loamy sand.

Included with this soil in mapping are small areas of Podunk soils in slight depressions. Also included are a few areas of this Ondawa soil that are flooded less frequently than most areas. The included soils make up about 10 percent of the map unit.

Permeability of this Ondawa soil is moderately rapid in the surface layer and subsoil and moderately rapid to rapid in the substratum. The available water capacity is high. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate. Flooding for periods of 2 to 7 days is common from October through April.

Most areas of this soil are farmed. Silage corn, vegetables, and hay are common crops.

This soil can be cropped continuously if it is protected from flooding. In unprotected areas that are subject to erosion by floodwaters, the soil is better suited to hay and pasture than to row crops (fig. 8). The soil is suited to legumes that withstand flooding. A permanent strip of sod or trees along streams helps to control streambank erosion.

This soil is suited to most trees. Potential productivity is moderate. There are few limitations to forest management practices and to logging operations.

Flooding is the main limitation to use of this soil for most types of building site development and as sites for septic tank absorption fields, sewage lagoons, and recreation use.

This soil is a probable source of sand for use in construction.

This soil is in capability subclass I.

104—Podunk fine sandy loam. This soil is nearly level and moderately well drained. It is in slight depressions on flood plains. Areas of the soil are long and narrow in shape and range from 3 to 15 acres.

Typically, the surface layer is dark brown fine sandy loam about 9 inches thick. The subsoil, to a depth of 29 inches, is yellowish brown fine sandy loam in the upper part and mottled, yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, light olive brown loamy fine sand in the upper part and mottled, light olive brown loamy sand in the lower part. In some areas the substratum has layers of gravel as much as 5 inches thick or is sandy loam or fine sandy loam.

Included with this soil in mapping are small areas of Rumney soils in depressions and Ondawa soils on the higher parts of the flood plain. The included soils make up 15 percent of the map unit.

Permeability of this Podunk soil is moderately rapid in the surface layer and subsoil and moderately rapid or rapid in the substratum. The available water capacity is high. Depth to bedrock is more than 60 inches. The soil is subject to frequent flooding from November through May. In most years the seasonal high water table is at a depth of 1 1/2 to 3 feet during the same period. Potential frost action is high.

Most areas of this soil are used for pasture or grass-legume hay (fig. 9).

The flooding hazard and the seasonal high water table are limitations to use of this soil for row crops, hay, and pasture. If the soil is not drained, the seasonal high water table restricts the choice of crops and delays cultivation in spring. If adequately drained, the soil is suited to some moisture-tolerant grasses and legumes

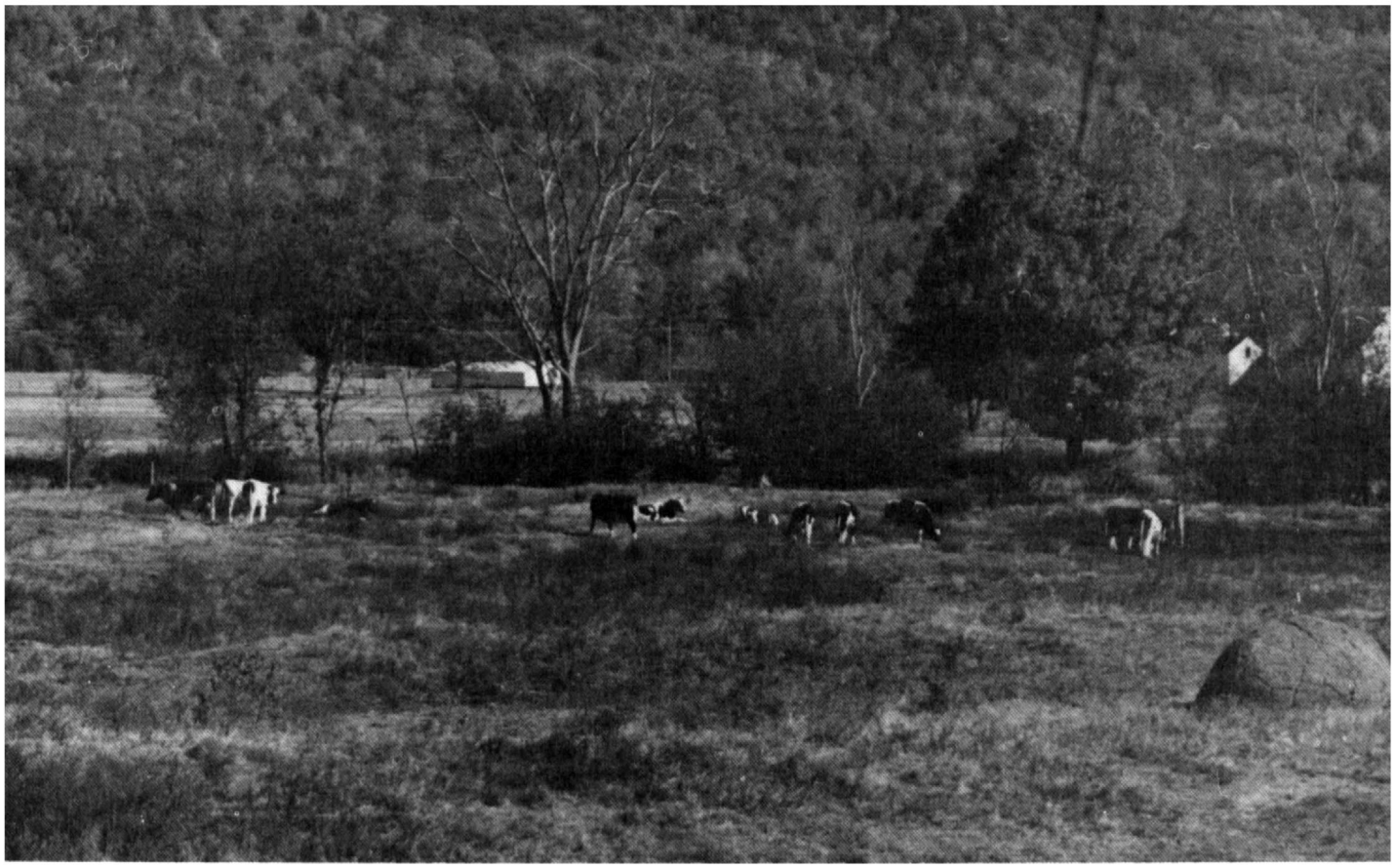


Figure &.—Pasture and hayland on prime farmland soils. Ondawa fine sandy loam is in the foreground, and Podunk fine sandy loam is in the middle ground.

for hay and pasture. A permanent strip of sod or trees along streams helps to control streambank erosion.

This soil is well suited to many species of trees. Potential productivity is moderately high. There are few limitations to management and to use of equipment.

The flooding hazard and the seasonal high water table are limitations to use of this soil for building site development and as sites for sanitary facilities and recreation development.

This soil is a probable source of sand and gravel for use in construction.

This soil is in capability subclass IIw.

105—Rumney loam. This soil is nearly level and poorly drained. It is in depressions on flood plains (fig. 10). Areas of the soil are long and narrow in shape, and range from 3 to 15 acres.

Typically, the surface layer is covered by 1 inch of fresh leaf litter. The surface layer consists of 1 inch of decomposed leaf litter over 3 inches of very dark brown loam. The subsoil, to a depth of 31 inches, is mottled, very dark grayish brown loam. The substratum, to a depth of 60 inches or more, is light brownish gray gravelly sand in the upper part, dark brown gravelly sand in the middle part, and olive brown loamy fine sand in the lower part. In some areas the substratum does not have gravel. In some areas the soil is loam, silt loam, or fine sandy loam throughout.

Included with this soil in mapping are small areas of Podunk soils on slightly higher parts of the landscape and very poorly drained soils in depressions. The included soils make up about 20 percent of the map unit.

Permeability of this Rumney soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is high. Depth to bedrock is more than 60 inches. The soil is subject to frequent flooding from October through May. In most years the seasonal high water table is between the surface and a depth of 18 inches from November through June. Potential frost action is high.

Most areas of this soil are in woodland. A few areas are used for hay or pasture.

This soil is not suited to truck crops or row crops because of the seasonal high water table and frequent flooding. If adequately drained, the soil is suited to some moisture-tolerant grasses and legumes for hay and pasture. A permanent strip of sod or trees along streams helps to control streambank erosion.

This soil is suited to species of water-tolerant trees. Potential productivity is moderate. The seasonal high water table is a limitation to most types of forest management and to use of equipment in logging operations. The equipment limitation can be overcome by operating equipment during the drier parts of the year.

The seasonal high water table and frequent flooding are limitations to use of this soil for building site development and as sites for septic tank absorption fields, sewage lagoons, and some types of recreation development.

This soil is a probable source of sand for use in construction.

This soil is suited to use as habitat for openland, woodland, and wetland wildlife. Any of these habitats can be established, improved, or maintained, but moderately intensive management is needed to obtain satisfactory results. In the flattest areas of the soil, wetland plants and shallow water areas can be more easily established, improved, or maintained, and there are few or no limitations to management.

This soil is in capability subclass IIIw.

142B—Monadnock fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on hilltops and at the base of slopes on hilly uplands. Areas of the soil are irregularly shaped and range from 5 to 100 acres.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this soil in mapping are scattered small areas of Becket and Tunbridge soils and small areas of Skerry soils in slight depressions. Also included are scattered small areas of soils that have slopes of 0 to 3 percent or 8 to 15 percent. Also included are some

Figure 9.—Pasture on Podunk fine sandy loam. This is a prime farmland soil.

areas where a few stones are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are used for hay or pasture. A few areas are used for cultivated crops or as orchards, and some areas are used for residential development.

This soil is well suited to silage corn, grasses and legumes, hay, and pasture. Erosion is a hazard if the soil is used continuously for row crops. Contour farming, stripcropping, using cover crops, and including grasses and legumes in the cropping system help to control erosion.

This soil is suited to drought-tolerant conifers and hardwoods, such as eastern white pine and northern red oak. Potential productivity is moderate. There are few limitations to most types of forest management and to logging operations.

There are few limitations to use of this soil as sites for dwellings with or without basements and for lawns and landscaping. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope. For small commercial buildings, slope can be overcome by cutting and shaping the slope.

There are few limitations to use of this soil as sites for septic tank absorption fields. Seepage is a limitation for sewage lagoons.

This soil is a probable source of sand for use in construction.

There are few limitations to use of this soil as sites for camp and picnic areas and paths and trails. Small stones on the surface and slope are limitations for playgrounds. These limitations can be overcome respectively by removing the stones and by cutting and shaping the slope.

This soil is in capability subclass IIe.

142C—Monadnock fine sandy loam, 8 to 15 percent slopes. This soil is strongly sloping and well drained. It is on side slopes on hilly uplands. Areas of the soil are irregularly shaped, and range from 5 to 25 acres.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this soil in mapping are scattered small areas of Becket and Tunbridge soils and areas of soils that have slopes of 3 to 8 percent or 15 to 25 percent. Also included are small areas of Skerry soils in slight depressions and some areas where a few stones are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

This soil is used for pasture or hay. A few areas are used for cultivated crops or as orchards.

This soil is suited to hay and pasture. The erosion hazard is a limitation for row crops. Including grasses and legumes in the cropping system, contour farming, stripcropping, and using diversions help to control erosion in cultivated areas. Adding manure and mixing crop residue into the soil increase the organic matter content and help to maintain the soil tilth and to conserve moisture.

This soil is suited to drought-tolerant conifers and hardwoods, such as eastern white pine and northern red oak. Potential productivity is moderate. There are few limitations to most types of forest management and to logging operations.

Slope is a limitation to use of this soil for many types of building site development. This limitation can be overcome by cutting and shaping the slope and by careful design and layout of the sites. Cutbanks of some shallow excavations cave in unless shored up or cut back to a more stable slope.

Slope is a limitation to use of this soil as sites for septic tank absorption fields. Special design and proper installation prevent lateral seepage of the effluent to downslope areas. Seepage and slope are limitations for sewage lagoons. Slope can be overcome by cutting and shaping the slope.

This soil is a probable source of sand for use in construction.

Slope is a limitation for camp and picnic areas. This limitation can be overcome by cutting and shaping the slope and by careful design and layout of the individual areas. There are few limitations for paths and trails.

This soil is in capability subclass IIIe.

143B—Monadnock stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on hilltops and side slopes (fig. 10) on wooded uplands. Areas of the soil are irregularly shaped and range from 5 to 150 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part

Figure 10.—A typlcal landscape showing the relationship of some sons. In the foreground Is Monadnock stony fine sandy loam, 3 to 8 percent slopes, on a side slope. In the mlddle ground, In front of the tree line, Is Adams loamy sand, 3 to 8 percent slopes, on a terrace. Behind the tree line Is Rumney loam on a flood plaln. In the background Is Monadnock stony fine sandy loam, 15 to 35 percent slopes, on a hillside.

and very pale brown gravelly loamy sand in the lower part.

Included with this soil in mapping are scattered small areas of Becket, Tunbridge, and Colton soils and, in shallow depressions, Skerry soils. Also included are scattered small areas of soils that have slopes of 0 to 3 percent or 8 to 15 percent. Also included are some areas where stones less than 5 feet apart and a few boulders are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded. A few areas are used for residential development.

This soil is not suited to row crops and is poorly suited to improved pasture or hay because of stones on the surface.

This soil is suited to drought-tolerant conifers and hardwoods, such as eastern white pine and northern red oak. Potential productivity is moderate. There are few limitations to most forest management practices and to logging operations.

There are few limitations to use of this soil as sites for dwellings with or without basements. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope. For small commercial buildings, slope can be overcome by cutting and shaping the slope. Large stones, unless removed, are a limitation for lawns and landscaping.

There are few limitations to use of this soil as sites for septic tank absorption fields. Seepage is a limitation for sewage lagoons.

This soil is a probable source of sand for use in construction.

Stones, unless removed, are a limitation for camp areas, picnic areas, and playgrounds. There are few limitations for paths and trails.

This soil is in capability subclass Vis.

143C—Monadnock stony fine sandy loam, 8 to 15 percent slopes. This soil is strongly sloping and well drained. It is on side slopes and hills on wooded uplands. Areas of the soil are irregularly shaped and range from 5 to 150 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this soil in mapping are scattered small areas of Becket and Tunbridge soils and areas of Skerry soils in shallow depressions. Also included are areas of soils that have slopes of 3 to 8 percent or 15 to 35 percent. Also included are some areas where stones less than 5 feet apart and a few boulders are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are wooded. A few areas are used for unimproved pasture, residential development, or commercial development.

This soil is not suited to row crops and is poorly suited to hay or improved pasture because of stones on the surface.

This soil is suited to drought-tolerant conifers and hardwoods, such as eastern white pine and northern red oak. Potential productivity is moderate. There are few limitations to most forest management practices and to logging operations.

Slope is a limitation to use of this soil for many types of building site development. This limitation can be overcome by cutting and shaping the slope and by careful design and layout of the sites (fig. 11). Stones, unless removed, are a limitation for lawns and landscaping. Cutbanks of some shallow excavations cave in unless shored up or cut back to a more stable slope.

Slope is a limitation to use of this soil as sites for septic tank absorption fields. Special design and proper installation help to prevent lateral seepage of the effluent to downslope areas. Seepage and slope are limitations for sewage lagoons. Slope can be overcome by cutting and shaping the slope.

This soil is a probable source of sand for use in construction.

Slope and large stones on the surface are limitations to use of this soil as sites for camp and picnic areas. Slope can be overcome by cutting and shaping the slope and by careful design and layout of the individual sites. The large stones can be removed. There are few limitations for paths and trails.

This soil is in capability subclass Vis.

143D—Monadnock stony fine sandy loam, 15 to 35 percent slopes. This soil is moderately steep to steep and well drained. It is on hillsides on wooded uplands (fig. 10). Areas of the soil are long and narrow in shape and range from 5 to 75 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22

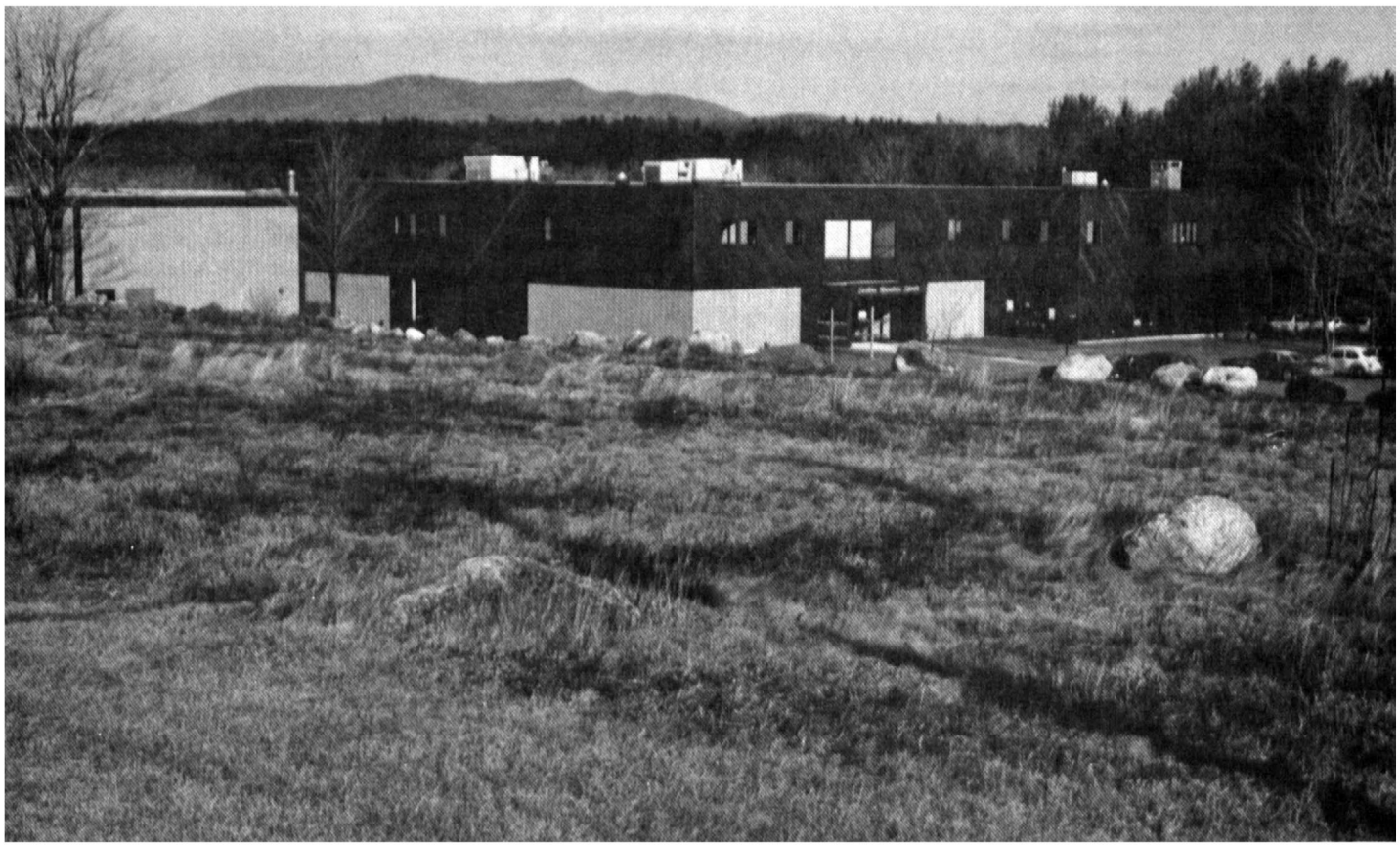


Figure 11.—A small commercial building on Monadnock stony fine sandy loam, 8 to 15 percent slopes.

inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this soil in mapping are scattered small areas of Tunbridge, Lyman, and Becket soils. Also included are small areas of soils that have slopes of 8 to 15 percent or 35 to 60 percent. Also included are some areas where stones less than 5 feet apart and a few boulders are on the surface. The included soils make up about 15 percent of the map unit.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most of the acreage of this soil is wooded. A few areas are used for unimproved pasture.

This soil is not suited to row crops because of slope and stones on the surface. Stones on the surface are also a limitation for hay and pasture.

This soil is suited to drought-tolerant conifers and hardwoods, such as eastern white pine and northern red oak. Potential productivity is moderate. There are few limitations to most forest management practices. Slope is a limitation to equipment operation. The erosion hazard on logging roads and skid trails is increased if equipment is used during wet periods. Laying out these roads and trails on the contour helps to control erosion and permits easier and safer use of the equipment.

Slope is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and recreation development.

This soil is a probable source of sand for use in construction.

This soil is in capability subclass VIIs.

145C—Monadnock very bouldery fine sandy loam, 8 to 15 percent slopes. This strongly sloping, well

drained soil is on hills and low mountains. Areas of the soil are irregularly shaped, and range from 5 to 200 acres. Stones 1 to 2 feet in diameter and boulders 2 to 15 feet in diameter are 3 to 10 feet apart on the surface. Most of the boulders and the bedrock underlying areas of this map unit are Kinsman Quartz Monzonite.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this soil in mapping are scattered small areas of Lyman, Tunbridge, Marlow, and Becket soils, small areas of Skerry soils in shallow depressions, and isolated spots of wet soils in depressions. Also included are scattered small areas of soils that have slopes of 3 to 8 percent or 15 to 35 percent. Also included are some areas where stones and boulders less than 3 feet apart are on the surface. The included soils make up about 25 percent of the map unit.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are used as woodland.

This soil generally is not suited to farming because of stones and boulders on the surface.

This soil is suited to drought-tolerant conifers and hardwoods, such as eastern white pine and northern red oak. Potential productivity is moderate. There are few limitations to most forest management practices, but equipment operations are hampered by the boulders.

Slope is a limitation to use of this soil for many types of building site development. This limitation can be overcome by cutting and shaping the slope and by careful design and layout of the site. Large stones and boulders are limitations for local roads and streets and for lawns and landscaping. Removing the stones and boulders is difficult without use of large machinery or of blasting. In places laying out roads and streets to avoid the boulders is more feasible. Cutbanks of some shallow excavations cave in unless shored up or cut back to a more stable slope.

Slope is a limitation to use of this soil as sites for septic tank absorption fields. Special design and proper installation prevent lateral seepage of effluent to downslope areas. Seepage and slope are limitations for sewage lagoons.

This soil is a probable source of sand for use in construction.

The slope and large stones and boulders on the surface are limitations to use of this soil as sites for camp and picnic areas. The slope can be modified by cutting and shaping. The smaller stones and boulders can be removed. The larger boulders can be avoided through careful design and layout of the individual sites. There are few limitations for paths and trails.

This soil is in capability subclass VIIs.

145D—Monadnock very bouldery fine sandy loam, 15 to 35 percent slopes. This moderately steep to steep, well drained soil is on hills and low mountains in the northwestern part of the survey area. Areas of the soil are irregularly shaped, and range from 30 to 200 acres. Stones 1 to 2 feet in diameter and boulders 2 to 15 feet in diameter are 3 to 10 feet apart on the surface. The boulders for the most part and the bedrock underlying areas of this soil are Kinsman Quartz Monzonite.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red fine cobbly sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this soil in mapping are scattered small areas of Lyman, Tunbridge, Marlow, and Becket soils. Also included are scattered small areas of soils that have slopes of 8 to 15 percent or 35 to 60 percent. Also included are some areas where stones and boulders less than 3 feet apart are on the surface. The included soils make up about 25 percent of the map unit.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this soil are in woodland.

This soil generally is not suited to farming because of stones and boulders on the surface and slope.

This soil is suited to drought-tolerant conifers and hardwoods, such as eastern white pine and northern red oak. Potential productivity is moderate. There are few limitations to most forest management practices, but use of equipment is limited by boulders and slope (fig. 12). The erosion hazard on logging roads and skid trails is increased if equipment is used during wet periods. Laying out logging roads and skid trails on the contour wherever possible helps to control erosion and permits easier and safer use of equipment.

Slope is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and recreation development.

This soil is a probable source of sand for use in construction.

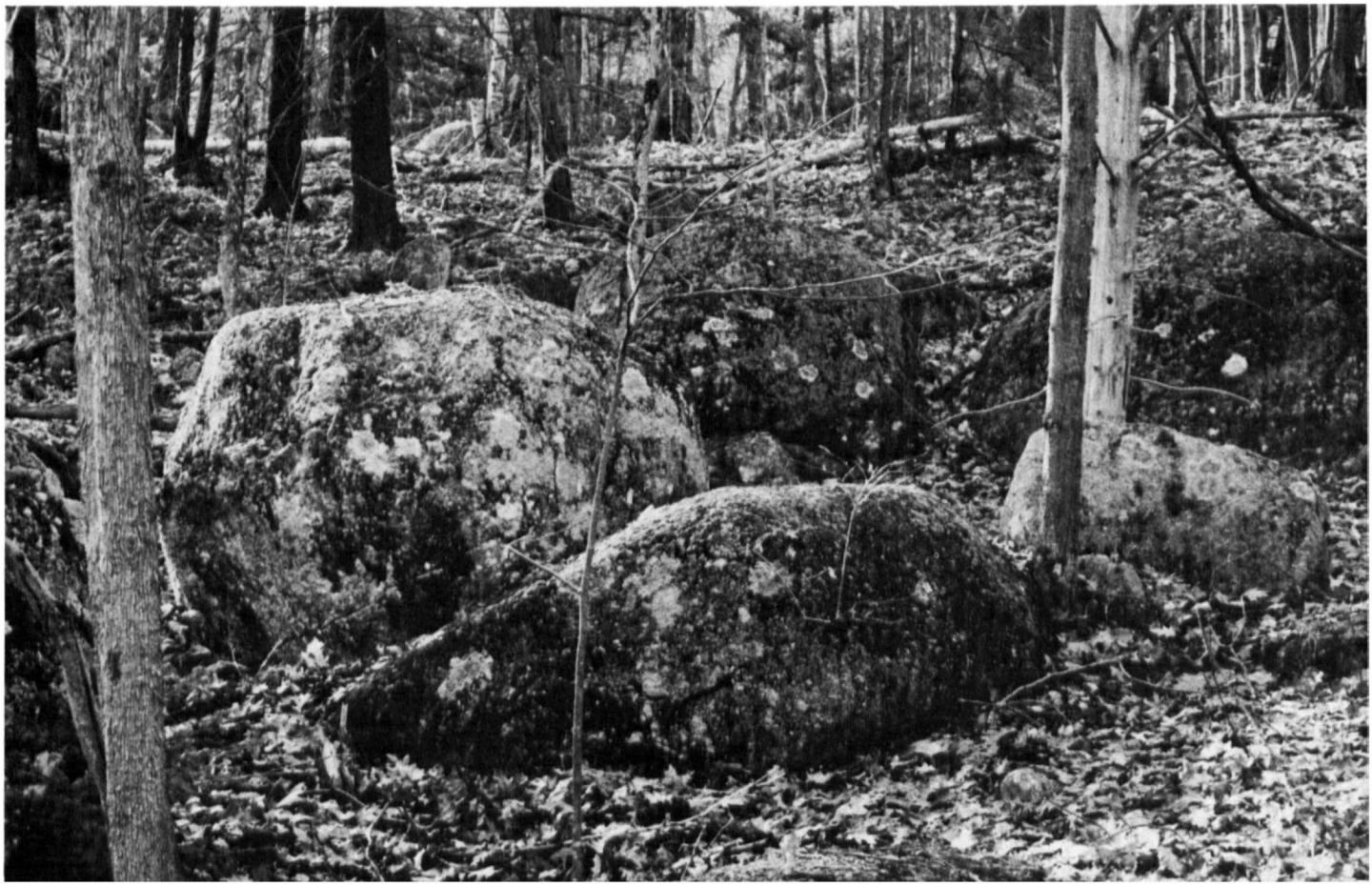


Figure 12.—An area of Monadnock very bouldery fine sandy loam, 15 to 35 percent slopes. Boulders on the surface and slope limit the use of logging equipment.

This soil is in capability subclass VIIs.

