United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil and Water Science Department; the Florida Department of Agricultural and Consumer Services; and the Pinellas County Board of Commissioners

Soil Survey of Pinellas County, Florida

How To Use This Soil Survey

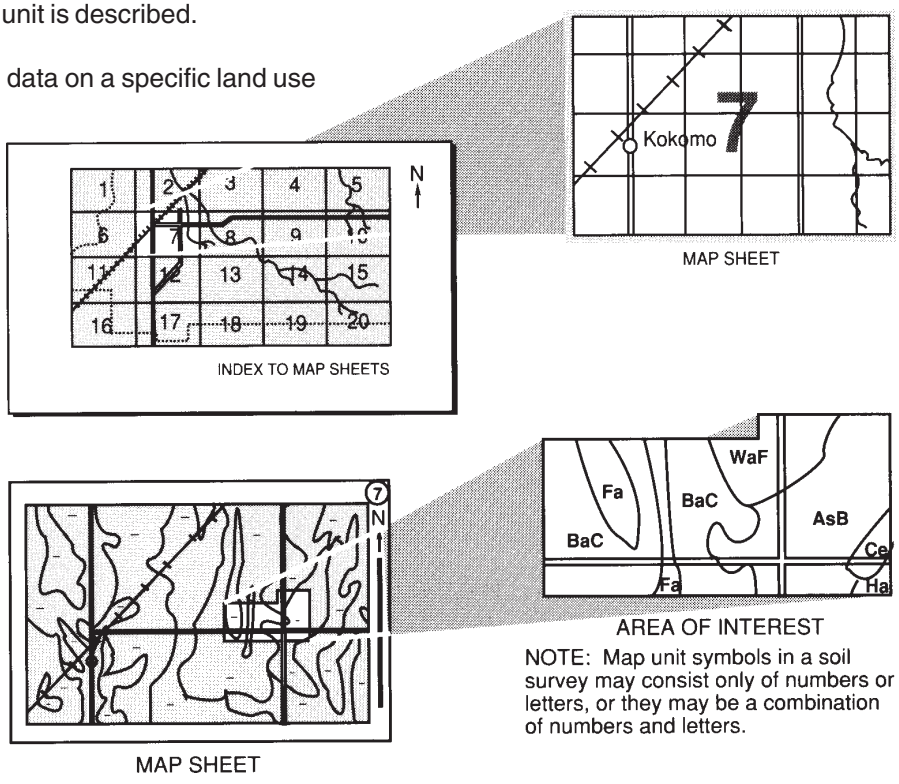
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

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 Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2002. Soil names and descriptions were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2003. This survey was made cooperatively by the Natural Resources Conservation Service and the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil and Water Science Department; the Florida Department of Agricultural and Consumer Services; and the Pinellas County Board of Commissioners.

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.

Cover: The skyline of downtown St. Petersburg across the North Yacht Basin. The downtown area is mapped as Urban land on the detailed soil maps.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2006

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, 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 ensure 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.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

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. 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 Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of
Pinellas County, Florida

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil and Water Science Department; the Florida Department of Agricultural and Consumer Services; and the Pinellas County Board of Commissioners

Pinellas County is in the west-central part of peninsular Florida (fig. 1). It has an area of about 280 square miles. It is bounded on the north by Pasco County, on the east by Hillsborough County and Tampa Bay, and on the west and south by the Gulf of Mexico.

Business is the major industry in Pinellas County. Nearly 50,000 businesses are located in the county. Although by area it is the second smallest county in Florida, it has a population of over 921,000 (US Census, 2000).

Saint Petersburg, the county seat, is the largest municipality in the county.

This soil survey updates the survey of Pinellas County, Florida, published in September, 1972 (USDA, 1972). It provides additional information on the soils and updated photography of the county.

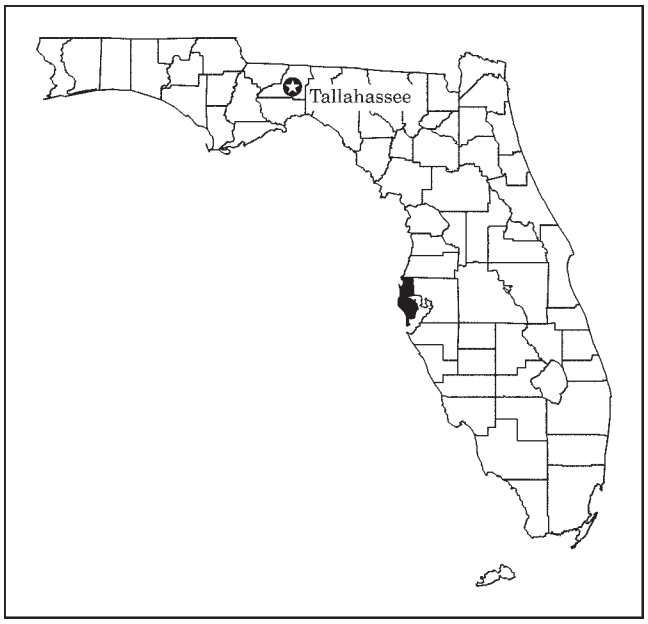

Figure 1.—Location of Pinellas County in Florida.

General Nature of the County

This section provides general information about the county. It describes history and development and climate.

History and Development

The earliest European visitor to Pinellas County was Panfilo de Narvaez. He arrived in 1528, which was 36 years after Columbus arrived in the Caribbean and 37 years before the founding of St. Augustine (Pinellas County, 2004). Narvaez and his men came looking for gold and silver, but they found only the Tocobagan Indian Tribe, an agricultural tribe that had occupied the peninsula for hundreds of years.

In the early 1830s, Count Odet Philippe of France, the first settler, established his plantation, St. Helena, on the site that is now Philippe Park in Safety Harbor. Philippe introduced the first citrus grove to the area and was significant in beginning Florida's citrus industry.

In 1842, Federal homesteading legislation opened the area to settlers. The completion of the Orange Belt

Railroad from Central Florida to St. Petersburg in 1888 assured the continued growth of the area.

On January 1, 1912, Pinellas County was formed from part of Hillsborough County. Since then, Pinellas County has grown from a rural farming community to the most densely populated county in Florida. It has more than 3,290 people per square mile. Broward County is the next most densely populated county with about 1,347 people per square mile. Pinellas County is also a leader in Florida's 21-county High Tech Corridor (PCED, 2003). Pinellas County is ranked second in manufacturing employees and third in manufacturing firms in the state of Florida. Within the High Tech Corridor, Pinellas County is ranked second in optics and photonics and third in information technology and in aviation and aerospace. Less than 0.1 percent of the population is now involved with agriculture, and most of that deals with horticultural products for homeowners.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at St. Petersburg in the period 1971 to 2000.

In winter, the average temperature is 63 degrees F and the average daily minimum temperature is 55 degrees. In summer, the average temperature is 83 degrees and the average daily maximum temperature is 91 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 (50 degrees F).

The total annual precipitation is about 49.5 inches. Of this, 65 percent usually falls in May through September. Thunderstorms occur on about 85 days each year, and most occur in summer.

The average relative humidity in midafternoon is about 75 percent. The sun shines, on average, 361 days per year. The prevailing wind is from the east.

Freezes occur on average about once every three years, and the temperature rarely falls below 28 degrees F. The waters of Tampa Bay and the Gulf of Mexico moderate the freezing temperatures that counties to the south can experience several times a year. Snowfall is rare.

Hurricanes are the greatest natural threat to Florida and Pinellas County. They have caused the greatest amount of property damage. As more people move to Pinellas County, the potential for hurricane-related deaths and damages increases every year. Hurricanes produce high winds and large amounts of rainfall. Because Pinellas is a coastal county, it is also subject to storm surge. Storm surges, causing the most hurricane-related deaths, were historically more dangerous than the high winds and heavy rainfall. Because of modern, up-to-the-minute weather forecasting, however, storm surges are very predictable and most hurricane-related deaths are now caused by rain producing inland flooding.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; and native plants. 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 biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area 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-vegetation-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, reaction, 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. Soil taxonomy, 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 are usually collected for laboratory analyses and for engineering tests. Samples were not, however, collected in Pinellas County; samples of similar soils from surrounding counties were used.

Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists.

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 predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict 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.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. 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 soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils. Mapping units with an Urban land component have a variable composition.

Most minor soils have properties 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, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

An identifying symbol precedes the map unit name in the map unit descriptions.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, 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, slope, stoniness, salinity, 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, Basinger fine sand, depressional, is a phase of the Basinger series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are undifferentiated groups.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be

made up of all of them. Matlacha and St. Augustine soils and Urban land is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Beaches is an example.

Table 2 gives the acreage and proportionate extent of each map unit. Other 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 or miscellaneous areas.

2—Adamsville soils and Urban land, 0 to 5 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Knolls and low ridges
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Adamsville and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 1 to 5 percent

Typical Profile of the Adamsville Soil

Surface layer:
0 to 6 inches—dark gray fine sand

Subsurface layer:
6 to 17 inches—dark grayish brown fine sand

Subsoil:
17 to 38 inches—very pale brown fine sand that has yellowish brown mottles
38 to 52 inches—very pale brown fine sand that has light gray and brownish yellow mottles
52 to 80 inches—very pale brown sand that has yellowish brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at a depth of 2 to 3½ feet from June through November
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Adamsville soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the wetter Placid and Myakka soils

Similar soils:
- Scattered areas that contain shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Adamsville—3w; Urban land—not rated
Ecological community: Upland Hardwood Hammocks

3—Anclote fine sand, depressional

Setting

Landscape: Lower Coastal Plain
Landform: Depressions, drainageways, and swamps
Shape of areas: Irregular
Size of areas: 10 to more than 75 acres

Composition

Anclote and similar soils: 95 percent
Dissimilar soils: 5 percent

Typical Profile

Surface layer:
0 to 16 inches—black fine sand

Figure 2.—Cypress trees in an area of Anclote fine sand, depressional. This map unit is subject to ponding during the summer rainy season.

Subsoil:
16 to 29 inches—dark grayish brown fine sand that has very dark gray mottles
29 to 58 inches—grayish brown fine sand that has light gray mottles
58 to 80 inches—mottled grayish brown and light brownish gray fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Available water capacity: Moderate
Seasonal high water table: Apparent, from the surface to 2 feet above the surface from June through December
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Ponded
Content of organic matter in the surface layer: Moderate
Natural fertility: Medium
Parent material: Sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of the poorly drained Basinger and Myakka soils

Similar soils:
- Scattered areas of soils that have several inches of muck on the surface

Land Use

Dominant use: Wildlife habitat (fig. 2)
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7w
Ecological community: Freshwater Marshes and Ponds

4—Astatula soils and Urban land, 0 to 5 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Broad ridges
Shape of areas: Irregular
Size of areas: 10 to more than 100 acres

Composition

Astatula and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 1 to 5 percent

Typical Profile of the Astatula Soil

Surface layer:
0 to 3 inches—very dark gray fine sand

Substratum:
3 to 25 inches—pale brown fine sand
25 to 56 inches—brownish yellow fine sand
56 to 71 inches—light yellowish brown fine sand
71 to 80 inches—very pale brown fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Very low
Depth to seasonal high water table: More than 6 feet
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Astatula soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the somewhat poorly drained Adamsville soils and the moderately well drained Tavares soils

Similar soils:
- Scattered areas that contain shell fragments below a depth of 60 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: Astatula—6s; Urban land—not rated
Ecological community: Longleaf Pine-Turkey Oak Hills

5—Astatula soils and Urban land, 5 to 12 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Broad ridges
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Astatula and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 1 to 5 percent

Typical Profile of the Astatula Soil

Surface layer:
0 to 3 inches—very dark gray fine sand

Substratum:
3 to 25 inches—pale brown fine sand
25 to 56 inches—brownish yellow fine sand
56 to 71 inches—light yellowish brown fine sand
71 to 80 inches—very pale brown fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Very low
Depth to seasonal high water table: More than 6 feet
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Low

Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Astatula soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the somewhat poorly drained Adamsville soils and the moderately well drained Tavares soils

Similar soils:
- Scattered areas that have a slope of less than 5 percent

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: Astatula—7s; Urban land—not rated
Ecological community: Longleaf Pine-Turkey Oak Hills

6—Basinger soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Sloughs
Shape of areas: Irregular
Size of areas: 10 to more than 50 acres

Composition

Basinger and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 1 to 5 percent

Typical Profile of the Basinger Soil

Surface layer:
0 to 5 inches—very dark gray fine sand

Subsurface layer:
5 to 14 inches—light gray fine sand that has brownish yellow mottles

Subsoil:
14 to 36 inches—yellowish brown fine sand that has light gray and grayish brown mottles
36 to 58 inches—light brownish gray fine sand that has yellowish brown and dark grayish brown mottles
58 to 80 inches—light gray fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at the surface to a depth of 1 foot from June through February
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Basinger soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the very poorly drained Anclote and Placid soils

Similar soils:
- Scattered areas that contain shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Basinger—4w; Urban land—not rated
Ecological community: Slough

7—Basinger fine sand, depressional

Setting

Landscape: Lower Coastal Plain
Landform: Depressions and swamps
Shape of areas: Irregular
Size of areas: 10 to more than 50 acres

Composition

Basinger and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—very dark gray fine sand

Subsurface layer:
5 to 14 inches—light gray fine sand that has brownish yellow mottles

Subsoil:
14 to 36 inches—yellowish brown fine sand that has light gray and very dark grayish brown mottles
36 to 58 inches—light brownish gray fine sand that has yellowish brown and very dark grayish mottles
58 to 80 inches—light gray fine sand

Soil Properties and Qualities

Depth class: Deep
Drainage class: Very poorly drained
Permeability: Rapid
Available water capacity: Very low
Seasonal high water table: Apparent, from 2 feet above the surface to a depth of 1 foot from June through February
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Ponded
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of Samsula soils

Similar soils:
- Scattered areas that contain shell fragments below a depth of 40 inches

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7w
Ecological community: Freshwater Marshes and Ponds

8—Beaches

Setting

Landscape: Lower Coastal Plain
Landform: Beaches
Location of areas: Most areas of this map unit are on the western shores of the county.
Shape of areas: Typically, the areas are long strips that range from 30 to 200 feet in width.

Composition

Beaches: 95 percent
Dissimilar areas: 5 percent

Characteristics of Beaches

This map unit supports little or no vegetation. Areas are either bare or covered with saltwater during daily high tides and stormy periods. This mapping unit is used for beach and water activities.

Properties and Qualities

Seasonal high water table: Apparent, from 2 feet above the surface to the surface from January through December
Flooding: Very frequent
Parent material: Sandy marine sediments with varying amounts of shell fragments

Minor Components

Dissimilar areas:
- Scattered areas of Palm Beach soils

Land Use

Dominant use: Recreation (fig. 3)
Other uses: None
Suitability for urban development: Not rated
Suitability for recreational development: Not rated
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Figure 3.—An area of the Beaches map unit in Ft. DeSoto Park. Numerous beaches are located in the county.

Interpretive Groups

Land capability classification: 8w
Ecological community: South Florida Coastal Strand

9—Dumps

Setting

Landscape: Lower Coastal Plain
Landform: Dumps
Size and shape of areas: Typically, this unit occurs as rectangular areas ranging from 10 to 40 acres.

Composition

Dumps: 80 percent
Dissimilar areas: 20 percent

Characteristics of Dumps

Most of this map unit consists of disturbed areas that are used for the disposal of municipal refuse, waste, and rubble.

Properties and Qualities

Depth to seasonal high water table: Variable
Flooding: None

Minor Components

Dissimilar areas:
- Scattered areas of Astatula, Immokalee, and Myakka soils that were left undisturbed during the creation of the dump

Land Use

Dominant use: Waste disposal
Other uses: None
Suitability for urban development: Not rated
Suitability for recreational development: Not rated
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: 7s
Ecological community: Not rated

10—EauGallie soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

EauGallie and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 1 to 5 percent

Typical Profile of the EauGallie Soil

Surface layer:
0 to 5 inches—dark gray fine sand

Subsurface layers:
5 to 13 inches—light brownish gray fine sand
13 to 23 inches—light gray fine sand

Subsoil:
23 to 29 inches—black fine sand
29 to 37 inches—dark reddish brown fine sand
37 to 47 inches—brown fine sand that has dark reddish brown fragments

Substratum:
47 to 59 inches—grayish brown fine sandy clay loam that has olive brown mottles
59 to 80 inches—mottled light gray, light brownish gray, and dark gray sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at a depth of 1/2 to 1 1/2 feet from June through October
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Moderate
Natural fertility: Low
Parent material: Sandy marine sediments over loamy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of EauGallie soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the somewhat poorly drained Adamsville and Pomello soils

Similar soils:
- Scattered areas where the loamy layer or layers are below a depth of 60 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: EauGallie— 4w; Urban land—not rated
Ecological community: South Florida Flatwoods

11—Felda soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Drainageways and sloughs
Shape of areas: Irregular
Size of areas: 10 to 40 acres

Composition

Felda and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 1 to 5 percent

Typical Profile of the Felda Soil

Surface layer:
0 to 3 inches—very dark gray fine sand

Subsurface layer:
3 to 26 inches—light gray fine sand that has brown mottles

Subsoil:
26 to 34 inches—dark grayish brown fine sandy loam that has yellowish brown mottles
34 to 38 inches—grayish brown loamy fine sand that has olive brown and gray mottles
38 to 80 inches—grayish brown loamy sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: Apparent, from the surface to a depth of 1 foot from June through March
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments over loamy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Felda soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the very poorly drained Placid and Anclote soils

Similar soils:
- Scattered areas where the loamy layer is below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Felda—3w; Urban land—not rated
Ecological community: Slough

12—Felda fine sand, depressional

Setting

Landscape: Lower Coastal Plain
Landform: Depressions and swamps
Shape of areas: Irregular
Size of areas: 10 to 30 acres

Composition

Felda and similar soils: 75 percent
Dissimilar soils: 25 percent

Typical Profile

Surface layer:
0 to 3 inches—very dark gray fine sand

Subsurface layer:
3 to 26 inches—light gray fine sand that has brown mottles

Subsoil:
26 to 34 inches—dark grayish brown fine sandy loam that has yellowish brown mottles
34 to 38 inches—grayish brown loamy fine sand that has olive brown and gray mottles
38 to 80 inches—grayish brown loamy sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: Apparent, from 2 foot above the surface to a depth of 1 foot from June through December
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Ponded
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments over loamy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of the poorly drained Basinger, Myakka, and Wabasso soils

Similar soils:
- Scattered areas where the loamy layer is at a depth of more than 40 inches

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7w
Ecological community: Freshwater Marshes and Ponds

13—Immokalee soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods
Shape of areas: Irregular
Size of areas: 10 to 200 acres

Composition

Immokalee and similar soils: 25 to 95 percent
Urban land: 0 to 75 percent
Dissimilar soils: 1 to 5 percent

Typical Profile of the Immokalee Soil

Surface layer:
0 to 6 inches—very dark grayish brown fine sand

Subsurface layer:
6 to 35 inches—gray fine sand

Subsoil:
35 to 40 inches—dark brown fine sand
40 to 50 inches—dark reddish brown fine sand
50 to 60 inches—brown fine sand
60 to 80 inches—light brownish gray fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at a depth of 1/2 to 1 1/2 feet from June through November
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Immokalee soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the somewhat poorly drained Adamsville and Pomello soils

Similar soils:
- Scattered areas that have shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Immokalee—4w; Urban land—not rated
Ecological community: South Florida Flatwoods

14—Kesson fine sand, very frequently flooded

Setting

Landscape: Lower Coastal Plain
Landform: Tidal swamps (fig. 4)
Shape of areas: Irregular
Size of areas: 10 to more than 25 acres

Composition

Kesson and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—black fine sand that has about 10 percent, by volume, shell fragments

Substratum:
5 to 26 inches—light brownish gray fine sand that has about 15 percent, by volume, shell fragments
26 to 42 inches—mixed grayish brown and brown fine sand that has about 20 percent, by volume, shell fragments
42 to 80 inches—light brownish gray fine sand that has about 10 percent, by volume, shell fragments

Figure 4.—Mangroves in the foreground in an area of Kesson fine sand, very frequently flooded. This area is flooded during high tides. The buildings are in an area of Matlacha and St. Augustine soils and Urban land.

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: High
Seasonal high water table: Apparent, from the surface to a depth of 1/2 foot from January through December
Shrink-swell potential: Low
Flooding: Very frequent
Surface runoff class: Negligible
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of Wulfert soils

Similar soils:
- Small areas of soils that consist of more than 50 percent shell fragments

Land Use

Dominant use: Wildlife habitat
Other uses: None (fig. 5)
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: 8w
Ecological community: Mangrove Swamp

15—Manatee loamy fine sand

Setting

Landscape: Lower Coastal Plain
Landform: Depressions, drainageways, and flood plains
Shape of areas: Irregular
Size of areas: 10 to more than 50 acres

Composition

Manatee and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 11 inches—black loamy fine sand

Subsurface layer:
11 to 18 inches—very dark brown loamy fine sand

Subsoil:
18 to 34 inches—grayish brown fine sandy loam that has yellowish brown mottles
34 to 44 inches—grayish brown fine sandy loam that has dark yellowish brown, yellowish brown, and gray mottles and soft accumulations and semihard nodules of calcium carbonate

Substratum:
44 to 80 inches—light brownish gray fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate
Available water capacity: High
Seasonal high water table: Apparent, from the surface to a depth of 1 foot from June through October
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Slow
Content of organic matter in the surface layer: High
Natural fertility: Medium
Parent material: Sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of the poorly drained Basinger and Myakka soils

Figure 5.—The Sunshine Skyway Bridge, which is the gateway to the southern part of Pinellas County. The mangrove islands are areas of Kesson fine sand, very frequently flooded.