1608—Tunbridge-Lyman-Monadnock complex, stony, 3 to 8 percent slopes. This complex consists of gently sloping soils that generally are on hilltops and ridgetops. It is about 35 percent well drained, moderately deep Tunbridge soil; 30 percent somewhat excessively drained, shallow Lyman soil; 25 percent well drained, very deep Monadnock soil; and 10 percent other soils. The soils are in such an intricate pattern that it was not practical to map them separately. The Lyman and Tunbridge soils generally are on ridges and knolls, and the Monadnock soil is in lower positions. The mapped areas are irregularly shaped, and range from 10 to 50 acres. Stones 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer of the Tunbridge soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red channery fine sandy loam in the upper part and strong brown channery fine sandy loam in the lower part. The substratum, to a depth of 30 inches, is yellowish brown channery fine sandy loam. Bedrock is below a depth of 30 inches.

Typically, the surface layer of the Lyman soil is covered by about 2 inches of leaf litter. The surface layer is 2 inches of decomposed leaf litter. The subsurface layer is gray sandy loam 2 inches thick. The subsoil, to a depth of 15 inches, is reddish brown gravelly fine sandy loam. Bedrock is below a depth of 15 inches.

Typically, the surface layer of the Monadnock soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine

sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this complex in mapping are small areas of Marlow soils on the higher parts of the landscape and isolated wet spots in slight depressions. Also included are scattered small areas of soils that are very shallow to bedrock, soils that are deep to bedrock, and of Rock outcrop. Also included are scattered areas where stones more than 30 feet apart are on the surface.

Permeability of this Tunbridge soil is moderately rapid. The available water capacity is moderate. Depth to bedrock is 20 to 40 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Lyman soil is moderately rapid. The available water capacity is very low. Depth to bedrock is 8 to 20 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock generally is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this complex are in woodland, but some small areas are used for pasture and hay.

Because of surface stones and shallowness to rock on the Lyman soil, the soils making up this complex are better suited to grasses and legumes, hay, and pasture than to row crops.

These soils are suitable for a variety of hardwoods and conifers. Potential productivity is moderately high for the Tunbridge soil and moderate for the Lyman and Monadnock soils. There are few limitations to most types of forest management and to logging operations, but seedling mortality and windthrow are hazards on the Lyman soil. There are few limitations to use of logging equipment. Laying out logging roads and skid trails on the contour helps to control erosion.

Depth to bedrock is a limitation to use of the Tunbridge and Lyman soils for building site development. This limitation can be overcome by laying out the building site in an area of the Monadnock soil. On the Monadnock soil, cutbanks of some shallow excavations cave in unless shored up or cut back to a more stable slope. On the Tunbridge soil, frost action is a limitation for local roads and streets. This limitation can be overcome by installing a drainage system and by providing a coarser grained base material. On the Lyman soil, droughtiness is a limitation for lawns and landscaping. This limitation can be overcome by mulching and watering the soil.

Seepage is a limitation to use of these soils as sites for sewage lagoons. Depth to bedrock is a limitation to use of the Tunbridge and Lyman soils as sites for septic tank absorption fields and sewage lagoons. This limitation can be overcome by laying out these sanitary facilities in an area of the Monadnock soil.

The Monadnock soil is a probable source of sand for use in construction.

Stones on the surface and depth to bedrock are limitations to use of these soils as sites for recreation development. For camp and picnic areas, the surface can be cleared of stones. Depth to bedrock can be overcome by locating the individual sites in areas of Tunbridge and Monadnock soils. There are few limitations for paths and trails.

These soils are in capability subclass Vis.

160C—Tunbridge-Lyman-Monadnock complex, stony, 8 to 15 percent slopes. This complex consists of strongly sloping soils generally on the tops and sides of hills and ridges. It is about 35 percent well drained, moderately deep Tunbridge soil; 30 percent somewhat excessively drained, shallow Lyman soil; 25 percent well drained, very deep Monadnock soil; and 10 percent other soils. The soils are in such an intricate pattern that it was not practical to map them separately. The Lyman and Tunbridge soils generally are on ridges and knolls, and the Monadnock soil is in lower positions. The mapped areas are irregularly shaped, and range from 10 to 50 acres. Stones 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer of the Tunbridge soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red channery fine sandy loam in the upper part and strong brown channery fine sandy loam in the lower part. The substratum, to a depth of 30 inches, is yellowish brown channery fine sandy loam. Bedrock is below a depth of 30 inches.

Typically, the surface layer of the Lyman soil is covered by about 2 inches of fresh leaf litter. The surface layer is 2 inches of decomposed leaf litter. The subsurface layer is gray sandy loam 2 inches thick. The subsoil, to a depth of 15 inches, is reddish brown gravelly fine sandy loam. Bedrock is below a depth of 15 inches.

Typically, the surface layer of the Monadnock soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this complex in mapping are small areas of Marlow soils on the higher parts of the landscape, isolated wet spots in slight depressions, and scattered areas of soils that are shallow to bedrock. Also included are scattered small areas of soils that are deep to bedrock and of Rock outcrop and scattered areas where stones more than 30 feet apart are on the surface.

Permeability of this Tunbridge soil is moderately rapid. The available water capacity is moderate. Depth to bedrock is 20 to 40 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Lyman soil is moderately rapid. The available water capacity is very low. Depth to bedrock is 8 to 20 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock generally is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this complex are in woodland. Some small areas are used for pasture and hay.

The soils making up this complex are better suited to grasses and legumes, hay, and pasture than to row crops because of depth to bedrock and stones on the surface. Bedrock near the soil surface interferes with cultivation machinery.

These soils are suited to a variety of hardwoods and conifers. Potential productivity is moderately high for the Tunbridge soil and moderate for the Lyman and Monadnock soils. There are few limitations to most forest management practices. On the Lyman soil, seedling mortality and windthrow are hazards. There are few limitations to operation of logging equipment. Laying out logging roads and skid trails on the contour helps to control erosion.

Depth to bedrock is the main limitation to use of the Tunbridge and Lyman soils for building site development. This limitation can be overcome by laying out the building site in an area of the Monadnock soil. In some areas slope is a limitation for some types of building site development. This limitation can be overcome by cutting and shaping the slope. On the Monadnock soil, cutbanks of some shallow excavations may cave in unless shored up or cut back to a more stable slope. On the Tunbridge soil, potential frost action is a limitation for roads and streets. This limitation can be overcome by installing a drainage system and by providing a coarser grained base material. On the Lyman soil, droughtiness is a limitation for lawns and landscaping. This limitation can be overcome by mulching and watering the soil.

Slope is a limitation to use of these soils as sites for septic tank absorption fields. Seepage and slope are limitations for sewage lagoons. Depth to bedrock is a limitation to use of the Tunbridge and Lyman soils as sites for septic tank absorption fields and sewage lagoons. This limitation can be overcome by laying out these facilities in an area of the Monadnock soil.

The Monadnock soil is a probable source of sand for use in construction.

Depth to bedrock, slope, and stones on the surface are limitations to use of these soils as sites for camp and picnic areas. Depth to bedrock can be overcome by laying out the individual sites on the Tunbridge and Monadnock soils. Slope can be overcome by cutting and shaping the slope. The surface can be cleared of stones. There are few limitations for paths and trails.

These soils are in capability subclass *VIs*.

160D—Tunbridge-Lyman-Monadnock complex, stony, 15 to 25 percent slopes. This complex consists of moderately steep soils that generally are on the sides of hills and ridges. It is about 35 percent well drained, moderately deep Tunbridge soil; 30 percent somewhat excessively drained, shallow Lyman soil; 25 percent well drained, very deep Monadnock soil; and 10 percent other soils. The soils are in such an intricate pattern that it was not practical to map them separately. The Lyman and Tunbridge soils generally are on ridges and knolls, and the Monadnock soil is in lower positions. The mapped areas are irregularly shaped, and range from 10 to 50 acres. Stones 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer of the Tunbridge soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red channery fine sandy loam in the upper part and strong brown channery fine sandy loam in the lower part. The substratum, to a depth of 30 inches, is yellowish brown channery fine sandy loam. Bedrock is below a depth of 30 inches.

Typically, the surface layer of the Lyman soil is covered by about 2 inches of fresh leaf litter. The surface layer is 2 inches of decomposed leaf litter. The subsurface layer is gray sandy loam 2 inches thick. The subsoil, to a depth of 15 inches, is reddish brown gravelly fine sandy loam. Bedrock is below a depth of 15 inches.

Typically, the surface layer of the Monadnock soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red cobbly fine sandy loam in the upper part and dark yellowish brown fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam in the upper part and very pale brown gravelly loamy sand in the lower part.

Included with this complex in mapping are scattered small areas of Marlow soils and areas of Rock outcrop. Also included are areas of soils that are deep or very shallow to bedrock and areas where stones more than 30 feet apart are on the surface.

Permeability of this Tunbridge soil is moderately rapid. The available water capacity is moderate. Depth to bedrock is 20 to 40 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Lyman soil is moderately rapid. The available water capacity is very low. Depth to bedrock is 8 to 20 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The available water capacity is moderate. Depth to bedrock generally is more than 60 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is low.

Most areas of this complex are wooded. A few areas are used for pasture.

The soils making up this complex are suited to a variety of hardwoods and conifers. Potential productivity is moderately high for the Tunbridge soil and moderate for the Lyman and Monadnock soils. There are few limitations to many forest management practices. On the Lyman soil, seedling mortality and windthrow are hazards. On all soils, slope is a limitation to use of equipment. Laying out logging roads and skid trails on the contour helps to control erosion and permits easier and safer use of equipment.

Slope is a limitation to use of these soils for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and most types of recreation development. On the Lyman and Tunbridge soils, depth to bedrock is a limitation for these uses.

The Monadnock soil is a probable source of sand for use in construction.

This soils are in capability subclass Vis.

161C—Lyman-Tunbrldge-Rock outcrop complex, 3 to 15 percent slopes. This complex consists of gently sloping to strongly sloping soils and areas of Rock outcrop that generally are on the tops and sides of hills and ridges. It is about 35 percent somewhat excessively drained, shallow Lyman soil; 30 percent well drained, moderately deep Tunbridge soil; 20 percent Rock outcrop; and 15 percent other soils. The mapped areas are irregularly shaped, and range from 10 to 50 acres. Stones 1 to 2 feet in diameter and 5 to 20 feet apart are on the surface. The soils and areas of Rock outcrop are in such an intricate pattern that it was not practical to map them separately. The Lyman soil and areas of Rock outcrop generally are on ridges and knolls, and the Tunbridge soil is in lower positions.

Typically, the surface layer of the Lyman soil is covered by about 2 inches of fresh leaf litter. The surface layer is 2 inches of decomposed leaf litter. The subsurface layer is gray sandy loam 2 inches thick. The subsoil, to a depth of 15 inches, is reddish brown gravelly fine sandy loam. Bedrock is below a depth of 15 inches.

Typically, the surface layer of the Tunbridge soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red channery fine sandy loam in the upper part and strong brown channery fine sandy loam in the lower part. The substratum, to a depth of 30 inches, is yellowish brown channery fine sandy loam. Bedrock is below a depth of 30 inches.

Rock outcrop consists of areas of exposed bedrock.

Included with this complex in mapping are scattered small areas of gently sloping Monadnock and Marlow soils, isolated spots of wet soils in depressions, and scattered small areas of soils that are very shallow or deep to bedrock.

Permeability of this Lyman soil is moderately rapid in the surface layer and subsoil. The available water capacity is very low. Depth to bedrock is 8 to 20 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Tunbridge soil is moderately rapid. The available water capacity is moderate. Depth to bedrock is 20 to 40 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Most areas of this complex are wooded.

In most areas the soils making up this complex generally are not suited to row crops, hay, or improved pasture because of depth to bedrock and droughtiness.

These soils are suited to a variety of hardwoods and conifers. Potential productivity is moderate for the Lyman soil and moderately high for the Tunbridge soil. On the Lyman soil, seedling mortality and windthrow are hazards. Rock outcrops restrict use of equipment.

Depth to bedrock is a limitation to use of these soils for most types of building site development and as sites for septic tank absorption fields and sewage lagoons. This limitation can be overcome by laying out building sites on the very deep included soils.

Depth to bedrock, slope, and stones on the surface are limitations to use of these soils as sites for recreation development. For camp and picnic areas, depth to bedrock can be overcome by laying out the individual sites on the Tunbridge soil. Slope and stones on the surface can be overcome respectively by cutting and shaping the slope and by removing the stones. For paths and trails, rock outcrops and large stones and boulders can be overcome by carefully laying out the route to avoid these obstacles.

These soils are in capability subclass Vis.

161D—Lyman-Tunbrldse-Rock outcrop complex, 15 to 35 percent slopes. This complex consists of moderately steep to steep soils and areas of exposed bedrock that generally are on the sides of hills and ridges. It is about 35 percent somewhat excessively drained, shallow Lyman soil, 30 percent well drained, moderately deep Tunbridge soil, 20 percent Rock outcrop, and 15 percent other soils. The mapped areas are irregularly shaped, and range from 10 to 50 acres. Stones 1 to 2 feet in diameter and 5 to 20 feet apart are

on the surface. The soils and areas of Rock outcrop are in such an intricate pattern that it was not practical to map them separately. The Lyman soil and areas of Rock outcrop generally are on ridges and knolls, and the Tunbridge soil is in lower positions.

Typically, the surface layer of the Lyman soil is covered by about 2 inches of fresh leaf litter. The surface layer is 2 inches of decomposed leaf litter. The subsurface layer is gray sandy loam 2 inches thick. The subsoil, to a depth of 15 inches, is reddish brown gravelly fine sandy loam. Bedrock is below a depth of 15 inches.

Typically, the surface layer of the Tunbridge soil is dark brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 22 inches, is yellowish red channery fine sandy loam in the upper part and strong brown channery fine sandy loam in the lower part. The substratum, to a depth of 30 inches, is yellowish brown channery fine sandy loam. Bedrock is below a depth of 30 inches.

Rock outcrop consists of areas of exposed bedrock.

Included with this complex in mapping are scattered small areas of the moderately steep Monadnock and Marlow soils, isolated spots of wet soils in depressions, and scattered small areas of soils that are very shallow to bedrock and soils that are deep to bedrock.

Permeability of this Lyman soil is moderately rapid in the surface layer and subsoil. The available water capacity is very low. Depth to bedrock is 8 to 20 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Permeability of this Tunbridge soil is moderately rapid. The available water capacity is moderate. Depth to bedrock is 20 to 40 inches. Depth to the seasonal high water table is more than 6 feet. Potential frost action is moderate.

Most areas of this complex are wooded.

In most areas the soils making up this complex are not suited to row crops, hay, or pasture because of depth to bedrock, droughtiness, and slope.

These soils are suited to a variety of hardwoods and conifers. Potential productivity is moderate for the Lyman soil and moderately high for the Tunbridge soil. On the Lyman soil, seedling mortality and windthrow are hazards. On both soils rock outcrops and slope are limitations to use of equipment.

Depth to bedrock and slope are limitations to use of these soils for building site development and as sites for septic tank absorption fields, sewage lagoons, and recreation development.

These soils are in capability subclass VIIs.

197—Borohemists, ponded. These soils are nearly level and very poorly drained. They are in marshes that commonly are around the edges of lakes and ponds or else are in depressions on terraces, outwash plains, and uplands. The marshes are covered by shallow water most of the time: many of them are the result of beaver dams. Areas of these soils are irregularly shaped, and range from 3 to 150 acres.

These soils differ from area to area: thus, a typical profile cannot be given. They generally consist of partly decayed organic material more than 16 inches thick.

Included with these soils in mapping are scattered small areas of Greenwood and Chocorua soils. The included soils and open water make up about 20 percent of the map unit.

Permeability of Borohemists, ponded, is moderately rapid. The available water capacity is high. Depth to bedrock is more than 60 inches. The seasonal high water table is at or above the surface during most of the year and seldom drops below a depth of 6 inches. Potential frost action is high.

Much of the acreage of these soils is covered by grasses, reeds, cattails, and sedges, a few red maple, tamarack, and black spruce, and cranberry. A small acreage is wooded.

These soils are not suited to most uses because of ponding and the seasonal high water table.

These soils are well suited to use as habitat for wetland wildlife. Wetland plants and shallow water areas can be easily established, improved, or maintained, and there are few limitations to management.

These soils are not assigned to a capability subclass.

214A—Naumburg fine sandy loam, 0 to 3 percent slopes. This soil is nearly level and somewhat poorly drained and poorly drained. It is in depressions on terraces and outwash plains. Areas of this soil are irregularly shaped, and range from 5 to 100 acres.

Typically, the surface layer consists of 2 inches of decomposed organic matter over 7 inches of black fine sandy loam. The subsurface layer, to a depth of 13 inches, is pinkish gray loamy sand. The subsoil, to a depth of 22 inches, is mottled, dark reddish brown loamy sand in the upper part; mottled, brown and reddish brown loamy sand in the middle part; and brown sand in the lower part. The substratum, to a depth of 60 inches or more, is mottled, light yellowish brown and pale brown sand. In a few areas the subsoil in the upper part is cemented. In some areas the subsoil and substratum have gravel. In the Contoocook River Valley, in a few areas the subsoil and substratum are mainly silt loam.

Included with this soil in mapping are scattered small areas of Croghan soils and areas of soils that have slopes of 3 to 8 percent. The included soils make up about 10 percent of the map unit.

Permeability of this Naumburg soil is moderately rapid in the surface layer and rapid in the subsoil and substratum. The available water capacity is low. Depth to bedrock is more than 60 inches. In most years the seasonal high water table is between the surface and a depth of 1 1/2 feet from December through April. Potential frost action is moderate.

Most areas of this soil are used as woodland.

The seasonal high water table is a limitation to use of this soil for row crops, hay, and pasture. If tile drains or open ditches are installed, the soil is suited to moisture-tolerant grasses and legumes.

This soil is suited to a variety of trees, mainly moisture-tolerant species, such as red maple. Potential productivity is moderate. The seasonal high water table is a limitation to some types of forest management practices and to use of equipment in logging operations. The equipment limitation can be overcome by operating equipment during the drier parts of the year.

The seasonal high water table is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and all types of recreation development.

This soil is a probable source of sand for use in construction.

This soil is suited to use as habitat for openland, woodland, and wetland wildlife. Habitat for openland and woodland wildlife can be established, improved, or maintained, but moderately intensive management is needed for satisfactory results. Wetland plants and shallow water areas can be established, improved, or maintained, and there are few limitations to management.

This soil is in capability subclass IVw.

214B—Naumburg fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and somewhat poorly drained and poorly drained. It is in depressions on terraces and outwash plains. Areas of the soil are irregularly shaped, and range from about 5 to 150 acres.

Typically, the surface layer consists of 2 inches of decomposed organic matter over 7 inches of black fine sandy loam. The subsurface layer, to a depth of 13 inches, is pinkish gray loamy sand. The subsoil, to a depth of 22 inches, is mottled, dark reddish brown loamy sand in the upper part; mottled, brown and reddish brown loamy sand in the middle part; and brown sand in the lower part. The substratum, to a depth of 60 inches or more, is mottled, light yellowish brown and pale brown sand. In a few areas the subsoil in the upper part is cemented. In some areas the subsoil and substratum have gravel. In the Contoocook River Valley, in a few areas the subsoil and substratum are mainly silt loam.

Included with this soil in mapping are scattered small areas of Croghan soils and areas of soils that have slopes of 0 to 3 percent. The included soils make up about 15 percent of the map unit.

Permeability of this Naumburg soil is moderately rapid in the surface layer and rapid in the subsoil and substratum. The available water capacity is low. Depth to bedrock is more than 60 inches. In most years the seasonal high water table is between the surface and a depth of 1 1/2 feet from December through April. Potential frost action is moderate.

Most areas of this soil are used as woodland.

The seasonal high water table is a limitation to use of this soil for row crops, hay, and pasture. If tile drains or open ditches are installed, the soil is suited to moisture-tolerant grasses and legumes.

This soil is suited to a variety of trees, mainly moisture-tolerant species, such as red maple. Potential productivity is moderate. The seasonal high water table is a limitation to some types of forest management and to equipment operations. The equipment limitation can be overcome by operating equipment during the drier parts of the year.

The seasonal high water table is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and all types of recreation development.

This soil is a probable source of sand for use in construction.

This soil is suited to use as habitat for openland and woodland wildlife. Habitat can be established, improved, or maintained, but moderately intensive management is needed for satisfactory results.

This soil is in capability subclass IVw.

246B—Lyme loam, 0 to 5 percent slopes. This soil is nearly level to gently sloping and poorly drained. It generally is in depressions on hilly uplands. Areas of the soil are irregularly shaped or long and narrow, and range from 3 to 20 acres.

Typically, the surface layer is black loam about 8 inches thick. The subsoil, to a depth of 22 inches, is mottled olive gray gravelly sandy loam. The substratum, to a depth of 60 inches or more, is mottled olive gravelly sandy loam.

Included with this soil in mapping are scattered small areas of Pillsbury, Naumburg, and Searsport soils and soils that have slopes of 5 to 15 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Lyme soil is moderate to moderately rapid throughout. The available water capacity is moderate. Depth to bedrock is more than 60 inches. In most years the seasonal high water table is between the surface and a depth of 1 1/2 feet from November through May. Potential frost action is high.

Most areas of this soil are used for pasture.

The seasonal high water table is a limitation to use of this soil for row crops and hay. The seasonal high water table restricts the choice of crops, hampers the use of machinery, and delays cultivation in spring. The soil is suited to moisture-tolerant grasses and legumes if tile drains or open ditches are installed.

This soil is suited to a variety of trees, mainly water-tolerant species, such as red maple. Potential productivity is moderate. The high water table is a limitation to some forest management practices and to

equipment operations. The equipment limitation can be overcome by operating equipment during the drier parts of the year.

The seasonal high water table is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and all types of recreation development.

This soil is suited to use as habitat for openland and woodland wildlife. Habitat can be established, improved, or maintained, but moderately intensive management is needed for satisfactory results. In most areas the soil is suited to use as habitat for wetland wildlife. In nearly level areas wetland plants and shallow water areas can be established, improved, or maintained, and there are few limitations to management.

This soil is in capability subclass IIIw.

247B—Lyme stony loam, 0 to 5 percent slopes. This soil is nearly level to gently sloping and poorly drained. It is generally in depressions on hilly uplands. Areas of the soil are irregularly shaped or long and narrow, and range from 3 to 20 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is black gravelly loam about 8 inches thick. The subsoil, to a depth of 22 inches, is mottled, olive gray gravelly sandy loam. The substratum, to a depth of 60 inches or more, is mottled, olive gravelly sandy loam.

Included with this soil in mapping are scattered small areas of Pillsbury, Naumburg, and Searsport soils and soils that have slopes of 5 to 15 percent. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Lyme soil is moderate to moderately rapid throughout. The available water capacity is moderate. Depth to bedrock is more than 60 inches. In most years the seasonal high water table is between the surface and a depth of 1 1/2 feet from November through May. Potential frost action is high.

Most areas of this soil are used as woodland. A few areas are used as unimproved pasture.

This soil generally is not suited to row crops, improved pasture, or hay because of the seasonal high water table and stones on the surface.

This soil is suited to a variety of trees, mainly water-tolerant species, such as red maple. Potential productivity is moderate. The seasonal high water table is a limitation to some forest management practices and to equipment operations. The equipment limitation can be overcome by operating equipment during the drier parts of the year.

The seasonal high water table is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and all types of recreation development.

This soil is suited to use as habitat for woodland wildlife. Habitat can be established, improved, or maintained, but moderately intensive management is needed for satisfactory results. In most areas the soil is poorly suited to use as habitat for wetland wildlife. In nearly level areas wetland plants and shallow water areas can be established, improved, or maintained, and there are few limitations to management.

This soil is in capability subclass VIIs.

295—Greenwood mucky peat. This soil is nearly level and very poorly drained. It is in depressions on outwash terraces, outwash plains, and uplands. Areas of the soil are irregularly shaped and range from 10 to 400 acres.

Typically, the uppermost 38 inches of the soil is very dark brown, partly decayed organic material. Below that, to a depth of 60 inches or more, there is dark yellowish brown, partly decayed organic material.

Included with this soil in mapping are scattered small areas of Chocorua soils and Borohemists. Also included are some small areas of open bogs. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Greenwood soil is moderately rapid. The available water capacity is high. Depth to bedrock is more than 60 inches. The seasonal high water table ranges from 1 foot above the surface to 1 foot below the surface from September through June. Potential frost action is high.

Most of the acreage of this soil is wooded. Some areas are in open bogs.

This soil is not suited to most uses other than as habitat for wetland wildlife because of the seasonal high water table and the low bearing strength.

This soil is well suited to use as habitat for wetland wildlife. Wetland plants and shallow water areas can be established, improved, or maintained, and there are few limitations to management.

This soil is in capability subclass VIIw.

298—Pits, gravel. This map unit consists of open excavations from which gravel or sand has been removed for use in construction. Many excavations are on terraces. Areas of this unit are irregularly shaped, and range from 2 to 40 acres. Most areas have nearly level floors and steep or very steep sides. Most areas are devoid of vegetation, but scattered small areas are covered by grasses, small trees, and shrubs. In many areas piles of stones and boulders are on the pit floor.

Included with this unit in mapping are pits in upland areas from which loamy material has been removed.

Permeability of Pits, gravel, generally is rapid. The available water capacity generally is very low. Depth to bedrock is more than 60 inches, but in some areas bedrock is exposed on the floor. In many areas the seasonal high water table is more than 6 feet below the pit floor. Some areas have been excavated to a depth

below the seasonal high water table and have pools of water during the wettest parts of the year.

Onsite investigation is needed to determine the suitability and limitations of this unit for any use.

This map unit is in capability subclass VIIIs.

299—Udorthents, smoothed. These soils are nearly level to very steep and well drained. Areas of the soils are irregularly shaped, and range from 5 to 100 acres. Slopes range from 0 to 60 percent, but are mainly 0 to 15 percent.

These soils differ from area to area; thus, a typical pedon cannot be given. They generally consist of sandy and gravelly fill material that has been placed on terraces, flood plains, and uplands. The fill ranges from 20 inches to more than 20 feet in thickness.

Included with this unit in mapping are scattered small areas of Colton and Adams soils and areas of nonearthy fill material, such as building rubble and trash. The included areas make up about 20 percent of the map unit.

Most areas of Udorthents, ponded, are used as building sites. Some open areas have been landscaped and planted with grasses and shrubs.

Some areas are suited to lawns, trees, shrubs, and vegetable gardens or to recreation uses, such as picnic areas and parks. Onsite investigation generally is needed to determine the suitabilities and limitations for most uses.

These soils are not assigned to a capability subclass.

395—Chocorua mucky peat. This soil is nearly level and very poorly drained. It is in depressions on flood plains, terraces, outwash plains, and uplands. Areas of the soil are irregularly shaped, and range from 15 to 50 acres.

Typically, the uppermost 33 inches of the soil is dark reddish brown mucky peat. Below the mucky peat, to a depth of 60 inches or more, there is light brownish gray and gray coarse sand.

Included with this soil in mapping are scattered small areas of Searsport, Ossipee, and Greenwood soils and areas of Borohemists. The included soils make up about 15 percent of the map unit.

Permeability of this Chocorua soil is moderate or moderately rapid in the organic layer and rapid or very rapid in the sand layer. The available water capacity is high. Depth to bedrock is more than 60 inches. Throughout the year the water table ranges between 12 inches above the surface and a depth of 6 inches below the surface. Potential frost action is high.

Most areas of this soil are in open bogs (fig. 13) or are wooded. Red maple and small shrubs, such as highbush blueberries, are the common species of vegetation.

This soil generally is not suited to most uses because of the high water table, the excess organic matter, and the low bearing strength.

This soil is a probable source of sand for use in construction.

This soil is well suited to use as habitat for wetland wildlife. Wetland plants and shallow water areas can be established, improved, or maintained, and there are few limitations to management.

This soil is in capability subclass VIIIw.

399—Rock outcrop. This map unit consists of areas where bare bedrock is exposed on more than 90 percent of the surface. Typically, areas of Rock outcrop are on gently sloping to steep, higher mountaintops and on very steep mountain cliffs. The areas are irregularly shaped and range from 10 to 600 acres.

Included with this unit in mapping are scattered small areas of Lyman soils and very shallow soils in cracks and crevices. The included soils make up about 10 percent of the map unit.