Similar soils:
- Small areas of soils that have several inches of muck on the surface

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7w
Ecological community: Freshwater Marshes and Ponds

16—Matlacha and St. Augustine soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Low ridges
Shape of areas: Irregular
Size of areas: 10 to 75 acres

Composition

Matlacha and similar soils: 15 to 35 percent
St. Augustine and similar soils: 10 to 30 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Matlacha Soil

Surface layer:
0 to 42 inches—mixed very dark gray, light brownish gray, and very pale brown sand that has 20 percent, by volume, shell fragments and limestone fragments

Substratum:
42 to 51 inches—gray fine sand that has 5 percent, by volume, shell fragments
51 to 80 inches—light gray fine sand that has 30 percent, by volume, shell fragments

Typical Profile of the St. Augustine Soil

Surface layer:
0 to 8 inches—dark gray sand that has 10 percent, by volume, shell fragments

Subsurface layers:
8 to 22 inches—light gray sand
22 to 33 inches—brown loamy fine sand that has yellowish brown and reddish yellow mottles and 12 percent, by volume, shell fragments
33 to 48 inches—light gray fine sand that has 10 percent, by volume, shell fragments
48 to 63 inches—mixed gray and light brownish gray sandy loam that has yellowish brown mottles and 5 percent, by volume, shell fragments
63 to 80 inches—light gray sand that has 40 percent, by volume, shell fragments

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Matlacha—moderately rapid or rapid; St. Augustine—moderately rapid or rapid, except in the clayey layers, which have slow permeability
Available water capacity: Low
Seasonal high water table: Apparent, at a depth of 1 1/2 to 3 feet from June through October
Shrink-swell potential: Low
Flooding: Rare
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Material derived from dredge and fill operations

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Matlacha and St. Augustine soils that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the very poorly drained Kesson and Wulfert soils

Similar soils:
- Scattered areas that do not have shell fragments

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: Matlacha—6s; St. Augustine—7s; Urban land—not rated
Ecological community: Not rated

17—Myakka soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods
Shape of areas: Irregular
Size of areas: 10 to 250 acres

Composition

Myakka and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Myakka Soil

Surface layer:
0 to 4 inches—black fine sand

Subsurface layer:
4 to 22 inches—gray fine sand

Subsoil:
22 to 24 inches—black fine sand
24 to 29 inches—dark reddish brown fine sand
29 to 36 inches—dark yellowish brown fine sand that has dark reddish brown bodies
36 to 54 inches—light yellowish brown fine sand
54 to 80 inches—very pale brown fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at a depth of 1/2 to 1 1/2 feet from June through November
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Myakka soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the somewhat poorly drained Adamsville and Pomello soils

Similar soils:
- Scattered areas that have shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Myakka—4w; Urban land—not rated
Ecological community: South Florida Flatwoods

18—Okeechobee muck

Setting

Landscape: Lower Coastal Plain
Landform: Depressions, drainageways, and swamps
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Okeechobee and similar soils: 95 percent
Dissimilar soils: 5 percent

Typical Profile

Surface layer:
0 to 26 inches—black muck

Subsoil:
26 to 34 inches—very dark brown mucky peat
34 to 80 inches—dark reddish brown mucky peat

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Available water capacity: Very high
Seasonal high water table: Apparent, from 2 feet above the surface to a depth of 1 foot from June through April

Shrink-swell potential: Low
Flooding: None
Surface runoff class: Ponded
Content of organic matter in the surface layer: Very high
Natural fertility: Medium
Parent material: Residuum weathered from organic materials

Minor Components

Dissimilar soils:
- Scattered areas of Placid soils

Similar soils:
- Small areas of soils that have a muck layer that is less than 51 inches thick

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7w
Ecological community: Freshwater Marshes and Ponds

19—Palm Beach fine sand, 0 to 8 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Ridges
Shape of areas: Elongated
Size of areas: 10 to more than 90 acres

Composition

Palm Beach and similar soils: 95 percent
Dissimilar soils: 5 percent

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown fine sand that has 5 percent, by volume, shell fragments

Subsoil:
4 to 34 inches—light gray fine sand that has 15 percent, by volume, shell fragments
34 to 80 inches—mixed light gray and very pale brown fine sand that has 35 percent, by volume, shell fragments in layers and mixed with the fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained to excessively drained
Permeability: Very rapid
Available water capacity: Very low
Depth to seasonal high water table: More than 6 feet
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Very low
Natural fertility: Low
Parent material: Sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of Beaches and the moderately well drained Tavares soils

Similar soils:
- Scattered areas that do not have shell fragments

Land Use

Dominant use: Recreation
Other uses: Urban development
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7s
Ecological community: South Florida Coastal Strand

20—Paola and St. Lucie soils and Urban land, 0 to 5 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Ridges
Shape of areas: Irregular
Size of areas: 10 to 75 acres

Composition

Paola and similar soils: 15 to 35 percent
St. Lucie and similar soils: 10 to 30 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Paola Soil

Surface layer:
0 to 3 inches—gray fine sand

Subsurface layer:
3 to 22 inches—white fine sand

Substratum:
22 to 50 inches—yellow fine sand that has dark reddish brown and brown concretions
50 to 80 inches—very pale brown fine sand

Typical Profile of the St. Lucie Soil

Surface layer:
0 to 3 inches—gray fine sand

Substratum:
3 to 22 inches—light gray fine sand
22 to 80 inches—white fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Very rapid
Available water capacity: Very low
Depth to seasonal high water table: More than 6 feet
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Negligible
Content of organic matter in the surface layer: Very low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Paola and St. Lucie soils that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the moderately well drained Tavares soils

Similar soils:
- Scattered areas that have shell fragments below a depth of 60 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: Paola and St. Lucie—6s; Urban land—not rated
Ecological community: Sand Scrub

21—Paola and St. Lucie soils and Urban land, 5 to 12 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Ridges and side slopes
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Paola and similar soils: 15 to 35 percent
St. Lucie and similar soils: 10 to 30 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Paola Soil

Surface layer:
0 to 3 inches—gray fine sand

Subsurface layer:
3 to 22 inches—white fine sand

Substratum:
22 to 50 inches—yellow fine sand that has dark reddish brown and brown concretions
50 to 80 inches—very pale brown fine sand

Typical Profile of the St. Lucie Soil

Surface layer:
0 to 3 inches—gray fine sand

Substratum:
3 to 22 inches—light gray fine sand
22 to 80 inches—white fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Very rapid
Available water capacity: Very low
Depth to seasonal high water table: More than 6 feet
Shrink-swell potential: Low
Flooding: None

Surface runoff class: Very little
Content of organic matter in the surface layer: Very low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Paola and St. Lucie soils that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the moderately well drained Tavares soils

Similar soils:
- Scattered areas that have a slope of less than 5 percent

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: Paola and St. Lucie—7s; Urban land—not rated
Ecological community: Sand Scrub

22—Pineda soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods
Shape of areas: Irregular
Size of areas: 10 to 40 acres

Composition

Pineda and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 10 percent

Typical Profile of the Pineda Soil

Surface layer:
0 to 4 inches—very dark gray fine sand

Subsurface layers:
4 to 17 inches—light gray fine sand that has brownish yellow mottles
17 to 24 inches—very pale brown fine sand that has brownish yellow mottles

Subsoil:
24 to 32 inches—yellow fine sand
32 to 37 inches—light gray fine sand that has brownish yellow mottles
37 to 55 inches—grayish brown fine sandy loam that has vertical tongues of light gray fine sand

Substratum:
55 to 80 inches—grayish brown sand that has 5 percent, by volume, shell fragments

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow to rapid
Available water capacity: Very low
Seasonal high water table: Apparent, from the surface to a depth of 1 foot from June through October
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments over loamy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Pineda soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the very poorly drained Placid and Anclote soils

Similar soils:
- Scattered areas where the loamy layer is at a depth of more than 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b

Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Pineda—3w; Urban land—not rated
Ecological community: South Florida Flatwoods

23—Pinellas soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods
Shape of areas: Irregular
Size of areas: 10 to 60 acres

Composition

Pinellas and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Pinellas Soil

Surface layer:
0 to 3 inches—black fine sand

Subsurface layers:
3 to 8 inches—gray fine sand
8 to 18 inches—pale brown fine sand that has very pale brown mottles

Subsoil:
18 to 25 inches—very pale brown fine sand that has soft masses of calcium carbonates
25 to 35 inches—light gray fine sand that has brownish yellow mottles and soft masses of calcium carbonates
35 to 48 inches—grayish brown fine sandy loam that has brownish mottles and few masses of calcium carbonates
48 to 54 inches—gray fine sandy loam that has olive mottles and few masses of calcium carbonates

Substratum:
54 to 80 inches—light olive brown sand that has about 25 percent, by volume, shell fragments

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at a depth of 1/2 to 1 1/2 feet from June through October
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments over loamy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Pinellas soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the very poorly drained Placid and Anclote soils

Similar soils:
- Scattered areas of soils that do not contain calcium carbonate

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Pinellas—3w; Urban land—not rated
Ecological community: South Florida Flatwoods

24—Pits

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods and ridges

Composition

Pits: 95 percent
Dissimilar areas: 5 percent

Characteristics of Pits

Most of this map unit consists of excavations from which soil and other geologic material have been removed for use as fill material. The sides of the excavations are comprised of short, steep side

slopes. Areas that have been excavated below the water table usually contain water.

Properties and Qualities

Depth to seasonal high water table: Variable

Minor Components

Dissimilar areas:
- Scattered areas of Myakka, Immokalee, Pineda, Pinellas, and Adamsville soils that were left undisturbed during the process of excavation

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: Not rated
Suitability for recreational development: Not rated
Suitability for wildlife habitat: Not rated
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: Not rated
Ecological community: Not rated

25—Placid fine sand, depressional

Setting

Landscape: Lower Coastal Plain
Landform: Depressions and swamps
Shape of areas: Irregular
Size of areas: 5 to 50 acres

Composition

Placid and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 11 inches—black fine sand

Subsurface layer:
11 to 17 inches—black fine sand that has stripped areas of light brownish gray

Substratum:
17 to 29 inches—light brownish gray fine that has very dark gray mottles
29 to 80 inches—grayish brown fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Available water capacity: Moderate
Seasonal high water table: Apparent, from 2 foot above the surface to a depth of 1 foot from June through March
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Ponded
Content of organic matter in the surface layer: Moderate
Natural fertility: Medium
Parent material: Sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of the poorly drained Basinger and Myakka soils at the outer edges of the Placid soil

Similar soils:
- Small areas of soils that have several inches of muck on the surface

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7w
Ecological community: Freshwater Marshes and Ponds

26—Pomello soils and Urban land, 0 to 5 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Low ridges
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Pomello and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 10 percent

Typical Profile of the Pomello Soil

Surface layer:
0 to 3 inches—light gray fine sand

Subsurface layers:
3 to 15 inches—light gray fine sand
15 to 44 inches—white fine sand

Subsoil:
44 to 49 inches—black fine sand
49 to 59 inches—dark reddish brown fine sand

Substratum:
59 to 80 inches—yellowish brown fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained or moderately well drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at a depth of 2 1/2 to 3 1/2 feet from June through November
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Pomello soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the poorly drained Immokalee and Myakka soils
- Scattered areas of the very poorly drained Placid soils

Similar soils:
- Scattered areas that have a thick, dark surface layer
- Scattered areas that have shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Pomello—6s; Urban land—not rated
Ecological community: Sand Scrub

27—Samsula muck

Setting

Landscape: Lower Coastal Plain
Landform: Depressions and swamps (fig. 6)
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Samsula and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—dark reddish brown muck

Subsurface layer:
8 to 36 inches—black muck

Substratum:
36 to 44 inches—grayish brown fine sand that has dark grayish brown mottles
44 to 80 inches—light brownish gray fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Available water capacity: Very high
Seasonal high water table: Apparent, from 2 foot above the surface to a depth of 1 foot from June through October
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Ponded
Content of organic matter in the surface layer: Very high
Natural fertility: Medium
Parent material: Organic materials over sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of Placid soils

Similar soils:
- Small areas of soils that have a muck layer that is more than 51 inches thick

Figure 6.—A pond created by removing Samsula muck, which is a very poorly drained soil.

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: 7w
Ecological community: Freshwater Marshes and Ponds

28—Seffner soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Knolls and low ridges
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Seffner and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Seffner Soil

Surface layer:
0 to 8 inches—black fine sand

Subsurface layer:
8 to 16 inches—very dark gray fine sand

Substratum:
16 to 29 inches—grayish brown fine sand that has yellowish brown mottles
29 to 53 inches—very pale brown fine sand that has brownish yellow, strong brown, and light gray mottles
53 to 80 inches—pale brown fine sand that has strong brown mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat poorly drained
Permeability: Rapid
Available water capacity: Low
Seasonal high water table: Apparent, at a depth of 1 1/2 to 3 1/2 feet from June through November
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Moderate
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Seffner soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas.

Minor Components

Dissimilar soils:
- Scattered areas of the poorly drained Basinger and Myakka soils

Similar soils:
- Scattered areas that contain shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Seffner—3w; Urban land—not rated
Ecological community: Upland Hardwood Hammocks

29—Tavares soils and Urban land, 0 to 5 percent slopes

Setting

Landscape: Lower Coastal Plain
Landform: Knolls and low ridges
Shape of areas: Irregular
Size of areas: 10 to 80 acres

Composition

Tavares and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Tavares Soil

Surface layer:
0 to 5 inches—very dark grayish brown fine sand

Substratum:
5 to 25 inches—very pale brown fine sand
25 to 50 inches—light yellowish brown fine sand
50 to 65 inches—very pale brown fine sand that has yellowish red mottles
65 to 80 inches—very pale brown fine sand that has yellowish red and reddish brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Rapid
Available water capacity: Very low
Seasonal high water table: Apparent, at a depth of 3 1/2 to 6 feet from June through December
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Tavares soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the somewhat poorly drained Adamsville, Pomello, and Seffner soils

Similar soils:
- Scattered areas that contain shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b

Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Tavares—3s; Urban land—not rated
Ecological community: Longleaf Pine-Turkey Oak Hills

30—Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods and ridges
Shape of areas: Rectangular
Size of areas: 10 to 100 acres

Composition

Urban land: 85 percent
Dissimilar areas: 15 percent

Characteristics of the Urban Land

Urban land consists of areas where most of the soil surface is covered with impervious materials, such as shopping malls, large parking lots, large commercial buildings, highways, and large industrial areas.

Minor Components

Dissimilar areas:
- Small, scattered areas that are not covered by impervious materials

31—Wabasso soils and Urban land

Setting

Landscape: Lower Coastal Plain
Landform: Flatwoods
Shape of areas: Irregular
Size of areas: 10 to 50 acres

Composition

Wabasso and similar soils: 25 to 65 percent
Urban land: 35 to 75 percent
Dissimilar soils: 5 percent

Typical Profile of the Wabasso Soil

Surface layer:
0 to 5 inches—black fine sand

Subsurface layer:
5 to 26 inches—gray fine sand

Subsoil:
26 to 32 inches—black fine sand
32 to 36 inches—dark reddish brown fine sand
36 to 44 inches—dark grayish brown fine sandy clay loam that has olive brown mottles
44 to 50 inches—mixed dark brown, olive brown, and grayish brown fine sandy loam

Substratum:
50 to 80 inches—light gray fine sand that has 10 percent, by volume, shell fragments

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow to rapid
Available water capacity: Moderate
Seasonal high water table: Apparent, at a depth of 1/2 to 1 1/2 feet from June through October
Shrink-swell potential: Low
Flooding: None
Surface runoff class: Very low
Content of organic matter in the surface layer: Low
Natural fertility: Low
Parent material: Sandy marine sediments over loamy marine sediments

Characteristics of the Urban Land

Urban land consists of high-density residential developments, commercial buildings, streets, highways, parking lots, and other types of impervious ground cover. The areas of Immokalee soil that are not covered by impervious material are too small to be delineated separately at the scale of mapping and are mostly grassy areas. The Urban land dominates this map unit, except for a small area that remains in native condition in the northeast corner of the county.

Minor Components

Dissimilar soils:
- Scattered areas of the somewhat poorly drained Adamsville and Pomello soils

Similar soils:
- Scattered areas that have shell fragments below a depth of 40 inches

Land Use

Dominant use: Urban development
Other uses: Recreation
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: See table 4 and tables 5a to 5e

Interpretive Groups

Land capability classification: Wabasso—3w; Urban land—not rated
Ecological community: South Florida Flatwoods

32—Wulfert muck, very frequently flooded

Setting

Landscape: Lower Coastal Plain
Landform: Tidal marshes
Shape of areas: Irregular
Size of areas: 15 to more than 65 acres

Composition

Wulfert and similar soils: 80 percent
Dissimilar soils: 20 percent

Typical Profile

Surface layer:
0 to 35 inches—black muck

Substratum:
35 to 43 inches—black fine sand that has small pockets of black muck
43 to 80 inches—mixed grayish brown and brown fine sand that has 5 percent, by volume, shell fragments

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Available water capacity: Very high
Seasonal high water table: Apparent, at the surface to a depth of 1/2 foot from January through December
Shrink-swell potential: Low
Flooding: Very frequent
Surface runoff: Negligible
Content of organic matter in the surface layer: Very high
Natural fertility: Low
Parent material: Organic materials over sandy marine sediments

Minor Components

Dissimilar soils:
- Scattered areas of Kesson soils

Similar soils:
- Small areas of soils that have a muck layer that is more than 51 inches thick

Land Use

Dominant use: Wildlife habitat
Other uses: None
Suitability for urban development: See tables 9a and 9b
Suitability for recreational development: See tables 6a and 6b
Suitability for wildlife habitat: See table 7
Suitability for woodland: Not rated

Interpretive Groups

Land capability classification: 8w
Ecological community: Salt Marsh

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 to prevent 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 behavioral characteristics of the soils. They collect data on slope, 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 buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat and woodland. 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.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

General management needed for crops and pasture is typically suggested in this section, but Pinellas County has very little acreage of either cropland or pastureland. Although estimated yields of crops and pasture plants are not listed, such information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service. For general information, the system of land capability classification used by the Natural Resources Conservation Service is explained and prime farmland is described.

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 criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include 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 rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units” and in table 3.

Prime Farmland

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. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is

protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

Pinellas County does not contain any prime farmland soils.

Ecological Communities

Among areas that have similar climate and topography, differences in the kind and amount of vegetation produced are closely related to the kinds of soils in the areas. An *ecological community* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff; and a characteristic plant community. The vegetation, soils, and hydrology are all interrelated. Descriptions of ecological communities are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

The relationship between soils and vegetation was ascertained during this survey; thus, ecological communities generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of plants. Soil reaction, salt content, and a seasonal high water table are also important.

The ecological community concept is based on the knowledge that a soil type commonly supports a specific vegetative community, which in turn provides the habitat needed by specific wildlife species.

Vegetative communities form recognizable units on the landscape, most of which are apparent to the casual observer after only a little training. Even without prior botanical training, an observer can quickly learn to distinguish between the South Florida Flatwoods community and the Longleaf Pine-Turkey Oak Hills community and between the Slough community and the Freshwater Marshes and Ponds community. Once a community is recognized, information can be found concerning the general characteristics of the soil on which it occurs and the types of plants and animals it supports.

Although some plants are found only within a very narrow range of conditions, many plants can survive throughout a wide range of conditions. Individual plants that have a wide tolerance level can occur in many different communities and on a variety of soils. When describing ecological communities, plant scientists study the patterns in which vegetation occurs. They study what species occur, the relative abundance of each species, the stage of plant succession, the dominance of species, the position of species on the landscape, and the soil or soils on which the patterns occur. Recognizable patterns of vegetation are typically found in a small group of soil types that have common characteristics.

During many years of field observation while conducting soil surveys, the Natural Resources Conservation Service determined which vegetative communities commonly occur on which soils throughout Florida. This information is summarized in a booklet named “26 Ecological Communities of Florida” (USDA, 1989).

In the following paragraphs, the vegetative communities occurring during the climax state of plant succession are described. The descriptions are based on relatively natural conditions. Human activities, such as urbanization and fire suppression, can alter the community on a specific site.