The surface of the rock commonly is smooth on mountaintops and jagged on mountainsides. The native vegetation is very sparse and consists mainly of lichens. Grasses, sedges, mosses, and scrubby trees grow in cracks and crevices.

The exposed bedrock is a limitation for most uses. Some areas of the unit have vistas or scenic value.

This map unit is in capability subclass VIIIs.

495—Osslpee peat. This soil is nearly level and very poorly drained. It is in depressions on terraces, outwash plains, uplands, and flood plains. Areas of the soil are irregularly shaped, and range from 5 to 50 acres.

Typically, the uppermost 41 inches of the soil consists of dark yellowish brown, black, and very dark brown partly decayed organic material. The substratum, to a depth of 60 inches or more, is dark gray fine sandy loam.

Included with this soil in mapping are scattered small areas of Searsport, Ossipee, and Greenwood soils and areas of Borohemists. The included soils make up about 15 percent of the map unit.

Permeability of this Ossipee soil is moderate or moderately rapid in the organic material and moderate or moderately slow in the substratum. The available water capacity is high. Depth to bedrock is more than 60 inches. Throughout the year the water table ranges between 12 inches above the surface and a depth of 6 inches below the surface. Potential frost action is high.

Most areas of this soil are in open bogs or are wooded. Red maple and small shrubs, such as highbush blueberry and silky dogwood, are common species of vegetation.

This soil generally is not suited to most uses other than as habitat for wetland wildlife because of the high water table, the excess organic matter, and the low bearing strength.

This soil is well suited to use as habitat for wetland wildlife. Wetland plants and shallow water areas can be

Figure 13.—A typlcal area of Chocorua mucky peat In **late summer.**

established, improved, or maintained, and there are few limitations to management.

This soil is in capability subclass VIIIw.

549—Peacham stony muck. This soil is nearly level and very poorly drained. Slopes range from 0 to 2 percent. It is mainly in depressions on uplands. Areas of the soil are long and narrow in shape and range from 3 to 15 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by 2 inches of dark reddish brown leaves, needles, twigs, and sphagnum moss. The surface layer is 6 inches of black muck. The subsoil, to a depth of 16 inches, is mottled dark gray fine sandy loam. The substratum, to a depth of 60 inches or more, is mottled, light olive gray, firm fine sandy loam.

Included with this soil in mapping are small areas of Pillsbury and Lyme soils on slightly higher parts of the landscape. Also included are scattered small areas of Chocorua, Ossipee, and Searsport soils and soils that have slopes of 2 to 8 percent. The included soils make up about 15 percent of the map unit.

Permeability of this Peacham soil is moderately rapid in the surface layer, moderate in the subsoil, and very slow in the substratum. The available water capacity is moderate. Depth to bedrock is more than 60 inches. In most years the seasonal high water table is between the surface and a depth of 18 inches from October through June. Potential frost action is high.

Most areas of this soil are wooded.

The seasonal high water table and stones on the surface are limitations to use of this soil for row crops, hay, and improved pasture.

The seasonal high water table is a limitation to use of this soil in forest management, for all types of building site development, and as sites for septic tank absorption fields and recreation development. There are few limitations for sewage lagoons.

This soil is suited to use as habitat for wetland wildlife. Wetland plants can be established, improved, or maintained, and there are few or no limitations to management. Shallow water areas require moderately intensive management for satisfactory results.

This soil is in capability subclass VIIs.

558B—Skerry fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is in broad depressions on hilly uplands. Some areas of the soil are on smooth-sided, oval-shaped hills called drumlins. Areas of the soil are long and narrow or irregular in shape, and range from 3 to 10 acres.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The subsoil, to a depth of 26 inches, is reddish brown gravelly fine sandy loam in the upper part and mottled reddish brown and strong brown gravelly fine sandy loam in the lower part. The firm substratum, to a depth of 60 inches or more, is mottled, yellowish brown gravelly loamy sand.

Included with this soil in mapping are scattered small areas of Peru soils and small areas of Becket and Marlow soils on slightly higher parts of the landscape and Pillsbury and Lyme soils in slight depressions. Also included are scattered small areas of soils that have slopes of 0 to 3 percent or 8 to 15 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Skerry soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through May. Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are used for hay or pasture.

The seasonal high water table is a limitation to use of this soil for farming. The seasonal high water table restricts the choice of crops and delays cultivation in spring. The soil is suited to row crops, hay, and pasture if tile drains or open ditches are installed. Erosion is a hazard if this soil is cultivated. Contour farming, stripcropping, using cover crops, and using grasses and legumes in the cropping system help to control erosion. The soil is suited to grasses and legumes that tolerate seasonal wetness. Mixing crop residue and manure into the plow layer improves the soil tilth and the organic matter content.

This soil is well suited to many hardwoods and conifers. Potential productivity is moderately high. There are few limitations to most types of forest management and to logging operations. Operating logging equipment during wet periods increases the erosion hazard on skid trails and logging roads. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can be overcome by installing a drainage system. For small commercial buildings, slope can be overcome by cutting and shaping the slope. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability in the substratum are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Slope can be overcome by cutting and shaping the slope. Seepage and slope are moderate limitations for sewage lagoons.

The soil is in capability subclass IIw.

559B—Skerry stony fine sandy loam, 0 to 8 percent slopes. This soil is nearly level to gently sloping and moderately well drained. It is in broad depressions on hilly uplands. Some areas of the soil are on smooth-sided, oval-shaped hills called drumlins. Areas of the soil are irregularly shaped, and range from 5 to 25 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by a 4-inch mat of partly decomposed leaf and needle litter. The surface layer is black fine sandy loam 4 inches thick. The subsoil, to a depth of 26 inches, is reddish brown gravelly fine sandy loam in the upper part and mottled, reddish brown and strong brown gravelly fine sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, yellowish brown, firm gravelly loamy sand.

Included with this soil in mapping are scattered small areas of Peru soils and small areas of Becket and Marlow soils on slightly higher parts of the landscape and Pillsbury and Lyme soils in slight depressions. Also included are scattered small areas of soils that have slopes of 8 to 15 percent. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Skerry soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the

root zone. In most years the seasonal high water table is perched on the substratum from November through May. Depth to bedrock generally is more than 60 inches. Potential frost action is high.

Most areas of this soil are in woodland. A few areas are used for pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface is also a limitation for pasture and hay. The stones interfere with cultivation and harvesting machinery. If the surface is cleared of stones, the soil is suited to row crops, pasture, and hay.

This soil is well suited to many hardwoods and conifers. Potential productivity is moderately high. There are few limitations to most types of forest management and to logging operations. Operating logging equipment during wet periods increases the erosion hazard on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can be overcome by installing a drainage system. For small commercial buildings, slope can be overcome by cutting and shaping the slope. Stones, unless removed from the surface, are a limitation for lawns and landscaping. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability in the substratum are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Seepage and slope are limitations for sewage lagoons. Slope can be overcome by cutting and shaping the slope.

This soil is a probable source of sand and gravel for use in construction.

This soil is in capability subclass Vis.

559C—Skerry stony fine sandy loam, 8 to 15 percent slopes. This soil is strongly sloping and moderately well drained. It is in broad depressions and on side slopes of hills on uplands. Some of these hills are smooth-sided, oval-shaped hills called drumlins. Areas of the soil are irregularly shaped, and range from 5 to 15 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is covered by a 4-inch mat of partly decomposed leaf and needle litter. The surface layer is black fine sandy loam 4 inches thick. The subsoil, to a depth of 26 inches, is reddish brown gravelly fine sandy loam in the upper part and mottled, reddish brown and strong brown gravelly fine sandy loam in the lower part. The firm substratum, to a depth of 60 inches or more, is mottled, yellowish brown gravelly loamy sand.

Included with this soil in mapping are scattered small areas of Peru soils, Marlow and Becket soils on slightly higher parts of the landscape, and Lyme soils in gently sloping depressions. Also included are scattered small areas of soils that have slopes of 3 to 8 percent or 15 to 25 percent. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Skerry soil is moderate in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. The firm substratum limits the depth of the root zone. In most years the seasonal high water table is perched on the substratum from November through **May.** Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are in woodland. A few areas are used for pasture.

This soil is not suited to row crops because of stones on the surface. Stones on the surface is also a limitation for pasture and hay. The stones interfere with cultivation and harvesting machinery.

This soil is well suited to many hardwoods and conifers. Potential productivity is moderately high. There are few limitations to most types of forest management and to logging operations. Operating logging equipment during wet periods increases the erosion hazard on logging roads and skid trails. Laying out these roads and trails on the contour helps to control erosion.

The seasonal high water table and slope are limitations to use of this soil for most types of building site development. These limitations can be overcome respectively by installing a drainage system and by cutting and shaping the slope. Stones, unless removed during cutting and shaping, are a limitation for lawns and landscaping. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material.

The seasonal high water table and permeability in the substratum are limitations to use of this soil as sites for septic tank absorption fields. These limitations can be overcome respectively by installing a drainage system to intercept runoff from higher areas and by enlarging the absorption field. Slope is a limitation for sewage lagoons. This limitation can be overcome by cutting and shaping the slope.

This soil is a probable source of sand and gravel for use in construction.

This soil is in capability subclass Vis.

613A—Croghan loamy fine sand, 0 to 3 percent slopes. This soil is nearly level and moderately well drained. It is in slight depressions on terraces and outwash plains. Areas of the soil are irregularly shaped and range from 5 to 150 acres.

Typically, the surface layer is black loamy fine sand about 4 inches thick. The subsoil, to a depth of 28

inches, is dark reddish brown and brown loamy fine sand in the upper part; mottled, strong brown sand in the middle part; and mottled, yellowish brown sand in the lower part. The substratum, to a depth of 60 inches or more, is mottled, grayish brown sand in the upper part and grayish brown coarse sand in the lower part. In some areas the substratum has gravel.

Included with this soil in mapping are small areas of Naumburg soils in depressions. The included soils make up about 10 percent of the map unit.

Permeability of this Croghan soil is rapid in the surface layer and very rapid in the subsoil and substratum. The available water capacity is very low. Depth to bedrock is more than 60 inches. In most years the seasonal high water table is at a depth of 1 1/2 to 2 feet from November through May. Potential frost action is moderate.

Most areas of this soil are in woodland. A few areas are used for hay or residential development.

In undrained areas the seasonal high water table restricts the choice of crops on this soil and delays cultivation in spring. Drained areas can be used for row crops continuously, but irrigation is needed during dry periods. Adding manure and mixing crop residue into the soil help to maintain the organic matter content and the available water capacity.

This soil is suited to some species of trees. Potential productivity is moderate. Seedling mortality is a hazard because of the sandy surface layer and subsoil. Using planting techniques that maintain or increase the organic matter content and the available water capacity or using hardier planting stock helps to decrease the seedling mortality rate. There are few limitations to most other types of forest management and to logging operations.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can be overcome by installing a drainage system. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. For lawns and landscaping, droughtiness in summer can be overcome by applying fertilizers, mulching, and sprinkling. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields and sewage lagoons. If this soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of sand for use in construction.

The seasonal high water table is a limitation to use of this soil as sites for all recreation uses. For camp and picnic areas and playgrounds, this limitation can be overcome by installing a drainage system.

This soil is in capability subclass IIIw.

613B—Croghan loamy fine sand, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is in slight depressions on terraces and outwash plains. Areas of the soil are irregularly shaped, and range from 5 to 30 acres.

Typically, the surface layer is black loamy fine sand about 4 inches thick. The subsoil, to a depth of 28 inches, is dark reddish brown and brown loamy fine sand in the upper part, mottled, strong brown sand in the middle part, and mottled, yellowish brown sand in the lower part. The substratum, to a depth of 60 inches or more, is mottled, grayish brown sand in the upper part and grayish brown coarse sand in the lower part. In some areas the substratum has gravel.

Included with this soil in mapping are small areas of Naumburg soils in depressions. The included soils make up about 10 percent of the map unit.

Permeability of this Croghan soil is rapid in the surface layer and very rapid in the subsoil and substratum. The available water capacity is very low. Depth to bedrock is more than 60 inches. In most years the seasonal high water table is at a depth of 1 1/2 to 2 feet from November through **May.** Potential frost action is moderate.

Most of the acreage of this soil is in woodland. A few areas are used for hay or residential development.

In undrained areas the seasonal high water table restricts the choice of crops on this soil and delays cultivation in spring. Drained areas can be used for row crops continuously, but irrigation is needed during dry periods. Adding manure and mixing crop residue into the soil help to maintain the organic matter content and the available water capacity.

This soil is suited to some species of trees. Potential productivity is moderate. The rate of seedling mortality is a management concern because of the sandy surface layer and subsoil. The rate can be decreased by using planting techniques that maintain or increase the organic matter content and the available water capacity or by using hardier planting stock. There are few limitations to most other types of forest management and to logging operations.

The seasonal high water table is a limitation to use of this soil for most types of building site development. This limitation can be overcome by installing a drainage system. For local roads and streets, potential frost action can be overcome by installing a drainage system and by providing a coarser grained base material. For small commercial buildings, slope can be overcome by cutting and shaping the slope. For lawns and landscaping, droughtiness in summer can be overcome by applying fertilizers, mulching, and sprinkling. Cutbanks of some shallow excavations cave in unless shored up or cut back to a stable slope.

The seasonal high water table and permeability are limitations to use of this soil as sites for septic tank absorption fields and sewage lagoons. Slope is also a limitation for sewage lagoons. If the soil is used as sites for septic tank absorption fields and sewage lagoons, the ground water can be contaminated because of permeability and the poor filtering action in the substratum.

This soil is a probable source of sand for use in construction.

The seasonal high water table is a limitation to use of this soil as sites for most recreation uses. This limitation can be overcome by installing a drainage system. For playgrounds, the slope can be modified by cutting and shaping.

This soil is in capability subclass IIIw.

646B—Pllllsbury loam, 0 to 5 percent slopes. This soil is nearly level to gently sloping and somewhat poorly drained and poorly drained. It is in depressions on hilly uplands. In many places the depressions are between drumlins. Areas of the soil are long and narrow in shape, and range from 3 to 10 acres.

Typically, the surface layer is very dark brown loam about 8 inches thick. The subsoil, to a depth of 15 inches, is mottled, brown fine sandy loam in the upper part and mottled, grayish brown sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, olive gray, very firm sandy loam. In some areas the substratum is loamy sand.

Included with this soil in mapping are scattered small areas of Lyme soils, Peru soils on slightly higher parts of the landscape, and Peacham soils in depressions. Also included are scattered small areas of soils that have slopes of 5 to 15 percent. Also included are some areas where a few stones are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Pillsbury soil is moderate in the surface layer and subsoil and slow in the substratum. The available water capacity is low. The substratum limits the depth of the root zone. In most years the perched seasonal high water table is between the surface and a depth of 18 inches from November through **May.** Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are wooded. Some drained areas are used for hay and pasture.

This soil generally is not suited to row crops and hay because of the seasonal high water table. The seasonal high water table restricts the choice of crops, hampers the use of machinery, and delays cultivation in spring. The soil is suited to moisture-tolerant grasses and legumes if tile drains or open ditches are installed.

This soil is suited to species of water-tolerant trees. Potential productivity is moderate. The seasonal high water table is a limitation to some forest management practices and to logging operations. Operating equipment during the drier parts of the year helps to overcome the equipment limitation.

The seasonal high water table is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields and all types of recreation development. Slope is a limitation for sewage lagoons.

This soil is suited to use as habitat for openland, woodland, and wetland wildlife. Habitat for openland and woodland wildlife can be established, improved, or maintained, but moderately intensive management is needed for satisfactory results. In nearly level areas of this soil, wetland plants and shallow water areas can be established, improved, or maintained, and there are few limitations to management.

This soil is in capability subclass IIIw.

647B—Pllllsbury stony loam, Oto 5 percent slopes. This soil is nearly level to gently sloping and somewhat poorly drained and poorly drained. It is in depressions on hilly uplands. In many places the depressions are between drumlins. Areas of the soil are long and narrow in shape, and range from 3 to 30 acres. Stones 1 to 1 1/2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is very dark brown loam about 8 inches thick. The subsoil, to a depth of 15 inches, is mottled, brown fine sandy loam in the upper part and mottled, grayish brown sandy loam in the lower part. The substratum, to a depth of 60 inches or more, is mottled, olive gray, very firm sandy loam. In some areas the substratum is loamy sand.

Included with this soil in mapping are scattered small areas of Lyme soils, Peru soils on slightly higher parts of the landscape, and Peacham soils in depressions. Also included are scattered small areas of soils that have slopes of 5 to 15 percent. Also included are some areas where stones less than 5 feet apart are on the surface. The included soils make up about 20 percent of the map unit.

Permeability of this Pillsbury soil is moderate in the surface layer and subsoil and slow in the substratum. The available water capacity is low. The substratum limits the depth of the root zone. The perched seasonal high water table is between the surface and a depth of 18 inches from November through May. Depth to bedrock is more than 60 inches. Potential frost action is high.

Most areas of this soil are wooded. A few areas are used for unimproved pasture.

This soil generally is not suited to row crops, improved pasture, or hay because of stones on the surface and the seasonal high water table.

This soil is suited.to species of water-tolerant trees. Potential productivity is moderate. The seasonal high water table is a limitation to forest management and to logging operations. Operating equipment during the drier

parts of the year helps to overcome the equipment limitation.

The seasonal high water table is a limitation to use of this soil for all types of building site development and as sites for septic tank absorption fields, sewage lagoons, and all types of recreation development.

This soil is suited to use as habitat for woodland wildlife. Habitat can be established, improved, or maintained, but moderately intensive management is needed for satisfactory results. In nearly level areas of this soil, wetland plants and shallow water areas can be established, improved, or maintained, and there are few or no limitations to management.

This soil is in capability subclass VIIs.

Prime Farmland

In this section, prime farmland is defined and discussed in table 5. The prime farmland soils in Hillsborough County are listed in table 5.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or build-up land and water areas cannot be considered prime farmland.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 8 percent.

Soils that have a seasonal high water table or are subject to flooding may qualify as prime farmland soils if the limitations or hazards are overcome by drainage or flood control. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information on the criteria for prime farmland soils can be obtained at the local office of the Soil Conservation Service.

About 10,000 acres in Hillsborough County, Western Part, or 3 percent of the survey area, is prime farmland. The Contoocook River Valley and other valley areas are dominantly prime farmland. Many areas throughout the rest of the survey area are also prime farmland. Prime farmland makes up 2 percent of general soil map unit 1, 5.5 percent of map unit 2, 3.5 percent of map unit 3, and 1 percent of map unit 4. The main crops on prime farmland are hay and corn silage used as feed for dairy cows.

A recent trend in land use in some parts of the county has been the conversion of some prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, difficult to cultivate, and usually less productive than prime farmland. Further, because the acreage of prime farmland is small, the loss of even a few small parcels has an impact on the farm community.

The map units, or soils, that make up prime farmland in Hillsborough County, Western Part, are listed in table 5. This list does not constitute a recommendation for a particular land use. If a soil is considered to be prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units."

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Statistics on farming are available only on a county basis. Consequently, the statistics in this section apply to all of Hillsborough County, not just the western part. About 23,000 acres in the county is used for crops and pasture. An estimated 65 percent of this acreage is used for hay and pasture, 20 percent for row crops, mainly vegetables and corn silage, and 15 percent as orchards or for other crops.

Acreage in crops and pasture has steadily declined during the past 5 years. Urban pressure has been an important factor in the decline.

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

Soil erosion is a major concern on much of the cropland and pastureland in the survey area. Erosion is a hazard on soils that have slope of more than 3 percent. Marlow and Monadnock soils are examples of soils that are subject to erosion.

Loss of the surface layer through erosion reduces productivity. In addition, part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a restrictive layer in the substratum that limits the depth of the root zone. Examples of such layers are the hardpan in the Marlow and Becket soils and bedrock in the Tunbridge and Lyman soils.

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

Erosion control practices provide a protective surface cover, reduce runoff, and increase infiltration of rainwater. A cropping system that keeps plant cover on the soil for extended periods can control soil erosion to an acceptable amount that will not reduce the productive capacity of the soil. On livestock farms that require

pastureland and hayland, the legume and grass forage crops in the cropping system reduce erosion on sloping land and provide nitrogen and improve tilth for the next crop.

Practices that help to control erosion are terracing, stripcropping, and conservation cropping systems. Field terraces and diversions are effective in controlling erosion. Many soils in the survey area have short and irregular slopes that are not suited to terraces. On these soils diversions are effective in intercepting water and protecting fields downslope.

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

On soils that are not suited to such practices as terracing and stripcropping, a cropping system can be used that keeps a plant cover on the surface for extended periods of time. Conservation tillage for crops that are normally tilled protects the soil from excessive erosion and can be used on most of the soils in the survey area.

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

The high water table is a major concern on several soils in the survey area. Some soils are naturally so wet that the production of crops common to the area generally is not feasible. Examples of such soils are the very poorly drained Searsport, Greenwood, and Chocorua soils and Borohemists.

The poorly drained soils are too wet for good crop production in most years. Tile drainage systems, drainage ditches, and the use of moisture-tolerant plants help to overcome the limitation of wetness on these soils. Rumney and Lyme soils are poorly drained.

Moderately well drained soils generally cannot be tilled or worked until late spring or early summer. They are poorly suited to early crops. Peru, Croghan, Skerry, and Podunk soils are moderately well drained.

Good designs for drainage systems vary with the kind of soil. Information on soil drainage and management of wet soils is available at the local office of the Soil Conservation Service.

Natural fertility is low in the soils in the survey area. The soils in their natural state are strongly acid or very strongly acid. Applications of lime are needed to raise the pH level for good growth of some crops. The available phosphorus and potassium levels also are low in the soils in the survey area. Additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected yields. The Hillsborough County Cooperative Extension Service can help in determining the kinds and application rates of fertilizers and lime to use on a soil.

The soil tilth is important in the germination of seeds and in the infiltration of water into the soil. The soils that have good tilth generally have a granular surface layer and are porous.

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

Specialty crops in the survey area are vegetables and apples. The most common vegetables are sweet corn, squash, tomatoes, and cabbage. Some soils are in low positions where frost is frequent and where air drainage is poor. These soils are poorly suited to early vegetables, small fruits, and orchards.

Deep, friable soils that have good natural drainage, such as Ondawa, Marlow, and Monadnock soils, are especially well suited to vegetables. The excessively drained Colton and Adams soils that have slopes of less than 8 percent are droughty. These soils are suited to cultivated crops if they are irrigated.

Ylelds Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

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

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information

about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

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 slight 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 miscellaneous areas 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*, or *s*, 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); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

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*, or *s* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

James D. Spielman, forester, Soil Conservation Service, helped to prepare this section.

This section provides information on forest resources in Hillsborough County, Western Part, and on potential productivity, suitable trees and their limitations, and limitations of soils for growing trees. Statistics on forest resources are available only on a county basis; consequently, the statistics in this section apply to all of Hillsborough County.

In 1976, commercial forestland covered approximately 77 percent, or about 441,500 acres, of the land area in Hillsborough County, according to a survey (9). Of the total commercial forestland in the county, approximately 97 percent is privately owned and 3 percent is publicly owned. Of this 97 percent, slightly more than 4 percent is owned by farmers. The 3 percent in public ownership is divided among local, state, and federal ownership.

Approximately 42 percent of the commercial forestland is the white pine-red pine forest type, 22 percent is the elm-ash-red maple type, 16 percent is the maple-beech-birch type, and 11 percent is the oak-hickory type. Of the remaining 9 percent, 4 percent is the aspen-birch type, 2 percent is the oak-pine type, 2 percent is the spruce-fir type, and 1 percent is the pitch pine type.

Approximately 45 percent of the commercial forestland in the county is in sawtimber sizes, 30 percent is in poletimber sizes, 24 percent is in seedling-sapling sizes, and 1 percent is nonstocked. The best opportunities for management in the survey area are on soils where potential productivity is moderate to moderately high and where there are few limitations to forest management (table 7).

Generally, a woodland owner can encourage the growth of more desirable and valuable trees by applying intensive management practices. In Hillsborough County, the important species to favor are white pine, northern red oak, hemlock, yellow birch, sugar maple, and white ash.

To some woodland owners, management for such values as water, recreation, wildlife, and aesthetics may have priority over management for wood products. Nevertheless, well planned, managed woodlands provide a variety of benefits to their owners and to society.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol

require the same general management and have about the same potential productivity.

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

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

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

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

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

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that few trees may be blown down by strong winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

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

Recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that 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 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the 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 haye gentle 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 campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for 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 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 and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and 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 have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Judy L. Tumosa, biologist, Soil Conservation Service, helped to prepare this section.

Hillsborough County, Western Part, provides habitat for a variety of fish and wildlife. The major game species that inhabit forests include white-tailed deer, snowshoe hare, and ruffed grouse. Woodcock search for food in alder swamps and use meadows for courting. At present, the wild turkey is being reestablished in New Hampshire in such areas as oak groves and cornfields. Other game animals in limited numbers include the New England cottontail and the ring-necked pheasant. Both species have declined in numbers because of the decrease in open farmland. The ring-necked pheasant is stocked every year by the state game agency, but it seldom overwinters.

Raccoon, fox, porcupine, hawks, owls, and furbearers, such as fisher and weasel, inhabit forested uplands. Other furbearers, including beaver, mink, muskrat, and otter, inhabit streams and wetlands. Black bear and coyote dwell in wilderness areas.

Nongame animals in suburban areas include chipmunks, red squirrels, woodchucks, and various songbirds.

Wetland plants found on wet soils provide food and cover for black ducks, wood ducks, and mallards. Herons sometimes use abandoned beaver flowages with dead trees as nesting rookeries.

Warm water rivers and lakes support bass, perch, pickerel, and horned pout. Cold water lakes and streams support brook, brown, and rainbow trout. Northern water snake, painted turtle, snapping turtle, and common newt are some of the common reptiles and amphibians.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The suitability of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, and oats.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features 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, timothy, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features 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 little bluestem, goldenrod, beggartick, curly dock, and ragweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, aspen, cherry, maple, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are elderberry, autumn-olive, and highbush cranberry.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, hemlock, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, pickerelweed, cattail, burreed, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for open/and wildlife 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 wildlife attracted to these areas include woodchuck, killdeer, meadowlark, field sparrow, meadow vole, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations must be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the

performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

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

Building Site Development

Table 10 shows 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. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented layer, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facllities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the 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.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, and bedrock.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and

cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders or organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given 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 the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

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 and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups 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 (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points)

across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity,

infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive 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 mainly of deep, well drained to excessively drained sands or gravelly sands. 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 having a layer that impedes the downward movement of water or soils of 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 clays 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.

Some soils in table 16 are assigned to two hydrologic soil groups. For some soils that are less than 20 inches deep to bedrock, the first letter applies to areas where the bedrock is cracked and pervious and the second letter to areas where the bedrock is impervious or where exposed bedrock covers more than 25 percent of the surface.

Flooding, the temporary inundation of an area, is caused by overflowing streams and by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, 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.**

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table fs water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 60 inches. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(14).* Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 17 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol.* An example is Spodosol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Orthod *(Orth,* meaning common, plus *od,* from Spodosol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplorthods *(Hapl,* meaning minimal horizonation, plus *orthod,* the suborder of the Spodosols that are the most common).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group 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 typifies the great group. An example is Typic Haplorthods.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, frigid, mesic Typic Haplorthods.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. An example of a series in the survey area is the Marlow Series.

Soil Serles and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*11).* Many of the technical terms used in the descriptions are defined in Soil Taxonomy *(14).* Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Adams Series

The Adams series consists of excessively drained soils that formed in sandy glacial outwash derived from crystalline rock. These soils are on outwash plains, terraces, and kames. Slopes range from 0 to 50 percent.

Adams soils are near excessively drained Colton soils, well drained Monadnock soils, and moderately well drained Croghan soils. Adams and Croghan soils formed in similar parent material. Adams soils have fewer rock fragments than Colton and Monadnock soils.