Freshwater Marshes and Ponds

The Freshwater Marshes and Ponds ecological community consists dominantly of open grassland marshes and ponds. Some sites support some trees, mostly cypress. Areas of this ecological community are typically saturated or covered with surface water for two or more months during the year. Common types of vegetation include pickerelweed, sawgrass, arrowhead, fire flag, and maidencane. This community provides excellent habitat for many species of urban wetland wildlife, such as wading birds, waterfowl, fish, and water-adapted reptiles and mammals. The map units that support the Freshwater Marshes and Ponds ecological community in Pinellas County are:

3 Anclote fine sand, depressional
7 Basinger fine sand, depressional
12 Felda fine sand, depressional
15 Manatee loamy fine sand
18 Okeechobee muck
25 Placid fine sand, depressional
27 Samsula muck

Longleaf Pine-Turkey Oak Hills

The Longleaf Pine-Turkey Oak Hills ecological community is on nearly level to gently sloping uplands. There are several variations of this community. In mature, natural stands of trees that have not been logged, the overstory is scattered longleaf pine. Areas in which pines were removed are dominated by turkey oak and other oaks, have little ground cover, and have numerous bare areas. The most important urban wildlife are such birds as warblers, towhees, great crested flycatchers, and

doves. Animals in areas of this ecological community include burrowers, such as the pocket gopher and gopher tortoise. The map units that support the Longleaf Pine-Turkey Oak Hills ecological community in Pinellas County are:

4 Astatula soils and Urban land, 0 to 5 percent slopes
5 Astatula soils and Urban land, 5 to 12 percent slopes
29 Tavares soils and Urban land, 0 to 5 percent slopes

Mangrove Swamp

The Mangrove Swamp ecological community occurs along saltwater shorelines that normally have mild wave action. Mangroves appear as a medium-height (10 to 20 feet) thicket of fleshy leafed, woody plants. The most common species are the red, black, and white mangrove. The mangrove swamps support a variety of wildlife, including birds, waterfowl, and alligators. This community is especially important for shoreline protection and stabilization. The map unit that supports the Mangrove Swamp ecological community in Pinellas County is:

14 Kesson fine sand, very frequently flooded

Salt Marsh

The Salt Marsh ecological community occurs along the gulf coast and inland along tidal rivers. This ecological community is normally flooded during high tides. The vegetative community appears as an open expanse of grasses, sedges, and rushes, such as black needlerush, seashore saltgrass, smooth cordgrass, and marshhay cordgrass. The salt marsh supports a variety of wildlife, including birds, waterfowl, and alligators. Areas of this ecological community also serve as habitat for numerous ocean species during the early life stages as they feed on invertebrate organisms. The map unit that supports the Salt Marsh ecological community in Pinellas County is:

32 Wulfert muck, very frequently flooded

Sand Scrub

The Sand Scrub ecological community occurs inland from the coast and supports even-aged stands of sand pines or thick, scrubby, oak growth. The understory is very sparse or bare. This ecological community provides valuable habitat for urban wildlife, such as the scrub jay, black racer, gopher tortoise, sand skink, and gopher frog. The map units that support the Sand Scrub ecological community in Pinellas County are:

20 Paola and St. Lucie soils and Urban land, 0 to 5 percent slopes
21 Paola and St. Lucie soils and Urban land, 5 to 12 percent slopes (fig. 7)
26 Pomello soils and Urban land, 0 to 5 percent slopes

Slough

The Slough ecological community consists primarily of open grassland in nearly level, broad drainage areas. The plant community is mostly grasses, such as blue maidencane, chalky bluestem, and bluejoint panicum, with scattered shrubs. The most important urban wildlife in areas of this community are songbirds, gray squirrels, opossum, and raccoon. The map units that support the Slough ecological community in Pinellas County are:

6 Basinger soils and Urban land
11 Felda soils and Urban land

South Florida Coastal Strand

The South Florida Coastal Strand ecological community occurs along the Gulf of Mexico and adjacent bays. This community generally encompasses long, narrow areas (sand dunes) and coastal beaches. The natural vegetation of this community is low-growing grasses, vines, and herbaceous plants with few trees or large shrubs. Seagrape, beach morning-glory, sandbur, and seaoats are some of the common plant species. These plants help to secure the dunes during hurricanes and periods of high wind. A variety of shorebirds, terns, and gulls can be found on or near the beach. Areas adjacent to the beach serve as nesting grounds for sea turtles. The map units that support the South Florida Coastal Strand ecological community in Pinellas County are:

8 Beaches
19 Palm Beach fine sand, 0 to 8 percent slopes

South Florida Flatwoods

The South Florida Flatwoods ecological community occurs in nearly level areas. The typical vegetation is scattered slash pine with an understory of sawpalmetto and grasses, typically pineland threeawn. The most important urban wildlife in areas of this community are songbirds, armadillo, gray squirrel, skunks, raccoon, and possum. The map units that support the South Florida Flatwoods ecological community in Pinellas County are:

10 EauGallie soils and Urban land

Figure 7.—Sand pine in an area of Paola and St. Lucie soils and Urban land, which is a droughty map unit. The ground cover is very sparse because the water table is deep and the soil has a very low available water capacity.

13 Immokalee soils and Urban land (fig. 8)
17 Myakka soils and Urban land
22 Pineda soils and Urban land
23 Pinellas soils and Urban land
31 Wabasso soils and Urban land

Upland Hardwood Hammocks

The Upland Hardwood Hammocks ecological community occurs as slight uplands adjacent to the flatwoods. This community is characterized by stands of hardwoods (mostly oak) and a few pines with an understory of grasses and scattered palmetto. The most important urban wildlife in areas of this community are songbirds, gray squirrel, raccoon, possum, and gopher tortoise. The map units that support the Upland Hardwood Hammocks ecological community in Pinellas County are:

2 Adamsville soils and Urban land, 0 to 5 percent slopes
28 Seffner soils and Urban land (fig. 9)

Units not assigned to an Ecological Community are:

9 Dumps
16 Matlacha and St. Augustine soils and Urban land
24 Pits
30 Urban land

Woodland Productivity and Management

The tables in this section can help woodland owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of woodland management.

Woodland Productivity

In table 4, the *potential productivity* of merchantable or *common trees* on a soil is

expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and co-dominant 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. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Woodland Management

In tables 5a through 5e, interpretive ratings are given for various aspects of woodland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified woodland management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more

Figure 8.—Typical Florida flatwoods in an area of Immokalee soils and Urban land in War Veterans' Memorial Park. The vegetation consists of saw palmetto and scattered slash pine.

Figure 9.—An area of the Upland Hardwood Hammocks ecological community in Philippe Park. This is an area of Seffner soils and Urban land.

properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified woodland management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for woodland management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in

construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of woodland equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance; and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer (fig. 10).

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Figure 10.—An area of Myakka soils and Urban land that was managed by controlled burning to minimize the potential for wildfire.

Recreation

The soils of the survey area are rated in tables 6a and 6b according to limitations that affect their suitability for recreation (fig. 11). The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables 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 sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by

the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in tables 6a and 6b can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

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 ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and

Figure 11.—Lake Tarpon, which is in the northern part of Pinellas County. The county has many water areas that are used for recreation.

Figure 12.—Boca Ciega Bay viewed from Boca Ciega Millennium Park. This area can be flooded during extremely high tides.

stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer (fig. 12).

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to

bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

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 7, 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 potential 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 flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

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, flooding, and slope. Soil temperature and soil moisture also are considerations.

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 flooding. Soil temperature and soil moisture also are considerations.

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, available water capacity, and wetness. Examples of these plants are oak and sweetgum.

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 and cedar.

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, saltgrass, cordgrass, 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 openland 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. Wildlife attracted to these

Figure 13.—A sidewalk passing over a wetland in an area of Basinger fine sand, depressional.

areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodpeckers, possum, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, herons, shore birds, and egrets.

Hydric Soils

In this section, hydric soils are defined and described. The hydric soils in the survey area are listed in table 8.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation (fig. 13).

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The

criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 1998) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1998).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1998).

3 Anclote fine sand, depressional
7 Basinger fine sand, depressional
8 Beaches
12 Felda fine sand, depressional
14 Kesson fine sand, very frequently flooded
15 Manatee loamy fine sand
18 Okeechobee muck
25 Placid fine sand, depressional
27 Samsula muck
32 Wulfert muck, very frequently flooded

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

6 Basinger soils and Urban land
11 Felda soils and Urban land
22 Pineda soils and Urban land

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. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

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 between the surface and a depth of 5 to 7 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 should 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 particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses (fig 14).

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate

Figure 14.—A concrete water-control structure that minimizes erosion and controls the water level in a small lake.

alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills and septic tank absorption fields; plan detailed onsite investigations of soils and geology; locate potential sources of sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and 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

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 9a and 9b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

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 soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Tables 10a and 10b show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the

Figure 15.—An area of Felda fine sand in which a septic system has been placed in a raised bed due to a seasonal high water table.

specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table (fig. 15), ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

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. Nearly impervious soil material for

the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, 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. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Tables 11a and 11b give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 11a, only the likelihood 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 Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

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. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

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.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

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 whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a 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 AASHTO classification

of the soil) and linear extensibility (shrink-swell potential).

Water Management

Table 12 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 excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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. Embankments that have zoned construction (core and shell) are not considered. 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, organic matter, or salts or sodium. 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.

Soil Properties

Soil properties are ascertained 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.

Estimates of soil properties are based on field examinations 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 to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 13 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

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 15 percent or more, 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 (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-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, CL-ML.

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 particle-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.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 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 particle-size distribution, liquid limit, and plasticity index are generally 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 generally omitted in the table.

Physical Properties

Table 14 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 14, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, 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 $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each 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. Depending on soil texture, a bulk density of more than 1.4 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 (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, 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 and septic tank absorption fields.

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 soil layer. The capacity varies, depending on soil properties that affect retention of water. 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.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 14, 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 in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity,

and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in table 14 as the K factor (Kw and Kf) and the T factor. 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) and the Revised Universal Soil Loss Equation (RUSLE) 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 and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 15 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases 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. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil 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.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative

sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Soil Features

Table 16 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for 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 the 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 to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Water Features

Table 17 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, 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 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.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 17 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 17 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

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 little or no horizon development.

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.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). 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 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve 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 Spodosols.

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 Aquod (*aqu*, meaning aquic conditions, plus *od*, from Spodosols).

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; type of saturation; 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 Alaquod (*al*, meaning less than 0.10 percent iron (by ammonium oxalate) in the spodic horizon, plus *aquod*, the suborder of the Spodosols with aquic conditions.

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup 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 taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Alfic* identifies the subgroup that has, within 200 centimeters of the surface, an argillic or kandic horizon that has a base saturation of 35 percent or more (by sum of the cations). An example is Alfic Alaquods.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, 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, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is sandy, siliceous, hyperthermic Alfic Alaquods.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. An example of a series name is EauGallie.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each 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" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Adamsville Series

Depth class: Very deep
Drainage class: Somewhat poorly drained

Permeability: Rapid throughout
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Knolls and low ridges
Slope: 0 to 5 percent
Taxonomic class: Hyperthermic, uncoated Aquic Quartzipsamments

The Adamsville soils are commonly associated on the landscape with Pomello and Seffner soils. Pomello soils have a spodic horizon. Seffner soils have an umbric epipedon.

Typical Pedon

Adamsville fine sand, in an area of Adamsville soils and Urban land, 0 to 5 percent slopes, in Pinellas County; USGS Dunedin topographic quadrangle; lat. 28 degrees 01 minute 20 seconds N. and long. 82 degrees 45 minutes 31 seconds W.

A1—0 to 6 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.
A2—6 to 17 inches; dark grayish brown (10YR 4/2) fine sand; single grain; loose; common fine roots; strongly acid; clear smooth boundary.
C1—17 to 38 inches; very pale brown (10YR 7/3) fine sand; single grain; loose; common fine and medium roots; some uncoated sand grains; common fine and medium distinct yellowish brown (10YR 5/8) areas of iron accumulation; strongly acid; gradual wavy boundary.
C2—38 to 52 inches; very pale brown (10YR 7/3) fine sand; single grain; loose; common medium brownish yellow (10YR 6/6) areas of iron accumulation; few medium light gray (10YR 7/1) stripped areas; strongly acid; gradual wavy boundary.
C3—52 to 80 inches; very pale brown (10YR 8/2) fine sand; single grain; loose; common medium distinct yellowish brown (10YR 5/8) areas of iron accumulation; strongly acid.

Range in Characteristics

Reaction: Very strongly acid to moderately acid in the A or Ap horizon and strongly acid to slightly acid in the C horizons

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 or 2
Texture—sand or fine sand

C horizon:
Color—hue of 10YR, value of 5 to 8, and chroma of 1 to 4
Texture—sand or fine sand
Redoximorphic features—few or common iron accumulations in shades of red, brown, or yellow below a depth of 16 inches. In some pedons, the C horizon has a few streaks of gray to light gray uncoated sand grains along root channels in the upper part of the horizon.

Anclote Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Depressions, drainageways, and flood plains
Slope: 0 to 2 percent
Taxonomic class: Sandy, siliceous, hyperthermic Typic Endoaquolls

The Anclote soils are commonly associated on the landscape with Manatee, Okeechobee, Placid, and Samsula soils. Manatee soils have an argillic horizon. Okeechobee and Samsula soils are organic soils. Placid soils do not have a mollic epipedon.

Typical Pedon

Anclote fine sand, depressional, in Pinellas County; USGS Oldsmar topographic quadrangle; lat. 28 degrees 06 minutes 00 seconds N. and long. 82 degrees 44 minutes 53 seconds W.

A—0 to 16 inches; black (10YR 2/1) fine sand; weak medium granular structure; loose to friable; many fine roots and few medium and large roots; slightly acid; clear wavy boundary.
Cg1—16 to 29 inches; dark grayish brown (10YR 4/2) fine sand; single grain; loose; few medium faint areas of very dark gray (10YR 3/1) fine sand; few fine roots; slightly acid; clear wavy boundary.
Cg2—29 to 58 inches; grayish brown (10YR 5/2) fine sand; single grain; loose; few fine distinct streaks of light gray (10YR 7/1) fine sand throughout; slightly acid; clear wavy boundary.
Cg3—58 to 80 inches; 60 percent grayish brown (10YR 5/2) and 40 percent light brownish gray (10YR 6/2) fine sand; single grain; loose; neutral.

Range in Characteristics

Reaction: Moderately acid to slightly alkaline throughout

A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2

Texture—sand or fine sand. In some pedons, the A horizon has a thin layer of muck.

Cg horizon:
Color—hue of 10YR to 5Y, value of 2 to 7, and chroma of 1 or 2
Texture—sand or fine sand
Redoximorphic features (where present)—iron depletions in shades of gray

Astatula Series

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Broad ridges
Slope: 0 to 12 percent
Taxonomic class: Hyperthermic, uncoated Typic Quartzipsamments

The Astatula soils are commonly associated on the landscape with Palm Beach, Paola, St. Lucie, and Tavares soils. Palm Beach soils contain shell fragments. Paola and St. Lucie have chroma of 2 or less in the C horizon. Tavares soils are moderately well drained.

Typical Pedon

Astatula fine sand, in an area of Astatula soils and Urban land, 0 to 5 percent slopes, in Pinellas County; USGS Dunedin topographic quadrangle; lat. 28 degrees 06 minutes 39 seconds N. and long. 82 degrees 46 minutes 03 seconds W.

A—0 to 3 inches; very dark gray (10YR 3/1) fine sand; single grain; loose; few medium and many fine roots; strongly acid; clear smooth boundary.
C1—3 to 25 inches; pale brown (10YR 6/3) fine sand; single grain; loose; common medium roots; very strongly acid; gradual wavy boundary.
C2—25 to 56 inches; brownish yellow (10YR 6/6) fine sand; single grain; loose; few medium roots; very strongly acid; gradual wavy boundary.
C3—56 to 71 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; very strongly acid; gradual wavy boundary.
C4—71 to 80 inches; very pale brown (10YR 7/3) fine sand; single grain; loose; very strongly acid.

Range in Characteristics

Reaction: Very strongly acid to slightly acid throughout

A horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 or 2
Texture—sand or fine sand

C horizon:
Color—hue of 10YR, value of 5 to 8, and chroma of 3 to 7
Texture—fine sand or sand

Basinger Series

Depth class: Very deep
Drainage class: Poorly drained and very poorly drained
Permeability: Rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Depressions, sloughs, and swamps
Slope: 0 to 2 percent
Taxonomic class: Siliceous, hyperthermic Spodic Psammaquents

The Basinger soils are commonly associated on the landscape with Felda and Pineda soils. Felda and Pineda soils have an argillic horizon.

Typical Pedon

Basinger fine sand, in an area of Basinger soils and Urban land, in Pinellas County; USGS Elfers Harbor topographic quadrangle; lat. 28 degrees 08 minutes 47 seconds N. and long. 82 degrees 41 minutes 30 seconds W.

A—0 to 5 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine and few coarse roots; strongly acid; clear smooth boundary.
E—5 to 14 inches; light gray (10YR 7/2) fine sand; single grain; loose; common fine roots; few fine distinct brownish yellow (10YR 6/6) areas of iron accumulation; strongly acid; gradual wavy boundary.
E/Bh—14 to 36 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; few fine roots; few medium faint light gray (10YR 7/2) and very dark grayish brown (10YR 3/2) areas of iron depletion; moderately acid; gradual wavy boundary.
Cg1—36 to 58 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; few fine roots; common fine distinct yellowish brown (10YR 5/6) areas of iron accumulation; few medium faint very dark grayish brown (10YR 3/2) areas of iron depletion; strongly acid; gradual wavy boundary.

Cg2—58 to 80 inches; light gray (10YR 7/2) fine sand; single grain; loose; slightly acid.

Range in Characteristics

Reaction: Extremely acid to neutral throughout

A horizon:
- Color—hue of 10YR, value of 2 to 5, and chroma of 1 or 2
- Texture—sand or fine sand

E horizon:
- Color—hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 4
- Texture—sand or fine sand
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, olive, or yellow or iron depletions in shades of gray

E/Bh horizon:
- Color—E portion has colors similar to those of the E horizon; Bh portion has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 4
- Texture—sand or fine sand
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, red, or yellow or iron depletions in shades of gray

Cg horizon:
- Color—hue of 10YR, value of 5 to 8, and chroma of 1 or 2
- Quantity of shell fragments—none to few
- Texture—sand or fine sand

EauGallie Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid in the A and E horizons and moderate to slow in the B horizons
Parent material: Sandy marine sediments over loamy marine sediments
Landscape: Lower Coastal Plain
Landform: Flatwoods
Slope: 0 to 2 percent
Taxonomic class: Sandy, siliceous, hyperthermic Alfic Alaquods

The EauGallie soils are commonly associated on the landscape with Immokalee, Myakka, Pinellas, and Wabasso soils. Immokalee and Myakka soils do not have an argillic horizon. Pinellas soils have a Bk horizon. Wabasso soils have an argillic horizon within a depth of 40 inches.

Typical Pedon

EauGallie fine sand, in an area of EauGallie soils and Urban land, in Pinellas County; USGS St. Petersburg topographic quadrangle; lat. 27 degrees 51 minutes 57 seconds N. and long. 82 degrees 41 minutes 15 seconds W.

A—0 to 5 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.
E1—5 to 13 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; few fine and medium roots; moderately acid; gradual wavy boundary.
E2—13 to 23 inches; light gray (10YR 6/1) fine sand; single grain; loose; few fine and medium roots; moderately acid; abrupt smooth boundary.
Bh1—23 to 29 inches; black (5YR 2/1) fine sand; weak medium subangular blocky structure; friable; few fine and medium roots; sand grains coated with organic matter; slightly acid; gradual wavy boundary.
Bh2—29 to 37 inches; dark reddish brown (5YR 2/2) fine sand; moderate weak subangular blocky structure; friable; many fine and medium roots; sand grains coated with organic matter; moderately acid; gradual wavy boundary.
BE—37 to 47 inches; brown (10YR 4/3) fine sand; common medium dark reddish brown (5YR 2/2) firm fragments of material from the Bh horizon; single grain; loose; many uncoated sand grains; slightly acid; clear wavy boundary.
Btg—47 to 59 inches; grayish brown (10YR 5/2) fine sandy clay loam; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; common, medium, and coarse distinct olive brown (2.5Y 4/4) areas of iron accumulation; slightly acid; abrupt wavy boundary.
Cg—59 to 80 inches; 40 percent light gray (10YR 6/1), 30 percent light brownish gray (10YR 6/2), and 30 percent dark gray (10YR 4/1) sand; few shell fragments; single grain; loose; neutral.

Range in Characteristics

Thickness of the solum: 46 to more than 80 inches
Reaction: Extremely acid to moderately acid in the A and E horizons and extremely acid to slightly alkaline in the Bh, BE, Btg, and Cg horizons

A horizon:
- Color—hue of 10YR, value of 2 to 4, and chroma of 1 with a salt-and-pepper appearance where undisturbed
- Texture—sand or fine sand

E horizon:
Color—hue of 10YR, value of 5 to 8, and chroma of 1 or 2
Texture—sand or fine sand
Redoximorphic features (where present)—none to common iron accumulations in shades of brown, red, or yellow

Bh horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3
Texture—sand, fine sand, or loamy fine sand

BE horizon:
Color—hue of 10YR, value of 4 to 7, and chroma of 3 or 4
Quantity of fragments of Bh material—none to common
Texture—sand or fine sand

E´ horizon (where present):
Color—hue of 10YR, value of 4 to 8, and chroma of 1 to 3
Texture—sand or fine sand

Btg horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 3
Texture—sandy loam, fine sandy clay loam, or sandy clay loam
Redoximorphic features (where present)—few or common iron accumulations in shades of brown and yellow or iron depletions in shades of gray

Cg horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 1 to 3
Texture—sand, fine sand, or fine sandy loam
Quantity of shell fragments—none to common
Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow

Felda Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Parent material: Sandy marine sediments over loamy marine sediments
Landscape: Lower Coastal Plain
Landform: Depressions, drainageways, sloughs, and swamps
Slope: 0 to 2 percent
Taxonomic class: Loamy, siliceous, superactive, hyperthermic Arenic Endoaqualfs

The Felda soils are commonly associated on the landscape with Basinger and Pineda soils. Basinger soils do not have an argillic horizon. Pineda soils have a Bw horizon.

Typical Pedon

Felda fine sand, in an area of Felda soils and Urban land, in Pinellas County; USGS St. Petersburg topographic quadrangle; lat. 27 degrees 52 minutes 37 seconds N. and long. 82 degrees 44 minutes 08 seconds W.

A—0 to 3 inches; very dark gray (10YR 3/1) fine sand; salt-and-pepper appearance due to mixture of organic matter and light gray (10YR 7/1) sand grains; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.
Eg—3 to 26 inches; light gray (10YR 7/2) fine sand; single grain; loose; few fine roots; common medium faint brown (10YR 5/3) areas of iron accumulation; strongly acid; clear smooth boundary.
Btg—26 to 34 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine subangular blocky structure; friable; many fine and few medium roots; common coarse faint yellowish brown (10YR 5/4) and few fine distinct yellowish brown (10YR 5/8) areas of iron accumulation; slightly acid; clear wavy boundary.
BCg—34 to 38 inches; grayish brown (10YR 5/2) loamy fine sand; weak fine granular structure; friable; many fine roots and few medium roots; many coarse distinct olive brown (2.5Y 5/6) areas of iron accumulation; common medium faint gray (10YR 6/1) areas of iron depletion; neutral; clear smooth boundary.
Cg—38 to 80 inches; grayish brown (10YR 5/2) loamy sand that is about 5 percent, by volume, shell fragments; single grain; loose; calcareous; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 80 inches
Reaction: Very strongly acid to neutral in the A and Eg horizons, slightly acid to slightly alkaline in the Btg horizon, and slightly acid to moderately alkaline in the BCg and Cg horizons

A horizon:
Color—hue of 10YR, value of 2 to 5, and chroma of 1 or 2
Texture—sand or fine sand

Eg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2

Texture—sand or fine sand
Redoximorphic features (where present)—few or common iron accumulations in shades of brown, olive, or yellow

Btg horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
Texture—fine sandy loam, sandy loam, or sandy clay loam
Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow

BCg horizon (where present):
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
Texture—loamy fine sand, sandy loam, or loamy sand
Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow

Cg horizon:
Color—hue of 10YR to 5G, value of 4 to 8, and chroma of 1 or 2
Texture—sand, fine sand, or loamy sand. In some pedons, the Cg horizon is mixed with shell fragments, has layers of shell fragments, or both.
Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow and iron depletions in shades of gray

Immokalee Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid in the A horizon and moderate or moderately rapid in the Bh horizon
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Flatwoods
Slope: 0 to 2 percent
Taxonomic class: Sandy, siliceous, hyperthermic Arenic Alaquods

The Immokalee soils are commonly associated on the landscape with EauGallie, Myakka, Pinellas, and Wabasso soils. EauGallie and Wabasso soils have an argillic horizon. Myakka soils have a spodic horizon above a depth of 30 inches. Pinellas soils do not have a spodic horizon.