Typical pedon of Adams loamy sand, 15 to 50 percent slopes, in the town of Antrim, 5,000 feet north of the intersection of U.S. Route 202 and N.H. Route 31:

Ap—0 to 9 inches; dark brown (10YA 3/3) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt wavy boundary.
Bhs—9 to 21 inches; dark brown (7.5YR 3/2) loamy sand; weak fine granular structure; very friable and moderately smeary; few fine roots; moderately acid; clear wavy boundary.
Bw—21 to 29 inches; yellowish brown (10YR 5/4) loamy sand; massive; very friable; very few fine roots; moderately acid; clear wavy boundary.
C—29 to 60 inches; yellowish brown (10YR 5/4) sand; single grain; loose; 5 percent fine gravel; strongly acid.

The solum ranges from 16 to 30 inches in thickness. The content of gravel ranges from 0 to 5 percent above a depth of 20 inches and from 0 to 20 percent below that depth. Reaction ranges from very strongly acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 2 or 3. Some pedons have an E horizon that has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 1 or 2. The A and E horizons range from loamy fine sand to sand.

The Bhs horizon is neutral or has hue of 7.5YR or 5YR; value is 2 or 3, and chroma is 0 to 2. The Bw horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 3 to 6. The B horizon is loamy sand or sand.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4.

Becket Serles

The Becket series consists of well drained soils that formed in loamy glacial till over compact, sandy glacial till derived from granite and schist. These soils are on drumlins, hills, and ridges. Slopes range from 3 to 25 percent.

Becket soils are near well drained Monadnock and Marlow soils and moderately well drained Skerry soils. Becket and Skerry soils formed in similar parent material. Unlike Monadnock soils, Becket soils have a firm or very firm substratum. Marlow soils have a finer textured substratum than Becket soils.

Typical pedon of Becket fine sandy loam, in an area of Becket stony fine sandy loam, 3 to 8 percent slopes, in the town of Deering, 500 feet west on N.H. Route 149, 2 miles southeast of where N.H. Route 149 crosses the Contoocook River, in woodland:

Oi—1 inch to 0; loose leaf litter.
Oa—0 to 1 inch; decomposed leaf litter.
A—1 to 5 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent gravel; very strongly acid; clear wavy boundary.
Bs—5 to 9 inches; dark reddish brown (5YR 3/4) gravelly fine sandy loam; weak fine granular structure; friable and moderately smeary; common fine and medium roots; 10 percent gravel, 10 percent cobbles, and 5 percent stones; strongly acid; clear wavy boundary.
Bw—9 to 28 inches; yellowish brown (10YR 5/6) gravelly fine sandy loam; weak fine granular structure; friable; few fine roots; 10 percent gravel, 10 percent cobbles, and 5 percent stones; very strongly acid; clear wavy boundary.
BC—28 to 32 inches; olive yellow (2.5Y 6/6) gravelly loamy sand; weak fine granular structure; friable; 15 percent gravel, 10 percent cobbles, and 5 percent stones; strongly acid; clear wavy boundary.
C—32 to 60 inches; light brownish gray (2.5Y 6/2) very gravelly loamy sand; weak medium platy structure; firm; 15 percent gravel, 15 percent cobbles, and 5 percent stones; strongly acid.

The solum ranges from 18 to 36 inches in thickness. The content of rock fragments ranges from 5 to 30 percent in the solum and from 5 to 40 percent in the substratum. Reaction ranges from extremely acid to moderately acid throughout.

The A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3. Some pedons have an Ap horizon that has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. The A horizon is fine sandy loam, sandy loam, loam, or their gravelly analogs.

The Bs horizon has hue of 2.5YR to 7.5YR, value of 3 to 8, and chroma of 3 to 8. The Bw horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 8. The BC horizon has hue of 10YA to 5Y, value of 3 to 6, and chroma of 3 to 6. The Bs and Bw horizons are fine sandy loam, sandy loam, or their gravelly analogs. The BC horizon is fine sandy loam, sandy loam, loamy fine sand, loamy sand, or their gravelly analogs.

The C horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 to 6. It is loamy sand, loamy fine sand, or their gravelly analogs. It is firm or very firm.

Borohemlsts

The Borohemists are very poorly drained soils that consist of moderately decomposed organic material. Borohemists formed in organic deposits more than 16 inches thick. They are in depressions on terraces, outwash plains, and glacial till uplands and along the margins of lakes and ponds. Slopes range from 0 to 3 percent.

Borohemists are near very poorly drained Searsport, Chocorua, Ossipee, and Greenwood soils and bodies of water. Chocorua, Ossipee, and Greenwood soils formed in organic material but are less variable in composition

than Borohemists. Borohemists have a minimum of 16 inches of organic material, and Searsport soils have less than 16 inches of organic material over sand.

Borohemists differ from place to place in composition and thickness; thus, a typical pedon cannot be given.

The organic material in Borohemists ranges from 16 inches to more than 51 inches in thickness. Reaction ranges from extremely acid to moderately acid throughout. The fibers are mainly herbaceous, but some pedons have as much as 20 percent woody fragments.

The surface tier ranges from reddish brown hemic material to black sapric material. The subsurface tier is mainly reddish brown or dusky red hemic material, but in some pedons it has thin layers of sapric material, fibric material, or layers of water.

The bottom tier is mainly hemic or sapric material.

Some pedons have a C horizon that is strongly gleyed glacial outwash, glacial till, or lacustrine deposits.

Chocorua Series

The Chocorua series consists of very poorly drained soils. These soils formed in organic deposits 16 to 51 inches thick overlying sandy material. They are in depressions on outwash plains, terraces, and uplands. Slopes range from 0 to 2 percent.

Chocorua soils are near excessively drained Colton and Adams soils, poorly drained Lyme soils, and very poorly drained Greenwood and Ossipee soils. Colton, Adams, and Lyme soils formed in mineral material. Greenwood soils formed in organic deposits more than 51 inches thick. Like Chocorua soils, Ossipee soils formed in organic deposits 16 to 51 inches thick overlying loamy material.

Typical pedon of Chocorua mucky peat, in the town of Peterborough, 3,000 feet south of Hancock town line and 3,900 feet west of Contoocook River:

Oe1—0 to 4 inches; dark reddish brown (5YR 2/2) broken face and rubbed mucky peat (hemic material); about 70 percent herbaceous fiber, about 60 percent rubbed; weak medium subangular blocky structure; nonsticky; many fine roots; very strongly acid; abrupt smooth boundary.

Oe2—4 to 33 inches; dark reddish brown (5YR 2/2) broken face and rubbed mucky peat (hemic material); about 60 percent herbaceous fiber, about 35 percent rubbed; massive; nonsticky; few fine roots; 10 percent woody coarse fragments; very strongly acid; abrupt smooth boundary.

Cg—33 to 60 inches; light brownish gray (2.5Y 6/2) and gray (5Y 5/1) coarse sand; single grain; loose; strongly acid.

The organic layers range from 16 to 51 inches in thickness. The organic material is herbaceous and woody. It has 0 to 15 percent slightly decomposed woody fragments. In some pedons thin layers of fibric material are on the surface.

The Oe horizon has hue of 2.5YR to 10YA, value of 1 to 4, and chroma of 1 to 4. Value and chroma can increase 1 or 2 units when the organic material is exposed to air. Reaction ranges from extremely acid to very strongly acid.

The surface tier, exclusive of loose litter or moss, has a fiber content of 40 to 70 percent unrubbed and 15 to 60 percent rubbed.

The subsurface tier has a fiber content of 50 to 75 percent unrubbed and 15 to 35 percent rubbed.

The C horizon is neutral or has hue of 10YA to 5Y; value is 4 to 6, and chroma is 0 to 4. It is coarse sand, sand, loamy coarse sand, or loamy sand in the fine earth fraction. The content of coarse fragments ranges from 0 to 40 percent. Reaction ranges from very strongly acid to moderately acid.

Colton Serles

The Colton series consists of excessively drained soils that formed in sandy and gravelly glacial outwash derived mainly from granite. These soils are on outwash terraces, kames, and eskers. Slopes range from 0 to 50 percent.

Colton soils are near excessively drained Adams soils, well drained Monadnock soils, and moderately well drained Croghan soils. Colton soils have more rock fragments than Adams and Croghan soils. Colton soils have more sand in the solum than Monadnock soils.

Typical pedon of Colton loamy sand, 3 to 8 percent slopes, in the town of Greenfield, 3,000 feet north of Otter Lake and 1.8 miles east of Hancock town line:

Oi—1 inch to 0; loose leaf litter.

Oa—0 to 1 inch; decomposed leaf litter.

E—1 to 3 inches; dark gray (10YR 4/1) loamy sand; weak fine granular structure; very friable; many fine and medium roots; 10 percent gravel; very strongly acid; abrupt wavy boundary.

Bs—3 to 23 inches; strong brown (7.5YR 5/6) gravelly loamy sand; weak fine granular structure; very friable and slightly smeary; many fine, medium, and coarse roots; 25 percent gravel and 10 percent cobbles; very strongly acid; clear wavy boundary.

C1—23 to 36 inches; yellowish brown (10YR 5/6) extremely gravelly sand; single grain; loose; 50 percent gravel and 20 percent cobbles; strongly acid; abrupt wavy boundary.

C2—36 to 60 inches; light olive brown (2.5Y 5/4) very gravelly sand; single grain; loose; 40 percent gravel; strongly acid.

The solum ranges from 18 to 36 inches in thickness. The content of rock fragments ranges from 10 to 55

percent in the solum and 35 to 70 percent in the C horizon.

Some pedons have an A horizon that has hue of 5YR to 10YR, value of 2 to 5, and chroma of 2 or 3. The E horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 1 or 2. The A and E horizons range from loamy coarse sand to fine sandy loam. Reaction is extremely acid or very strongly acid.

The B horizon has hue of 5YR to 10YR, value of 3 to 6, and chroma of 3 to 8. It ranges from coarse sand to loamy sand. Reaction is strongly acid or very strongly acid.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. Reaction ranges from very strongly acid to moderately acid.

Croghan Serles

The Croghan series consists of moderately well drained soils that formed in sandy glacial outwash derived from granite, gneiss, and schist. These soils are on outwash plains and terraces. Slopes range from 0 to 8 percent.

Croghan soils are near excessively drained Colton and Adams soils and poorly drained and somewhat poorly drained Naumburg soils. Croghan soils have fewer rock fragments than Colton soils. Croghan soils and Adams and Naumburg soils formed in similar parent material.

Typical pedon of Croghan loamy fine sand, 0 to 3 percent slopes, in the town of Deering, 4,000 feet north of the Deering-Bennington town line and 1,300 feet east of the Contoocook River:

A—0 to 4 inches; black (10YR 2/1) loamy fine sand, light gray (10YR 6/1) dry; weak fine granular structure; very friable; common fine and few medium roots; extremely acid; abrupt wavy boundary.

Bs1—4 to 10 inches; mixed dark reddish brown (5YR 3/2) and brown (7.5YR 4/4) loamy fine sand; weak fine granular structure; very friable and moderately smeary; common fine and few medium roots; 2 percent gravel; extremely acid; gradual wavy boundary.

Bs2—10 to 18 inches; strong brown (7.5YR 5/6) sand; few fine distinct grayish brown (2.5Y 5/2) and few medium prominent red (2.5YR 4/6) mottles in lower part; weak fine granular structure; very friable; few fine and medium roots; 3 percent gravel; very strongly acid; gradual wavy boundary.

BC—18 to 28 inches; yellowish brown (10YR 5/4) sand; few fine distinct grayish brown (2.5Y 5/2) and few medium prominent red (2.5YR 4/6) mottles; weak fine granular structure; very friable; few fine roots; 2 percent gravel; very strongly acid; abrupt smooth boundary.

C1—28 to 42 inches; grayish brown (10YR 5/2) sand; common fine faint light olive brown (2.5Y 5/.4) mottles; massive; friable; 1 percent gravel; very strongly acid; clear wavy boundary.

C2—42 to 60 inches; grayish brown (2.5Y 5/2) coarse sand; single grain; loose; strongly acid; 10 percent gravel; strongly acid.

The solum ranges from 15 to 40 inches in thickness. The content of gravel ranges from 0 to 3 percent in the A horizon and from 0 to 15 percent in the B and C horizons. Reaction ranges from extremely acid to moderately acid in the solum and from very strongly acid to moderately acid in the substratum.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 3. Some pedons have an E horizon that has hue of 5YR to 10YR, value of 5 to 7, and chroma of 1 or 2. The A and E horizons range from loamy fine sand to sand.

The Bs horizon has hue of 5YR to 10YR, value of 2 to 5, and chroma of 1 to 6; if the horizon is less than 1 inch thick, value is 2 and chroma is 1. The BC horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6. The B horizon ranges from loamy fine sand to sand.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. It ranges from loamy sand to sand.

Greenwood Serles

The Greenwood series consists of very poorly drained organic soils that formed in organic soil material more than 51 inches thick. These soils are in depressions on outwash terraces, outwash plains, and uplands. Slopes range from 0 to 2 percent.

Greenwood soils are near excessively drained Colton and Adams soils, poorly drained Lyme soils, and very poorly drained Chocorua and Ossipee soils. Colton, Adams, and Lyme soils formed in mineral material. Chocorua and Ossipee soils formed in organic material less than 51 inches thick overlying mineral material.

Typical pedon of Greenwood mucky peat, in the town of Sharon, 120 feet south of N.H. Route 124 and 50 feet west of the Gridley River:

Oe1—0 to 24 inches; very dark brown (10YR 2/2) broken face and rubbed mucky peat (hemic material); about 60 percent herbaceous fiber, 40 percent rubbed; massive; nonsticky; common fine roots; very strongly acid; abrupt smooth boundary.

Oe2—24 to 38 inches; very dark brown (10YR 2/2) broken face and rubbed mucky peat (hemic material); about 40 percent herbaceous fiber, 30 percent rubbed; massive; nonsticky; few fine roots; very strongly acid; abrupt smooth boundary.

Oe3—38 to 60 inches; dark yellowish brown (10YR 3/4) broken face and rubbed mucky peat (hemic

material); about 50 percent herbaceous fiber, 40 percent rubbed; massive; nonsticky; extremely acid.

The organic material is more than 51 inches thick. Reaction ranges from extremely acid to slightly acid throughout. The fibers are mainly herbaceous. The content of woody fragments ranges from 0 to 20 percent throughout.

The surface tier has hue of 2.SYR to 10YA, value of 2, and chroma of 2 to 4. The content of fiber ranges from 35 to 65 percent unrubbed and from 10 to 40 percent rubbed.

The subsurface tier has hue of 2.SYR to 10YA, value of 2, and chroma of 1 to 4. The content of fiber ranges from 35 to 65 percent unrubbed and from 10 to 40 percent rubbed.

The bottom tier has hue of 10R to 10YA, value of 2 or 3, and chroma of 2 to 4. The content of fiber ranges from 35 to 65 percent unrubbed and from 10 to 40 percent rubbed.

Groveton Series

The Groveton series consists of well drained soils on outwash plains and stream terraces. These soils formed in loamy deposits and the underlying sandy sediment. Slopes range from 0 to 5 percent.

Groveton soils are near excessively drained Adams soils and moderately well drained Madawaska soils. Groveton soils have less sand in the solum than Adams soils. Groveton and Madawaska soils formed in similar parent material.

Typical pedon of Groveton very fine sandy loam, 0 to 5 percent slopes, in the town of Peterborough, 6,700 feet south of N.H. Route 101 and 750 feet west of the Contoocook River:

A—0 to 1 inch; dark brown (10YA 3/3) very fine sandy loam; weak fine granular structure; very friable; many fine and common medium roots; very strongly acid; clear wavy boundary.

Bs—1 to 7 inches; strong brown (7.SYR 5/6) very fine sandy loam; weak fine granular structure; very friable and slightly smeary; many fine and few medium roots; very strongly acid; clear wavy boundary.

Bw—7 to 25 inches; yellowish brown (10YR 5/4) very fine sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; wavy boundary.

BC—25 to 33 inches; light yellowish brown (2.SY 6/4) very fine sandy loam; weak medium subangular blocky structure; few fine roots; strongly acid; clear wavy boundary.

C—33 to 60 inches; light olive gray (SY 6/2) fine sand; massive; very friable; moderately acid.

The solum ranges from 20 to 36 inches in thickness. The content of coarse fragments ranges from 0 to 5 percent in the solum and from 0 to 10 percent in the substratum. Reaction ranges from slightly acid to very strongly acid in the solum and from slightly acid to strongly acid in the substratum.

The A horizon has hue of 10YA or 7.SYR, value of 2 or 3, and chroma of 1 to 3. It is very fine sandy loam, fine sandy loam, or sandy loam.

The Bs horizon has hue of 2.SYR to 7.SYR, value of 3 to 6, and chroma of 3 to 8. It is very fine sandy loam, fine sandy loam, or sandy loam.

The Bw horizon has hue of 7.SYR or 10YA, value of 4 to 6, and chroma of 4 to 8. It is very fine sandy loam, fine sandy loam, or sandy loam.

The BC horizon has hue of 7.SYR to SY, value of 4 to 6, and chroma of 3 to 6. It is very fine sandy loam, fine sandy loam, or loamy fine sand.

The C horizon has hue of 10YA to SY, value of 4 to 6, and chroma of 2 to 4. It ranges from fine sandy loam to sand.

Lyman Series

The Lyman series consists of shallow, somewhat excessively drained soils that formed in loamy glacial till derived from schist, granite, and gneiss. These soils are on mountaintops, hilltops, and ridgetops. Slopes range from 3 to 35 percent.

Lyman soils are near well drained Marlow, Monadnock, and Tunbridge soils. Lyman soils are shallower to bedrock than Tunbridge, Marlow, and Monadnock soils.

Typical pedon of Lyman sandy loam, in an area of Lyman-Tunbridge-Rock outcrop complex, 3 to 15 percent slopes, in the town of Mason, 1 mile south of Wilton town line and 600 feet east of Greenville town line:

Oi—2 inches to 0; loose leaf litter.

Oa—0 to 2 inches; decomposed leaf litter.

E—2 to 4 inches; gray (10YA 5/1) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; 5 percent gravel; very strongly acid; abrupt wavy boundary.

Bs—4 to 15 inches; reddish brown (SYR **4/4**) gravelly fine sandy loam; moderate medium to very coarse subangular blocky structure; friable and slightly smeary; few fine roots; 20 percent gravel and 10 percent cobbles; very strongly acid; abrupt smooth boundary.

R—15 inches; mica schist bedrock.

The thickness of the solum and depth to bedrock range from 8 to 20 inches. The content of rock fragments ranges from 5 to 30 percent in the upper part of the solum and from 10 to 35 percent in the lower part. Reaction ranges from extremely acid to moderately acid throughout.

Some pedons have an A horizon that has hue of 5YR to 10YR, value of 2 or 3, and chroma of Oto 2. The E horizon has hue of 7.5YR to 10YR, value of 4 to 6, and chroma of 1 or 2. The A and E horizons range from sandy loam to loam.

The Bs horizon has hue of 2.5YR to 10YR, value of 3 or 4, and chroma of 3 to 8. It ranges from sandy loam to loam.

Lyme Serles

The Lyme series consists of poorly drained soils that formed in loamy glacial till derived from granite, gneiss, and schist. These soils are in depressions and drainageways on uplands. Slopes range from 0 to 5 percent.

Lyme soils are near well drained Monadnock soils, moderately well drained Skerry soils, and poorly drained and somewhat poorly drained Pillsbury soils. Monadnock soils have a coarser textured substratum than Lyme soils. Unlike Lyme soils, Skerry and Pillsbury soils have a firm or very firm substratum.

Typical pedon of Lyme loam, in an area of Lyme stony loam, 0 to 5 percent slopes, in the town of Deering, 1.5 miles south of the Hillsborough-Deering town line and 1.7 miles east of the Contoocook River:

A—0 to 8 inches; black (10YR 2/1) loam, light gray (10YR 6/1) dry; moderate medium granular structure; friable; 14 percent gravel; strongly acid; abrupt wavy boundary.

Bg—8 to 22 inches; olive gray (5Y 4/2) gravelly sandy loam; common fine distinct light olive brown (2.5Y 5/6) mottles; weak fine granular structure; friable; 20 percent gravel; strongly acid; clear wavy boundary.

C—22 to 60 inches; olive (5Y 4/3) gravelly sandy loam; common fine distinct light olive brown (2.5Y 5/6) mottles; massive; friable; 30 percent gravel; strongly acid.

The solum ranges from 20 to 36 inches in thickness. The content of rock fragments ranges from 5 to 30 percent in the solum and from 10 to 35 percent in the substratum. Reaction is very strongly acid or strongly acid throughout.

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

The B horizon has hue of 10YA to 5Y, value of 4 to 6, and chroma of 1 or 2. It is loam, 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 1 to 4. It is fine sandy loam, sandy loam, or their gravelly analogs. In some pedons, below a depth of 40 inches it is loamy sand. I

Madawaska Serles

The Madawaska series consists of moderately well drained soils that formed in loamy glacial outwash overlying sandy glacial outwash derived from granite, gneiss, and schist. These soils are on outwash plains and terraces. Slopes range from 0 to 5 percent.

Madawaska soils are near excessively drained Adams soils, well drained Groveton soils, moderately well drained Croghan soils, and poorly drained and somewhat poorly drained Naumburg soils. Madawaska soils have less sand in the solum than Adams, Croghan, and Naumburg soils. Madawaska and Groveton soils formed in similar parent material.

Typical pedon of Madawaska fine sandy loam, 0 to 5 percent slopes, in the town of Peterborough, 7,200 feet south of N.H. Route 1O1 and 1,000 feet west of the Contoocook River:

A—0 to 4 inches; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; very friable; many fine and common medium roots; very strongly acid; clear wavy boundary.

Bs1—4 to 9 inches; brown (7.5YR 4/4) fine sandy loam; **weak** medium subangular blocky structure; very friable and slightly smeary; common fine and few medium roots; very strongly acid; gradual wavy boundary.

Bs2—9 to 20 inches; yellowish brown (10YA 5/6) fine sandy loam; few fine distinct light brownish gray (10YR 6/2), pale brown (10YR 6/3), and reddish yellow (7.5YR 6/8) mottles; weak medium subangular blocky structure; very friable; common fine roots; strongly acid; gradual wavy boundary.

BC—20 to 32 inches; light olive brown (2.5Y 5/4) fine sandy loam; few fine distinct yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; abrupt wavy boundary.

2C—32 to 60 inches; light olive brown (2.5Y 5/4) stratified loamy sand and sand; single grain; loose; 5 percent gravel; moderately acid.

The solum ranges from 18 to 32 inches in thickness. The content of rock fragments ranges from 0 to 10 percent in the substratum. Reaction ranges from very strongly acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Some pedons have an E horizon that is neutral or has hue of 7.5YR to 2.5Y; value is 5 to 7, and chroma is 0 to 2. The A and E horizons are very fine sandy loam, fine sandy loam, or sandy loam.

The Bs horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 8. The BC horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8.

The B horizon is very fine sandy loam, fine sandy loam, or sandy loam.

The C horizon has hue of 2.5Y to 5Y, value of 4 to 6, and chroma of 1 to 3. It ranges from sand to very fine sandy loam.

Marlow Series

The Marlow series consists of well drained soils that formed in loamy glacial till over compact glacial till derived mainly from mica schist and granite. These soils are on drumlins and on side slopes of hills and ridges. Slopes range from 3 to 35 percent.

Marlow soils are near somewhat excessively drained Lyman soils, well drained Monadnock and Tunbridge soils, moderately well drained Peru soils, and poorly drained and somewhat poorly drained Pillsbury soils. Unlike Lyman, Monadnock, and Tunbridge soils, Marlow soils have a firm or very firm substratum. Marlow soils and Peru and Pillsbury soils formed in similar parent material.

Typical pedon of Marlow loam, 8 to 15 percent slopes, in the town of Wilton, 3,200 feet north of the Souhegan River and 1,300 feet east of the town line of Temple:

Ap—0 to 8 inches; dark brown (10YR 3/3) loam; weak fine granular structure; friable; many fine and medium roots; 5 percent cobbles; strongly acid; abrupt smooth boundary.

Bs—8 to 13 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; friable and slightly smeary; many fine and medium roots; 10 percent cobbles; strongly acid; clear wavy boundary.

Bw—13 to 19 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; 10 percent cobbles; strongly acid; abrupt wavy boundary.

BC—19 to 24 inches; olive (5Y 5/3) sandy loam; weak medium platy structure; friable; few fine roots; 10 percent cobbles; strongly acid; abrupt wavy boundary.

Cr—24 to 60 inches; light olive brown (2.5Y 5/4) fine sandy loam; moderate medium platy structure; very firm; 5 percent gravel; 5 percent cobbles; very strongly acid.

The solum ranges from 14 to 40 inches in thickness. The content of rock fragments ranges from 5 to 30 percent throughout. Reaction ranges from extremely acid to moderately acid throughout.

The A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 2 to 4. It is fine sandy loam or loam. Some pedons have a thin, discontinuous E horizon.

The Bs horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 8. The Bw horizon has hue of 5YR to 2.SY, value of 4 or 5, and chroma of 3 to 6. The BC horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 3 to 6. The B horizon is fine sandy loam, sandy loam, or loam.

The C horizon has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 1 to 4. It is fine sandy loam, sandy loam, or loam. It is firm or very firm.

Monadnock Series

The Monadnock series consists of well drained soils that formed in glacial till derived from granite and gneiss. These soils are on side slopes of hills and ridges. Slopes range from 3 to 35 percent.

Monadnock soils are near somewhat excessively drained Lyman soils, well drained Tunbridge and Marlow soils, and moderately well drained Skerry soils. Monadnock soils are deeper to bedrock than Lyman and Tunbridge soils. Unlike Monadnock soils, Skerry and Marlow soils have a firm or very firm substratum.

Typical pedon of Monadnock fine sandy loam, in an area of Monadnock stony fine sandy loam, 8 to 15 percent slopes, in the town of Sharon, 6,500 feet north of the intersection of N.H. Routes 123 and 124 and 3,000 feet west of the Temple town line:

A—0 to 4 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many coarse and fine roots; 2 percent gravel; very strongly acid; abrupt smooth boundary.

Bs—4 to 10 inches; yellowish red (5YR 4/8) cobbly fine sandy loam; weak fine granular structure; very friable and slightly smeary; many fine roots; 15 percent cobbles; very strongly acid; clear wavy boundary.

Bw—10 to 22 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; 10 percent cobbles; very strongly acid; clear irregular boundary.

C1—22 to 28 inches; pale brown (10YR 6/3) fine sandy loam; massive; friable; few fine roots; 10 percent cobbles; strongly acid; clear wavy boundary.

2C2—28 to 60 inches; very pale brown (10YR 7/3) gravelly loamy sand; massive; firm; 15 percent gravel; strongly acid.

The solum ranges from 18 to 36 inches in thickness. It has 0 to 15 percent gravel, 0 to 20 percent cobbles, and 0 to 20 percent stones. The substratum has 0 to 45 percent gravel, 0 to 20 percent cobbles, and 0 to 20 percent stones. Total content of rock fragments ranges from 2 to 30 percent in the solum and from 5 to 60 percent in the substratum. Reaction ranges from extremely acid to moderately acid throughout.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 3. Some pedons have an Ap horizon that has hue of 10YR, value of 2 to 4, and chroma of 2 to 4. Some pedons have an E horizon that has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of

1 or 2. The A and E horizons range from sandy loam to loam.

The Bs horizon has hue of 2.SYR to 10YA, value of 3 to 6, and chroma of 2 to 8. The Bw horizon has hue of 7.SYR to SY, value of 4 to 6, and chroma of 3 to 8.

The C horizon has hue of 10YA to SY, value of 4 to 7, and chroma of 2 to 4. The C1 horizon is fine sandy loam or sandy loam. The 2C2 horizon is loamy sand or loamy fine sand.

Naumburg Serles

The Naumburg series consists of poorly drained and somewhat poorly drained soils that formed in sandy glacial outwash derived from granite, gneiss, and schist. These soils are in depressions on outwash plains and terraces. Slopes range from 0 to 8 percent.

Naumburg soils are near moderately well drained Croghan and Madawaska soils and very poorly drained Searsport soils. Naumburg soils and Searsport and Croghan soils formed in similar parent material. Madawaska soils have less sand in the solum than Naumburg soils.