Typical Pedon

Immokalee fine sand, in an area of Immokalee soils and Urban land, in Pinellas County; USGS Oldsmar topographic quadrangle; lat. 28 degrees 01 minute 52 seconds N. and long. 82 degrees 40 minutes 07 seconds W.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine granular structure; very friable; many fine and coarse roots; very strongly acid; clear smooth boundary.
E—6 to 35 inches; gray (10YR 6/1) fine sand; single grain; loose; many medium and coarse roots; very strongly acid; clear smooth boundary.
Bh1—35 to 40 inches; dark brown (10YR 3/3) fine sand; single grain; loose; few fine and medium roots; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.
Bh2—40 to 50 inches; dark reddish brown (5YR 3/2) fine sand; weak fine subangular blocky structure; few medium roots; sand grains coated with organic matter; strongly acid; clear wavy boundary.
BC—50 to 60 inches; brown (10YR 5/3) fine sand; single grain; loose; strongly acid; gradual wavy boundary.
C—60 to 80 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; strongly acid.

Range in Characteristics

Reaction: Extremely acid to moderately acid throughout
Other features: Some pedons have E´ and B´h horizons below the Bh horizon. The E´ and B´h horizons have the same range in color and texture as the E and Bh horizons.

A horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 or 2 with a salt-and-pepper appearance when unrubbed
Texture—sand or fine sand

E horizon:
Color—hue of 10YR, value of 5 to 8, and chroma of 1 or 2
Texture—sand or fine sand
Redoximorphic features (where present)—few or common iron accumulations in shades of brown, red, or yellow

Bh horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3
Texture—sand or fine sand

BC horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4
Texture—sand or fine sand

C horizon:
Color—hue of 10YR, value of 4 to 7, and chroma of 1 to 4
Texture—sand or fine sand
Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow

Kesson Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid or rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Tidal swamps
Slope: 0 to 1 percent
Taxonomic class: Siliceous, hyperthermic Typic Psammaquents

The Kesson soils are commonly associated on the landscape with Wulfert soils. Wulfert soils are organic soils.

Typical Pedon

Kesson fine sand, very frequently flooded, in Pinellas County; USGS Tarpon Springs topographic quadrangle; lat. 28 degrees 10 minutes 10 seconds N. and long. 82 degrees 47 minutes 14 seconds W.

A—0 to 5 inches; black (10YR 2/1) fine sand; single grain; loose; few medium and common fine roots; about 10 percent, by volume, shell fragments; calcareous; slightly alkaline; gradual wavy boundary.
Cg1—5 to 26 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; about 15 percent, by volume, shell fragments; calcareous; slightly alkaline; gradual wavy boundary.
Cg2—26 to 42 inches; 60 percent grayish brown (10YR 5/2) and 40 percent brown (10YR 5/3) fine sand; single grain; loose; about 20 percent, by volume, shell fragments; calcareous; slightly alkaline; clear wavy boundary.
Cg3—42 to 80 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; about 10 percent, by volume, shell fragments; calcareous; slightly alkaline.

Range in Characteristics

Reaction: Slightly alkaline to strongly alkaline throughout
Content of sulfur: Greater than 0.75 percent within a depth of 20 inches

A horizon:
Color—hue of 10YR, value of 2 to 5, and chroma of 1 to 3
Texture—fine sand or sand. In some pedons, the A horizon has a layer of organic matter less than 6 inches thick.
Quantity of shell fragments—5 to 15 percent

Cg horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 1 to 3
Texture—fine sand or sand
Quantity of shell fragments—5 to 30 percent

Manatee Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate
Parent material: Sandy and loamy marine sediments
Landscape: Lower Coastal Plain
Landform: Depressions, drainageways, and flood plains
Slope: 0 to 2 percent
Taxonomic class: Coarse-loamy, siliceous, superactive, hyperthermic Typic Argiaquolls

The Manatee soils are commonly associated on the landscape with Anclote, Okeechobee, Placid, and Samsula soils. Anclote soils do not have an argillic horizon. Okeechobee and Samsula soils are organic soils. Placid soils do not have a mollic epipedon.

Typical Pedon

Manatee loamy fine sand, in Pinellas County; USGS St. Petersburg topographic quadrangle; lat. 27 degrees 49 minutes 48 seconds N. and long. 82 degrees 43 minutes 22 seconds W.

A1—0 to 11 inches; black (10YR 2/1) loamy fine sand; weak fine granular structure; very friable; many fine roots; slightly alkaline; clear smooth boundary.
A2—11 to 18 inches; very dark brown (10YR 2/2) loamy fine sand; weak fine granular structure; very friable; many fine roots; slightly alkaline; clear irregular boundary.
Btg—18 to 34 inches; grayish brown (10YR 5/2) fine sandy loam; weak medium subangular blocky structure; friable; many fine roots; many sand grains coated and bridged with clay; common medium distinct yellowish brown (10YR 5/6) areas of iron accumulation; slightly alkaline; gradual wavy boundary.

BCkg—34 to 44 inches; grayish brown (10YR 5/2) fine sandy loam; weak medium subangular blocky structure; friable; slightly sticky, slightly plastic; many fine white (10YR 8/1) semihard calcium carbonate nodules and soft accumulations of calcium carbonate; calcareous; common medium faint dark yellowish brown (10YR 3/4) and common medium distinct yellowish brown (10YR 5/6) areas of iron accumulation; common coarse faint gray (10YR 5/1) areas of iron depletion; moderately alkaline; gradual wavy boundary.
Cg—44 to 80 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; slightly alkaline.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Reaction: Moderately acid to slightly alkaline in the A horizon and neutral to moderately alkaline in the B and C horizons

A horizon:
- Color—hue of 10YR, value of 2 or 3, and chroma of 2 or less; or neutral in hue and value of 2 or 3
- Texture—fine sandy loam, fine sand, loamy fine sand, mucky loamy fine sand, or mucky fine sand

Btg horizon:
- Color—hue of 10YR or 5Y, value of 4 to 6, and chroma of 1 or 2
- Texture—fine sandy loam or sandy loam
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, red, or yellow

BCkg horizon:
- Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 or less
- Texture—fine sandy loam, sandy loam, or loamy fine sand
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, red, or yellow and iron depletions in shades of gray

Cg horizon:
- Color—hue of 10YR to 5GY, value of 4 to 7, and chroma of 2 or less
- Texture—sand, fine sand, sandy loam, or fine sandy loam

Matlacha Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid or rapid
Parent material: Material derived from fill and dredge operations
Landscape: Lower Coastal Plain
Landform: Low ridges
Slope: 0 to 2 percent
Taxonomic class: Sandy, siliceous, hyperthermic Alfic Udarents

The Matlacha soils are commonly associated on the landscape with St. Augustine soils. St. Augustine soils contain less than 15 percent limestone fragments.

Typical Pedon

Matlacha sand, in an area of Matlacha and St. Augustine soils and Urban land, in Pinellas County; USGS Pass-A-Grille Beach topographic quadrangle; lat. 27 degrees 38 minutes 32 seconds N. and long. 82 degrees 44 minutes 18 seconds W.

C—0 to 42 inches; 40 percent very dark gray (10YR 3/1), 35 percent light brownish gray (10YR 6/2), and 25 percent very pale brown (10YR 7/3) sand that has lenses of white (10YR 8/1) fine sand; single grain; loose; about 20 percent, by volume, shell and limestone fragments less than 3 inches in diameter; few fine and medium roots; moderately alkaline; abrupt smooth boundary.
2Ab—42 to 51 inches; gray (10YR 5/1) fine sand; single grain; loose; about 5 percent, by volume, shell fragments; moderately alkaline; gradual wavy boundary.
2Eb—51 to 80 inches; light gray (10YR 7/1) fine sand; about 30 percent, by volume, shell fragments; moderately alkaline.

Range in Characteristics

Reaction: Slightly acid to moderately alkaline throughout

C horizon:
- Color—hue of 10YR or 2.5Y, value of 2 to 7, and chroma of 1 to 6
- Texture—sand, fine sand, loamy fine sand, loamy sand. In some pedons, the C horizon has few or common pockets or lenses of clay, sandy clay, or sandy clay loam.
- Fragments—15 to 30 percent shell and rock fragments less than 3 inches in diameter; in some pedons, few or common fragments of mollic, argillic, spodic, and albic horizons
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, red, and yellow and iron depletions in shades of gray

2Ab horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 or 2
Texture—sand or fine sand
Quantity of shell fragments—0 to 15 percent

2Eb horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 1 to 4
Texture—sand or fine sand. In some pedons, the 2Eb horizon has lenses of loamy fine sand or loamy sand.
Quantity of shell fragments—5 to 50 percent
Redoximorphic features (where present)—few or common iron accumulations in shades of brown and yellow and iron depletions in shades of gray

Myakka Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid in the A horizon and moderate or moderately rapid in the Bh horizon
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Flatwoods
Slope: 0 to 2 percent
Taxonomic class: Sandy, siliceous, hyperthermic Aeric Alaquods

The Myakka soils are commonly associated on the landscape with EauGallie, Immokalee, Pinellas, and Wabasso soils. EauGallie and Wabasso soils have argillic horizons. Immokalee soils have a spodic horizon below a depth of 30 inches. Pinellas soils do not have a spodic horizon.

Typical Pedon

Myakka fine sand, in an area of Myakka soils and Urban land, in Pinellas County; USGS Safety Harbor topographic quadrangle; lat. 27 degrees 53 minutes 34 seconds N. and long. 82 degrees 41 minutes 59 seconds W.

A—0 to 4 inches; fine sand, black (10YR 2/1) rubbed; weak fine granular structure; very friable; many fine and coarse roots; very strongly acid; clear smooth boundary.
E—4 to 22 inches; gray (10YR 6/1) fine sand; single grain; loose; many medium and coarse roots; very strongly acid; clear smooth boundary.
Bh1—22 to 24 inches; black (5YR 2/1) fine sand; weak medium subangular blocky structure; friable; few fine and medium roots; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.
Bh2—24 to 29 inches; dark reddish brown (5YR 2/2) fine sand; weak fine subangular blocky structure; friable; few medium roots; sand grains coated with organic matter; strongly acid; clear wavy boundary.
C/B—29 to 36 inches; dark yellowish brown (10YR 3/4) fine sand; single grain; loose; few fine roots; common medium distinct dark reddish brown (5YR 2/2) Bh bodies; strongly acid; gradual wavy boundary.
C1—36 to 54 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; strongly acid; gradual wavy boundary.
C2—54 to 80 inches; very pale brown (10YR 7/3) fine sand; single grain; loose; strongly acid.

Range in Characteristics

Reaction: Extremely acid to slightly acid throughout
Other features: Some pedons have E´ and B´h horizons below the Bh horizon. The E´ and B´h horizons have the same range in color and texture as the E and Bh horizons.

A horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 with a salt-and-pepper appearance when unrubbed
Texture—sand or fine sand

E horizon:
Color—hue of 10YR, value of 4 to 8, and chroma of 1 or 2
Texture—sand or fine sand
Redoximorphic features (where present)—few or common iron accumulations in shades of brown, red, or yellow

Bh horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 4
Texture—sand or fine sand

C/B horizon:
Color—the C part has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4; the B part has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 4.
Texture—sand or fine sand

C horizon:
Color—hue of 10YR, value of 4 to 7, and chroma of 1 to 4
Texture—sand or fine sand
Redoximorphic features (where present)—few or

common iron accumulations in shades of brown or yellow

Okeechobee Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Parent material: Organic materials
Landscape: Lower Coastal Plain
Landform: Freshwater marshes
Slope: 0 to 1 percent
Taxonomic class: Euic, hyperthermic Hemic Haplosaprists

The Okeechobee soils are commonly associated on the landscape with Anclote, Manatee, Placid, and Samsula soils. Anclote, Manatee, and Placid soils are mineral soils. Samsula soils do not contain hemic material and are underlain by sandy material at a depth of 16 to 51 inches.

Typical Pedon

Okeechobee muck, in Pinellas County; USGS St. Petersburg topographic quadrangle; lat. 27 degrees 50 minutes 09 seconds N. and long. 82 degrees 40 minutes 29 seconds W.

Oa—0 to 26 inches; black (10YR 2/1) muck; less than 5 percent fiber rubbed; 10 percent mineral material; weak medium granular structure; friable; many fine roots; slightly acid; gradual smooth boundary.
Oe1—26 to 34 inches; very dark brown (10YR 2/2) mucky peat; 65 percent fiber unrubbed, 20 percent rubbed; 5 percent mineral material; massive; friable; few medium faint areas of very dark gray (10YR 3/1) fine sand; few fine roots; moderately acid; gradual smooth boundary.
Oe2—34 to 80 inches; dark reddish brown (5YR 3/4) mucky peat; 60 percent fiber unrubbed, 25 percent rubbed; massive; friable; slightly acid.

Range in Characteristics

Thickness of organic materials: Greater than 51 inches
Reaction: Moderately acid to slightly alkaline throughout

Oa horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2
Texture—muck; less than 5 percent fiber unrubbed and rubbed; 5 to 15 percent mineral material

Oe horizon:
Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 4
Texture—mucky peat; 60 to 80 percent fiber unrubbed and 18 to 40 percent rubbed; less than 10 percent mineral material

Oa´ horizon (where present):
Color—same as the Oa horizon
Texture—same as the Oa horizon

Palm Beach Series

Depth class: Very deep
Drainage class: Well drained to excessively drained
Permeability: Very rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Ridges
Slope: 0 to 8 percent
Taxonomic class: Hyperthermic, uncoated Typic Quartzipsamments

The Palm Beach soils are commonly associated on the landscape with Astatula, Paola, St. Lucie, and Tavares soils. Astatula, Paola, St. Lucie, and Tavares soils do not have shell fragments.

Typical Pedon

Palm Beach fine sand, 0 to 8 percent slopes, in Pinellas County; USGS Dunedin topographic quadrangle; lat. 28 degrees 01 minute 25 seconds N. and long. 82 degrees 49 minutes 17 seconds W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) fine sand; single grain; loose; common fine and few medium roots; about 5 percent, by volume, shell fragments; slightly alkaline; abrupt wavy boundary.
C1—4 to 34 inches; light gray (10YR 7/2) fine sand; single grain; loose; about 15 percent, by volume, shell fragments; moderately alkaline; gradual wavy boundary.
C2—34 to 80 inches; 55 percent light gray (10YR 7/1) and 45 percent very pale brown (10YR 7/3) fine sand; single grain; loose; about 35 percent, by volume, shell fragments; shell fragments are in layers and also mixed with the sand; strongly alkaline.

Range in Characteristics

Reaction: Slightly alkaline to strongly alkaline throughout

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3

Texture—fine sand or sand; 5 to 25 percent, by volume, multicolored shell fragments

C horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 1 to 3
Texture—fine sand or sand; 15 to 65 percent, by volume, multicolored shell fragments

Paola Series

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Very rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Ridges
Slope: 0 to 12 percent
Taxonomic class: Hyperthermic, uncoated Spodic Quartzipsamments

The Paola soils are commonly associated on the landscape with Astatula, Palm Beach, St. Lucie, and Tavares soils. Astatula soils do not have chroma of 2 or less and do not have a weakly expressed spodic horizon. Palm Beach soils have shell fragments. St. Lucie soils do not have chroma of 3 or more throughout the profile. Tavares soils are moderately well drained and do not have a weakly expressed spodic horizon.

Typical Pedon

Paola fine sand, in an area of Paola and St. Lucie soils and Urban land, 0 to 5 percent slopes, in Pinellas County; USGS Elfers topographic quadrangle; lat. 28 degrees 09 minutes 16 seconds N. and long. 82 degrees 42 minutes 59 seconds W.

A—0 to 3 inches; gray (10YR 6/1) fine sand; single grain; loose; many fine and medium roots; few fine charcoal fragments; very strongly acid; gradual wavy boundary.
E—3 to 22 inches; white (10YR 8/1) fine sand; single grain; loose; common fine and medium roots; common medium charcoal fragments; very strongly acid; clear irregular boundary.
B/E—22 to 50 inches; yellow (10YR 8/6) fine sand (Bw); single grain; loose; many fine, medium, and coarse roots; few tongues filled with white (10YR 8/1) sand from the overlying E horizon occur throughout the horizon; outer edges of the root channels are stained with dark reddish brown (5YR 2.5/2) and brown (7.5YR 4/4) fine sand; few or common coarse spheroidal dark reddish brown (5YR 2.5/2) and brown (7.5YR 4/4) concretions; thin (typically less than 2 inches thick) discontinuous layers of brown (7.5YR 4/4) weakly cemented fine sand occur at irregular intervals at the contact between the E horizon and the B horizon; very strongly acid; clear wavy boundary.
C—50 to 80 inches; very pale brown (10YR 8/4) fine sand; single grain; loose; few fine, medium, and coarse roots; very strongly acid.

Range in Characteristics

Reaction: Extremely acid to neutral throughout

A horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 1 or 2
Texture—sand or fine sand

E horizon:
Color—hue of 10YR, value of 6 to 8, and chroma of 1 or 2
Texture—sand or fine sand

B/E horizon:
Color—the Bw part of the B/E horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 to 8. Weakly cemented Bh fragments ranging from 1/2 to 2 inches in thickness occur as a thin discontinuous layer with hue of 5YR or 7.5YR, value of 2.5 to 4, and chroma of 3 or 4. In some pedons, the B/E horizon has sand strippings and shades of white, gray, or very pale brown in the Bw part.
Texture—sand or fine sand

C horizon:
Color—hue of 10YR, value of 5 to 8, and chroma of 1 to 8
Texture—sand or fine sand

Pineda Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Parent material: Sandy marine sediments over loamy marine sediments
Landscape: Lower Coastal Plain
Landform: Flatwoods
Slope: 0 to 2 percent
Taxonomic class: Loamy, siliceous, active, hyperthermic Arenic Glossaqualfs

The Pineda soils are commonly associated on the landscape with Basinger and Felda soils. Basinger and Felda soils do not have a Bw horizon.

Typical Pedon

Pineda fine sand, in an area of Pineda soils and Urban land, in Pinellas County; USGS Safety Harbor topographic quadrangle; lat. 27 degrees 52 minutes 53 seconds N. and long. 82 degrees 40 minutes 22 seconds W.

A—0 to 4 inches; very dark gray (10YR 3/1) fine sand; salt-and-pepper appearance due to mixture of organic matter and light gray sand grains; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

E1—4 to 17 inches; light gray (10YR 7/2) fine sand; single grain; loose; many fine and medium roots; few fine distinct brownish yellow (10YR 6/6) areas of iron accumulation; few medium faint white (10YR 8/1) stripped streaks; strongly acid; clear wavy boundary.

E2—17 to 24 inches; very pale brown (10YR 7/3) fine sand; single grain; loose; common fine and medium roots; few fine distinct brownish yellow (10YR 6/6) areas of iron accumulation; moderately acid; clear wavy boundary.

Bw—24 to 32 inches; yellow (10YR 7/8) fine sand; single grain; loose; few medium roots; strongly acid; gradual wavy boundary.

E´—32 to 37 inches; light gray (10YR 7/2) fine sand; single grain; loose; common coarse distinct brownish yellow (10YR 6/8) areas of iron accumulation; moderately acid; abrupt irregular boundary.

B/E—37 to 55 inches; grayish brown (2.5Y 5/2) fine sandy loam (Btg) with 25 percent light gray (10YR 7/2) vertical tongues of fine sand (E) 3 to 7 inches in length and 1/2 to 2 inches in width; weak fine subangular blocky structure; slightly sticky and slightly plastic; sandy tongues are single grain and loose; slightly alkaline; gradual wavy boundary.

Cg—55 to 80 inches; grayish brown (2.5Y 5/2) sand mixed with 5 percent, by volume, shell fragments; single grain; loose; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 80 inches

Reaction: Very strongly acid to neutral in the A, E, E´, and Bw horizons; strongly acid to moderately alkaline in the Btg horizon, where present, and in the B part of the B/E horizon; and moderately acid to moderately alkaline in the Cg horizon

Other features: Some pedons have a Btg horizon with colors and textures similar to those of the Btg part of the B/E horizon.

A horizon:
- Color—hue of 10YR, value of 2 to 5, and chroma of 1 or 2
- Texture—sand or fine sand

E horizon:
- Color—hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 1 to 3
- Texture—sand or fine sand
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, olive, or yellow or iron depletions in shades of gray

Bw horizon:
- Color—hue of 7.5YR or 10YR, value of 4 to 8, and chroma of 3 to 8
- Texture—sand or fine sand

E´ horizon (where present):
- Color—hue of 10YR, value of 5 to 8, and chroma of 2 to 4
- Texture—sand or fine sand

B/E horizon:
- Color—the E part has colors and textures similar to those of the E and E´ horizons; the Btg part has hue of 10YR to 5BG, value of 4 to 7, and chroma of 1 or 2
- Texture—fine sandy loam, sandy loam, or sandy clay loam. Tongues of material from the E´ horizon extend into the B/E horizon. The tongues are more than 5 centimeters in length and occupy more than 15 percent of the B/E horizon.
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow

Cg horizon:
- Color—hue of 10YR to 5GY, value of 5 to 8, and chroma of 1 or 2
- Texture—sand, fine sand, or loamy sand. In some pedons, the Cg horizon is mixed with shell fragments, has layers of shell fragments, or both

Pinellas Series

Depth class: Very deep

Drainage class: Poorly drained

Permeability: Rapid or moderately rapid

Parent material: Sandy marine sediments over loamy marine sediments

Landscape: Lower Coastal Plain

Landform: Flatwoods

Slope: 0 to 2 percent
Taxonomic class: Loamy, siliceous, superactive, hyperthermic Arenic Endoaqualfs

The Pinellas soils are commonly associated on the landscape with EauGallie, Immokalee, Myakka, and Wabasso soils. EauGallie, Immokalee, Myakka, and Wabasso soils do not have a Bk horizon.

Typical Pedon

Pinellas fine sand, in an area of Pinellas soils and Urban land, in Pinellas County; USGS Oldsmar topographic quadrangle; lat. 27 degrees 51 minutes 23 seconds N. and long. 82 degrees 41 minutes 43 seconds W.

A—0 to 3 inches; fine sand, black (10YR 2/1) rubbed; salt-and-pepper appearance due to mixture of organic matter and light gray (10YR 7/1) sand grains; weak fine granular structure; very friable; many fine and medium roots; moderately acid; clear smooth boundary.
E1—3 to 8 inches; gray (10YR 6/1) fine sand; single grain; loose; many fine, medium, and coarse roots; moderately acid; clear wavy boundary.
E2—8 to 18 inches; pale brown (10YR 6/3) fine sand; single grain; loose; many medium and few coarse roots; common coarse faint very pale brown (10YR 7/4) areas of iron accumulation; few medium faint white (10YR 8/1) stripped streaks; slightly acid; clear wavy boundary.
Bk1—18 to 25 inches; very pale brown (10YR 8/3) fine sand; weak fine granular structure; very friable; few coarse roots; soft masses of calcium carbonate in interstices between sand grains; sand grains thinly coated with calcium carbonate; calcareous; moderately alkaline; gradual wavy boundary.
Bk2—25 to 35 inches; light gray (10YR 7/2) fine sand; single grain; loose; few fine and medium roots; soft masses of calcium carbonate in interstices between sand grains and in many root channels; sand grains thinly coated with calcium carbonate; common coarse distinct brownish yellow (10YR 6/8) areas of iron accumulation; calcareous; moderately alkaline; clear wavy boundary.
Btg1—35 to 48 inches; grayish brown (2.5Y 5/2) fine sandy loam; weak fine subangular blocky structure; slightly sticky; common fine and medium roots; common coarse faint olive brown (2.5Y 4/4) areas of iron accumulation; few white (10YR 8/1) soft masses of calcium carbonate in old root channels; sand grains bridged and coated with clay; few lenses of uncoated sand grains; moderately alkaline; gradual wavy boundary.
Btg2—48 to 54 inches; gray (5Y 5/1) fine sandy loam; weak fine subangular blocky structure; slightly sticky; few very pale brown (10YR 8/2) soft masses of calcium carbonate in old root channels; sand grains bridged and coated with clay; few fine faint olive (5Y 4/3) areas of iron accumulation; moderately alkaline; clear smooth boundary.
2C—54 to 80 inches; light olive brown (2.5Y 5/4) gravelly sand; single grain; loose; about 25 percent, by volume, shell fragments; calcareous; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Reaction: Strongly acid to slightly alkaline in the A and E horizons; calcareous in the Bk horizon; and slightly alkaline or moderately alkaline in the Btg and C horizons

A horizon:
- Color—hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 1 or 2; or neutral in hue and value of 5 to 8
- Texture—sand, fine sand, loamy sand, or loamy fine sand

E horizon:
- Color—hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 1 to 3; or neutral in hue and value of 5 to 8
- Texture—sand or fine sand
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, olive, or yellow or iron depletions in shades of gray

Bk horizon:
- Color—hue of 10YR, value of 5 to 8, and chroma of 2 or 3;
- Horizon thickness—more than 6 inches
- Calcium carbonate equivalent—more than 15 percent; more than 5 percent higher than the underlying horizons
- Texture—sand or fine sand

Btg horizon:
- Color—hue of 10YR to 5Y, value of 4 to 8, and chroma of 1 or 2; or neutral in hue and value of 4 to 7
- Texture—fine sandy loam, sandy loam, or sandy clay loam
- Redoximorphic features (where present)—few or common iron accumulations in shades of brown, olive, or yellow or iron depletions in shades of gray

C horizon (where present):
Color—similar to those of the Btg horizon
Texture—sand or fine sand

2C horizon (where present):
Color—largely dependent on the color of the shell material, but the sand has colors similar to those of the Btg horizon
Texture—mixture of sand and shell fragments

Placid Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Depressions, drainageways, and swamps
Slope: 0 to 2 percent
Taxonomic class: Sandy, siliceous, hyperthermic Typic Humaquepts

The Placid soils are commonly associated on the landscape with Anclote, Manatee, Okeechobee, and Samsula soils. Anclote soils have a mollic epipedon. Manatee soils have an argillic horizon. Okeechobee and Samsula soils are organic soils.

Typical Pedon

Placid fine sand, depressional, in Pinellas County; USGS Safety Harbor topographic quadrangle; lat. 27 degrees 59 minutes 57 seconds N. and long. 82 degrees 42 minutes 14 seconds W.

A1—0 to 11 inches; black (10YR 2/1) fine sand; moderate fine granular structure; friable; many fine and few medium and large roots; very strongly acid; clear smooth boundary.
A2—11 to 17 inches; black (10YR 2/1) fine sand; single grain; loose; many fine and medium roots; common medium faint stripped areas of light brownish gray (10YR 6/2) fine sand; very strongly acid; gradual smooth boundary.
Cg1—17 to 29 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; few fine and coarse roots; few medium distinct pockets of very dark gray (10YR 3/1) iron depletion; very strongly acid; gradual smooth boundary.
Cg2—29 to 80 inches; grayish brown (10YR 5/2) fine sand; single grain; loose; strongly acid.

Range in Characteristics

Reaction: Extremely acid to strongly acid throughout
Other features: Some pedons have a thin layer (1 to 3 inches) of muck on the surface.

A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2
Texture—sand, fine sand, or mucky fine sand
Content of organic matter—4 to 15 percent
Redoximorphic features (where present)—iron depletions in shades of gray

Cg horizon:
Color—hue of 10YR, value of 4 to 7, and chroma of 2 or less
Texture—sand or fine sand
Redoximorphic features (where present)—iron depletions in shades of gray

Pomello Series

Depth class: Very deep
Drainage class: Somewhat poorly drained or moderately well drained
Permeability: Rapid in the A and E horizons and moderately rapid in the B horizon
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Low ridges
Slope: 0 to 5 percent
Taxonomic class: Sandy, siliceous, hyperthermic Oxyaquic Alorthods

The Pomello soils are commonly associated on the landscape with Adamsville and Seffner soils. Adamsville and Seffner soils do not have a spodic horizon.

Typical Pedon

Pomello fine sand, in an area of Pomello soils and Urban land, 0 to 5 percent slopes, in Pinellas County; USGS Dunedin topographic quadrangle; lat. 28 degrees 02 minutes 52 seconds N. and long. 82 degrees 45 minutes 54 seconds W.

A—0 to 3 inches; light gray (10YR 6/1) fine sand; single grain; loose; few fine and medium roots; very strongly acid; clear smooth boundary.
E1—3 to 15 inches; light gray (10YR 7/1) fine sand; single grain; loose; common fine and medium roots; very strongly acid; gradual wavy boundary.
E2—15 to 44 inches; white (10YR 8/1) fine sand; single grain; loose; few medium roots; very strongly acid; clear smooth.
Bh1—44 to 49 inches; black (10YR 2/1) fine sand; weakly cemented; massive; friable; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

Bh2—49 to 59 inches; dark reddish brown (5YR 3/3) fine sand; weakly cemented; massive; friable; few or common coarse fragments of dark reddish brown (5YR 3/2) organic bodies; very strongly acid; clear wavy boundary.
C—59 to 80 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; very strongly acid.

Range in Characteristics

Reaction: Moderately acid to very strongly acid throughout

A horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 1 or 2
Texture—sand or fine sand

E horizon:
Color—hue of 10YR, value of 5 to 8, and chroma of 1 or 2
Texture—sand or fine sand

Bh horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3
Texture—sand or fine sand

Bw horizon (where present):
Color—hue of 5YR to 10YR, value of 3 to 6, and chroma of 3 to 6
Texture—sand or fine sand

C horizon (where present):
Color—hue of 10YR, value of 5 to 7, and chroma of 1 to 4
Texture—sand or fine sand

Samsula Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Parent material: Organic material underlain by sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Depressions and swamps
Slope: 0 to 1 percent
Taxonomic class: Sandy or sandy-skeletal, siliceous, dysic, hyperthermic Terric Haplosaprists

The Samsula soils are commonly associated on the landscape with Anclote, Manatee, Okeechobee, and Placid soils. Anclote, Manatee, and Placid soils are mineral soils. Okeechobee soils have organic materials with a combined thickness of more than 51 inches.

Typical Pedon

Samsula muck, in Pinellas County; USGS Elfers topographic quadrangle; lat. 28 degrees 09 minutes 02 seconds N. and long. 82 degrees 42 minutes 27 seconds W.

Oa1—0 to 8 inches; dark reddish brown (5YR 3/2) muck; about 18 percent fiber unrubbed, 3 percent rubbed; 5 percent mineral material; weak medium granular structure; friable; common fine roots; very strongly acid; gradual smooth boundary.
Oa2—8 to 36 inches; black (10YR 2/1) muck; about 12 percent fiber unrubbed, less than 5 percent rubbed; 5 percent mineral material; massive; friable; very strongly acid; clear wavy boundary.
Cg1—36 to 44 inches; grayish brown (10YR 5/2) fine sand; single grain; loose; common medium faint dark grayish brown (10YR 4/2) areas of iron depletion; very strongly acid; clear wavy boundary.
Cg2—44 to 80 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; very strongly acid.

Range in Characteristics

Contrasting soil material: 16 to 51 inches of organic material over mineral material
Reaction: Very strongly acid or strongly acid in the Oa horizon and extremely acid to strongly acid in the Cg horizon

Oa horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 4 or less
Texture—muck; 10 to 25 percent fiber unrubbed and less than 5 percent rubbed; 0 to 15 percent mineral material

Cg horizon:
Color—hue of 10YR, value of 2 to 7, and chroma of 1 or 2
Texture—fine sand, sand, or loamy fine sand
Redoximorphic features (where present)—iron depletions in shades of gray

Seffner Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Knolls and low ridges
Slope: 0 to 2 percent

Taxonomic class: Sandy, siliceous, hyperthermic Aquic Humic Dystrudepts

The Seffner soils are commonly associated on the landscape with Adamsville and Pomello soils. Adamsville and Pomello soils do not have an umbric epipedon.

Typical Pedon

Seffner fine sand, in an area of Seffner soils and Urban land, in Pinellas County; USGS Oldsmar topographic quadrangle; lat. 28 degrees 03 minutes 53 seconds N. and long. 82 degrees 44 minutes 59 seconds W.

A1—0 to 8 inches; black (10YR 2/1) fine sand; weak fine granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.
A2—8 to 16 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine roots; very strongly acid; gradual wavy boundary.
AC—16 to 29 inches; grayish brown (10YR 5/2) fine sand; single grain; loose; few fine and medium roots; few fine distinct yellowish brown (10YR 5/8) areas of iron accumulation; very strongly acid; gradual wavy boundary.
C1—29 to 53 inches; very pale brown (10YR 7/3) fine sand; single grain; loose; few fine roots; common medium distinct brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) areas of iron accumulation; common medium faint light gray (10YR 7/2) areas of iron depletion; very strongly acid; gradual wavy boundary.
C2—53 to 80 inches; pale brown (10YR 6/3) fine sand; single grain; loose; common coarse distinct strong brown (7.5YR 5/8) areas of iron accumulation; strongly acid.

Range in Characteristics

Reaction: Very strongly acid to neutral throughout

A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3
Texture—sand or fine sand

AC horizon (where present):
Color—hue of 10YR, value of 3 to 6, and chroma of 1 to 4
Texture—sand or fine sand
Redoximorphic features—few or common iron accumulations in shades of red, brown, or yellow

C horizon:
Color—hue of 10YR, value of 5 to 8, and chroma of 1 to 3
Texture—sand or fine sand
Redoximorphic features—few or common iron accumulations in shades of red, brown, or yellow and iron depletions in shades of gray

St. Augustine Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Dominantly rapid or moderately rapid; very slow in pedons that have clayey horizons
Parent material: Material derived from fill and dredge operations
Landscape: Lower Coastal Plain
Landform: Low ridges
Slope: 0 to 2 percent
Taxonomic class: Siliceous, hyperthermic Aquic Udipsamments

The St. Augustine soils are commonly associated on the landscape with Matlacha soils. Matlacha soils have more than 15 percent limestone fragments.

Typical Pedon

St. Augustine sand, in an area of Matlacha and St. Augustine soils and Urban land, in Pinellas County; USGS Seminole topographic quadrangle; lat. 27 degrees 49 minutes 28 seconds N. and long. 82 degrees 49 minutes 08 seconds W.

A—0 to 8 inches; dark gray (10YR 4/1) sand; single grain; loose; about 10 percent, by volume, shell fragments; few fine roots; neutral; abrupt smooth boundary.
C1—8 to 22 inches; 60 percent light gray (10YR 6/1) and 40 light gray (10YR 7/2) sand; single grain; loose; neutral; gradual smooth boundary.
C2—22 to 33 inches; brown (10YR 4/3) loamy fine sand; massive; very friable; about 12 percent, by volume, shell fragments; many coarse faint yellowish brown (10YR 6/4) and common medium distinct reddish yellow (7.5YR 6/6) areas of iron accumulation; moderately alkaline; abrupt smooth boundary.
C3—33 to 48 inches; light gray (10YR 6/1) fine sand; single grain; loose; about 10 percent, by volume, shell fragments; neutral; abrupt wavy boundary.
C4—48 to 63 inches; 55 percent gray (10YR 5/1) and 45 percent light brownish gray (10YR 6/2) sandy loam; massive; very friable; about 5 percent, by volume, shell fragments; many coarse faint yellowish brown (10YR 6/4) areas of iron accumulation; moderately alkaline; abrupt smooth boundary.

C5—63 to 80 inches; light gray (10YR 7/2) sand; single grain; loose; about 40 percent, by volume, shell fragments; moderately alkaline.

Range in Characteristics

Reaction: Slightly acid to moderately alkaline throughout

A horizon:
- Color—hue of 10YR, value of 3 or 4, and chroma of 1 or 2
- Texture—sand or fine sand
- Quantity of shell fragments—0 to 20 percent

C horizon:
- Color—hue of 10YR or 5Y, value of 3 to 8, and chroma of 1 to 3
- Texture—sand, fine sand, loamy fine sand, or loamy sand. In some pedons, the C horizon has few or common pockets of clay, sandy clay, or sandy clay loam.
- Fragments—0 to 12 percent shell and rock fragments less than 3 inches in diameter; in some pedons, few or common fragments of mollic, argillic, spodic, and albic horizons
- Redoximorphic features (where present)—iron accumulations in shades of brown, red, and yellow and iron depletions in shades of gray

St. Lucie Series

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Very rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Ridges and side slopes
Slope: 0 to 12 percent
Taxonomic class: Hyperthermic, uncoated Typic Quartzipsamments

The St. Lucie soils are commonly associated on the landscape with Astatula, Palm Beach, Paola, and Tavares soils. Astatula soils do not have chroma of 2 or less. Palm Beach soils have shell fragments. Paola soils have chroma of 3 or more in the lower portion of the profile. Tavares soils are moderately well drained and have chroma of 3 or more.

Typical Pedon

St. Lucie fine sand, in an area of Paola and St. Lucie soils and Urban land, 0 to 5 percent slopes, in Pinellas County; USGS Oldsmar topographic quadrangle; lat. 28 degrees 05 minutes 39 seconds N. and long. 82 degrees 45 minutes 00 seconds W.

A—0 to 3 inches; gray (10YR 5/1) fine sand; single grain; loose; many fine and medium roots; few fine charcoal fragments; very strongly acid; clear smooth boundary.
C1—3 to 22 inches; light gray (10YR 7/1) fine sand; single grain; loose; common fine and medium roots; very strongly acid; gradual wavy boundary.
C2—22 to 80 inches; white (10YR 8/1) fine sand; single grain; loose; very strongly acid.

Range in Characteristics

Reaction: Extremely acid to slightly acid throughout

A horizon:
- Color—hue of 10YR, value of 4 to 6, and chroma of 1 or 2
- Texture—sand or fine sand

C horizon:
- Color—hue of 10YR, value of 7 or 8, and chroma of 1 or 2
- Texture—sand or fine sand

Tavares Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Rapid
Parent material: Sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Knolls and low ridges
Slope: 0 to 5 percent
Taxonomic class: Hyperthermic, uncoated Typic Quartzipsamments

The Tavares soils are commonly associated on the landscape with Astatula, Palm Beach, Paola, and St. Lucie soils. Astatula, Paola, and St. Lucie soils are excessively drained. Palm Beach soils contain shell fragments.

Typical Pedon

Tavares fine sand, in an area of Tavares soils and Urban land, 0 to 5 percent slopes, in Pinellas County; USGS Dunedin topographic quadrangle; lat. 28 degrees 02 minutes 14 seconds N. and long. 82 degrees 45 minutes 33 seconds W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine granular structure; loose; many fine and few large roots; strongly acid; abrupt wavy boundary.
C1—5 to 25 inches; very pale brown (10YR 7/3) fine sand; single grain; loose; common medium roots; very strongly acid; gradual wavy boundary.

C2—25 to 50 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; few medium roots; very strongly acid; gradual wavy boundary.
C3—50 to 65 inches; very pale brown (10YR 7/3) fine sand; few uncoated sand grains; single grain; loose; common large distinct yellowish red (5YR 4/6) areas of iron accumulation; very strongly acid; gradual wavy boundary.
C4—65 to 80 inches; very pale brown (10YR 8/2) fine sand; single grain; loose; common large distinct yellowish red (5YR 4/6) and reddish brown (5YR 4/4) areas of iron accumulation; very strongly acid.

Range in Characteristics

Reaction: Extremely acid to slightly acid throughout

A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2
Texture—sand or fine sand

C horizon (upper part):
Color—hue of 10YR, value of 5 to 8, and chroma of 1 to 6
Texture—sand or fine sand

C horizon (lower part):
Color—hue of 10YR, value of 6 to 8, and chroma of 1 to 4
Texture—sand or fine sand
Redoximorphic features—masses of iron accumulations in shades of brown, red, and yellow

Wabasso Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid in the A and E horizons and slow in the B horizons
Parent material: Sandy marine sediments over loamy marine sediments
Landscape: Lower Coastal Plain
Landform: Flatwoods
Slope: 0 to 2 percent
Taxonomic class: Sandy, siliceous, active, hyperthermic Alfic Alaquods

The Wabasso soils are commonly associated on the landscape with EauGallie, Immokalee, Myakka, and Pinellas soils. EauGallie soils have an argillic horizon below a depth of 40 inches. Immokalee and Myakka soils do not have an argillic horizon. Pinellas soils have a Bk horizon.

Typical Pedon

Wabasso fine sand, in an area of Wabasso soils and Urban land, in Pinellas County; USGS St. Petersburg topographic quadrangle; lat. 27 degrees 51 minutes 57 seconds N. and long. 82 degrees 41 minutes 15 seconds W.

A—0 to 5 inches; fine sand, black (10YR 2/1) rubbed; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; gradual smooth boundary.
E—5 to 26 inches; gray (10YR 6/1) fine sand; single grain; loose; few fine and medium roots; very strongly acid; clear smooth boundary.
Bh1—26 to 32 inches; black (5YR 2/1) fine sand; weak medium subangular blocky structure; friable; many fine and medium roots; sand grains coated with organic matter; slightly acid; gradual wavy boundary.
Bh2—32 to 36 inches; dark reddish brown (5YR 2/2) fine sand; weak fine subangular blocky structure; friable; many fine and medium roots; sand grains coated with organic matter; moderately acid; gradual wavy boundary.
Bt1—36 to 44 inches; dark grayish brown (10YR 4/2) fine sandy clay loam; moderate medium subangular blocky structure; firm; many fine and medium roots; sand grains bridged and coated with clay; common medium and coarse distinct olive brown (2.5Y 4/4) masses of iron accumulation; slightly acid; abrupt smooth boundary.
Bt2—44 to 50 inches; 35 percent dark brown (10YR 3/3), 35 percent olive brown (2.5Y 4/4), and 30 percent grayish brown (2.5Y 5/2) fine sandy loam; weak medium subangular blocky structure; slightly sticky; common fine roots; slightly acid; clear wavy boundary.
Cg—50 to 80 inches; light gray (2.5Y 7/2) fine sand; single grain; loose; about 10 percent, by volume, shell fragments; moderately alkaline.

Range in Characteristics

Reaction: Extremely acid to slightly acid in the A and E horizons; very strongly acid to neutral in the Bh horizon; very strongly acid to moderately alkaline in the E´ horizon, where present, and in the Bt horizon; and slightly alkaline or moderately alkaline in the C horizon

A horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 or 2
Texture—sand or fine sand

E horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 1 or 2
Texture—sand or fine sand

Bh horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 4
Texture—sand or fine sand

E´ horizon (where present):
Color—hue of 10YR, value of 5 to 7, and chroma of 1 to 3
Texture—sand or fine sand

Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 to 4; or multicolored in shades of brown, yellow, and gray
Texture—sandy loam, fine sandy clay loam, or sandy clay loam
Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow

C horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture—fine sand or loamy sand
Redoximorphic features (where present)—few or common iron accumulations in shades of brown or yellow

Wulfert Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid
Parent material: Organic materials underlain by sandy marine sediments
Landscape: Lower Coastal Plain
Landform: Tidal marshes
Slope: 0 to 1 percent
Taxonomic class: Sandy or sandy-skeletal, siliceous, euic, hyperthermic Terric Sulfisaprists

The Wulfert soils are commonly associated on the landscape with Kesson soils. Kesson soils are mineral soils.