Typical pedon of Naumburg fine sandy loam, 0 to 3 percent slopes, in the town of Sharon, 7,700 feet north of N.H. Route 124 and 7,400 feet west of the Cheshire County line:

Oa—0 to 2 inches; decomposed organic mat with many fine and common medium roots.

A—2 to 9 inches; black (7.SYR 2/0) fine sandy loam, light brownish gray (10YA 6/2) dry; weak medium granular structure; friable; many fine and common medium roots; extremely acid; clear wavy boundary.

E—9 to 13 inches; pinkish gray (SYR 6/2) loamy sand; massive; friable; common fine roots; very strongly acid; clear wavy boundary.

Bh—13 to 17 inches; dark reddish brown (SYR 3/2) loamy sand; few medium distinct reddish brown (SYR 4/3) and brown (7.SYR 5/2) mottles; weak fine granular structure; friable and moderately smeary; common fine roots; very strongly acid; gradual wavy boundary.

Bs—17 to 19 inches; mottled brown (7.SYR 5/2) and reddish brown (SYR 5/3) loamy sand; massive; friable; few fine roots; very strongly acid; gradual wavy boundary.

BC—19 to 22 inches; brown (10YA 4/3) sand; massive; friable; very strongly acid; clear wavy boundary.

C—22 to 60 inches; mottled light yellowish brown (10YA 6/4), pale brown (10YR 6/3), and light yellowish brown (2.SY 6/4) sand; single grain; loose; very strongly acid.

The solum ranges from 18 to 40 inches in thickness. Reaction ranges from extremely acid to strongly acid in the solum and from very strongly acid to moderately acid in the substratum.

The A horizon is neutral or has hue of SYR to 10YA; value is 2 to 4, and chroma is 0 to 4. The E horizon has hue of SYR to 10YR, value of 5 to 7, and chroma of 1 or 2. The A and E horizons range from fine sandy loam to sand.

The Bh horizon has hue of SYR to 10YA, value of 2 or 3, and chroma of 1 or 2. The Bs horizon has hue of SYR to 10YA, value of 3 to 6, and chroma of 2 to 6. The B horizon ranges from loamy fine sand to sand. It is friable, very friable, or loose and has as much as 40 percent ortstein in the upper part.

The BC horizon has hue of 10YA or 2.SY, value of 4 or 5, and chroma of 3 or 4. It is sand or loamy sand.

The C horizon has hue of 10YA to SY, value of 4 to 6, and chroma of 2 to 4. It ranges from loamy fine sand to sand.

Ondawa Serles

The Ondawa series consists of well drained soils that are subject to common flooding. These soils formed in thick alluvial deposits derived from granite, gneiss, and schist. Slopes range from 0 to 3 percent.

Ondawa soils are near excessively drained Adams soils, moderately well drained Podunk soils, and poorly drained Rumney soils. Ondawa soils and Podunk and Rumney soils formed in similar parent material. Ondawa soils have less sand in the solum than Adams soils.

Typical pedon of Ondawa fine sandy loam, in the town of Deering, 1,200 feet southwest of the confluence of the Contoocook River and Beards Brook, 0.8 mile southwest of the village of Hillsboro:

Ap—0 to 10 inches; dark brown (10YA 3/3) fine sandy loam; weak fine and medium granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

Bw1—10 to 25 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; very friable; common fine roots; moderately acid; gradual wavy boundary.

Bw2—25 to 32 inches; light olive brown (2.SY 5/6) sandy loam; weak fine granular structure; very friable; few fine roots; moderately acid; clear wavy boundary.

C1—32 to 41 inches; olive yellow (2.SY 6/6) loamy sand; single grain; loose; 1 percent gravel; moderately acid; clear smooth boundary.

C2—41 to 46 inches; variegated light yellowish brown (2.SY 6/4) and olive yellow (2.SY 6/6) sand and coarse sand; single grain; loose; 8 percent gravel; slightly acid; clear smooth boundary.

C3—46 to 60 inches; brownish yellow (10YA 6/6) sand; single grain; loose; slightly acid.

Thickness of the solum and depth to the sandy substratum range from 20 to 40 inches. Reaction ranges from very strongly acid to slightly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 4. It ranges from sandy loam to loam.

The B horizon has hue of 10YR or 2.5Y, value of 3 to 8, and chroma of 3 to 8. It ranges from sandy loam to loam.

The C horizon has hue of 10YR to 5Y, value of 3 to 7, and chroma of 2 to 6. It ranges from loamy fine sand to coarse sand. The content of gravel ranges from 0 to 15 percent.

Ossipee Serles

The Ossipee series consists of very poorly drained soils that formed in organic deposits 16 to 51 inches thick overlying loamy mineral material. The soils are in depressions on outwash plains, terraces, and uplands. Slopes range from 0 to 2 percent.

Ossipee soils are near excessively drained Colton and Adams soils, poorly drained Lyme soils, and very poorly drained Greenwood and Chocorua soils. Colton, Adams, and Lyme soils formed in mineral material. Greenwood soils formed in organic deposits more than 51 inches thick. Chocorua soils formed in organic deposits 16 to 51 inches thick overlying sandy material.

Typical pedon of Ossipee peat, in the town of Hancock, 80 feet north of Halfmoon Pond and 1,000 feet east of the Cheshire County line:

Oi—0 to 4 inches; dark yellowish brown (10YR 3/4) broken face and rubbed peat (fibric material); about 90 percent herbaceous fiber, about 90 percent rubbed; **weak** medium granular structure; nonsticky; many fine and medium roots; very strongly acid; abrupt wavy boundary.

Oe1—4 to 22 inches; black (10YR 2/1) broken face and rubbed mucky peat (hemic material); about 75 percent herbaceous fiber, about 40 percent rubbed; massive; nonsticky; few fine roots; very strongly acid; abrupt wavy boundary.

Oe2—22 to 41 inches; very dark brown (10YR 2/2) broken face and very dark grayish brown (10YA 3/2) rubbed mucky peat (hemic material); about 65 percent herbaceous fiber, about 40 percent rubbed; massive; nonsticky; very strongly acid; abrupt smooth boundary.

Cg—41 to 60 inches; dark gray (5Y 4/1) fine sandy loam; massive; friable; strongly acid.

The organic layers range from 16 to 51 inches in thickness. The organic material is herbaceous and woody. It has 0 to 15 percent slightly decomposed woody fragments.

The Oe horizon has hue of 2.5YA to 10YA, value of 1 to 4, and chroma of 1 to 4. Value and chroma can increase 1 or 2 units when the organic material is exposed to air.

The surface tier, exclusive of loose surface litter or moss, has a fiber content of 40 to 90 percent unrubbed and 15 to 70 percent rubbed.

The subsurface and bottom tiers have a fiber content of 50 to 80 percent unrubbed and 20 to 40 percent rubbed.

The Cg horizon is neutral or has hue of 10YR to 5Y; value is 4 to 6, and chroma is 0 to 4. It ranges from sandy loam to silt loam. Reaction ranges from strongly acid to slightly acid.

Peacham Series

The Peacham series consists of very poorly drained soils that formed in accumulations of organic matter and the underlying loamy glacial till. These soils are in depressions on till uplands. Slopes range from 0 to 2 percent.

Peacham soils are near poorly drained and somewhat poorly drained Pillsbury soils and moderately well drained Peru and Skerry soils. Skerry soils have more sand in the substratum than Peacham soils. Peacham soils and Pillsbury and Peru soils formed in similar parent material.

Typical pedon of Peacham muck, in an area of Peacham stony muck, in the town of Greenfield, 2,800 feet south of Rand Brook and 2,000 feet west of the Francestown town line:

Oi—0 to 2 inches; dark reddish brown (5YR 3/2) undecomposed organic mat of leaves, needles, twigs, and sphagnum moss; massive; very strongly acid; clear wavy boundary.

Oa—2 to 8 inches; black (10YA 2/1) muck; massive; very strongly acid; clear wavy boundary.

Bg—8 to 16 inches; dark gray (10YA 4/1) fine sandy loam; moderate medium distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; 10 percent gravel; very strongly acid; clear wavy boundary.

Cr—16 to 60 inches; light olive gray (5Y 6/2) fine sandy loam; few medium distinct olive (5Y 4/4) mottles; massive; firm; 14 percent gravel; moderately acid.

The solum ranges from 6 to 24 inches in thickness. The content of rock fragments ranges from 5 to 30 percent in the subsoil and substratum.

The Oa horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The Bg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It is loam, fine sandy loam, sandy loam, or their gravelly analogs.

The C horizon has hue of 2.5Y to 5Y, value of 3 to 6, and chroma of 1 or 2. It is loam, fine sandy loam, sandy loam, or their gravelly analogs. It is firm or very firm.

Peru Serles

The Peru series consists of moderately well drained soils that formed in loamy glacial till over compact glacial till derived from schist and granite. These soils are on side slopes of drumlins and hills and in depressions on uplands. Slopes range from 0 to 25 percent.

Peru soils are near well drained Marlow soils, poorly drained and somewhat poorly drained Pillsbury soils, and very poorly drained Peacham soils. Peru soils and Marlow, Pillsbury, and Peacham soils formed in similar parent material.

Typical pedon of Peru loam, in an area of Peru stony loam, 0 to 8 percent slopes, in the town of Greenfield, 4,000 feet northwest of Otter Lake and 1 mile east of Hancock town line:

Oi—2 inches to 0; loose leaf litter.
Oa—0 to 1 inch; decomposed leaf litter.
A—1 to 5 inches; dark brown (10YR 3/3) loam; weak fine granular structure; very friable; many fine roots; 5 percent gravel; very strongly acid; abrupt wavy boundary.
Bs1—5 to 8 inches; yellowish red (5YR 4/6) loam; weak fine granular structure; very friable and slightly smeary; many fine and medium roots; 5 percent cobbles; very strongly acid; clear wavy boundary.
Bs2—8 to 13 inches; yellowish brown (10YR 5/6) loam; common fine distinct strong brown (7.5YR 5/6) mottles in lower part; weak fine granular structure; friable; common fine and medium roots; 10 percent gravel; very strongly acid; clear wavy boundary.
Bw—13 to 20 inches; light yellowish brown (2.5Y 6/4) sandy loam; common fine distinct yellowish brown (10YR 5/8) mottles; **weak** fine granular structure; friable; few fine roots; 5 percent gravel; very strongly acid; clear wavy boundary.
C—20 to 26 inches; olive gray (5Y 5/2) sandy loam; common fine distinct yellowish brown (10YR 5/6) mottles; massive; friable; 5 percent gravel; very strongly acid; clear wavy boundary.
Cr1—26 to 35 inches; light brownish gray (2.5Y 6/2) sandy loam; common medium prominent strong brown (7.SYR 5/6) mottles; moderate medium platy structure; firm; 5 percent gravel; very strongly acid; abrupt wavy boundary.
Cr2—35 to 60 inches; olive (5Y 4/3) fine sandy loam; moderate medium platy structure; firm; 5 percent gravel; strongly acid.

The solum ranges from 12 to 36 inches in thickness. The content of rock fragments ranges from 5 to 30 percent in the solum and from 0 to 30 percent in the substratum. Reaction ranges from extremely acid to moderately acid throughout.

The A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 2 or 3. It is loam or fine sandy *loam:*

The Bs horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 8. The Bw horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6. The B horizon is sandy loam, fine sandy loam, or loam.

The C and Cr horizons have hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. They are sandy loam, fine sandy loam, or loam. The Cr horizon is firm or very firm.

Pillsbury Serles

The Pillsbury series consists of poorly drained and somewhat poorly drained soils that formed in compact, loamy glacial till derived from granite, gneiss, and schist. These soils are in depressions and drainageways on uplands. Slopes range from 0 to 5 percent.

Pillsbury soils are near moderately well drained Skerry and Peru soils, poorly drained Lyme soils, and very poorly drained Peacham soils. Pillsbury soils and Peru and Peacham soils formed in similar parent material. Unlike Lyme soils, Pillsbury soils have a firm or very firm substratum. Skerry soils have a coarser textured substratum than Pillsbury soils.

Typical pedon of Pillsbury loam, in an area of Pillsbury stony loam, 0 to 5 percent slopes, in the town of Deering, 3,000 feet south of the intersection of the Hillsborough-Deering town line and the Merrimack County line:

A—0 to 8 inches; very dark brown (10YR 2/2) loam; light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many medium and fine roots; 5 percent gravel; very strongly acid; abrupt wavy boundary.
Bw—8 to 12 inches; brown (10YR 4/3) fine sandy loam; common medium distinct grayish brown (10YR 5/2) and strong brown (7.5YR 5/6) mottles; weak medium granular structure; friable; common medium and fine roots; 8 percent gravel; very strongly acid; clear wavy boundary.
Bg—12 to 15 inches; grayish brown (2.5Y 5/2) sandy loam; common medium distinct light olive brown (2.5Y 5/6) mottles; massive; friable; few fine roots; 8 percent gravel; very strongly acid; clear smooth boundary.
Cr—15 to 60 inches; olive gray (5Y 5/2) sandy loam; common medium distinct light olive brown (2.5Y 5/6) mottles; medium thick platy structure; very firm; 10 percent gravel; very strongly acid.

The solum ranges from 15 to 30 inches in thickness. The content of rock fragments ranges from 5 to 45 percent throughout. Reaction ranges from very strongly acid to strongly acid above a depth of 40 inches and from very strongly acid to moderately acid below that depth.

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

The B horizon is neutral or has hue of 10YA to 5Y; value is 4 to 6, and chroma is 0 to 4. It is loam, fine sandy loam, or sandy loam.

The C horizon has hue of 10YA to 5Y, value of 3 to 6, and chroma of 1 to 4. It is firm or very firm fine sandy loam or sandy loam.

Podunk Series

The Podunk series consists of moderately well drained soils that are frequently flooded. These soils formed in alluvial deposits derived from gneiss, schist, and granite. Slopes range from 0 to 3 percent.

Podunk soils are near well drained Ondawa soils and poorly drained Rumney soils. Podunk soils and Ondawa and Rumney soils formed in similar parent material.

Typical pedon of Podunk fine sandy loam, in the town of Deering, 1.9 miles north of the junction of the Bennington-Deering-Antrim town lines and 200 feet east of the Contoocook River:

Ap—0 to 9 inches; dark brown (10YA 3/3) fine sandy loam; light brownish gray (10YA 6/2) dry; weak fine granular structure; very friable; common fine roots; very strongly acid; abrupt smooth boundary.

Bw1—9 to 23 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; friable; few fine roots; strongly acid; clear wavy boundary.

Bw2—23 to 29 inches; yellowish brown (10YR 5/4) fine sandy loam; few fine distinct light olive gray (5Y 6/2) mottles; massive; friable; strongly acid; clear wavy boundary.

C1—29 to 49 inches; light olive t.rown (2.5Y 5/4) loamy fine sand; common fine distinct yellowish brown (10YA 5/8) and many medium faint light brownish gray (2.5Y 6/2) mottles; massive; friable; strongly acid; clear wavy boundary.

C2—49 to 60 inches; light olive brown (2.5Y 5/4) loamy sand; common, fine to coarse, prominent yellowish red (5YR 4/8), light brownish gray (2.5Y 6/2), and very dark brown (10YA 2/2) mottles; massive; very friable; strongly acid.

The solum ranges from 18 to 40 inches in thickness. Reaction ranges from very strongly acid to slightly acid throughout.

The A horizon has hue of 10YA to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is fine sandy loam, sandy loam, or loam.

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

The C horizon has hue of 10YA to 5Y, value of 4 to 6, and chroma of 1 to 6. It ranges from loamy fine sand to coarse sand.

Rumney Series

The Rumney series consists of poorly drained soils that are frequently flooded. These soils formed in alluvial deposits derived from gneiss, schist, and granite. Slopes range from 0 to 3 percent.

Rumney soils are near well drained Ondawa soils and moderately well drained Podunk soils. Rumney soils and Ondawa and Podunk soils formed in similar parent material.

Typical pedon of Rumney loam, in the town of Bennington, 150 feet south of the Contoocook River and 3,200 feet east of the Hancock town line:

Oi—1 inch to 0; loose leaf litter.

Oa—0 to 1 inch; decomposed leaf litter.

A—1 to 4 inches; very dark brown (10YR 2/2) loam; weak fine granular structure; friable; many fine, medium, and coarse roots; very strongly acid; abrupt smooth boundary.

Bg—4 to 31 inches; very dark grayish brown (10YA 3/2) loam; many fine prominent dark red (2.5YR 3/6) mottles; **weak** medium subangular blocky structure; friable; common fine and medium roots; moderately acid; abrupt smooth boundary.

C1—31 to 41 inches; light brownish gray (2.5Y 6/2) gravelly sand; single grain; loose; 15 percent gravel; moderately acid; abrupt smooth boundary.

C2—41 to 44 inches; dark brown (10YA 3/3) gravelly sand; single grain; loose; 30 percent gravel; moderately acid; abrupt smooth boundary.

C3—44 to 60 inches; olive brown (2.5Y 4/4) loamy fine sand; single grain; loose; 5 percent gravel; moderately acid.

The solum ranges from 20 to 40 inches in thickness. The content of gravel ranges from 0 to 10 percent in the solum and from 5 to 40 percent in the substratum. Reaction ranges from very strongly acid to slightly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. It is fine sandy loam, sandy loam, or loam.

The Bg horizon has hue of 10YA to 5Y, value of 3 to 6, and chroma of 1 or 2. It is sandy loam, fine sandy loam, or loam.

The C horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 4. It ranges from loamy fine sand to sand.

Searsport Series

The Searsport series consists of very poorly drained soils that formed in sandy glacial outwash derived from granite, gneiss, and schist. These soils are in depressions on outwash plains and terraces. Slopes range from 0 to 3 percent.

Searsport soils are near moderately well drained Croghan soils, poorly drained and somewhat poorly drained Naumburg soils, and very poorly drained Chocorua soils. Searsport and Croghan and Naumburg soils formed in similar parent material. Unlike Searsport soils, Chocorua soils have a thick organic layer.

Typical pedon of Searsport muck, in the town of Deering, 4,300 feet south of the Hillsborough-Deering town line and 2,700 feet **east** of the Contoocook River:

Oa—0 to 8 inches; black (7.5YR 2/0) broken face and rubbed muck (sapric material); about 30 percent herbaceous fiber, about 5 percent rubbed; moderate fine granular structure; slightly sticky; many fine roots; very strongly acid; abrupt smooth boundary.

Cg1—8 to 20 inches; gray (5Y 5/1) sand; single grain; loose; slightly acid; clear smooth boundary.

Cg2—20 to 28 inches; gray (5Y 6/1) coarse sand; common coarse distinct olive (5Y 5/3) mottles; single grain; loose; slightly acid; clear smooth boundary.

Cg3—28 to 60 inches; gray (SY 6/1) sand; few fine prominent olive (5Y 5/6) mottles; single grain; loose; slightly acid.

Some pedons have a mucky A horizon. The combined O and A horizons range from 8 to 16 inches in thickness. The content of coarse fragments ranges from 0 to 15 percent throughout. Reaction ranges from very strongly acid to slightly acid throughout.

The Oa horizon is neutral or has hue of 5YR to 5Y; value is 2 or 3, and chroma is 0 to 2.

The C horizon is neutral or has hue of 10YR to 5Y; value is 4 to 6, and chroma is 0 to 2. It is loamy sand, fine sand, sand, or coarse sand.

Skerry Series

The Skerry series consists of moderately well drained soils that formed in compact, loamy glacial till derived from granite and schist. These soils are on lower side slopes of hills, ridges, and drumlins. Slopes range from 0 to 15 percent.

Skerry soils are near well drained Becket and Monadnock soils, poorly drained and somewhat poorly drained Pillsbury soils, and poorly drained Lyme soils. Unlike Lyme and Monadnock soils, Skerry soils have a firm or very firm substratum. Pillsbury soils have less sand in the substratum than Skerry soils. Becket and Skerry soils formed in similar soil material.

Typical pedon of Skerry fine sandy loam, in an area of Skerry stony fine sandy loam, 0 to 8 percent slopes, in the town of Hillsborough, 1.4 miles northwest of Hillsborough Upper Village and 150 feet north of N.H. Route 31:

Oe—4 inches to 0; partly decomposed leaf and needle litter mat that has many coarse, medium, and fine roots.

A—0 to 4 inches; black (10YR 2/1) fine sandy loam; light gray (10YR 6/1) dry; weak fine granular structure; friable; many medium and fine roots; 10 percent gravel; very strongly acid; abrupt wavy boundary.

Bs1—4 to 8 inches; reddish brown (5YR 4/4) gravelly fine sandy loam; **weak** medium subangular blocky structure parting to **weak** medium granular; friable and slightly smeary; many medium and fine roots; 20 percent gravel; very strongly acid; clear wavy boundary.

Bs2—8 to 26 inches; mixed reddish brown (5YR 4/4) and strong brown (7.5YR 5/6) gravelly fine sandy loam; few fine distinct grayish brown (10YR 5/2) mottles; **weak** medium subangular blocky structure; friable; few medium and fine roots; 20 percent gravel; very strongly acid; clear wavy boundary.

C—26 to 60 inches; yellowish brown (10YR 5/4) gravelly loamy sand; few fine distinct strong brown (7.5YR 5/8) mottles; weak medium platy structure; firm; 30 percent gravel; very strongly acid.

The solum ranges from 15 to 36 inches in thickness. The content of rock fragments ranges from 5 to 30 percent in the solum and from 5 to 40 percent in the substratum. Reaction ranges from very strongly acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Some pedons have an Ap horizon that has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. The A and Ap horizons are fine sandy loam or sandy loam. Some pedons have an E horizon that has hue of 10YA, value of 4 to 6, and chroma of 1 or 2.

The B horizon has hue of 5YR to 7.5YR, value of 2 to 6, and chroma of 3 to 8. 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 2 to 4. It is loamy sand or loamy fine sand. It is firm or very firm.

Tunbridge Serles

The Tunbridge series consists of moderately deep, well drained soils that formed in loamy glacial till derived from granite, gneiss, and schist. These soils are on hills, ridges, and mountains. Slopes range from 3 to 35 percent.

Tunbridge soils are near shallow, somewhat excessively drained Lyman soils and deep, well drained Monadnock soils. Tunbridge soils are deeper to bedrock than Lyman soils. Tunbridge soils are shallower to bedrock and have less sand in the substratum than Monadnock soils.

Typical pedon of Tunbridge fine sandy loam, in an area of Tunbridge-Lyman-Monadnock complex, stony, 8 to 15 percent slopes, in the town of Weare, 2 miles northwest of Chase Village and 0.5 mile south of the Merrimack County line:

A—0 to 4 inches; dark brown (7.5YR 3/2) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; 5 percent channers; very strongly acid; clear wavy boundary.

Bs1—4 to 11 inches; yellowish red (5YR 4/6) channery fine sandy loam; **weak** fine and medium granular structure; friable; common fine and medium roots; 10 percent channers, 5 percent gravel; strongly acid; clear wavy boundary.

Bs2—11 to 22 inches; strong brown (7.5YR 4/6) channery fine sandy loam; weak fine and medium granular structure; friable; common fine and medium roots; 15 percent channers, 5 percent gravel; moderately acid; clear wavy boundary.

C—22 to 30 inches; yellowish brown (10YR 5/4) channery fine sandy loam; massive; friable; few fine roots; 15 percent channers, 5 percent gravel; moderately acid; abrupt wavy boundary.

R—30 inches; schist bedrock.

The solum ranges from 14 to 38 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. Reaction ranges from very strongly acid to moderately acid in the solum and from strongly acid to slightly acid in the C horizon. The content of rock fragments ranges from 5 to 20 percent in the solum and from 10 to 20 percent in the C horizon. The content of rock fragments larger than 3 inches ranges from 0 to 5 percent in the A horizon and from 0 to 15 percent in the B and C horizon.

The A horizon is neutral or has hue of 5YR or 10YA; value is 2 to 5, and chroma is 0 to 4. It is loam or fine sandy loam.

The Bs1 horizon has hue of 5YR to 10YA, value of 3 to 5, and chroma of 3 to 6. It is loam, fine sandy loam, or their channery analogs. The Bs2 horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 6. It is loam, fine sandy loam, or their channery analogs.

The C horizon has hue of 10YA to 5Y, value of 4 or 5, and chroma of 2 to 4. It is loam, fine sandy loam, or their channery analogs.

Udorthents

Udorthents consist of well drained soils that formed in sandy and gravelly fill material. The fill generally was derived from Adams and Colton soils. Slopes range from 0 to 60 percent.

Udorthents are near excessively drained Adams and Colton soils. Unlike Udorthents, Adams and Colton soils have identifiable diagnostic horizons.

Udorthents differ from place to place; thus, a typical pedon cannot be given.

Undisturbed material is at a depth of more than 20 inches. There are no identifiable diagnostic horizons at a depth of within 40 inches. Between depths of 10 and 40 inches the soils range from loamy fine sand to very coarse sand and their gravelly and very gravelly analogs. The content of rock fragments in all horizons is more than 35 percent. Reaction ranges from strongly acid to moderately acid.

Formation of the Soils

This section consists of two parts. The first part discusses the factors of soil formation and the second part the processes of soil formation as they relate to morphology.

Factors of Soll Formation

Soils are the result of the interaction of five major factors: climate, parent material, plant and animal life, topography, and time **(8).** The relative importance of each factor differs from place to place. One or more of the factors may dominate the kind of soil that formed in a particular area. More commonly, the effect of any one factor is difficult to isolate, and the combined effect of all five factors is evident. In this survey area differences in parent material, drainage, and time have determined most of the differences in the soils.

Climate

The climate of the survey area is predominantly continental. The average annual temperature is about 45° F. The average annual rainfall is about 45 inches. The rainfall during the growing season is fairly uniform. It ranges from about 3.5 to 4.1 inches per month. Local variations in climate are mainly the result of differences in elevation. More detailed information about the climate of the survey area is given in the "Climate" section.

Temperature and rainfall govern the rates of physical and chemical weathering of the soil *(13).* The excessively drained to moderately well drained soils in the survey area have been leached of readily soluble bases and are acid in reaction. In winter, chemical weathering proceeds at a very slow rate *(10).* Physical weathering in the form of freezing and thawing granulates the soil material and breaks down rock fragments.

Parent Materlal

Parent material is the unconsolidated material in which soils form. It determines to a large extent the mineralogical and chemical composition of the soils. It also affects the rate of soil formation.

There are six types of parent material in the survey area. They are: glacial till, stratified deposits of glacial outwash, silty glaciolacustrine deposits, recent alluvium, organic deposits, and soil material altered by man. The parent material of most of the soils is glacial deposits that accumulated when the last ice sheet melted, about 12,000 years ago.

More than two-thirds of the soils in the survey area formed in moderately coarse or coarse textured glacial till. The characteristics of these soils differ greatly. Marlow, Monadnock, Becket, and Lyman soils formed in glacial till. Adams, Colton, and Naumburg soils formed in coarse textured glacial outwash. These soils commonly are underlain by stratified sand and gravel. Glaciolacustrine deposits are of very limited extent in the survey area.

Ondawa, Podunk, and Rumney soils formed in recent alluvium on flood plains. They are medium and moderately coarse textured and have only slight profile development.

Greenwood soils formed in organic deposits. Organic deposits consist of partly decomposed plant remains that have been accumulating in depressions since the last ice sheet melted.

Udorthents formed in material that has been altered by man during the preparation of building sites.

Plant and Animal Life

Plant and animal life has been active in soil formation. In the survey area, climate, topography, and parent material have had a greater influence on soil formation than plant and animal life. Plants mainly have added organic matter.

The kinds of plants growing on the soils influence the number and kind of micro-organisms in the soils. Fungi generally are present in much greater numbers in soils that formed under forest vegetation. Bacteria, fungi, and other micro-organisms decompose the organic matter and change it into humus, which is more resistant to decomposition. Earthworms, rodents, and other animals that live in the soil help to mix the soil layers. They also help to aerate the soil and to decompose the organic matter.

The activities of man have also brought about significant changes in soil development. By clearing forests, constructing buildings and roads, and cultivating, liming, fertilizing, and irrigating the soil, man has altered the upper horizons of the soil, accelerated the rate of erosion, or otherwise changed the nature of the soils.