Typical Pedon

Wulfert muck, very frequently flooded, in Pinellas County; USGS Elfers topographic quadrangle; lat. 28 degrees 09 minutes 41 seconds N. and long. 82 degrees 44 minutes 29 seconds W.

Oa—0 to 35 inches; black (10YR 2/1) muck; about 5 percent fiber unrubbed, less than 1 percent rubbed; massive; very friable; few fine roots; 1.5 percent sulfur; slightly acid; gradual wavy boundary.
Cg1—35 to 43 inches; black (10YR 2/1) fine sand; common medium faint pockets of black (10YR 2/1) muck; single grain; loose; 0.5 percent sulfur; strongly acid; gradual wavy boundary.
Cg2—43 to 80 inches; 60 percent grayish brown (10YR 5/2) and 40 percent brown (10YR 5/3) fine sand; single grain; loose; about 5 percent, by volume, shell fragments; 0.5 percent sulfur; very strongly acid.

Range in Characteristics

Contrasting soil material: 16 to 51 inches of organic material over mineral material
Reaction: Extremely acid to neutral (natural state) in the Oa horizon and extremely acid to slightly alkaline in the Cg horizon

Oa horizon:
Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2
Texture—muck; 0 to 25 percent fiber unrubbed and less than 5 percent rubbed; 5 to 40 percent mineral material. In some pedons, the Oa horizon contains hemic material.
Content of sulfur—0.7 to 2.0 percent

Cg horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2
Texture—sand, fine sand, or loamy fine sand. In some pedons, the upper part of the horizon contains mucky fine sand.
Quantity of shell fragments—up to 30 percent
Redoximorphic features (where present)—iron accumulation in shades of yellow or brown

Formation of the Soils

In this section, the factors and processes of soil formation and the geology of the county are described and related to the soils in the survey area.

Factors of Soil Formation

Soil is produced by forces of weathering acting on parent material deposited or accumulated by geologic agencies. The kind of soil that develops depends on five major factors. These factors are the type of parent material; the climate under which soil material has existed since accumulation; the plant and animal life in and on the soil; the relief, or lay of the land; and the length of time the forces of soil formation have acted on the soil material (Jenny, 1941).

The five soil-forming factors are interdependent; each modifies the effect of the others. Any one of the five factors can have more influence than the others on the formation of a soil and can account for most of its properties. For example, if the parent material is quartz sand, the soil generally has weakly expressed horizons. In places the effect of the parent material is modified greatly by the effects of climate, relief, and plants and animals. As a soil forms, it is influenced by each of the five factors, but in places one factor may be dominant. A modification or variation in any of the five factors results in a different kind of soil.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. It determines the limits of the chemical and mineralogical composition of the soil. In Pinellas County, the parent material consists of beds of sandy and clayey materials that were transported and deposited by ocean currents. The ocean covered the area a number of times during the Pleistocene period. In some parts of the county, depressions contain organic material from decomposed plant remains.

Climate

The climate of Pinellas County is generally warm and humid. Few differences between the soils are caused by climate; however, the climate aids in rapid decomposition of organic matter and hastens chemical reactions in the soil. Heavy rainfall leaches the soils of most plant nutrients and produces an acid condition in many of the sandy soils. It also carries the less soluble fine particles downward. Because of the climatic conditions, many of the soils in the county have a low content of organic matter, low natural fertility, and low available water capacity.

Plants and Animals

Plants have been the principal biological factor in the formation of soils in the county. Animals, insects, bacteria, and fungi have also been important. Plants and animals furnish organic matter to the soil and bring nutrients from lower soil layers to upper soil layers. In places, plants and animals cause differences in the amount of organic matter, nitrogen, and nutrients in the soil and differences in soil porosity and structure. For example, crayfish penetrate different layers of soil, thereby mixing loamy layers with sandy layers.

Microorganisms, including bacteria and fungi, help to weather and break down minerals and to decompose organic matter. These organisms are most numerous in the upper few inches of the soil. Earthworms and other small animals that inhabit the soil alter its physical and chemical composition and mix the soil material.

Relief

In Pinellas County, relief has affected the formation of soils primarily through its influence on soil-water relationships. The three general areas of relief in the county are flatwoods, elevated knolls and ridges, and depressions and flood plains. Differences between the soils, which all formed in similar parent materials, are directly related to relief. In areas of the flatwoods, the water table is at a shallow depth and the soils are periodically saturated to the surface. These soils display less leaching and greater retention of organic matter than the soils in the other areas. The soils on the elevated knolls and ridges have a greater depth to

the water table. They are highly leached and have less organic matter. The soils in depressions have a medium to high content of organic matter.

Time

Time is an important factor affecting soil formation. The physical and chemical changes brought about by climate, living organisms, and relief are relatively slow. The length of time needed to convert geological material into soil varies according to the nature of the material and the interaction of the other soil forming factors. Some basic minerals from which soils are formed weather fairly rapidly, while others are chemically inert and show little change over time. Within the soil, the translocation of fine particles to form horizons varies under differing conditions, but the processes take a relatively long period of time.

Processes of Soil Formation

Soil genesis refers to the formation of soil horizons. The differentiation of horizons in soils in the county is the result of accumulation of organic matter, leaching of carbonates, reduction and transfer of iron, or accumulation of silicate clay minerals. Sometimes more than one of these processes is involved. Some organic matter has accumulated in the upper layers of most of the soils. The content of organic matter is low in some of the soils and fairly high in others.

The soils in the county are leached to varying degrees. Carbonates and salts have been leached in most of the soils. Because the leaching permitted the subsequent translocation of silicate clay materials in some soils, the effects have been indirect. The reduction and transfer of iron have occurred in most of the soils in the county, except in the organic soils. In some of the wet soils, iron in the subsoil has formed yellowish brown horizons and redoximorphic features (mottles).

Geology

Richard Green and Jonathan Arthur, Florida Geological Survey, prepared this section.

Geomorphology/Terraces

Pinellas County lies in the Gulf Coastal Lowlands Province (White, 1970). This province, which generally includes the area from the shoreline to the 100-foot contour line, was formed by deposition of marine units. Erosion by streams and by surface drainage has further modified the land surface. Terrain in Pinellas County is generally flat-lying and is closely related to Pleistocene and Pliocene sea-level stands and the sediments that were deposited during these times. Several terraces, or ancient shorelines, are readily visible in the county today (fig. 16). The Pamlico Terrace ranges from 0 to 25 feet above mean sea level (MSL). The Penholoway Terrace ranges from 42 to 70 feet above MSL.

Lithostratigraphy

The geology of Pinellas County consists of a complex series of interbedded limestone, dolostone, sand, and clay units (fig. 17). The units range in age from Eocene (52 million years old) to Holocene (10,000 years old).

Eocene Series

Avon Park Formation

The Middle Eocene Avon Park Formation (Miller, 1986) underlies all of Pinellas County. The lithology of the formation is generally comprised of tan to buff dolostones and dolomitic limestones with occasional orange-rich laminations. The uppermost portion of the Avon Park Formation within the county is, however, a very light orange to yellowish-gray calcarenitic limestone with variable amounts of organic-rich laminations and dolomite. Porosity in this formation is generally intergranular in the limestone section. Fracture porosity in the dolostone is common, as is intercrystalline porosity in the sucrosic textures. Pinpoint vugs and fossil molds are present to a lesser extent. The most diagnostic fossils include the foraminifers *Dictyoconus americanus* and *Coskinolina floridana*. The echinoid *Neolaganum (peronella) dalli* is common within the upper portions of the unit.

The Loweer to Middle Eocene (Braunstein and others, 1988) Oldsmar Limestone is subjacent to the Avon Park Formation in this region. Miller (1986) reports the base of Middle Eocene rocks (approximately the base of Avon Park Formation) at depths ranging from 1,800 to 2,400 feet below MSL. The Avon Park Formation varies in thickness beneath Pinellas County, ranging from approximately 1,400 feet in the northern part of the county to 1,500 feet in the southern part (Miller, 1986). The top of the formation is between 440 and 760 feet below MSL. The Avon Park Formation is unconformably overlain by the Ocala Limestone throughout Pinellas County

Ocala Limestone

The Upper Eocene Ocala Limestone, first named by Dall and Harris (1992), consists of white to light-gray to light-orange limestone with a diverse fossil

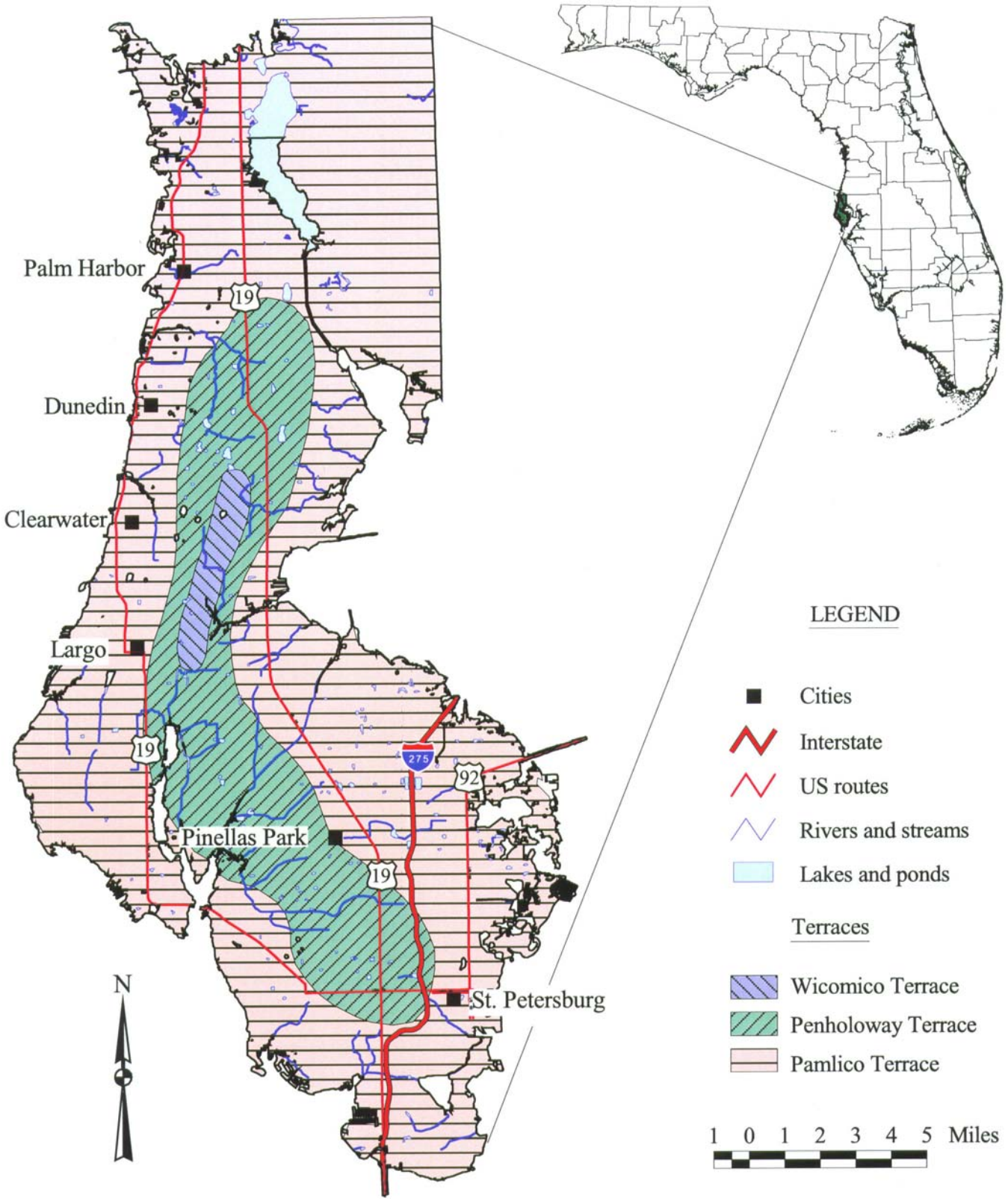

Figure 16.—Generalized map of terraces in Pinellas County.

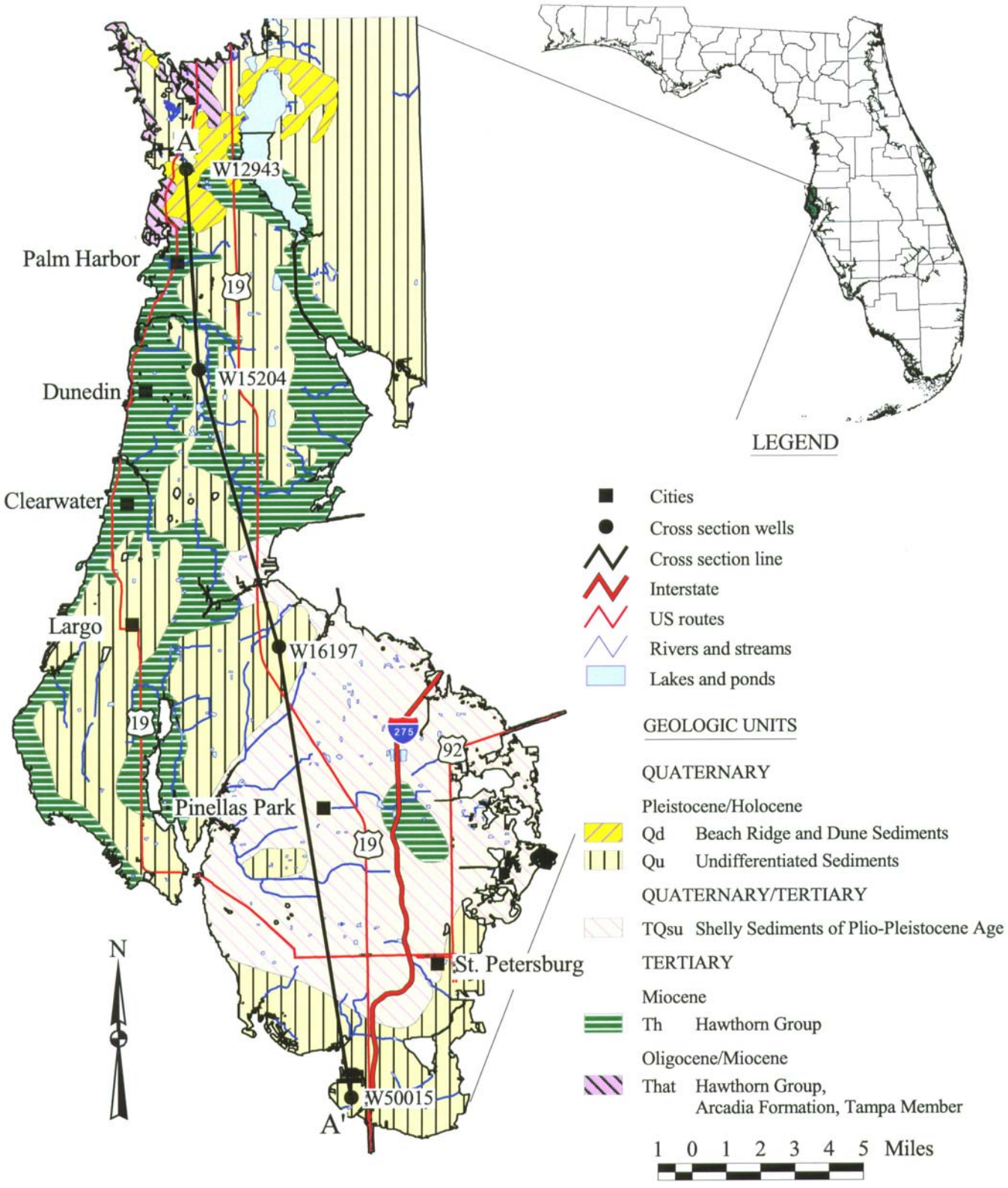

Figure 17.—Generalized geologic map showing location of cross sections in Pinellas County.

assemblage. More specifically, the lithology of this formation ranges from a weathered wackestone to packstone with a variable amount of calcilutite matrix (chalky) in the upper portions to a biogenic packstone to grainstone in the central and lower portions of the unit. Trace amounts of organics, clay, and variable amounts of dolomite are also present. Porosity is variable within this unit and is generally moldic and intergranular with occasional macrofossil molds. This formation contains characteristic fossils, such as the foraminifera *Lepidocyclina* spp., nummulities (operculinoides), and echinoids, such as *Eupatagus antillarum*. Other fossils observed in the unit include pelecypods, bryozoans, gastropods, and rare Rotulina (Spirolina) vermoni. The Ocala Limestone is typically bound by unconformities. Depths to the top of the formation range from approximately 100 to 570 feet below MSL. Analysis of selected well cuttings and cores indicate that the Ocala Limestone ranges in thickness from 120 feet in the northern part of Pinellas County to 175 feet in the southern part. The dip of the Ocala Limestone in this area is approximately 0.1 to 0.2 degrees towards the southwest.

Lower Oligocene Series

Suwannee Limestone

The lithology of the Lower Oligocene Suwannee Limestone (Cooke and Mansfield, 1936) ranges from a light-gray to yellowish-gray packstone to grainstone. These carbonates are variably moldic with trace amounts of sand and clay within the upper portions. Trace amounts of chert and organics occur throughout the unit. Fossils in the unit include gastropods, pelecypods, echinoids (e.g., *Rhyncholampus gouldii),* abundant millolids and other benthic foraminifers, including *Coskolina floridana* and *Dictyoconus cookei*.

This formation unconformably overlies the Ocala Limestone and is unconformably overlain by Hawthorn Group sediments. The top of the Suwannee Limestone occurs between 50 and 330 feet below MSL. The unit thickens to the north, ranging from 200 to 250 feet and averaging approximately 200 feet. The dip of the Suwannee Limestone is approximately 0.1 degrees toward the southwest.

Lower Oligocene to Pliocene Series

Hawthorn Group

Hawthorn Group sediments (Scott, 1988) are Lower Oligocene (Wingard and others, 1993) to Lower Pliocene (Covington, 1993) in age and generally consist of phosphatic siliciclastics (sands, silts, and clays) and carbonates. In Pinellas County, these sediments lie unconformably above the Suwannee Limestone. The Hawthorn Group in this area consists of the Tampa Member of the Arcadia Formation, the Arcadia Formation, and undifferentiated Hawthorn Group sediments. The Tampa Member of the Arcadia Formation, the oldest unit to crop out in Pinellas County (fig. 17), is present throughout the county. In the southern part of the county, the Tampa Member of the Arcadia Formation is overlain by undifferentiated Arcadia Formation sediments. In the central part of the county, the Tampa Member of the Arcadia Formation is overlain by undifferentiated Hawthorn Group sediments.

Overall, the top of the Hawthorn Group occurs from approximately 100 feet above MSL to just over 100 feet below MSL and the unit ranges from approximately 40 to 260 feet. Unconsolidated post-Pliocene sediments lie unconformably above the Hawthorn Group throughout much of the area.

Arcadia Formation

The Lower Oligocene to Middle Miocene (Wingard and other, 1993) Arcadia Formation (undifferentiated) is a yellowish-gray to light-olive gray, clayey carbonate with highly variable amounts of quartz sand and sand-size to gravel-size phosphate. Highly dolomitic layers occur throughout the formation, and many of the finer-grained carbonate beds are dolomitic. Some of the descriptions on which the stratigraphic columns are based did not note that many of the “clay” units are comprised of fine-grained dolomite with a subordinate clay matrix. Scott (1988) reports most of the carbonate in this formation is dolomite. The top of the Arcadia Formation ranges from 10 to 75 feet below MSL. The thickness of the formation ranges from less than 50 feet to approximately 300 feet (Scott 1988).

Tampa Member of the Arcadia Formation

The Upper Oligocene (Wingard and others, 1993) to Lower Miocene Tampa Member of the Arcadia Formation is white to yellowish gray in color and ranges from a wackestone to packstone with varying micrite, quartz sand, and clay (Scott, 1988). Minor phosphate, dolomite, and chert are also observed. Porosity of this unit is generally intergranular and moldic. The top of the Tampa Member of the Arcadia Formation ranges from slightly above MSL to more than 180 feet below MSL. The thickness of the unit ranges from approximately 30 to 150 feet.

Undifferentiated Hawthorn Group

The sediments assigned to the undifferentiated Hawthorn Group in this area may belong to the Peace

River Formation, or they may be residual sediments left over from re-worked and eroded Peace River and upper Arcadia Formation sediments. Lithologically, these sediments are a mixture of sands, clays, dolostone, and phosphates. Their thickness is highly variable and may range up to 100 feet. This unit appears to grade laterally into the Arcadia Formation towards the south in Pinellas County.

Post-Hawthorn Group

Undifferentiated Sands and Clays

Post-Hawthorn Group sediments occur throughout the area and range in thickness from approximately 30 to 80 feet. These sediments are comprised of varying proportions of sand, shell, clay, and organics. Lithostratigraphic units in this sequence can include the Ft. Thompson and Caloosahatchee Formations as well as Holocene sands and dune deposits. The unit mapped as TQsu (undifferentiated Tertiary/ Quaternary shell beds) includes units, such as the Ft. Thompson and Caloosahatchee Formations, that were previously differentiated in the literature by the included fauna (fig. 17). Undifferentiated Quaternary (Qu) surficial sands, clayey sands, clays, marls, and peats that are more than 20 feet thick are also mapped in Pinellas County. No mappable formations are recognized in this unit. There are several occurrences of clean, fine- to medium-grained quartz sand with surface expressions of dunes (Qd) mapped in the county.

Hydrostratigraphy

The hydrostratigraphy of the study area consists of a variably complex, two- and three-layer aquifer system. The three aquifers present, in descending order, are the surficial aquifer system, the intermediate aquifer system/intermediate confining unit, and the Floridan aquifer system (Southeastern Geological Society, 1986). Correlation between aquifer systems and geologic formations generally coincides with lithostratigraphic boundaries.