Topography

Topography affects surface drainage and has considerable influence on soil formation. The influence of topography on the soils is evident from a comparison of the profiles of soils that formed in the same parent material and climate but that differ in topography and drainage conditions. Marlow, Peru, and Pillsbury soils formed in compact, platy glacial till. Marlow soils are well drained, have a hardpan at a depth of about 24 inches, and are mainly sloping. They are not steep enough for erosion to be a hazard on undisturbed sites, even though runoff is medium or rapid.

Peru soils are moderately well drained and have a hardpan in the substratum. They are mainly gently sloping. Runoff is medium to slow, and permeability is moderate to slow. Pillsbury soils are in depressions. They are nearly level to gently sloping and poorly drained and have a hardpan in the substratum. Pillsbury soils are in a low position on the landscape; consequently, water tends to pond on them. Table 18 shows the relationship among parent material, landscape position, dominant texture, and drainage of the soils in the survey area.

Time

Time is required for soil formation. The degree of profile development reflects the length of time that soil forming processes have acted on parent material.

Generally, the soils in the survey area have been forming since the last ice sheet receded, about 12,000 years ago. Whether or not a distinct profile forms depends in part on each of the five factors of soil formation. If the parent material has been in place long enough, the soil will develop distinct horizons. Adams and Monadnock soils are examples of soils that have well developed horizons. The rate of weathering, or soil formation, exceeds the rate of geologic erosion in Adams and Monadnock soils. Further, horizons form more quickly in sandy soils, such as Adams soils, where leaching occurs very rapidly.

If the soil is steep and the rate of geologic erosion has been rapid or if the parent material is relatively young, the soil generally has indistinct horizons. Rumney soils formed in recent alluvium on flood plains. They have indistinct horizons because of the continual accumulation of sediment, or parent material, during periods of flooding.

Morphology of the Solis

Most of the soils have distinct horizon development. The soils forming in recent alluvium, such as Rumney, Ondawa, and Podunk soils, are exceptions.

Distinct soil horizons are the result of profile development under cool, humid conditions in the northeastern states. In the survey area, the principal reasons for differences in the horizons are additions of organic matter, transfer of organic matter and iron and aluminum oxides, chemical weathering of primary rocks, minerals, and parent material into silicate clays, and chemical transfer of iron. One or more of these processes have occurred to some degree on most of the soils in the survey area.

Organic matter has accumulated in the soils to form an A horizon. Plowing and cultivation have changed the A horizon to an Ap horizon. In places part or all of the A horizon has been removed by erosion. The amount of organic matter added to the surface of soils varies with vegetation, aspect, temperature, moisture, and drainage conditions. Colton and Adams soils are moderate in organic matter content in the A horizon, but Searsport and Peacham soils are high.

The most important process in the formation of horizons is the movement of organic matter and iron and aluminum oxides from the A horizon to the B horizon, where they are precipitated under oxidizing conditions. The extent of this soil-forming process determines the degree of development of a spodic B horizon. A light gray E horizon may form over an accumulation of humus and iron and aluminum oxides in the spodic B horizon. The Monadnock, Adams, Colton, Marlow, and Peru soils show evidence of the development of a spodic horizon.

In wet soils, the reduction of ferric iron to ferrous iron results in a change in soil color. In gleization, the soil color changes from shades of brown, red, and yellow to various shades of gray (4). Sometimes, the iron is removed completely from the profile. Other times, the iron moves to a different horizon and is partly re-oxidized; thus, mottles form in the soil. Gray layers are common in poorly drained and very poorly drained soils, such as Lyme and Searsport soils.

Marlow, Becket, and some other soils have a compact substratum at a depth of about 24 inches. The compact substratum probably formed through the process of lodgement, or plastering, while the glacial till was being deposited.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

Ablation tlll. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

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.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 24
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	>5.2

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

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

Bottom land. The normal flood plain of a stream, subject to flooding.

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

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

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

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

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

Colluvlum. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Commercial forestland. Forestland that is capable of producing more than 20 cubic feet per acre per year of industrial wood in natural stands.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Congellturbate. Soil material disturbed by frost action.

Conservation tlllage. A form of noninversion tillage that retains protective amounts of residue mulch on the surface throughout the year. Conservation tillage includes no-tillage, stubble mulching, and other types of noninversion tillage.

Consistence, soll. 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 fqrefinger 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.

Hard—*When* dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—*When* dry, breaks into powder or individual grains under very slight pressure.

Cemented—*Hard;* little affected by moistening.

Contour strlpcropplng. 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.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

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

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth to rock (in tables). Bedrock is too near the surface for 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 they are wet 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.

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

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by 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 the surface.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

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.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 37.5 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial melt water.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, askers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial melt water. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

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 that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

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. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon 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.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have 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 in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 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.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake in inches per hour is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

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.
Corrugation.—*Water* is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
Drip (or trickle).—*Water* is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.
Furrow.—*Water* is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
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.
Wild flooding.—*Water*, released at high points, is allowed to flow onto an area without controlled distribution.

Kame (geology). An irregular, short ridge or hill of stratified glacial drift.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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. The soil is not strong enough to support loads.

Medium textured soil. *Very* fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some 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. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash, glacial. Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by glacial melt water.

Outwash plain. A landform 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 that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Peres slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

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

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity Index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability the soil may not adequately filter effluent from a waste disposal system.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure 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

Relief. The elevations or inequalities of a land surface, considered collectively.

Rlii. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rlppable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil 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.

Saprlc 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 (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Serles, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Slllca. A combination of silicon and oxygen. The mineral form is called quartz.

Slit. 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.

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

Site Index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average

height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

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.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slow Intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soll. A natural, three-dimensional body at the earth's surface. It 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.

Soll separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in 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 plant and animal activities 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.

Strlpcropplng. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soll. The arrangement of primary soil particles into compound particles or 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).

Subsoll. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. 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 and behavior.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

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 water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

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 loam, silt, 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 (in tables). Otherwise suitable soil material too thin for the specified use.

Tlii plain. An extensive flat to undulating area underlain by glacial till.

Tlith, soll. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

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

Topsoll. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

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

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by melt water streams, in a glacial lake or other body of still water in front of a glacier.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Wlltlng point (or permanent wlltlng point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-79 at Peterborough, New Hampshire]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	V.E	V.E	V.E	V.E	VF	Units	In	In	In		In
January----	30,9	12.1	21.5	55	-15	0	3,71	1.71	5,42	1	19,7
February---	33, 1.	13.1	23,1	56	-16	0	3.39	2.04	4.59	6	2u.:1
March------	41. 6	22.2	31.9	66	-2	22	3.82	2.56	4. 96	1	Hl.5
April------	55,5	31.9	43,7	82	13	l:i0	3,47	2.21	4. :i4	1	4.9
May--------	67,5	41.7	54.6	87	25	453	3,55	2.01	4,86	8	.4
June-------	75,5	50,9	63.2	91	32	696	3,47	1.71	4. 98	1	.0
July-------	79.6	55,8	67,7	92	38	859	3,48	1. 80	4.94	1	.0
August-----	77,4	54.2	65.8	91	36	800	4.06	2.45	5,50	8	.0
September--	10.0	46.7	58.4	87	25	552	3,49	1.77	4,99	6	.0
October----	60.2	37:3	48.8	80	16	282	3,63	1. 76	5.24	6	.6
November---	46.9	28. 8	37, 9	69	7	66	4.22	2.36	5,85	e	6.3
December---	34. 3	16,9	25.6	59	-11	10	4.18	2,33	5,82	1	17,0
Yearly:											
Average--	56.o	34,3	45.2	---	---	---	---	---	---	---	---
Extreme--	---	---	---	93	-18	---	---	---	---	---	---
Total----	---	---	---	---	---	3,890	44.47	37,84	,0.81	84	88. :l

[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

[Recorded in the period of 1951-79 at Peterborough, New Hampshire]

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--	May 5	May 26	June 15
2 years in 10 later than--	April 29	May 19	June 8
5 years in 10 later than--	April 18	May 4	May 25
First freezing temperature in fall:			
1 year in 10 earlier than--	September 28	September 14	September 9
2 years in 10 earlier than--	October 4	September 20	September 14
5 years in 10 earlier than--	October 15	October 1	September 23

TABLE 3,--GROWING SEASON

[Recorded in the period 1959-79 at Peterborough, New Hampshire]

Probability	Length of growing season if dally minimum temperature ls--		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years 1n 10	148	120	90
8 years in 10	159	130	100
5 years 1n 10	179	149	120
2 years 1n 10	200	169	140
1 year 1n 10	211	179	151

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

Map symbol	Soil name	[illegible] ft	[illegible]
15	Searsport muck	1,166	0.3
22A	Colton loamy sand, 0 to 3 percent slopes	2,277	0.7
22B	Colton loamy sand, 3 to 8 percent slopes	8,626	2.9
22C	Colton loamy sand, 8 to 15 percent slopes	7,147	2.4
22E	Colton loamy sand, 15 to 50 percent slopes	5,835	1.9
27B	Groveton very fine sandy loam, 0 to 5 percent slopes	208	0.1
28B	Madawaska fine sandy loam, 0 to 5 percent slopes	259	0.1
36A	Adams loamy sand, 0 to 3 percent slopes	516	0.2
36B	Adams loamy sand, 3 to 8 percent slopes	2,253	0,7
36c	Adams loamy sand, 8 to 15 percent slopes	1,923	o.6
36E	Adams loamy sand, 15 to 50 percent slopes	2,284	o.8
56B	Becket fine sandy loam, 3 to 8 percent slopes	383	0.1
56C	Becket fine sandy loam, 8 to 15 percent slopes	270	0.1
57B	Becket stony fine sandy loam, 3 to 8 percent slopes	393	0,1
57C	Becket stony fine sandy loam, 8 to 15 percent slopes	1,541	U,5
57D	Becket stony fine sandy loam, 15 to 25 percent slopes	963	o. 3
76B	Marlow loam, 3 to 8 percent slopes	4,034	1.3
76C	Marlow loam, 8 to 15 percent slopes	4,770	1. 6
76D	Marlow loam, 15 to 25 percent slopes	2,235	0.7
77B	Marlow stony loam, 3 to 8 percent slopes	5,332	1. 8
77C	Marlow stony loam, 8 to 15 percent slopes	22,147	7,3
77D	Marlow stony loam, 15 to 35 percent slopes	32,592	10.8
78B	Peru loam, 3 to 8 percent slopes	1,052	0.3
79B	Peru stony loam, 0 to 8 percent slopes	7,741	2.6
79C	Peru stony loam, 8 to 15 percent slopes	2,224	0.7
79D	Peru stony loam, 15 to 25 percent slopes	237	0.1
101	Ondawa fine sandy loam	567	0.2
104	Podunk fine sandy loam	524	0.2
105	Rumney loam	3,667	1.2
142B	Monadnock fine sandy loam, 3 to 8 percent slopes	2,208	0.7
142C	Monadnock fine sandy loam, 8 to 15 percent slopes	2,721	0,9
143B	Monadnock stony fine sandy loam, 3 to 8 percent slopes	6,832	2.3
143C	Monadnock stony fine sandy loam, 8 to 15 percent slopes	26,898	8,9
143D	Monadnock stony fine sandy loam, 15 to 35 percent slopes	18,865	6.2
145C	Monadnock very bouldery fine sandy loam, 8 to 15 percent slopes	8,641	2.9
145D	Monadnock very bouldery fine sandy loam, 15 to 35 percent slopes	11,258	3,7
160B	Tunbridge-Lyman-Monadnock complex, stony, 3 to 8 percent slopes	1,533	0.5
160c	Tunbridge-Lyman-Monadnock complex, stony, 8 to 15 percent slopes	8,992	3,0
160D	Tunbridge-Lyman-Monadnock complex, stony, 15 to 25 percent slopes	7,088	2,3
161c	Lyman-Tunbridge-Rock outcrop complex, 3 to 15 percent slopes	12,498	4.1
1610	Lyman-Tunbridge-Rock outcrop complex, 15 to 35 percent slopes	26,884	8,9
197	Borohemists, ponded	5,261	1.7
214A	Naumburg fine sandy loam, 0 to 3 percent slopes	3,550	1.2
214B	Naumburg fine sandy loam, 3 to 8 percent slopes	436	0.2
246B	Lyme loam, 0 to 5 percent slopes	401	0.1
247B	Lyme stony loam, 0 to 5 percent slopes	7,353	2.4
295	Greenwood mucky peat	2,124	0,7
298	Pits gravel	518	0.2
299	Udorthents, smoothed	340	0.1
395	Chocorua mucky peat	1,892	0.6
399	Rock outcrop	658	0.2
495	Ossipee peat	658	0.2
549	Peacham stony muck	1,592	0,5
558B	Skerry fine sandy loam, 3 to 8 percent slopes	971	0.3
559B	Skerry stony fine sandy loam, 0 to 8 percent slopes	6,669	2.2
559C	Skerry stony fine sandy loam, 8 to 15 percent slopes	1,740	o.6
613A	Croghan loamy fine sand, 0 to 3 percent slopes	1,576	0,5
613B	Croghan loamy fine sand, 3 to 8 percent slopes	677	0.2
646B	Pillsbury loam, 0 to 5 percent slopes	417	0.2
647B	Pillsbury stony loam, 0 to 5 percent slopes	4,472	1.5
W	Water	4,045	1.3
	Total	302,734	100.0

TABLE 5.--PRIME FARMLAND

[Only the soils considered to be prime farmland are listed. Urban or built-up areas of the soils listed are not considered to be prime farmland. If a soil is prime farmland only under certain cor~itions, the conditions are specified in parentheses after the soil name]

Map symbol	Soil name
27B	Groveton very fine sandy loam, 0 to 5 percent slopes
28B	Madawaska fine sandy loam, Oto 5 percent slopes
56B	Becket fine sandy loam, 3 to 8 percent slopes
76B	Marlow loam, 3 to 8 percent slopes
78B	Peru loam, 3 to 8 percent slopes
101	Ondawa fine sandy loam (where protected from flooding)
104	Podunk fine sandy loam (where drained and protected from flooding)
142B	Monadnock fine sandy loam, 3 to 8 percent slopes
5588	Skerry fine sandy loam, 3 to 8 percent slopes

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Corn silage	Alfalfa hay	Grass-legume hay	Grass hay	Semidwarf apples
	Ton	Ton	Ton	Ton	Bu
[1]Earsport	---	---	---	---	---
22A, Colton	12	2.5	2.0	---	---
22B, Colton	12	2.5	2.0	---	---
22C, Colton	---	2,5	2.0	---	---
22E, Colton	---	---	---	---	---
27B, Groveton	22	---	4.0	---	---
28B, Madawaska	22	4,5	3.5	4.0	---
36A, 36B, Adams	12	---	2.5	---	---
36C, Adams	12	---	2,5	---	---
36E, Adams	---	---	---	---	---
56B, Becket	22	4.0	3.5	3.5	---
56C, Becket	20	4.0	3.5	3.5	---
57B, 57C, 57D, Becket	---	---	---	---	---
76B, Marlow	22	4.5	4.0	4.0	700-900
76C, Marlow	20	4.5	4.0	4.0	650-850
76D, Marlow	18	4.0	3,5	3.5	600-800
77B, 77C, 77D, Marlow	---	---	---	---	---
78B, Peru	20	4.0	4.0	4.0	650-850

See footnote at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass-legume hay	Grass hay	Semidwarf apples
	Ton	Ton	Ton	Ton	Bu
79B, 79C, 79D---------- Peru	---	---	---	---	---
101---------- 0ndawa	26	4.5	4.0	---	---
104---------- fud=k	24	4.0	4.5	4.5	---
1~~mney----------	20	---	3.5	4.0	---
142B---------- Monadnock	18	4.0	4.0	3,5	---
142C---------- Monadnock	16	4.0	3.5	3.0	---
143B, 143C---------- Monadnock	---	---	---	---	---
143D, 145C, 145D---------- Monadnock	---	---	---	---	---
160B, ~60C, 160D---------- Tunbridge-Lyman-Monadnock	---	---	---	---	---
161C, 161D---------- Lyman-Tunbridge-Rock outcrop	---	---	---	---	---
197*, Borohemists					
214A, 214B---------- Naumburg	14	---	---	---	---
2463---------- Lyme	15	---	3,5	3,0	---
247B---------- ~=	---	---	---	---	---
2~~eenwood----------	---	---	---	---	---
298*. Pits					
299*. Udorthents					
395---------- Chocorua	---	---	---	---	---
399*. Rock outcrop					
495---------- 0ssipee	---	---	---	---	---
549---------- Peacham	---	---	---	---	---
558B---------- Skerry	18	3,5	4.0	4.0	---

See footnote at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass-legume hay	Grass hay	Semidwarf apples
	Ton	Ton	Ton	Ton	Bu
559B, 559C---------- Skerry	---	---	---	---	---
613A, 613B---------- Oroghan	14	3.0	3,0	---	---
646B---------- Pillsbury	16	---	3.5	3.0	---
647B---------- Pillsbury	---	---	---	---	---

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

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
15---------- Searsport	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple---------- Black spruce-------- Balsam fir---------- Tamarack----------	55 65 ---)o ---	Northern white-cedar, European larch,
22A, 22B, 22C------ Colton	5s	Slight	Slight	Severe	Slight	Eastern white pine-- Red pine---------- Red spruce---------- White spruce--------	59 50 40 52	Eastern white pine, red pine.
22E---------- Colton	4s	slight	Moderate	severe	slight	Eastern white pine-- Red pine---------- Red spruce---------- Sugar maple--------- White spruce--------	60 50 39 61 52	Eastern white pine, red pine.
27B---------- Groveton	3o	Slight	slight	Slight	Slight	Eastern white pine-- Red spruce---------- Balsam fir---------- Red pine---------- Northern red oak---- Paper birch---------	70 50 55 70 65 70	Eastern white pine, northern red oak, paper birch.
289---------- Madawaska	3o	Slight	Slight	Slight	Slight	Eastern white pine-- White spruce-------- Sugar maple--------- Balsam fir---------- Paper birch--------- Red spruce----------	70 50 60 50 60 50	Eastern white pine, white spruce, European larch, balsam fir.
36A, 36B, 36C------ Adams	4s	Slight	Slight	Severe	Slight	Eastern white pine-- Red pine---------- Red spruce---------- Sugar maple---------	62 60 45 50	Eastern white pine, red pine, European larch.
36E---------- Adams	4s	Slight	Moderate	Severe	Slight	Eastern white pine-- Red pine---------- Red spruce---------- Sugar maple---------	62 60 45 50	Eastern white pine, red pine, European larch.
56B, 56C, 57B, 57C- Becket	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Balsam fir---------- White spruce-------- Sugar maple--------- Red oak----------	70 55 55 55 66	Eastern white pine, white spruce, balsam fir,
57D---------- Becket	3r	Slight	Moderate	Slight	slight	Eastern white pine-- Balswn fir---------- White spruce-------- Sugar maple--------- Red oak----------	70 55 55 55 66	Eastern white pine, white spruce, balsam fir.
76B, 76C---------- Marlow	3o	slight	slight	s1ight	slight	Eastern white pine-- Balsam fir---------- Red spruce---------- Sugar maple--------- Red pine---------- Yellow birch-------- Paper birch--------- White ash---------- Red oak----------	66 57 48 59 64 63 65 67 66	Eastern white pine, white spruce, balsam fir.

See footnote at end of table.

TABLE 7,--WO0DLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
76D--~---------- Marlow	3r	Slight	Moderate	Slight	Slight	Eastern white pine-- Balsam fir---------- Red spruce---------- Sugar maple---------- Red pine---------- Yellow birch-------- Paper birch--------- White ash---------- Red oak----------	66 57 48 59 64 63 65 67 66	Eastern white pine, white spruce, balsam fir.
77B, 77C---------- Marlow	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Balsam fir---------- Red spruce---------- Sugar maple---------- Red pine----------	66 57 48 59 64	Eastern white pine, white spruce, balsam fir.
77D---------- Marlow	3r	Slight	Moderate/Slight		Slight	Eastern white pine-- Balsam fir---------- Red spruce---------- Sugar maple---------- Red pine----------	66 57 48 59 64	Eastern white pine, white spruce, balsam fir.
78B, 79B, 79C------ Peru	3o	Slight	Slight	/slight	Slight	Sugar maple---------/ Northern red oak---- Eastern white pine-- Red spruce---------- Balsam fir---------- /White spruce--------	57 70 67 45 55 52	Eastern white pine, red pine, white spruce, European larch.
79D---------- Peru	3r	Slight	Moderate	Slight	Slight	Sugar maple--------- Northern red oak---- Eastern white pine--/ /Red spruce---------- Balsam fir---------- White spruce--------	57 70 67 45 55 52	Eastern white pine, red pine, white spruce, European larch.
101---------- Ondawa	So	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine---------- Red spruce---------- Sugar maple---------	55 60 55 45 55	Eastern white pine, white spruce, red pine.
104---------- ~d~k	3o	Slight	Slight	Slight	Slight	[illegible]	70 70	Eastern white pine, red pine, white spruce.
105---------- Rumney	5w	Slight	Severe	Severe	Severe	/Eastern white pine-- Red maple---------- Red spruce----------	57 65 45	Eastern white pine, white spruce, northern white-cedar.
142B,142C,143B,143C Mnnadnock	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- /Red pine----------	60 55 60	Eastern white pine, red pine, white spruce,
143D---------- Monadnock	4r	Slight	Moderate	Slight	Slight	/Eastern white pine--/ Northern red oak---- Red pine----------	60 55 60	Eastern white pine, red pine, white spruce,
145C, 145D--------- Monadnock	4x	Slight	Moderate	Slight	Slight	Northern red oak---- Red pine---------- Eastern white pine--	55 60 60	Red pine, white spruce, eastern white pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
160B*, 160C*: Tunbridge	3o	Slight	Slight	Slight	Slight	Northern red oak Eastern white pine Red spruce	70 66 45	Eastern white pine, white spruce, red spruce.
Lyman	4d	Slight	slight	Severe	Moderate	Sugar maple White spruce Balsam fir Red spruce Eastern white pine	50 55 50 40 55	Eastern white pine, red pine, wnite spruce, balsam fir.
Monadnock	5o	Slight	Slight	Slight	Slight	Eastern white pine Northern red oak Red pine	bO 55 60	Eastern white pine, red pine, white spruce.
160D*: Tunbridge	3r	Slight	Moderate	slight	slight	Northern red oak Eastern white pine Red spruce	70 66 45	Eastern white pine, white spruce, red spruce.
Lyman	4d	Slight	Moderate	Severe	Moderate	Sugar maple White spruce Balsam fir Red spruce Eastern white pine	50 55 50 40 55	Eastern white pine, red pine, white spruce, balsam fir.
Monadnock	4r	Slight	Moderate	Slight	slight	Eastern white pine Northern red oak Red pine	60 55 60	Eastern white pine, red pine, white spruce.
161C*: Lyman	4d	Slight	Slight	Severe	Moderate	sugar maple White spruce Balsam fir Red spruce Eastern white pine	50 55 50 40 55	Eastern white pine, red pine, white spruce, balsam fir.
Tunbridge	3o	slight	slight	slight	slight	Northern reO oak Eastern white pine Red spruce	70 66 45	Eastern white pine, white spruce, red spruce.
Rock outcrop.								
[illegible]	4d	slight	Moderate	Severe	Moderate	sugar maple White spruce Balsam fir Red spruce	50 55 50 4u	Eastern white pine, red pine, white spruce, balsam fir.
Tunbridge	3r	slight	Moderate	Slight	slight	Northern red oak Eastern white pine Red spruce	70 66 45	Eastern white pine, white spruce, red spruce.
Rock outcrop.								
214A, 214B Naumburg	4w	slight	Moderate	severe	Moderate	Eastern white pine Red maple	60 70	Eastern white pine, Norway spruce, white spruce.
246B Lyme	4w	Slight	Severe	Severe	Severe	Balsam fir Eastern white pine Red maple Red spruce	50 60 65 50	Eastern white pine, white spruce; eastern hemlock.

See footnote at end of table.

TABLE 7,--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
247B---------- Lyme	4w	Slight	Severe	Severe	Severe	Balsam fir----------	55	Eastern white pine, white spruce, eastern hemlock,
						Red spruce----------	50	
						Eastern white pine--	60	
						Red maple----------	65	
295---------- Greenwood	5w	Slight	Severe	Severe	Severe	Balsam fir----------	40	
						Black spruce--------	---	
						Tamarack----------	---	
						Red maple----------	---	
395---------- Chocorua	5w	Slight	Severe	Severe	Severe	Black spruce--------	---	
						Tamarack----------	---	
						Balsam fir----------	---	
495---------- Ossipee	5w	Slight	Severe	Severe	Severe	Black spruce--------	---	
						Tamarack----------	---	
						Balsam fir----------	---	
549---------- Peacham	5w	Slight	Severe	Severe	Severe	Eastern white pine--	65	
						Balsam fir----------	55	
55RB, 559B, 559C--- Skerry	3o	Slight	Slight	Slight	Slight	Eastern white pine--	75	Eastern white pine, European larch, white spruce,
						Sugar maple---------	60	
						Balsam fir----------	55	
613A, 613B--------- Croghan	4s	Slight	Slight	Moderate	Slight	Eastern white pine--	70	Eastern white pine, red pine, European larch.
						Red pine----------	65	
						Sugar maple---------	55	
646B, 647B--------- Pillsbury	4w	Slight	Severe	Severe	Severe	Northern red oak----	60	Eastern white pine, white spruce,
						Red spruce----------	50	
						Eastern white pine--	60	

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

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "mod~rate," 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
1~;;;;;;;;----------1s:~~~~~g,	excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
22A---------- Colton	\Slight----------	1Slight----------	1Moderate: small stones.	ISlight----------	lSevere: draughty.
22B---------- Colton	1Slight----------	1Slight----------	1Moderate: slope, small stones.	Slight----------	1severe: draughty.
22C---------- Colton	\Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	lSevere: draughty.
2~~i;;~----------	\S:r~~:\	Severe: slope.	Severe: slope, small stones.	severe: slope.	severe: small stones, draughty, slope.
27B---------- Groveton	ISlight----------	Slight----------	lModerate: slope.	1Slight----------	1Slight.
28B---------- Madawaska	1Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	\Moderate: wetness.	\Moderate: wetness.
36A---------- Adams	ls1ight----------	Slight----------/	s1ight----------l	s1ight----------/	severe: draughty.
36B---------- Adams	!Slight----------	Slight----------l	Moderate: slope.	\slight----------	lsevere: draughty.
36C---------- Adams	1Moderate: slope.	Moderate: slope.	Severe: slope.	\slight----------/	severe: draughty.
36E---------- Adams	lsevere: slope.	Severe: slope.	Severe: slope.	Severe: slope.	\Severe: slope, draughty.
56B---------- Becket	1Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: slope, small stones.	jModerate: wetness.	\Moderate: wetness, droughty.
56C---------- Becket	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.	\Moderate: wetness, draughty, slope.
57B---------- Becket	1Moderate: large stones, wetness.	Moderate: wetness, large stones.	\Severe: large stones.	jModerate: wetness.	jModerate: large stones, wetness, droughty.
57C---------- Becket	1Moderate: slope, large stones, wetness.	\Moderate: slope, wetness, large stones.	Severe: large stones, slope.	\Moderate: wetness.	\Moderate: wetness, draughty, slope.
Si~;k;;---------~----	1S:r~~:\	Severe: slope.	!Severe: large stones, slope.	!Moderate: wetness, slope.	\Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
76B--- Marlow	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight---	Slight.
76C--- Marlow	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight---	Moderate: slope.
76D--- Marlow	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
77B--- Marlow	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight---	Moderate: large stones.
77C--- Marlow	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight---	Moderate: large stones, slope.
77D--- Marlow	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
78B--- Peru	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Moderate: wetness.	Moderate: wetness.
79B--- Peru	Moderate: large stones, wetness.	Moderate: wetness, large stones.	Severe: large stones.	Moderate: wetness.	Moderate: large stones, wetness.
79C--- Peru	Moderate: slope, large stones, wetness.	Moderate: slope, wetness, large stones.	Severe: large stones, slope.	Moderate: wetness,	Severe: large stones, wetness, slope.
79D--- Peru	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: wetness, slope.	Severe: slope.
101--- Ondawa	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
104--- Podunk	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness,	Severe: flooding.
105--- Rumney	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: flooding, wetness,
142B--- Monadnock	Slight---	Slight---	Moderate: slope, small stones,	Slight---	Slight.
142C--- Monadnock	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight---	Moderate: slope,
143B--- Monadnock	Moderate: large stones.	Moderate: large stones.	Severe: small stones.	Slight---	Moderate: large stones.
143C--- Monadnock	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Slight---	Moderate: large stones, slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
143D---------- Monadnock	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
145C---------- Monadnock	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: slope.	Moderate: large stones, slope.
145D---------- Monadnock	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
160B*:					
Tunbridge----------	Moderate: large stones.	Slight----------	Moderate: slope, depth to rock, large stones.	Moderate: large stones.	Moderate: depth to rock, large stones,
Lyman----------	Severe: depth to rock.	Severe: depth to rock.	Severe: large stones, depth to rock.	Slight----------	Severe: thin layer, droughty.
Monadnock----------	Moderate: large stones.	Moderate: large stones.	Severe: small stones.	Slight----------	Moderate: large stones.
160C*:					
Tunbridge----------	Moderate: slope, large stones.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Moderate: depth to rock, large stones.
Lyman----------	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, large stones, depth to rock.	Slight----------	severe: thin layer, droughty.
Monadnock----------	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Slight----------	Moderate: large stones, slope.
160D*:					
Tunbridge----------	Severe: slope.	severe: slope.	Severe: slope.	Moderate: slope, large stones.	Severe: slope.
Lyman----------	Severe: slope, depth to rock.	severe: slope, depth to rock.	Severe: slope, large stones, depth to rock.	Moderate: slope.	Severe: slope, thin layer, droughty.
Monadnock----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
161C*:					
Lyman----------	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, large stones, depth to rock.	Slight----------	Severe: thin layer, droughty.
Tunbridge----------	Moderate: slope, large stones.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Moderate: depth to rock, large stones.
Rock outcrop----------	Severe: depth to rock.	Severe: depth to rock,	Severe: slope, depth to rock.	Slight	Severe: thin layer,

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1610*: Lyman	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope.	Severe: slope, thin layer, droughty.
Tunbridge	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
197*. Borohemists					
214A, 214B--- Naumburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
246B--- Lyme	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
247B--- Lyme	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
2[illegible]	Severe: excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
298. Pits					
299*, Udorthents					
395--- Chocorua	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
399*. Rock outcrop					
495--- Ossipee	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
5[illegible]	Severe: percs slowly.	Severe: wetness, excess humus.	Severe: large stones, wetness.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
558B--- Skerry	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
559B--- Skerry	Moderate: large stones, wetness.	Slight---	Severe: large stones.	Moderate: wetness.	Moderate: large stones, wetness.
559C--- Skerry	Severe: large stones, slope, wetness.	Moderate: slope.	Severe: large stones, slope.	Moderate: wetness.	Moderate: large stones, wetness, slope.