The surficial aquifer system is composed of unconsolidated clastic (and locally, carbonate) deposits that are generally referred to as Quaternary (post-Hawthorn Group) undifferentiated sand and clays (Qu) or undifferentiated Tertiary/Quaternary sand, clay, and shells (TQsu). As noted above, the TQsu and Qu sediments may include all or parts of the Pleistocene Fort Thompson and Caloosahatchee Formations as well as Pleistocene-Holocene marine terrace deposits. Clays in the base of the surficial aquifer system most likely represent reworked Hawthorn Group sediments.

The intermediate aquifer system/intermediate confining unit (IAS/ICU) is composed of interbedded clays and carbonates of the Hawthorn Group (undifferentiated) and some carbonates of the undifferentiated Arcadia Formation and the Tampa Member. The IAS/ICU in Pinellas County is generally restricted to the Hawthorn Group sediments, although post-Hawthorn confining (clay) beds may locally occur above the carbonates of the IAS/ICU.

The Floridan aquifer system, the principle artesian aquifer in the region, is primarily a carbonate aquifer and includes all or part of the Tampa Member (Arcadia Formation) and all of the Suwannee Limestone, Ocala Limestone, and the Avon Park Formation.

Hydrostratigraphy in the county varies from a simple two-aquifer system in the northern part of the county, where the Floridan aquifer system is directly overlain by sediments of the surficial aquifer system, to a more complex system in the southern part of the county, where two confined aquifers are present below the surficial aquifer system. The Floridan aquifer system in the northern part of the area exists as a poorly confined or semi-confined artesian aquifer where siliciclastic sediments of the upper Hawthorn Group become thin and discontinuous. The surficial aquifer system may also be intersected by numerous karst features in which sinkholes act as direct conduits between the surficial aquifer system and the Floridan aquifer system. The hydrogeologic importance of the IAS/ICU increases where the Hawthorn Group sediments thicken from north to south, overlying regional southwest-dipping carbonate rock sequences of the Floridan aquifer system. Permeable carbonates interbedded with lower permeability clastics within the Hawthorn Group facilitate artesian conditions within the IAS/ICU. Collectively, the IAS/ICU forms a thick confining unit separating the Floridan aquifer system from the surficial aquifer system in much of Pinellas County.

Surficial Aquifer System

The surficial aquifer system occurs throughout the county and is composed primarily of unconsolidated quartz sand with variable amounts of shell, clay, phosphate, and organic material. The thickness of the surficial aquifer system ranges from 10 feet or less in northern Pinellas County to approximately 80 feet in southern Pinellas County.

The surficial aquifer system is normally identified by the presence of a phreatic water level that is distinct from potentiometric water levels occurring in

deeper confined aquifer systems. A surficial or "water table" aquifer may occur where there are sufficient confining materials, such as clay at the base of the unconsolidated sediments, or if hardpan intervals within the surficial sand provide a permeability barrier and result in a "perched" water table.

Hydrostratigraphic correlation of the surficial aquifer system with geologic units in the county places the system in the post-Hawthorn undifferentiated sands and clays (Qu) and the undifferentiated sands, clays, and shells (TQsu). The base of the aquifer generally coincides with the first occurrence of clay at the top of the Hawthorn Group. Where these clayey sediments are missing in northern Pinellas County, the surficial aquifer system directly overlies the Floridan aquifer system. Sandy clays typically form the base of the surficial aquifer system, providing some hydraulic separation between the surficial aquifer system and the Floridan aquifer system.

Intermediate Aquifer System/Intermediate Confining Unit

The intermediate aquifer system (IAS) and the intermediate confining unit (ICU) occur across most of Pinellas County, except in the northern part of the county. Hydrogeologic properties of the IAS/ICU are highly variable, due to lithologic variations and complex interbedding typical of the Hawthorn Group sediments. The IAS/ICU is primarily contained within the Hawthorn Group, although some post-Hawthorn siliciclastics may also occur in the uppermost potions of the ICU. Parts of the Tampa Member may not be included in the IAS/ICU where vertical hydraulic connection exists between the Tampa Member and the Suwannee Limestone of the Floridan aquifer system.

Floridan Aquifer System

The Floridan aquifer system, which is present throughout the county, is composed of heterogeneous Lower Eocene to Lower Miocene carbonate rocks. In the county, the Floridan aquifer system is typically considered an artesian aquifer having a distinct potentiometric water level based on wells open to the system. The top of the Floridan aquifer system is generally placed at the first occurrence of vertically persistent carbonates below siliciclastic materials of the surficial aquifer system and IAS/ICU. The base of the Floridan aquifer system is identified by the presence of vertically and laterally persistent evaporate (e.g., gypsum and anhydrite) beds of regional extent (Southeastern Geological Society, 1986). These evaporates comprise the sub-Floridan confining unit, which underlies the Floridan aquifer system throughout the region.

The top of the Floridan aquifer system occurs near the land surface in the northern part of Pinellas County and dips to more than 1,800 feet below land surface in the southern part of the county. The base of the Floridan aquifer system occurs in the lower Avon Park Formation where bedded or interstitial evaporates retard vertical movement of water.

References

American Association of State Highway and Transportation Officials (AASHTO). 2000. Standard specifications for transportation materials and methods of sampling and testing. 20th edition, 2 volumes.

American Society for Testing and Materials (ASTM). 2001. Standard classification of soils for engineering purposes. ASTM Standard D 2487–00.

Braunstein, J., P. Huddleston, and R. Biel, editors. 1988. Gulf coast region: Correlation of Stratgraphic Units in North America (COSUNA). American Association of Petroleum Geologists.

Cooke, C.W., and W.C. Mansfield. 1936. Suwannee Limestone of Florida. Geological Society of America Proceedings. pp. 71–72.

Covington, J.M. 1993. Neogene nannofossils of Florida *in* Zullo, V.A., and others, editors. The Neogene of Florida and adjacent regions. Florida Geological Survey Special Publication 37.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS–79/31.

Dall, W.H., and G.D. Harris. 1992. Correlation papers—Neogene. U.S. Geological Survey Bulletin 84.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. February 24, 1995. Hydric soils of the United States.

Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. 1998. Field indicators of hydric soils in the United States. Version 4.0.

Jenny, Hans. 1941. Factors of soil formation.

Miller, J.A. 1986. Hydrogeologic framework of the Floridan aquifer system in Florida and in parts of Georgia, Alabama, and South Carolina. U.S. Geological Survey Professional Paper 1403–B.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Pinellas County. Accessed May 24, 2004. http://www.pinellascounty.org/about_pinellas.htm.

Pinellas County Economic Development (PCED). Accessed April 1, 2003. http://www.siliconbay.org/fast_facts/.

Scott, T.M. 1988. The lithostratigraphy of the Hawthorn Group (Miocene) of Florida. Florida Geological Survey Bulletin 59.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Southeastern Geological Society Ad Hoc Committee on Florida Hydrogeologic Unit Definition. 1986. Hydrogeological units of Florida. Florida Geological Survey Special Publication 28.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y–87–1.

United States Census Bureau. 2000. Census of Population.

United States Department of Agriculture, Soil Conservation Service. 1972. Soil Survey of Pinellas County, Florida.

United States Department of Agriculture, Soil Conservation Service. 1989. 26 Ecological communities of Florida.

Wingard, G.L., P.J. Sugarman. L.E. Edwards, L. McCarten, and M.D. Feigenson. 1993. Biostratigraphy and chronostratigraphy of the area between Sarasota and Lake Okeechobee, southern Florida—An integrated approach. Abstracts with programs—Geological Society of America. Volume 25, number 4, page 78.

White, W.A. 1970. The geomorphology of the Florida Peninsula. Florida Bureau of Geology Bulletin 51.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.

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.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

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

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

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

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

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

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

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.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

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

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

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas 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 or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness

of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. 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.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

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.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

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 wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

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

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

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.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

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 human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remain on the surface after fine particles are removed by sheet or rill erosion.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

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*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flatwoods (colloquial). Broad, nearly level landscapes of poorly drained, dominantly sandy soils vegetated by slash pine woodlands with an understory of palmetto.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the 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.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other

uses. Revegetation and erosion control are extremely difficult.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

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 uppercase letter represents the major horizons. Numbers or lowercase 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.

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 A horizon. The B horizon is in part a layer of transition from the overlying A 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.

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 overlying soil material. 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, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it 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 potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

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.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

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

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

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.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions, small basins, or sinkholes.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

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-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

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

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that have high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

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. 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, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

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. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

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 movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 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, such as slope, stoniness, and flooding.

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.

Plinthite. The sesquioxide-rich, humus-poor, highly

weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

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 degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly 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

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a

diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

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.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

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.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. 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.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

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

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

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.

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. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 8 percent
Strongly sloping	8 to 12 percent

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. 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.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and

sizes, in millimeters, of separates recognized in the United States are as follows:

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, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. 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 if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. 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).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

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."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

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. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

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. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

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."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. 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.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland. 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.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

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.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

[Recorded in the period 1971 to 2000 at St. Petersburg, Florida]

Month	Temperature						Precipitation			
				2 Years in 10 will have--		Average number of growing degree days		2 years in 10 will have--		Average number of days with 0.10 inch or more
	Average Daily Maximum	Average Daily Minimum	Average Daily	Maximum temp. higher than--	Minimum temp. lower than--		Average	Less than--	More than--	
	°F	*°F*	*°F*	*°F*	*°F*	*Units*	*In*	*In*	*In*	
January-------	70.1	54.5	62.3	82	32	389	2.76	1.00	4.44	4
February------	71.6	55.8	63.7	83	36	390	2.87	0.80	4.58	4
March---------	76.1	60.5	68.3	86	42	568	3.29	1.33	4.73	4
April---------	80.7	65.1	72.9	89	51	686	1.92	0.29	3.44	2
May-----------	86.2	71.1	78.6	93	61	888	2.80	0.83	4.61	3
June----------	89.5	75.3	82.4	96	68	972	6.09	2.89	8.61	7
July----------	90.6	76.6	83.6	96	69	1,040	6.72	4.09	9.14	10
August--------	90.6	76.6	83.6	96	69	1,035	8.26	5.21	10.86	11
September-----	88.6	75.5	82.1	95	68	962	7.59	4.23	10.68	9
October-------	83.5	69.9	76.7	91	56	828	2.64	0.55	4.15	3
November------	77.2	63.0	70.1	87	45	604	2.04	0.60	3.30	3
December------	71.8	56.6	64.2	84	35	447	2.60	0.62	3.98	3
Yearly:										
Average-----	81.3	66.7	74.0	---	---	---	---	---	---	---
Extreme-----	100	24	---	98	30	---	---	---	---	---
Total-------	---	---	---	---	---	8,810	49.58	41.01	57.53	63

*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 (50 degrees F).

Table 2.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
2	Adamsville soils and Urban Land, 0 to 5 percent slopes	2,470	1.1
3	Anclote fine sand, depressional	460	0.2
4	Astatula soils and Urban land, 0 to 5 percent slopes	16,640	7.4
5	Astatula soils and Urban land, 5 to 12 percent slopes	1,140	0.5
6	Basinger soils and Urban land	1,120	0.5
7	Basinger fine sand, depressional	1,020	0.5
8	Beaches	2,040	0.9
9	Dumps	620	0.3
10	EauGallie soils and Urban land	3,510	1.6
11	Felda soils and Urban land	1,010	0.4
12	Felda fine sand, depressional	1,740	0.8
13	Immokalee soils and Urban land	9,980	4.4
14	Kesson fine sand, very frequently flooded	5,360	2.4
15	Manatee loamy fine sand	870	0.4
16	Matlacha and St. Augustine soils and Urban land	21,940	9.8
17	Myakka soils and Urban land	50,950	22.7
18	Okeechobee muck	490	0.2
19	Palm Beach fine sand, 0 to 8 percent slopes	2,070	0.9
20	Paola and St. Lucie soils and Urban land, 0 to 5 percent slopes	1,120	0.5
21	Paola and St. Lucie soils and Urban land, 5 to 12 percent slopes	510	0.2
22	Pineda soils and Urban land	4,660	2.1
23	Pinellas soils and Urban land	2,020	0.9
24	Pits	560	0.2
25	Placid fine sand	710	0.3
26	Pomello soils and Urban land, 0 to 5 percent slopes	5,110	2.3
27	Samsula muck	1,420	0.6
28	Seffner soils and Urban land	680	0.3
29	Tavares soils and Urban land, 0 to 5 percent slopes	14,050	6.3
30	Urban land	5,030	2.2
31	Wabasso soils and Urban land	7,730	3.4
32	Wulfert muck, very frequently flooded	1,140	0.5
99	Water	10,440	4.6
100	Waters of the Gulf of Mexico	45,990	20.5
	Total	224,600	100.0

Table 3.--Land Capability Subclass

Map symbol and Soil name	Land capability
2:	
Adamsville	3w
Urban land	---
3---	7w
Anclote	
4:	
Astatula	6s
Urban land	---
5:	
Astatula	7s
Urban land	---
6:	
Basinger	4w
Urban land	---
7---	7w
Basinger	
8---	8w
Beaches	
9---	7s
Dumps	
10:	
EauGallie	4w
Urban land	---
11:	
Felda	3w
Urban land	---
12---	7w
Felda	
13:	
Immokalee	4w
Urban land	---
14---	8w
Kesson	
15---	7w
Manatee	
16:	
Matlacha	6s
St. Augustine	7s
Urban land	---
17:	
Myakka	4w
Urban land	---
18---	7w
Okeechobee	
19---	7s
Palm Beach	

Table 3.--Land Capability Subclass--continued

Map symbol and Soil name	Land capability
20:	
Paola	6s
St. Lucie	6s
Urban land	---
21:	
Paola	7s
St. Lucie	7s
Urban land	---
22:	
Pineda	3w
Urban land	---
23:	
Pinellas	3w
Urban land	---
24--Pits	---
25--Placid	7w
26:	
Pomello	6s
Urban land	---
27--Samsula	7w
28:	
Seffner	3w
Urban land	---
29:	
Tavares	3s
Urban land	---
30--Urban land	---
31:	
Urban land	---
Wabasso	3w
32--Wulfert	8w

Table 4.--Forest Productivity

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			cu ft/ac	
2:				
Adamsville	Slash pine	80	143	Slash pine, longleaf pine
	Longleaf pine	65	72	
	Laurel oak	---	---	
	Water oak	---	---	
	Live oak	---	---	
	Hickory	---	---	
	Black cherry	---	---	
Urban land.				
3:				
Anclote	Pondcypress	75	29	---
	Baldcypress	---	---	
	Pond pine	---	---	
	Blackgum	---	---	
	Cabbage palmetto	---	---	
	Carolina ash	---	---	
	Loblolly bay	---	---	
	Red maple	---	---	
	Sweetbay	---	---	
4:				
Astatula.				
Urban land.				
5:				
Astatula.				
Urban land.				
6:				
Basinger	Slash pine	70	114	Slash pine
	Longleaf pine	60	57	
	Loblolly pine	---	---	
	Laurel oak	---	---	
	Live oak	---	---	
Urban land.				
7:				
Basinger	Pondcypress	75	29	Pondcypress
	Baldcypress	---	---	
	Pond pine	---	---	
	Blackgum	---	---	
	Cabbage palmetto	---	---	
	Carolina ash	---	---	
	Loblolly bay	---	---	
	Red maple	---	---	
	Sweetbay	---	---	
8:				
Beaches.				
9:				
Dumps.				

Table 4.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			cu ft/ac	
10:				
EauGallie	Slash pine	80	143	Slash pine
	Longleaf pine	70	86	
Urban land.				
11:				
Felda	Slash pine	80	143	Slash pine
	Longleaf pine	65	72	
Urban land.				
12:				
Felda	Pondcypress	75	29	Pondcypress
	Baldcypress	---	---	
	Pond pine	---	---	
	Blackgum	---	---	
	Cabbage palmetto	---	---	
	Loblolly bay	---	---	
	Red maple	---	---	
	Sweetbay	---	---	
13:				
Immokalee	Slash pine	70	114	Slash pine
	Longleaf pine	65	72	
Urban land.				
14:				
Kesson.				
15:				
Manatee	Slash pine	90	157	Slash pine
	Red maple	---	---	
16:				
Matlacha.				
St. Augustine.				
Urban land.				
17:				
Myakka	Slash pine	70	114	Slash pine, longleaf pine
	Longleaf pine	65	72	
Urban land.				
18:				
Okeechobee.				
19:				
Palm Beach.				
20:				
Paola.				
St. Lucie.				
Urban land.				

Table 4.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			cu ft/ac	
21:				
Paola.				
St. Lucie.				
Urban land.				
22:				
Pineda	Slash pine	80	143	Slash pine
	Longleaf pine	70	86	
	Cabbage palmetto	---	---	
Urban land.				
23:				
Pinellas	Slash pine	70	143	Slash pine
	Longleaf pine	60	57	
Urban land.				
24:				
Pits.				
25:				
Placid	Pondcypress	75	157	Pondcypress
26:				
Pomello	Slash pine	70	114	Slash pine,
	Sand pine	60	43	sand pine
	Longleaf pine	60	57	
Urban land.				
27:				
Samsula.				
28:				
Seffner	Slash pine	80	143	Slash pine
	Live oak	80	---	
	Longleaf pine	70	86	
Urban land.				
29:				
Tavares	Slash pine	80	143	Slash pine
	Longleaf pine	70	86	
	Bluejack oak	---	---	
	Turkey oak	---	---	
Urban land.				
30:				
Urban land.				

Table 4.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			cu ft/ac	
31:				
Urban land.				
Wabasso	Slash pine	80	143	Slash pine, loblolly pine, longleaf pine
	Loblolly pine	80	114	
	Longleaf pine	65	72	
	Live oak	---	---	
	Water oak	---	---	
32:				
Wulfert.				

Table 5a.--Woodland Management

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville----------	50	Moderate Sandiness	 0.50	Moderately suited Sandiness	 0.50	Moderate Strength	 0.50
Urban land----------	40	Not rated		Not rated		Not rated	
3:							
Anclote-------------	95	Moderate Sandiness	 0.50	Poorly suited Wetness Sandiness	 1.00 0.50	Moderate Strength	 0.50
4:							
Astatula------------	50	Not rated		Not rated		Not rated	
Urban land----------	45	Not rated		Not rated		Not rated	
5:							
Astatula------------	50	Not rated		Not rated		Not rated	
Urban land----------	45	Not rated		Not rated		Not rated	
6:							
Basinger------------	50	Moderate Sandiness	 0.50	Poorly suited Wetness Sandiness	 1.00 0.50	Moderate Strength	 0.50
Urban land----------	40	Not rated		Not rated		Not rated	
7:							
Basinger------------	90	Moderate Sandiness	 0.50	Poorly suited Wetness Sandiness	 1.00 0.50	Moderate Strength	 0.50
8:							
Beaches-------------	95	Not rated		Not rated		Not rated	
9:							
Dumps---------------	90	Not rated		Not rated		Not rated	
10:							
EauGallie-----------	45	Moderate Sandiness	 0.50	Moderately suited Wetness Sandiness	 0.50 0.50	Moderate Strength	 0.50
Urban land----------	35	Not rated		Not rated		Not rated	
11:							
Felda---------------	60	Moderate Sandiness	 0.50	Moderately suited Wetness Sandiness	 0.50 0.50	Slight	
Urban land----------	30	Not rated		Not rated		Not rated	

Table 5a.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12:							
Felda	85	Moderate Sandiness	0.50	Poorly suited Wetness Sandiness	1.00 0.50	Moderate Strength	0.50
13:							
Immokalee	50	Moderate Sandiness	0.50	Moderately suited Wetness Sandiness	0.50 0.50	Moderate Strength	0.50
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Not rated		Not rated		Not rated	
15:							
Manatee	90	Moderate Sandiness	0.50	Poorly suited Wetness Sandiness	1.00 0.50	Moderate Strength	0.50
16:							
Matlacha	30	Not rated		Not rated		Not rated	
St. Augustine	25	Not rated		Not rated		Not rated	
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Moderate Sandiness	0.50	Moderately suited Wetness Sandiness	0.50 0.50	Moderate Strength	0.50
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Severe Strength	1.00	Poorly suited Strength Wetness	1.00 1.00	Severe Strength	1.00
19:							
Palm Beach	90	Moderate Sandiness	0.50	Moderately suited Sandiness	0.50	Moderate Strength	0.50
20:							
Paola	35	Not rated		Not rated		Not rated	
St. Lucie	25	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Not rated		Not rated		Not rated	
St. Lucie	30	Not rated		Not rated		Not rated	
Urban land	25	Not rated		Not rated		Not rated	

Table 5a.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22:							
Pineda	50	Moderate		Poorly suited		Moderate	
		Sandiness	0.50	Wetness	1.00	Strength	0.50
				Sandiness	0.50		
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Moderate		Moderately suited		Moderate	
		Sandiness	0.50	Wetness	0.50	Strength	0.50
				Sandiness	0.50		
Urban land	40	Not rated		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Moderate		Poorly suited		Moderate	
		Sandiness	0.50	Wetness	1.00	Strength	0.50
				Sandiness	0.50		
26:							
Pomello	60	Moderate		Moderately suited		Moderate	
		Sandiness	0.50	Sandiness	0.50	Strength	0.50
Urban land	35	Not rated		Not rated		Not rated	
27:							
Samsula	85	Severe		Poorly suited		Severe	
		Strength	1.00	Strength	1.00	Strength	1.00
				Wetness	1.00		
28:							
Seffner	60	Moderate		Moderately suited		Moderate	
		Sandiness	0.50	Sandiness	0.50	Strength	0.50
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Moderate		Moderately suited		Moderate	
		Sandiness	0.50	Sandiness	0.50	Strength	0.50
Urban land	45	Not rated		Not rated		Not rated	
30:							
Urban land	85	Not rated		Not rated		Not rated	
31:							
Urban land	45	Not rated		Not rated		Not rated	
Wabasso	50	Moderate		Moderately suited		Moderate	
		Sandiness	0.50	Wetness	0.50	Strength	0.50
				Sandiness	0.50		
32:							
Wulfert	80	Not rated		Not rated		Not rated	