See footnote at end of table,

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
613A---------- Croghan	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: drou~hty.
613B---------- Croghan	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Severe: draughty.
646B---------- Pillsbury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
647B---------- Pillsbury	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.

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

TABLE 9,--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor;" Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Suitability for habitat elements							Suitability 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
15---- Searsport	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
22A, 22B, 22C---- Colton	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
22E---- Colton	Very poor.	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
27B---- Groveton	Fair.	Good	Good	Good	Good	Poor.	Very poor.	Good	Good	Very poor.
28B---- Madawaska	Fair.	Good	Good	Good	Good	Poor.	Very poor.	Good	Good	Very poor.
36A, 36B, 36C---- Adams	Poor	Fair.	Fair.	Poor.	Poor.	Very poor.	Very poor.	Fair	Poor	Very poor.
36E---- Adams	Very poor.	Fair	Fair.	Poor.	Poor.	Very poor.	Very poor.	Poor.	Poor.	Very poor.
56B---- Becket	Fair	Good	Good	Fair.	Fair.	Poor.	Very poor.	Good	Fair	Very poor.
56C---- Becket	Fair.	Good	Good	Fair.	Fair	Very poor.	Very poor.	Good	Fair.	Very poor.
57B---- Becket	Very poor.	Poor.	Good	Fair.	Fair.	Poor.	Very poor.	Poor	Fair	Very poor.
57C, 57D---- Becket	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor.	Fair.	Very poor.
76B---- Marlow	Fair.	Good	Good	Good	Good	Poor.	Very poor.	Good	Good	Very poor.
76C---- Marlow	Fair.	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
76D---- Marlow	Poor.	Fair.	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
77B---- Marlow	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
77C, 77D---- Marlow	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor.	Good	Very poor.
789---- Peru	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
79B---- Peru	Very poor.	Poor.	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
79C, 79D---- Peru	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
101---- Ondawa	Poor	Fair	Fair.	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Suitability for habitat elements							Suitability 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
104--Podunk	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
105--Rumney	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
142B--Monadnock	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
142C--Monadnock	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
143B--Monadnock	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
143C, 143D--Monadnock	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
145C, 145D--Monadnock	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
160B*:										
Tunbridge	Poor	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Lyman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Monadnock	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
160C*, 160D*:										
Tunbridge	Poor	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Lyman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Monadnock	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
161C*, 161D*:										
Lyman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Tunbridge	Poor	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.										
197*. Borohemists										
214A--Naumburg	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
214B--Naumburg	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
246B--Lyme	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
247B--Lyme	Very poor.	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Suitability for habitat elements							Suitability 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
295--- Greenwood	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
298*. Pits										
299*. Udorthents										
395--- Chocorua	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
399*. Rock outcrop										
495--- Ossipee	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
549--- Peacham	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
558B--- Skerry	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
559B--- Skerry	Very poor.	Poor	Good	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
559C--- Skerry	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
613B--- Croghan	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
646B--- Pillsbury	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
647B--- Pillsbury	Very poor.	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.

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

TABLE 10,--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary, See text for definitions of "slight," "moderate," and "severe;" Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
15---------- Seat-sport	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, excess humus.
22A---------- Colton	Severe: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Severe: droughty,
22B---------- Colton	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Severe: droughty,
22C---------- Colton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
22E---------- Colton	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
27B---------- Groveton	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
2~!a;;;;k;--------	s~:~~!~s, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Moderate: wetness.
36A---------- Adrians	Severe: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Severe: droughty.
36B---------- Adams	severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Severe: droughty.
36C---------- Adams	severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	severe: droughty,
3f~;;;----------	s!{~~!' cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, droughty,
56B---------- Becket	Moderate: dense layer', wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
56C---------- Becket	Moderate: dense layer', wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action,	Moderate: wetness, droughty, slope,
57B---------- Becket	Moderate: dense layer', wetness,	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: large stones, wetness, droughty,
57C---------- Becket	Moderate: dense layer', wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: wetness, droughty, slope.
57D---------- Becket	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	severe: slope.
76B---------- Marlow	Moderate: dense layer', wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets[1]	Lawns and landscaping
76C--Marlow	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
76D--Marlow	Poor: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
77B--Marlow	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: large stones.
77C--Marlow	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope,	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, slope.
77D--Marlow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
78B--Peru	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
79B--Peru	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: large stones, wetness,
79C--Peru	severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Severe: large stones, wetness, slope.
79D--Peru	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
101--Ondawa	severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
104--Podunk	severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
105--Rumney	severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: flooding, wetness.
142B--Monadnock	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
142C--Monadnock	severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
143B--Monadnock	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Moderate: large stones.
143C--Monadnock	severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: large stones, slope.
143D--Monadnock	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope,

See footnote at end of table.

TABLE 10.--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
145C---------- Monadnock	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, large stones.	Moderate: large stones, slope.
145D---------- Monadnock	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	severe: slope.	Severe: slope.	severe: slope.
160B*: Tunbridge--------	Severe: depth to rock.	Moderate: depth to rock, large stones.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: depth to rock, large stones.
Lyman----------	severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer, droughty.
Monadnock--------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Moderate: large stones,
160C*: Tunbridge--------	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: depth to rock, large stones.
Lyman----------	Severe: depth to rock.	severe: depth to rock.	severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer, draughty.
Monadnock--------	Severe: cutbanks cave.	Moderate: slope,	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: large stones, slope.
160D*: Tunbridge--------	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
Lyman----------	severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock,	Severe: slope, depth to rock.	Severe: slope; depth to rock.	severe: slope, thin layer, droughty.
Monadnock--------	severe: cutbanks cave, slope.	Severe: slope.	severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
161C*: Lyman----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock,	Severe: slope, depth to rock.	severe: depth to rock.	severe: thin layer, droughty.
Tunbridge--------	severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: depth to rock, large stones.
Rock outcrop.						

See footnote at end of table.

TABLE 10.--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
1610•: Lyman	severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock,	Severe: slope, thin layer, droughty.
Tunbridge	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
197*, Borohemists						
214A, 214B--- Naumburg	severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
246B, 247B--- Lyme	severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
295--- Greenwood	severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
298*. Pits						
299*. Udorthents						
395--- Chocorua	severe: cutbanks cave, excess humus, ponding.	severe: ponding, shrink-swell, low strength.	Severe: ponding.	Severe: ponding, shrink-swell, low strength.	severe: low strength, ponding, frost action.	Severe: ponding, excess humus.
399•. Rock outcrop						
495--- Ossipee	severe: excess humus, ponding.	Severe: ponding.	severe: ponding.	Severe: ponding.	Severe: frost action, ponding.	Severe: ponding, excess humus.
549--- Peacham	severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, excess humus.
558B--- Skerry	severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
559B--- Skerry	severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	severe: frost action.	Moderate: large stones, wetness.
559C--- Skerry	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	severe: frost action.	Moderate: large stones, wetness, slope.

See footnote at end of table.

TABLE 10.--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
613A---------- Croghan	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Severe: drought y,
613B---------- Croghan	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Severe: drought y.
646B, 647B-------- Pillsbury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.

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

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See 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
15--- Searsport	Severe: ponding, poor filter,	Severe: seepage, excess humus, ponding.
22A, 22B--- Colton	Severe: poor filter,	Severe: seepage,
22C--- Colton	severe: poor filter.	Severe: slope, seepage.
22E--- Colton	severe: poor filter, slope.	severe: slope, seepage.
2l~;;;t~;---	s11ght---	/s:~!~!ge.
2~!t;;;;~---	s:~~~!~s, poor filter,	Severe: wetness, seepage.
36A, 36B--- Adams	Severe: poor filter.	Severe: seepage,
36C--- Adams	Severe: poor filter.	Severe: slope, seepage,
36E--- Adams	Severe: poor filter, slope.	Severe: slope, seepage.
56B--- Becket	severe: percs slowly.	Moderate: seepage, slope,
5:;;k;t---	s;~~~==slowly.	Severe: slope.
5~!;k;t---	s;~~~!:slowly.	Moderate: seepage, slope.
5~;;~;;---	s;~~~==slowly.	Severe: slope,
5~~;k;t---	s;~~~==slowly, slope.	Severe: slope.
7~!;i~;---	s:~;~!~s, percs slowly,	Moderate: seepage, slope.
1i;;i~;---	s:~~~:~s, percs slowly,	Severe: slope,

See footnote at end of table.

TABLE 11,--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
7t~;1~:	1s:;~~!~s, percs slowly, slope.	Severe: slope.
778 Marlow	Severe: wetness, pe res slowly.	Moderate: seepage, slope.
1i~;i~;	1s:~~~=~s, pe rc s slowly.	Severe: slope.
1i~;i~;	1s:~~~=~s, pe res slowly, slope.	Severe: slope.
78B, 798 Peru	severe: wetness, percs slowly.	Moderate: seepage, slope.
1i~;~	1s:;~~!~s, percs slowly.	Severe: slope.
1i~;~	1s:;~~:~s, percs slowly, slope.	Severe: slope.
101 Ondawa	severe: flooding, poor filter.	Severe: flooding, seepage.
104 Podunk	Severe: flooding, wetness, poor filter.	Severe: flooding, wetness, seepage.
105 Rumney	severe: flooding, wetness, poor filter.	Severe: flooding, wetness, seepage.
1~;~;a~;;k	Slight	s:~:~!~e.
142C Monadnock	Moderate: slope.	Severe: seepage, slope.
143B Monadnock	slight	severe: seepage.
143C Monadnock	Moderate: slope.	severe: seepage, slope.
l~~~;d~;;k	S=~~~=:	Severe: seepage, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
l~~~;d~;~k	(M~f~~!~e:	Severe: seepage, slope.
145D Monadnock	/severe: slope.	/severe: seepage, slope.
160B*: Tunbridge	Severe: depth to rock,	Severe: depth to rock, seepage.
Lyman	Severe: depth to rock.	Severe: depth to rock, seepage,
Monadnock	Slight	Severe: seepage,
160C: Tunbridge	Severe: depth to rock.	Severe: slope, depth to rock, seepage.
Lyman	Severe: depth to rock.	Severe: slope, depth to rock, seepage.
Monadnock	Moderate: slope.	severe: seepage, slope.
160D: Tunbridge	Severe: slope, depth to rock,	Severe: slope, depth to rock, seepage.
Lyman	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage,
Monadnock	Severe: slope,	Severe: seepage, slope.
161C*: Lyman	Severe: depth to rock.	Severe: slope, depth to rock, seepage.
Tunbridge	Severe: depth to rock.	Severe: slope, depth to rock, seepage.
Rock outcrop.		

See footnote at end of table,

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
161D*, Lyman	Severe: slope, depth to rock,	Severe: slope, depth to rock, seepage.
Tunbridge	Severe: slope, depth to rock,	Severe: slope, depth to rock, seepage,
Rock outcrop,		
197*, Borohemists		
214A, 2148 Naumburg	Severe: wetness, poor filter.	Severe: seepage, wetness,
246B, 2478 Lyme	Severe: wetness.	Severe: seepage, wetness.
298*. Pits		Severe: seepage, excess humus, ponding.
299*. Udorthents		
399[11]. Rock outcrop	Severe: poor filter.	Severe: seepage, excess humus, ponding.
549 Peacham	Severe: wetness, percs slowly,	Slight,
558B, 5598 Skerry	severe: wetness, percs slowly.	Moderate: seepage, slope,
559C Skerry	Severe: wetness, percs slowly.	severe: slope.
613A, 613B Croghan	severe: wetness, poor filter.	Severe: seepage, wetness.
6468 Pillsbury	Severe: wetness, percs slowly,	[illegible] slope.
647B Pillsbury	Severe: percs slowly.	Severe: wetness.

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

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1~;;;;;;t----------	\P~~~~ess.	Probable----------	improbable: too sandy.	Poor: wetness, excess humus.
22A, 22B, 22C--------- Colton	Good----------	Probable----------	Probable----------	Poor: small stones, too sandy.
2~~lt;~----------	1P~~~~e.	Probable----------	Probable----------	Poor: slope, small stones, too sandy.
27B---------- Groveton	1Good----------	1Probable----------	1Improbable: too sandy.	Fair: thin layer.
2BB---------- Madawaska	1Fair: low strength, wetness.	Probable----------	Improbable: too sandy.	Fair: small stones, thin layer.
36A, 36B, 36C--------- Adsms	1Good----------	1Probable----------	Improbable: too sandy.	Poor: too sandy.
3f~;;;----------	1P~r~~e.	Probable----------	improbable: too sandy.	Poor: slope, too sandy.
56B, 56C, 57B, 57C---- Becket	1Fair: wetness.	Probable----------	Probable----------	Poor: small stones.
5;;~~;t----------	1F:!~~ess, slope.	Probable----------	Probable----------	Poor: small stones, slope.
76B, 76C---------- Marlow	1Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
7~~;i;;----------	\F!!~~ess, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
77B, 77C---------- **Marlow**	1Fair: **wetness.**	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
1i~;i;;----------	1P~r~~e.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
78B, 79B, 79C--------- Peru	1Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
79D---------- Peru	1Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
lOl---------- Ondawa	1Good----------	1Probable----------	1Improbable: too sandy.	Fair: thin layer.
104---------- Podunk	IFair: wetness.	Probable----------	Probable----------	Fair: small stones, thin layer, area reclaim.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
105---------- Rumney	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: wetness, small stones.
142B---------- Monadnock	Good----------	Probable----------	Improbable: too sandy.	Fair: small stones.
143B---------- Monadnock	Good----------	Probable----------	Improbable: too sandy.	Fair: small stones, slope.
143C---------- Monadnock	Good----------	Probable----------	Improbable: too sandy.	Poor: small stones.
[illegible]	[illegible]	Probable----------	Improbable: too sandy.	Poor: small stones, slope.
145C---------- Monadnock	Fair: large stones.	Probable----------	Improbable: too sandy.	Poor: large stones, small stones.
145D---------- Monadnock	Poor: slope.	Probable----------	Improbable: too sandy.	Poor: large stones, small stones, slope.
160B*, 160C*:				
Tunbridge----------	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
Lyman----------	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: small stones, area reclaim, thin layer.
Monadnock----------	Good----------	Probable----------	Improbable: too sandy.	Poor: small stones.
160D*:				
Tunbridge----------	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
Lyman----------	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Monadnock----------	Fair: slope.	Probable----------	Improbable: too sandy.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12,--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
161C•: Lyman	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer,	Poor: small stones, area reclaim, thin layer,
Tunbridge	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
Rock outcrop.				
1610•: Lyman	Poor: slope, thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Tunbridge	Poor: slope, thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones,
Rock outcrop,				
197*, Borohemists				
214A, 214B Naumburg	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness,
246B Lyme	Poor: wetness.	Improbable: excess fines,	Improbable: excess fines,	Poor: wetness,
2ii!;	1P~~~~ess.	Improbable: excess fines,	Improbable: excess fines.	Poor: small stones, wetness.
295 Greenwood	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines,	Poor: excess humus, wetness.
298*. Pits				
2991, Udorthents				
395 Chocorua	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness,
399*, Rock outcrop				
495 Ossipee	Poor: wetness.	Improbable: excess fines,	Improbable: excess fines,	Poor: excess humus, wetness,
5~~;;h;;	1P~~~~ess.	Improbable: excess fines.	Improbable: excess fines.	Poor: large atones, wetness,
558B, 559B, 559C, Skerry	Fair: wetness.	Probable	Probable	P~~~{l stones,

See footnote at end of table,

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
613A, 613B---------- Croghan	Fair: wetness.	Probable----------	Improbable: too sandy.	Fair: too sandy, small stones.
646B---------- Pillsbury	Poor: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
647B---------- Pillsbury	Poor: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.

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

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
[illegible]	[illegible]	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Cutbanks cave	Ponding	Wetness.
22A--- Colton	severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Droughty, large stones.
22B--- Colton	severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Droughty, large stones.
22c, 22E--- Colton	severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, droughty, large stones.
27B--- Groveton	severe: seepage.	Severe: piping, seepage.	Severe: no water.	Deep to water	Slope	Favorable.
28B--- Madawaska	severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave, frost action.	Wetness, slope.	Favorable.
36A--- Adams	severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Droughty.
36B--- Adams	severe: seepage.	Severe: seepage, piping.	severe: no water.	Deep to water	oroughty, fast intake, slope.	Droughty.
36C, 36E--- Adams	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water,	Deep to water	oroughty, fast intake, slope.	slope, droughty.
56B--- Becket	Moderate: seepage, slope.	Severe: seepage.	Severe: no water.	Peres slowly, slope.	Wetness, percs slowly, slope.	Droughty, rooting depth.
56C--- Becket	severe: slope.	Severe: seepage.	Severe: no water.	Peres slowly, slope.	Wetness, percs slowly, slope.	Slope, drcughty, rooting depth.
57B--- Becket	Moderate: seepage, slope.	Severe: seepage.	Severe: no water.	Peres slowly, slope.	wetness, percs slowly, slope.	Large stones, drcughty, rooting depth.
57C, 57D--- Becket	severe: slope.	Severe: seepage.	Severe: no water.	Peres slowly, slope.	Wetness, percs slowly, slope.	Large stones, slope, droughty.
76B--- Marlow	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Percs slowly, rooting depth, slope.	Erodes easily, rooting depth.
76C, 76D--- Marlow	severe: slope.	Severe: piping.	Severe: no water.	Slope	Percs slowly, rooting depth, slope.	Slope, erodes easily, rooting depth.
77B--- Marlow	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Peres slowly, rooting depth, slope.	Erodes easily.

See footnote at end of table.

TABLE 13,--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecti~--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
77C, 77D----------Marlow	severe: slope.	Severe: piping.	Severe: no water.	Slope----------	Percs slowly, rooting depth, slope.	Slope, erodes easily.
78B----------Peru	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Peres slowly, frost action, slope.	Wetness, percs slowly, slope.	Erodes easily, rooting depth,
79B----------Peru	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Peres slowly, frost action, slope.	Wetness, perce slowly, slope.	Erodes easily.
79C, 79D----------Peru	Severe: slope,	Severe: piping.	Severe: no water.	Peres slowly, frost action, slope.	wetness, percs slowly, slope.	Slope, erodes easily,
101----------Ondawa	Severe: seepage,	Severe: seepage, piping.	Severe: no water.	Deep to water	Flooding-------/	Erodes easily.
104----------Podunk	Severe: seepage,	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Frost action, flooding, cutbanks cave.	Wetness, flooding.	Erodes easily.
105----------Rumney	severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Frost action, flooding, cutbanks cave,	Plooding, wetness,	Wetness, erodes easily.
142B----------Monadnock	severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Favorable.
142C----------Monadnock	severe: seepage, slope.	Severe: seepage,	Severe: no water.	Deep to water	s1ope----------	s1ope.
143B----------Monadnock	severe: seepage,	Severe: seepage,	Severe: no water,	Deep to water	Slope----------	Favorable.
143C, 143D--------Monadnock	Severe: seepage, slope.	Severe: seepage,	Severe: no water.	Deep to water	slope----------	Slope,
145C, 145D--------Monadnock	Severe: seepage, slope.	Severe: seepage, large stones,	Severe: no water,	Deep to water	Slope----------	Large stones, slope.
160B*:						
Tunbridge---------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, large stones.	Slope, large stones,
Lyman----------	Severe: seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock, drought y,	Depth to rock, drought y,
Monadnock---------	Severe: seepage.	Severe: seepage,	Severe: no water.	Deep to water	Slope----------	Favorable,

See footnote at end of table.

TABLE 13,--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
160C, 160D*: Tunbridge	Severe: seepage, slope.	Severe: piping.	Severe: no water,	Deep to water	Slope, erodes easily, large stones.	Slope, large stones.
Lyman	Severe: slope, seepage, depth to rock,	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock, droughty.	Slope, depth to rock, droughty.
Monadnock	Severe: seepage, slope.	Severe: seepage,	Severe: no water.	Deep to water	Slope	Slope.
161C, 161D*: Lyman	Severe: slope, seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock, droughty,	Slope, depth to rock, droughty,
Tunbridge	Severe: seepage, slope.	Severe: piping.	Severe: no water,	Deep to water	Slope, erodes easily, large stones.	Slope, large stones.
Rock outcrop.						
197*. Borohemists						
214A Naumburg	Severe: seepage.	severe: seepage, piping, wetness.	severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, droughty,
214B Naumburg	Severe: seepage.	Severe: seepage, piping, wetness,	Severe: cutbanks cave,	Slope, cutbanks cave.	Wetness, droughty.	Wetness, droughty.
246B, 247B Lyme	Severe: seepage.	Severe: piping' wetness.	Moderate: slow refill.	Frost action, slope.	Wetness, slope.	Wetness.
295 Greenwood	Severe: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding, soil blowing,	Wetness.
298. Pits						
299. Udorthents						
395 Chocorua	Severe: seepage.	Severe: seepage, ponding, piping.	Severe: cutbanks cave.	Subsides, frost action, cutbanks cave.	Ponding	Wetness.
399*. Rock outcrop						

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
495--- Ossipee	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, frost action, subsides.	Ponding	Wetness.
549--- Peacham	Slight	Severe: piping, wetness.	Slight	Poor outlets, percs slowly, frost action.	Wetness, rooting depth, percs slowly.	Wetness, rooting depth, percs slowly.
558B--- Skerry	Moderate: seepage, slope.	Moderate: seepage.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, rooting depth, slope.	Rooting depth.
559B--- Skerry	Moderate: seepage, slope.	Moderate: seepage.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, rooting depth, slope.	Large stones, rooting depth.
559C--- Skerry	Severe: slope.	Moderate: seepage.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, rooting depth, slope.	Large stones, slope, rooting depth.
613A--- Croghan	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, draughty, fast intake.	Droughty.
613B--- Croghan	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, draughty, fast intake.	Droughty.
646B--- Pillsbury	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Peres slowly, frost action, slope.	Wetness, percs slowly, slope.	Wetness, rooting depth.
647B--- Pillsbury	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Peres slowly, slope.	Wetness, percs slowly, slope.	Wetness, rooting depth.

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

TABLE 14.--ENGINEERING INDEX PROPERTIES

[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		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
15---------- Searsport	0-8	Muck	PT	A-8	0	---	---	---	---	---	---
	8-60	Loamy sand, coarse sand, sand,	SM, SP	A-1, A-2, A-3	0	95-100	75-100	40-100	0-35	---	NP
22A, 22B, 22C, 22E---------- Colton	0-3	Loamy sand-------	SM, SW-SM, SP-SM	A-1, A-2, A-3, A-4	0-5	80-90	75-85	40-70	5-45	---	NP
	3-23	Gravelly loamy sand, very gravelly sand, cobbly sand,	SM, GM, SP, GP	A-1	5-20	30-80	25-75	20-50	2-20	---	NP
	23-60	Extremely gravelly sand, very gravelly sand.	GP, SP, GW, SW	A-1	10-45	20-55	15-50	10-30	0-5	---	NP
27B---------- Groveton	0-1	Very fine sandy loam.	SM, ML	A-4	0	100	95-100	60-90	45-70	<25	NP-3
	1-33	Fine sandy loam, sandy loam, very fine sandy loam.	SM, SP-SM	A-2, A-3, A-4	0	100	90-100	60-90	5-50	<20	NP-J
	33-60	Fine sandy loam, very fine sand, fine sand.	SM, SP-SM	A-1, A-2, A-3	0	95-100	90-100	40-90	5-35	---	NP
289---------- Madawaska	0-4	Fine sandy loam	SM, ML	A-4, A-2	0	100	85-100	65-95	30-75	---	NP
	4-32	Fine sandy loam, sandy loam,	SM, ML	A-4, A-2	0	100	85-100	65-95	30-75	---	NP
	32-60	Fine sand, sand, loamy sand,	SM, SP-SM	A-2, A-4, A-3	0	100	85-100	50-80	5-45	---	NP
36A, 36B, 36C, 36E---------- Adams	0-9	Loruny sand-------	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	45-85	5-40	---	NP
	9-29	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	35-95	5-40	---	NP
	29-60	Sand, coarse sand	SP-SM, SW-SM, SP	A-1, A-2, A-3	0-1	90-100	70-100	20-90	0-10	---	NP
56B, 56C---------- Becket	0-8	Fine sandy loam	SM	A-2, A-4	0-15	85-95	75-90	50-75	20-50	---	NP
	8-28	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM	A-2, A-4	5-15	70-90	60-85	50-75	25-40	---	NP
	28-60	Gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, GM, GP-GM	A-2	5-15	60-85	55-75	25-70	10-30	---	NP
57B, 57C, 57D---- Becket	0-5	Stony fine sandy loam,	SM	A-2, A-4	10-20	85-95	75-90	50-75	30-50	---	NP
	5-28	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM	A-2, A-4	5-15	70-90	60-85	50-75	25-40	---	NP
	28-60	Gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, GM, GP-GM	A-2	5-15	60-85	55-75	25-70	10-30	---	NP
76B, 76C, 76D---- Marlow	0-8	Loam----------	SM, ML, CL-ML	A-2, A-4	0-5	80-95	75-90	55-85	30-60	<30	NP-10
	8-24	Fine sandy loam, loam, sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	0-15	70-95	60-90	50-85	30-60	<30	NP-10
	24-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	0-15	70-90	60-85	50-80	25-55	<30	NP-10

See footnote at end of table,

TABLE 14.--ENGINEERING INDEX PROPERTIES--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	
77B, 77C, 77D---- Marlow	0-6	Stony loam	SM, ML, CL-ML	A-2, A-4	5-15	80-95	75-90	55-85	30-60	<30	NP-10
	6-24	Fine sandy loam, loam, sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	5-15	70-95	60-90	50-85	30-60	<30	NP-10
	24-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	5-15	70-90	60-85	50-80	25-55	<30	NP-10
78B---------- Peru	0-7	Loam----------	SM, ML, CL-ML	A-2, A-4	0-10	80-95	75-90	50-85	25-60	<30	NP-10
	7-26	Fine sandy loam, loam, sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	0-15	75-95	65-90	55-85	30-65	<30	NP-10
	26-60	Fine sandy loam, loam, sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	0-15	70-90	60-85	55-80	20-60	<30	NP-10
79B, 79C, 79D---- Peru	0-5	Stony loam	SM, ML, CL-ML	A-2, A-4	5-15	80-95	75-90	50-85	25-60	<30	NP-10
	5-26	Fine sandy loam, loam, sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-15	75-95	65-95	55-85	30-65	<30	NP-10
	26-60	Fine sandy loam, loam, sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-15	70-90	60-85	55-80	20-60	<30	NP-10
101---------- Ondawa	0-10	Fine sandy loam	SM, ML	A-2, A-4	0	100	100	60-100	30-60	---	NP
	10-32	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	100	80-95	20-40	---	NP
	32-60	Stratified loamy fine sand to sand.	SP, SM	A-2, A-3	0	90-100	75-100	70-90	0-35	---	NP
104---------- Podunk	0-9	Fine sandy loam	SM, ML	A-2, A-4	0	100	100	60-100	30-90	---	NP
	9-29	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	100	60-95	30-75	---	NP
	29-60	Stratified loamy fine sand to gravelly coarse sand.	SP-SM, SM	A-2, A-1, A-3	0	75-100	65-100	35-85	5-25	---	NP
105---------- Rumney	0-4	Loam----------	ML, SM	A-4	0	100	85-100	70-100	40-85	---	NP
	4-31	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	85-100	50-95	25-75	---	NP
	31-60	Stratified silt to gravelly sand.	SM, SP-SM	A-1, A-2, A-3	0	80-100	45-95	25-70	5-30	---	NP
142B, 142C------- Monadnock	0-7	Fine sandy loam	SM, ML	A-2, A-4	0-5	90-100	85-100	55-85	30-60	---	NP
	7-28	Fine sandy loam, loam, cobbly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-100	70-100	50-85	30-60	---	NP
	28-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-100	50-100	20-60	10-30	---	NP
143B, 143C, 143D- Monadnock	0-4	Stony fine sandy loam.	SM, ML	A-2, A-4	5-15	80-100	70-95	50-85	30-60	---	NP
	4-28	Fine sandy loam, loam, cobbly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	---	NP
	28-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
145C, 145D----- Monadnock	0-4	Very bouldery fine sandy loam.	SM, ML	A-2, A-4	10-25	80-100	70-95	50-85	30-60	---	NP
	4-28	Fine sandy loam, loam, cobbly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	---	NP
	28-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP
160B*, 160C*, 160D*: Tunbridge-----	0-4	Stony fine sandy loam.	SM, ML	A-2, A-4	0-15	80-90	70-85	50-70	20-55	---	NP
	4-30	Fine sandy loam, loam, channery fine sandy loam.	SM, ML	A-2, A-4	0-20	80-90	70-85	60-80	30-65	---	NP
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lyman-----	0-4	Stony sandy loam.	SM, ML	A-1, A-2, A-4	5-20	60-80	60-90	35-80	15-75	<30	NP-6
	4-15	Loam, gravelly fine sandy loam, silt loam.	SM, ML	A-1, A-2, A-4	0-20	55-90	60-90	35-85	20-80	<30	NP-4
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Monadnock-----	0-4	Stony fine sandy loam.	SM, ML	A-2, A-4	5-15	80-100	70-95	50-85	30-60	---	NP
	4-28	Fine sandy loam, loam, cobbly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	---	NP
	28-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP
161C*, 161D*: Lyman-----	0-4	Stony sandy loam.	SM, ML	A-1, A-2, A-4	5-20	60-80	60-90	35-80	15-75	<30	NP-6
	4-15	Loam, gravelly fine sandy loam, silt loam.	SM, ML	A-1, A-2, A-4	0-20	55-90	60-90	35-85	20-80	<30	NP-4
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tunbridge-----	0-4	Stony fine sandy loam.	SM, ML	A-2, A-4	0-15	80-90	70-85	50-70	20-55	---	NP
	4-30	Fine sandy loam, loam, channery fine sandy loam.	SM, ML	A-2, A-4	0-20	80-90	70-85	60-80	30-65	---	NP
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
197*. Borohemists											
214A, 214B----- Naumburg	0-9	Fine sandy loam	SM	A-2, A-4	0	95-100	95-100	55-85	30-50	---	NP
	9-22	Loamy fine sand, loamy sand, sand.	SM, SW-SM, SP-SM	A-1, A-2, A-3	0	90-100	90-100	45-85	5-35	---	NP
	22-60	Sand, loamy sand, loamy fine sand.	SM, SW-SM, SP-SM	A-1, A-2, A-3	0	90-100	90-100	45-80	5-35	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--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	
246B---------- Lyme	0-8	Loam----------	CL, ML, CL-ML	A-4, A-6	0-5	90-100	85-95	85-95	70-85	20-40	2-12
	8-22	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-15	80-95	70-90	40-80	25-60	<25	NP-3
	22-60	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-1, A-2, A-4	0-15	80-95	65-90	35-70	20-45	---	NP
247B---------- Lyme	0-8	Stony loam-------	SM, ML	A-2, A-4	5-10	80-100	70-95	40-95	25-85	<25	NP-3
	8-22	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-2, A-4	0-15	80-95	70-90	40-80	25-60	<25	NP-3
	22-60	Fine sandy loam, sandy loam, gravelly sandy loam.	SM, ML	A-2, A-4	0-15	80-95	65-90	40-80	25-60	<25	NP-3
295---------- Greenwood	0-60	Hemic material---	PT	A-8	0	---	---	---	---	---	---
298*. Pits											
299*, Udorthents											
395---------- Chocorua	0-4	Hemic material---	PT	A-8	5-15	---	---	---	---	---	---
	4-33	Hemic material---	PT	A-8	5-15	---	---	---	---	---	---
	33-60	Stratified gravelly sand to loamy fine sand.	SP, SM	A-1, A-2, A-3	0	75-100	60-100	30-80	5-10	---	NP
399*---------- Rock outcrop											
495---------- Ossipee	0-4	Fibric material	PT	A-8	2-15	---	---	---	---	---	---
	4-41	Hemic material---	PT	A-8	2-15	---	---	---	---	---	---
	41-60	Silt loam, fine sandy loam, sandy loam,	SM, ML, CL-ML, SC	A-4	0	100	100	100	40-90	<30	NP-10
549---------- Peacham	0-8	Stony muck	PT	A-8	5-20	---	---	---	---	---	---
	8-16	Loam, silt loam, fine sandy loam,	SM, ML	A-2, A-4	5-15	75-100	65-95	50-95	30-85	---	NP
	16-60	Loam, silt loam, fine sandy loam.	SM, ML	A-2, A-4	5-15	75-100	65-95	50-95	30-85	---	NP
558B---------- Skerry	0-7	Fine sandy loam	SM	A-2, A-4	5-10	80-95	75-90	60-85	30-50	---	NP
	7-26	Fine sandy loam, sandy loam, gravelly fine sandy loam,	SM	A-2, A-4	5-15	70-95	65-90	50-75	20-45	---	NP
	26-60	Gravelly loamy sand, gravelly loamy fine sand.	SM, GM, GP-GM, SP-SM	A-1, A-2	5-20	55-85	50-75	30-70	10-35	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--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	
559B, 559C------- Skerry	0-4	Stony fine sandy loam.	SM	A-2, A-4	10-20	80-95	75-90	60-85	30-50	---	NP
	4-26	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM	A-2, A-4	5-15	70-95	65-90	50-75	20-45	---	NP
	26-60	Gravelly loamy sand, gravelly loamy fine sand.	SM, GM, GP-GM, SP-SM	A-1, A-2	5-20	55-85	50-75	30-70	10-35	---	NP
613A, 613B------- Croghan	0-4	Loamy fine sand	SM, SP-SM, SW-SM	A-1, A-3, A-4, A-2	0	95-100	95-100	45-80	5-40	---	NP
	4-28	Sand, loamy sand, loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2, A-3, A-4	0	90-100	85-100	45-80	5-40	---	NP
	28-60	Sand, loamy sand	SM, SP-SM, SW-SM	A-1, A-2, A-3	0	90-100	85-100	45-75	5-30	---	NP
646B------------- Pillsbury	0-8	Loam-------------	SM, ML	A-1, A-2, A-4	0-5	90-100	85-95	85-95	70-85	20-40	2-12
	8-15	Loam, fine sandy loam, sandy loam.	SM, ML	A-1, A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
	15-60	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM, ML	A-1, A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
647B------------- Pillsbury	0-8	Stony loam-------	SM, ML	A-2, A-4	5-10	80-100	55-95	35-95	25-85	<25	NP-3
	8-15	Loam, fine sandy loam, sandy loam.	SM, ML	A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
	15-60	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3

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

TABLE 15,--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
15---------- Searsport	0-8	---	0.55-0.75	6.0-20	0.20-0.45	4.5-6.5	Low----------	1	5	---
	8-60	0-2	1.35-1.55	>6.0	0.01-0.09	4.5-6.5	Low----------	0.17		
22A, 22B, 22C, 22E---------- Colton	0-3	1-7	1.10-1.40	>6.0	0.03-0.12	3.6-5.0	Low----------	0.17	3	3-8
	3-23	0-5	1.25-1.55	>6.0	0.02-0.05	4.5-5.5	Low----------	0.17		
	23-60	0-3	1.45-1.65	>20	0.01-0.02	4.5-6.0	Low----------	0.17		
27B---------- Groveton	0-1	1-10	1.10-1.20	0.6-2.0	0.20-0.22	4.5-6.5	Low----------	0.32	3	2-6
	1-33	1-10	1.30-1.40	0.6-2.0	0.10-0.19	4.5-6.5	Low----------	0.32		
	33-60	1-5	1.30-1.50	0.6-6.0	0.05-0.16	5.1-6.5	Low----------	0.28		
28B---------- Madawaska	0-9	3-13	0.95-1.25	2.0-6.0	0.16-0.25	4.5-6.0	Low----------	0.28	3	3-9
	9-32	2-12	1.20-1.50	2.0-6.0	0.10-0.18	4.5-6.0	Low----------	0.28		
	32-60	0-5	1.35-1.65	6.0-20	0.06-0.18	4.5-6.0	Low----------	0.28		
36A, 36B, 36C, 36E---------- Adams	0-9	0-5	1.00-1.30	6.0-20	0.05-0.15	4.5-5.5	Low----------	0.17	5	1-4
	9-29	0-5	1.10-1.45	6.0-20	0.04-0.09	4.5-5.5	Low----------	0.17		
	29-60	0-5	1.20-1.50	>20	0.03-0.04	4.5-6.0	Low----------	0.17		
56B, 56C---------- Becket	0-8	2-8	1.00-1.20	0.6-2.0	0.10-0.23	3.6-6.0	Low----------	0.20	3	2-6
	8-28	2-7	1.30-1.60	0.6-2.0	0.05-0.16	3.6-6.0	Low----------	0.24		
	28-60	1-5	1.65-1.85	0.06-0.6	0.03-0.09	3.6-7.0	Low----------	0.24		
57B, 57C, 57D---- Becket	0-5	2-8	1.00-1.20	0.6-2.0	0.10-0.23	3.6-6.0	Low----------	0.17	3	---
	5-28	2-7	1.30-1.60	0.6-2.0	0.05-0.16	3.6-6.0	Low----------	0.24		
	28-60	1-5	1.65-1.85	0.06-0.6	0.03-0.09	3.6-6.0	Low----------	0.24		
76B, 76C, 76D---- Marlow	0-8	3-10	1.00-1.30	0.6-2.0	0.10-0.23	3.6-6.0	Low----------	0.24	3	2-8
	8-24	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	Low----------	0.32		
	24-60	3-10	1.60-2.05	0.06-0.6	0.05-0.12	3.6-6.0	Low----------	0.20		
77B, 77C, 77D---- Marlow	0-6	3-10	1.00-1.30	0.6-2.0	0.10-0.23	3.6-6.0	Low----------	0.20	3	---
	6-24	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	Low----------	0.32		
	24-60	3-10	1.60-2.05	0.06-0.6	0.05-0.12	3.6-6.0	Low----------	0.20		
78B---------- Peru	0-7	3-10	1.00-1.30	0.6-2.0	0.10-0.23	3.6-6.0	Low----------	0.24	3	2-6
	7-26	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	Low----------	0.32		
	26-60	3-10	1.60-2.05	0.06-0.6	0.05-0.12	3.6-6.0	Low----------	0.24		
79B, 79C, 79D---- Peru	0-5	3-10	1.00-1.30	0.6-2.0	0.10-0.23	3.6-6.0	Low----------	0.20	3	---
	5-26	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	Low----------	0.32		
	26-60	3-10	1.60-2.05	0.06-0.6	0.05-0.12	3.6-6.0	Low----------	0.24		
101---------- Ondawa	0-10	1-9	1.15-1.40	2.0-6.0	0.12-0.26	4.5-6.5	Low----------	0.24	5	3-7
	10-32	1-9	1.15-1.45	2.0-6.0	0.12-0.22	4.5-6.5	Low----------	0.37		
	32-60	0-3	1.30-1.50	2.0-20	0.04-0.13	4.5-6.5	Low----------	0.20		
104---------- Podunk	0-9	1-9	1.15-1.40	2.0-6.0	0.12-0.24	4.5-6.5	Low----------	0.24	5	3-8
	9-29	1-9	1.15-1.45	2.0-6.0	0.12-0.18	4.5-6.5	Low----------	0.37		
	29-60	0-3	1.30-1.50	2.0-20	0.04-0.13	4.5-6.5	Low----------	0.20		
105---------- Rumney	0-4	1-10	1.10-1.35	2.0-6.0	0.15-0.27	4.5-6.5	Low----------	0.28	5	4-8
	4-31	1-9	1.15-1.45	2.0-6.0	0.12-0.19	4.5-6.5	Low----------	0.37		
	31-60	0-3	1.30-1.50	>6.0	0.04-0.13	4.5-6.5	Low----------	0.20		

See footnote at end of table.

TABLE 15,--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cm³	In/hr	In/in	pH				Pct
142B, 142C---------- Monadnock	0-7	1-8	0.80-1.20	0.6-2.0	0.15-0.21	3.6-6.0	Low----------	0.28	3	3-8
	7-28	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	Low----------	0.28		
	28-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	Low----------	0.17		
143B, 143C, 143D---- Monadnock	0-4	1-8	0.80-1.20	0.6-2.0	0.14-0.20	3.6-6.0	Low----------	0.24	3	---
	4-28	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	Low----------	0.28		
145C, 145D---------- Monadnock	0-4	1-8	0.80-1.20	0.6-2.0	0.14-0.20	3.6-6.0	Low----------	0.20	3	---
	4-28	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	Low----------	0.28		
	28-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	Low----------	0.17		
160B*, 160C*, 160D*: Tunbridge----------	0-4	5-9	0.80-1.20	2.0-6.0	0.12-0.16	4.5-6.5	Low----------	0.20	2	---
	4-22	3-9	1.20-1.40	2.0-6.0	0.10-0.14	4.5-6.5	Low----------	0.20		
	22-30	3-7	1.40-1.50	2.0-6.0	0.10-0.14	5.1-6.5	Low----------	0.20		
	30	---	---	---	---	---	----------	----		
Lyman----------	0-4	2-10	0.75-1.20	2.0-6.0	0.13-0.24	3.6-6.0	Low----------	0.20	2	---
	4-15	2-10	0.90-1.40	2.0-6.0	0.08-0.28	3.6-6.0	Low----------	0.32		
	15	---	---	---	---	---	----------	----		
Monadnock----------	0-4	1-8	0.80-1.20	0.6-2.0	0.14-0.20	3.6-6.0	Low----------	0.24	3	---
	4-28	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	Low----------	0.28		
	28-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	Low----------	0.17		
161C*, 161D*: Lyman----------	0-4	2-10	0.75-1.20	2.0-6.0	0.13-0.24	3.6-6.0	Low----------	0.20	2	---
	4-15	2-10	0.90-1.40	2.0-6.0	0.08-0.28	3.6-6.0	Low----------	0.32		
	15	---	---	---	---	---	----------	----		
Tunbridge----------	0-4	5-9	0.80-1.20	2.0-6.0	0.12-0.16	4.5-6.5	Low----------	0.20	2	---
	4-22	3-9	1.20-1.40	2.0-6.0	0.10-0.14	4.5-6.5	Low----------	0.20		
	22-30	3-7	1.40-1.50	2.0-6.0	0.10-0.14	5.1-6.5	Low----------	0.20		
	30	---	---	---	---	---	----------	----		
Rock outcrop.										
197*. Borohemists										
214A, 214B---------- Naumburg	0-13	3-10	1.20-1.50	2.0-6.0	0.14-0.16	3.6-5.5	Low----------	0.28	5	3-7
	13-22	1-5	1.20-1.50	6.0-20	0.06-0.08	3.6-5.5	Low----------	0.17		
	22-60	1-5	1.45-1.65	6.0-20	0.04-0.06	4.5-6.5	Low----------	0.17		
246B---------- Lyme	0-8	3-10	1.00-1.25	0.6-6.0	0.15-0.24	4.5-5.5	Low----------	0.28	3	3-8
	8-22	3-10	1.35-1.60	0.6-6.0	0.05-0.20	4.5-5.5	Low----------	0.32		
	22-60	2-7	1.45-1.70	0.6-6.0	0.04-0.16	4.5-5.5	Low----------	0.24		
247B---------- Lyme	0-8	3-10	1.00-1.25	0.6-6.0	0.06-0.24	4.5-5.5	Low----------	0.24	3	---
	8-22	3-10	1.35-1.60	0.6-6.0	0.05-0.20	4.5-5.5	Low----------	0.32		
	22-60	2-7	1.45-1.70	0.6-6.0	0.04-0.16	4.5-5.5	Low----------			
295---------- Greenwood	0-60	---	0.10-0.40	2.0-6.0	0.45-0.65	3.6-4.4	----------		2	55-75
298*. Pits										
299*. Udorthents										

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
36~;~;;~~---------	~=~3	---	0.15-0,25	o.6-6.o	o.45-0.60	3.6-4.4	High---------	----	---	80-95
	33-60	1-5	1.20-1.50	>6.0	0.01-0.11	4.5-6,0	Low----------			
399*. Rock outcrop										
495---------- Ossipee	0-4	---	0.10-0.20	2.0-6.0	0,55-0.65	3,6-4.4	High---------	----	---	90-95
	4-41	---	0.15-0.25	o.6-6.o	0.45-0,60	3,6-4.4	High---------	----		
	41-60	5-10	1.20-1.50	0.2-2.0	0.11-0.19	5,1-6.5	Low----------	----		
549---------- Peacham	0-8	---	0.30-0.60	2.0-6.0	0,55-0.65	4.5-6.0	Low----------	----	3	---
	8-16	2-6	1.25-1.50	0.6-2.0	0.08-0.21	4.5-6.0	Low----------10,28			
	16-60	1-6	1.60-1.85	<0.06	0.05-0.11	4.5-6.0	Low----------10,28			
558B---------- Skerry	0-7	2-6	1.00-1.20	0.6-2.0	0.10-0.23	3,6-6.0	Low----------	0.24	3	2-5
	7-26	2-7	1.30-1.60	0.6-2.0	0.06-0.16	3,6-6.0	Low----------	0.24		
	26-60	1-5	1.60-1.85	0.06-0.6	0,03-0.09	3.6-6.0	Low----------	0.24		
559B, 559C------- Skerry	0-4	2-6	1.00-1.20	0.6-2.0	0.10-0.23	3.6-6.0	Low----------10,20		3	---
	4-26	2-7	1.30-1.60	0.6-2.0	0.06-0.16	3.6-6.0	Low----------10,24			
	26-60	1-5	1.60-1.85	0.06-0.6	0,03-0.09	3,6-6.0	Low----------10.24			
613A, 613B------- Croghan	0-4	0-5	1.10-1.50	6.0-20	0.05-0.09	4.5-6.0	Low----------	0.17	5	2-9
	4-28	0-5	1.20-1.50	>20	0,03-0,07	4.5-6.0	Low----------	0.17		
	28-60	0-5	1.20-1.50	>20	0,03-0.06	4.5-6,0	Low----------	0,17		
646B---------- Pillsbury	0-8	2-10	1.00-1.30	0.6-2.0	0.06-0.24	4.5-5,5	Low----------	0.28	3	4-7
	8-15	2-10	1.20-1.60	0.6-2.0	0.04-0.20	4.5-5.5	Low----------	0.32		
	15-60	2-10	1.80-2.00	0.06-0.2	0.01-0.05	4.5-6.0	Low----------	0.24		
647B---------- Pillsbury	0-8	2-10	1.00-1.30	0.6-2.0	0.06-0.24	4.5-5.5	Low----------/o.24		3	---
	8-15	2-10	1.20-1.60	0.6-2.0	0.04-0.20	4.5-5,5	Low----------10,32			
	15-60	2-10	1.80-2.00	0.06-0.2	0.01-0.05	4.5-6.0	Low----------10.24			

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

TABLE 16,--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. 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	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	
					Ft			In		
15**--- Searsport	D	None---	---	---	+l-1.0	Apparent	Sep-Jul	>60	---	Moderate.
22A, 22B, 22C, 22E--- Colton	A	None---	---	---	>6.o	---	---	>60	---	Low.
273--- Groveton	B	None---	---	---	>6.o	---	---	>60	---	Low,
2~!a;;;;~;---1	B	None---	---	---	1.5-3.0	Apparent	Nov-May	>60	---	High.
36A, 36B, 36C, 36E--- Adams	A	None---	---	---	>6.o	---	---	>60	---	Low.
56B, 56C--- Becket	C	None---	---	---	1.5-2,5	Perched	Nov-Mar	>60	---	Moderate.
57B, 57C, 57D--- Becket	C	None---	---	---	1.5-2.5	Perched	Nov-Mar	>60	---	Moderate.
76B, 76C, 76D, 77B, 77C, 77D--- Marlow	C	None---	---	---	2.0-2.5	Perched	Nov-Mar	>60	---	Moderate.
78B, 79B, 79C, 79D--- Peru	C	None---	---	---	L0-2.0	Perched	Nov-Apr	>60	---	High.
101--- Ondawa	B	Frequent---	Brief---	Oct-Apr	>6.0	---	---	>60	---	Moderate,
104--- Podunk	B	Frequent---	Brief---	Nov-May	1.5-3,0	Apparent	Nov-May	>60	---	High.
105--- Rumney	C	Frequent---	Brief---	Oct-May	0-1.5	Apparent	Nov-Jun	>60	---	High.
142B, 142C, 143B, 143C, 143D, 145C, 145D--- Monadnock	B	None---	---	---	>6.o	---	---	>60	---	Low,
160B*,160C*,160D*: Tunbridge---	C	None---	---	---	>6.o	---	---	20-40	Hard	Moderate.
Lyman---	C/D	None---	---	---	>6.o	---	---	8-20	Hard	Moderate,
Monadnock---1	B	None---	---	---	>6.0	---	---	>60	---	Low.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	
					Ft			In		
161C*, 161D*: Lyman	CID	None	---	---	>6.0	---	---	8-20	Hard	Moderate.
Tunbridge	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate.
Rock outcrop.										
197*, Borohemists										
214A, 214B, Naumburg	C	None	---	---	0-1.5	Apparent	Dec-Apr	>60	---	Moderate.
246B, 247B, Lyme	C	None	---	---	0-1.5	Apparent	Nov-May	>60	---	High,
295**, Greenwood	D	None	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	High.
298*. Pits										
299*, Udorthents										
395**, Chocorua	D	None	---	---	+1-0.5	Apparent	Jan-Dec	>60	---	High.
399*.										
[illegible] Ossipee	D	None	---	---	+1-0.5	Apparent	Jan-Dec	>60	---	High.
549, Peacham	D	None	---	---	0-1.5	Apparent	Oct-Jun	>60	---	High,
558B, Skerry	C	None	---	---	1.0-2.0	Perched	Nov-May	>60	---	High.
559B, 559C, Skerry	C	None	---	---	1.0-2.0	Perched	Nov-May	>60	---	High.
613A, 613B, Croghan	B	None	---	---	1.5-2.0	Apparent	Nov-May	>60	---	Moderate.
646B, 647B, Pillsbury	C	None	---	---	0-1.5	Perched	Nov-May	>60	---	High.

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

** In the "High water table--Depth" column, a plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

TABLE 17,--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Adams	Sandy, mixed, frigid Typic Haplorthods
Becket	Coarse-loamy, mixed, frigid Typic Haplorthods
Borohemists	Borohemists
Chocorua	Sandy or sandy-skeletal, mixed, dysic Terrie Borohemists
Colton	Sandy-skeletal, mixed, frigid Typic Haplorthods
Croghan	Sandy, mixed, frigid Aquic Haplorthods
Greenwood	Dysic Typic Borohemists
Groveton	Coarse-loamy, mixed, frigid Typic Haplorthods
Lyman	Loamy, mixed, frigid Lithic Haplorthods
Lyme	Coarse-loamy, mixed, acid, frigid Aerie Haplaquepts
Madawaska	Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Aquic Haplorthods
Marlow	Coarse-loamy, mixed, frigid Typic Haplorthods
Monadnock	Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Typic Haplorthods
Naumburg	Sandy, mixed, frigid Aerie Haplaquods
Ondawa	Coarse-loamy, mixed, frigid Fluventic Dystrochrepts
Oasipee	Loamy, mixed, dysic Terrie Borohemists
Peacham	Coarse-loamy, mixed, nonacid, frigid Histic Humaquepts
Peru	Coarse-loamy, mixed, frigid Aquic Haplorthods
Pillsbury	Coarse-loamy, mixed, acid, frigid Aerie Haplaquepts
Podunk	Coarse-loamy, mixed, frigid Fluvaquentic Dystrochrepts
Rumney	Coarse-loamy, mixed, nonacid, frigid Aerie Fluvaquents
Searsport	Sandy, mixed, frigid Histic Humaquepts
Skerry	Coarse-loamy, mixed, frigid Aquic Haplorthods
Tunbridge	Coarse-loamy, mixed, frigid Typic Haplorthods
Udorthents	Udorthents

TABLE 18.--RELATIONSHIP AMONG PARENT MATERIAL, LANDSCAPE POSITION, DOMINANT TEXTURE, AND DRAINAGE OF THE SOILS

Parent material and landscape position	Excessively drained	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
Soils that formed in alluvium on bottomlands:							
Medium and moderately coarse textured material over coarse textured material			Ondawa	Podunk		Rumney	
Soils that formed in glacial outwash on outwash plains, terraces, and kames in stream and river valleys:							
Coarse textured material and gravel	Colton						
Coarse textured material	Adams			Croghan	Naumburg	Naumburg	Searsport
Medium and moderately coarse textured material over coarse textured material			Groveton	Madawaska			
Soils that formed in glacial till on uplands:							
Coarse textured compact till			Becket	Skerry			
Moderately coarse textured compact till			Marlow	Peru	Pillsbury	Pillsbury	Peacham
Moderately coarse textured friable till		Lyman•	Monadnock Tunbridge••			Lyme	
Soils that formed in organic material in valleys and uplands:							
Shallow mucky peat over sandy material							Chocorua
Shallow mucky peat over loamy material							Ossipee
Deep mucky peat							Greenwood
Shallow to deep mucky peat over sandy or loamy material							Borohemists
Soils that formed in material disturbed by man:			Udorthents				

• Depth to bedrock is 8 to 20 inches.
•• Depth to bedrock is 20 to 40 inches.

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