Table 5b.--Woodland Management

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville----------	50	Slight		Slight		Moderately suited	
						Sandiness	0.50
Urban land----------	40	Not rated		Not rated		Not rated	
3:							
Anclote-------------	95	Slight		Slight		Poorly suited	
						Wetness	1.00
						Sandiness	0.50
4:							
Astatula------------	50	Not rated		Not rated		Not rated	
Urban land----------	45	Not rated		Not rated		Not rated	
5:							
Astatula------------	50	Not rated		Not rated		Not rated	
Urban land----------	45	Not rated		Not rated		Not rated	
6:							
Basinger------------	50	Slight		Slight		Poorly suited	
						Wetness	1.00
						Sandiness	0.50
Urban land----------	40	Not rated		Not rated		Not rated	
7:							
Basinger------------	90	Slight		Slight		Poorly suited	
						Wetness	1.00
						Sandiness	0.50
8:							
Beaches-------------	95	Not rated		Not rated		Not rated	
9:							
Dumps---------------	90	Not rated		Not rated		Not rated	
10:							
EauGallie-----------	45	Slight		Slight		Moderately suited	
						Wetness	0.50
						Sandiness	0.50
Urban land----------	35	Not rated		Not rated		Not rated	
11:							
Felda---------------	60	Slight		Slight		Moderately suited	
						Wetness	0.50
						Sandiness	0.50
Urban land----------	30	Not rated		Not rated		Not rated	

Table 5b.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12:							
Felda	85	Slight		Slight		Poorly suited	
						Wetness	1.00
						Sandiness	0.50
13:							
Immokalee	50	Slight		Slight		Moderately suited	
						Wetness	0.50
						Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Not rated		Not rated		Not rated	
15:							
Manatee	90	Slight		Slight		Poorly suited	
						Wetness	1.00
						Sandiness	0.50
16:							
Matlacha	30	Not rated		Not rated		Not rated	
St. Augustine	25	Not rated		Not rated		Not rated	
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Slight		Slight		Moderately suited	
						Wetness	0.50
						Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Not rated		Not rated		Poorly suited	
						Strength	1.00
						Wetness	1.00
19:							
Palm Beach	90	Slight		Slight		Moderately suited	
						Sandiness	0.50
20:							
Paola	35	Not rated		Not rated		Not rated	
St. Lucie	25	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Not rated		Not rated		Not rated	
St. Lucie	30	Not rated		Not rated		Not rated	
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Slight		Slight		Poorly suited	
						Wetness	1.00
						Sandiness	0.50

Table 5b.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22:							
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Slight		Slight		Moderately suited	
						Wetness	0.50
						Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Slight		Slight		Poorly suited	
						Wetness	1.00
						Sandiness	0.50
26:							
Pomello	60	Slight		Slight		Moderately suited	
						Sandiness	0.50
Urban land	35	Not rated		Not rated		Not rated	
27:							
Samsula	85	Not rated		Not rated		Poorly suited	
						Strength	1.00
						Wetness	1.00
28:							
Seffner	60	Slight		Slight		Moderately suited	
						Sandiness	0.50
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Slight		Slight		Moderately suited	
						Sandiness	0.50
Urban land	45	Not rated		Not rated		Not rated	
30:							
Urban land	85	Not rated		Not rated		Not rated	
31:							
Urban land	45	Not rated		Not rated		Not rated	
Wabasso	50	Slight		Slight		Moderately suited	
						Wetness	0.50
						Sandiness	0.50
32:							
Wulfert	80	Not rated		Not rated		Not rated	

Table 5c.--Woodland Management

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville	50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
3:							
Anclote	95	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
4:							
Astatula	50	Not rated		Not rated		Not rated	
Urban land	45	Not rated		Not rated		Not rated	
5:							
Astatula	50	Not rated		Not rated		Not rated	
Urban land	45	Not rated		Not rated		Not rated	
6:							
Basinger	50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
7:							
Basinger	90	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
8:							
Beaches	95	Not rated		Not rated		Not rated	
9:							
Dumps	90	Not rated		Not rated		Not rated	
10:							
EauGallie	45	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	35	Not rated		Not rated		Not rated	
11:							
Felda	60	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	30	Not rated		Not rated		Not rated	
12:							
Felda	85	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50

Table 5c.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13:							
Immokalee	50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Not rated		Not rated		Not rated	
15:							
Manatee	90	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
16:							
Matlacha	30	Not rated		Not rated		Not rated	
St. Augustine	25	Not rated		Not rated		Not rated	
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Well suited		Well suited		Poorly suited Strength	1.00
19:							
Palm Beach	90	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
20:							
Paola	35	Not rated		Not rated		Not rated	
St. Lucie	25	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Not rated		Not rated		Not rated	
St. Lucie	30	Not rated		Not rated		Not rated	
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50	Moderately suited Sandiness	0.50
Urban land	40	Not rated		Not rated		Not rated	

Table 5c.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Moderately suited		Moderately suited		Moderately suited	
		Sandiness	0.50	Sandiness	0.50	Sandiness	0.50
26:							
Pomello	60	Moderately suited		Moderately suited		Moderately suited	
		Sandiness	0.50	Sandiness	0.50	Sandiness	0.50
Urban land	35	Not rated		Not rated		Not rated	
27:							
Samsula	85	Well suited		Well suited		Poorly suited	
						Strength	1.00
28:							
Seffner	60	Moderately suited		Moderately suited		Moderately suited	
		Sandiness	0.50	Sandiness	0.50	Sandiness	0.50
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Moderately suited		Moderately suited		Moderately suited	
		Sandiness	0.50	Sandiness	0.50	Sandiness	0.50
Urban land	45	Not rated		Not rated		Not rated	
30:							
Urban land	85	Not rated		Not rated		Not rated	
31:							
Urban land	45	Not rated		Not rated		Not rated	
Wabasso	50	Moderately suited		Moderately suited		Moderately suited	
		Sandiness	0.50	Sandiness	0.50	Sandiness	0.50
32:							
Wulfert	80	Not rated		Not rated		Not rated	

Table 5d.--Woodland Management

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
2:					
Adamsville	50	Well suited		Well suited	
Urban land	40	Not rated		Not rated	
3:					
Anclote	95	Well suited		Well suited	
4:					
Astatula	50	Not rated		Not rated	
Urban land	45	Not rated		Not rated	
5:					
Astatula	50	Not rated		Not rated	
Urban land	45	Not rated		Not rated	
6:					
Basinger	50	Well suited		Well suited	
Urban land	40	Not rated		Not rated	
7:					
Basinger	90	Well suited		Well suited	
8:					
Beaches	95	Not rated		Not rated	
9:					
Dumps	90	Not rated		Not rated	
10:					
EauGallie	45	Well suited		Well suited	
Urban land	35	Not rated		Not rated	
11:					
Felda	60	Well suited		Well suited	
Urban land	30	Not rated		Not rated	
12:					
Felda	85	Well suited		Well suited	
13:					
Immokalee	50	Well suited		Well suited	
Urban land	40	Not rated		Not rated	
14:					
Kesson	80	Not rated		Not rated	

Table 5d.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
15:					
Manatee	90	Well suited		Well suited	
16:					
Matlacha	30	Not rated		Not rated	
St. Augustine	25	Not rated		Not rated	
Urban land	35	Not rated		Not rated	
17:					
Myakka	50	Well suited		Well suited	
Urban land	40	Not rated		Not rated	
18:					
Okeechobee	90	Well suited		Well suited	
19:					
Palm Beach	90	Well suited		Well suited	
20:					
Paola	35	Not rated		Not rated	
St. Lucie	25	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
21:					
Paola	35	Not rated		Not rated	
St. Lucie	30	Not rated		Not rated	
Urban land	25	Not rated		Not rated	
22:					
Pineda	50	Well suited		Well suited	
Urban land	40	Not rated		Not rated	
23:					
Pinellas	50	Well suited		Well suited	
Urban land	40	Not rated		Not rated	
24:					
Pits	95	Not rated		Not rated	
25:					
Placid	85	Well suited		Well suited	
26:					
Pomello	60	Well suited		Well suited	
Urban land	35	Not rated		Not rated	
27:					
Samsula	85	Well suited		Well suited	

Table 5d.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
28:					
Seffner	60	Well suited		Well suited	
Urban land	35	Not rated		Not rated	
29:					
Tavares	50	Well suited		Well suited	
Urban land	45	Not rated		Not rated	
30:					
Urban land	85	Not rated		Not rated	
31:					
Urban land	45	Not rated		Not rated	
Wabasso	50	Well suited		Well suited	
32:					
Wulfert	80	Not rated		Not rated	

Table 5e.--Woodland Management

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
2:					
Adamsville	50	High Texture/coarse fragments	1.00	Low	
Urban land	40	Not rated		Not rated	
3:					
Anclote	95	Moderate Texture/coarse fragments	0.50	High Wetness	1.00
4:					
Astatula	50	Not rated		Not rated	
Urban land	45	Not rated		Not rated	
5:					
Astatula	50	Not rated		Not rated	
Urban land	45	Not rated		Not rated	
6:					
Basinger	50	High Texture/coarse fragments	1.00	High Wetness	1.00
Urban land	40	Not rated		Not rated	
7:					
Basinger	90	Moderate Texture/coarse fragments	0.50	High Wetness	1.00
8:					
Beaches	95	Not rated		Not rated	
9:					
Dumps	90	Not rated		Not rated	
10:					
EauGallie	45	Moderate Texture/coarse fragments	0.50	High Wetness	1.00
Urban land	35	Not rated		Not rated	
11:					
Felda	60	Low		High Wetness	1.00
Urban land	30	Not rated		Not rated	

Table 5e.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
12:					
Felda	85	Low		High Wetness	1.00
13:					
Immokalee	50	High Texture/coarse fragments	1.00	High Wetness	1.00
Urban land	40	Not rated		Not rated	
14:					
Kesson	80	Not rated		Not rated	
15:					
Manatee	90	Moderate Texture/coarse fragments	0.50	High Wetness	1.00
16:					
Matlacha	30	Not rated		Not rated	
St. Augustine	25	Not rated		Not rated	
Urban land	35	Not rated		Not rated	
17:					
Myakka	50	Low		High Wetness	1.00
Urban land	40	Not rated		Not rated	
18:					
Okeechobee	90	Low		High Wetness Soil reaction	1.00 1.00
19:					
Palm Beach	90	Low		Moderate Soil reaction	0.50
20:					
Paola	35	Not rated		Not rated	
St. Lucie	25	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
21:					
Paola	35	Not rated		Not rated	
St. Lucie	30	Not rated		Not rated	
Urban land	25	Not rated		Not rated	
22:					
Pineda	50	Low		High Wetness	1.00
Urban land	40	Not rated		Not rated	

Table 5e.--Woodland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
23:					
Pinellas	50	Moderate Texture/coarse fragments	0.50	High Wetness	1.00
Urban land	40	Not rated		Not rated	
24:					
Pits	95	Not rated		Not rated	
25:					
Placid	85	Moderate Texture/coarse fragments	0.50	High Wetness	1.00
26:					
Pomello	60	High Texture/coarse fragments	1.00	Moderate Available water	0.50
Urban land	35	Not rated		Not rated	
27:					
Samsula	85	Low		High Wetness Soil reaction	1.00 1.00
28:					
Seffner	60	Moderate Texture/coarse fragments	0.50	Low	
Urban land	35	Not rated		Not rated	
29:					
Tavares	50	High Texture/coarse fragments	1.00	Moderate Available water	0.50
Urban land	45	Not rated		Not rated	
30:					
Urban land	85	Not rated		Not rated	
31:					
Urban land	45	Not rated		Not rated	
Wabasso	50	Moderate Texture/coarse fragments	0.50	High Wetness	1.00
32:					
Wulfert	80	Not rated		Not rated	

Table 6a.--Recreation

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
Urban land	40	Not rated		Not rated		Not rated	
3:							
Anclote	95	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
4:							
Astatula	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.12
Urban land	45	Not rated		Not rated		Not rated	
5:							
Astatula	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
Urban land	45	Not rated		Not rated		Not rated	
6:							
Basinger	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
Urban land	40	Not rated		Not rated		Not rated	
7:							
Basinger	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
8:							
Beaches	95	Not rated		Not rated		Not rated	
9:							
Dumps	90	Not rated		Not rated		Not rated	
10:							
EauGallie	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
Urban land	35	Not rated		Not rated		Not rated	

Table 6a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
11:							
Felda	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
Urban land	30	Not rated		Not rated		Not rated	
12:							
Felda	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
13:							
Immokalee	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Salinity	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Flooding	1.00	Salinity	1.00	Salinity	1.00
		Too sandy	1.00	Flooding	0.40	Flooding	1.00
15:							
Manatee	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	0.88	Too sandy	0.88	Too sandy	0.88
16:							
Matlacha	30	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
St. Augustine	25	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Depth to saturated zone	0.07	Depth to saturated zone	0.03	Depth to saturated zone	0.07
						Gravel content	0.06
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00

Table 6a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
19:							
Palm Beach	90	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.50
						Gravel content	0.06
20:							
Paola	35	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.12
St. Lucie	25	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.12
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
St. Lucie	30	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
Urban land	40	Not rated		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
26:							
Pomello	60	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
Urban land	35	Not rated		Not rated		Not rated	

Table 6a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
27:							
Samsula	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
28:							
Seffner	60	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.12
Urban land	45	Not rated		Not rated		Not rated	
30:							
Urban land	85	Not rated		Not rated		Not rated	
31:							
Urban land	45	Not rated		Not rated		Not rated	
Wabasso	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
32:							
Wulfert	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Salinity	1.00	Content of organic matter	1.00	Content of organic matter	1.00
		Flooding	1.00	Salinity	1.00	Salinity	1.00

Table 6b.--Recreation

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville	50	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.73
Urban land	40	Not rated		Not rated		Not rated	
3:							
Anclote	95	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Droughty	0.03
4:							
Astatula	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
Urban land	45	Not rated		Not rated		Not rated	
5:							
Astatula	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Slope	0.04
Urban land	45	Not rated		Not rated		Not rated	
6:							
Basinger	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00		
Urban land	40	Not rated		Not rated		Not rated	
7:							
Basinger	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00		
8:							
Beaches	95	Not rated		Not rated		Not rated	
9:							
Dumps	90	Not rated		Not rated		Not rated	
10:							
EauGallie	45	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
Urban land	35	Not rated		Not rated		Not rated	

Table 6b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
11:							
Felda	60	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Droughty	0.89
Urban land	30	Not rated		Not rated		Not rated	
12:							
Felda	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Droughty	0.89
13:							
Immokalee	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Droughty	0.90
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Too sandy	1.00	Too sandy	1.00	Droughty	0.15
		Flooding	0.40	Flooding	0.40	Salinity	1.00
						Depth to saturated zone	1.00
15:							
Manatee	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	0.88	Too sandy	0.88		
16:							
Matlacha	30	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.69
						Too sandy	0.50
St. Augustine	25	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Depth to saturated zone	0.03
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Droughty	0.17
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00

Table 6b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
19:							
Palm Beach	90	Very limited Too sandy	 1.00	Very limited Too sandy	 1.00	Very limited Droughty	 1.00
20:							
Paola	35	Very limited Too sandy	 1.00	Very limited Too sandy	 1.00	Very limited Droughty	 1.00
St. Lucie	25	Very limited Too sandy	 1.00	Very limited Too sandy	 1.00	Very limited Droughty	 1.00
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Very limited Too sandy	 1.00	Very limited Too sandy	 1.00	Very limited Droughty Slope	 1.00 0.04
St. Lucie	30	Very limited Too sandy	 1.00	Very limited Too sandy	 1.00	Very limited Droughty Slope	 1.00 0.04
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Very limited Depth to saturated zone Too sandy	 1.00 1.00	Very limited Depth to saturated zone Too sandy	 1.00 1.00	Very limited Depth to saturated zone Droughty	 1.00 1.00
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Very limited Too sandy Depth to saturated zone	 1.00 1.00	Very limited Too sandy Depth to saturated zone	 1.00 1.00	Very limited Depth to saturated zone Droughty	 1.00 0.12
Urban land	40	Not rated		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Very limited Depth to saturated zone Too sandy	 1.00 1.00	Very limited Depth to saturated zone Too sandy	 1.00 1.00	Very limited Depth to saturated zone	 1.00
26:							
Pomello	60	Very limited Too sandy	 1.00	Very limited Too sandy	 1.00	Very limited Droughty	 1.00
Urban land	35	Not rated		Not rated		Not rated	
27:							
Samsula	85	Very limited Depth to saturated zone Content of organic matter	 1.00 1.00	Very limited Depth to saturated zone Content of organic matter	 1.00 1.00	Very limited Content of organic matter Depth to saturated zone	 1.00 1.00

Table 6b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
28:							
Seffner	60	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.10
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.10
Urban land	45	Not rated		Not rated		Not rated	
30:							
Urban land	85	Not rated		Not rated		Not rated	
31:							
Urban land	45	Not rated		Not rated		Not rated	
Wabasso	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Droughty	0.59
32:							
Wulfert	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
						Salinity	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
		Flooding	0.40	Flooding	0.40		

Table 7.--Wildlife Habitat

[See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow Water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2:										
Adamsville	Poor	Poor	Fair	Fair	Fair	Poor	Poor	Poor	Fair	Poor
Urban land.										
3:										
Anclote	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
4:										
Astatula.										
Urban land.										
5:										
Astatula.										
Urban land.										
6:										
Basinger	Poor	Poor	Fair	Poor	Poor	Good	Fair	Poor	Poor	Fair
Urban land.										
7:										
Basinger	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
8:										
Beaches.										
9:										
Dumps.										
10:										
EauGallie	Poor	Poor	Fair	Poor	Poor	Poor	Poor	Poor	Poor	Poor
Urban land.										
11:										
Felda	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Poor	Fair
Urban land.										

Table 7.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow Water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
12:										
Felda	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
13:										
Immokalee	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Poor	Poor	Poor
Urban land.										
14:										
Kesson	Very poor	Very poor	Poor	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Fair
15:										
Manatee	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
16:										
Matlacha.										
St. Augustine.										
Urban land.										
17:										
Myakka	Poor	Fair	Fair	Poor	Poor	Fair	Poor	Fair	Poor	Poor
Urban land.										
18:										
Okeechobee	Very poor	Very poor	Poor	Poor	Very poor	Good	Good	Very poor	Poor	Good
19:										
Palm Beach	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor
20:										
Paola.										
St. Lucie.										
Urban land.										
21:										
Paola.										
St. Lucie.										
Urban land.										

Table 7.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow Water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
22:										
Pineda	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair
Urban land.										
23:										
Pinellas	Very poor	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair
Urban land.										
24:										
Pits.										
25:										
Placid	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
26:										
Pomello	Poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Urban land.										
27:										
Samsula	Very poor	Very poor	Poor	Fair	Very poor	Good	Good	Very poor	Poor	Good
28:										
Seffner	Poor	Poor	Fair	Good	Good	Poor	Very poor	Fair	Good	Very poor
Urban land.										
29:										
Tavares	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Urban land.										
30:										
Urban land.										

Table 7.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow Water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
31: Urban land.										
Wabasso	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair	Poor
32: Wulfert	Very poor	Very poor	Very poor	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Fair

Table 8.--Hydric Soils

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets Ponding criteria
3: Anclote fine sand, depressional	Anclote	Yes	Depression	2B2,3	Yes	No	Yes
7: Basinger fine sand, depressional	Basinger	Yes	Depression	3,2B1	Yes	No	Yes
8: Beaches	Beaches	Yes	Beach	4,2B1	Yes	Yes	No
12: Felda fine sand, depressional	Felda	Yes	Marsh	2B1,3	Yes	No	Yes
14: Kesson fine sand, very frequently flooded	Kesson	Yes	Swamp	2B1,4	Yes	Yes	No
15: Manatee loamy fine sand	Manatee	Yes	Marsh	2B3	Yes	No	No
18: Okeechobee muck	Okeechobee	Yes	Marsh	3,1	Yes	No	Yes
25: Placid fine sand, depressional	Placid	Yes	Swamp	2B1,3	Yes	No	Yes
27: Samsula muck	Samsula	Yes	Marsh	1,3	Yes	No	Yes
32: Wulfert muck, very frequently flooded	Wulfert	Yes	Marsh	1,4	Yes	Yes	No

Table 9a.--Building Site Development

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville	50	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
Urban land	40	Not rated		Not rated		Not rated	
3:							
Anclote	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
4:							
Astatula	50	Not limited		Not limited		Not limited	
Urban land	45	Not rated		Not rated		Not rated	
5:							
Astatula	50	Somewhat limited Slope	0.04	Somewhat limited Slope	0.04	Very limited Slope	1.00
Urban land	45	Not rated		Not rated		Not rated	
6:							
Basinger	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated		Not rated	
7:							
Basinger	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
8:							
Beaches	95	Not rated		Not rated		Not rated	
9:							
Dumps	90	Not rated		Not rated		Not rated	
10:							
EauGallie	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban land	35	Not rated		Not rated		Not rated	
11:							
Felda	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban land	30	Not rated		Not rated		Not rated	

Table 9a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12:							
Felda	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
13:							
Immokalee	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
15:							
Manatee	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
16:							
Matlacha	30	Not limited		Very limited Depth to saturated zone	1.00	Not limited	
St. Augustine	25	Somewhat limited Depth to saturated zone	0.07	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.07
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Very limited Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00	Very limited Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00	Very limited Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00
19:							
Palm Beach	90	Not limited		Not limited		Not limited	
20:							
Paola	35	Not limited		Not limited		Not limited	
St. Lucie	25	Not limited		Not limited		Not limited	
Urban land	30	Not rated		Not rated		Not rated	

Table 9a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21:							
Paola	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
St. Lucie	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
26:							
Pomello	60	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.99		
Urban land	35	Not rated		Not rated		Not rated	
27:							
Samsula	85	Very limited		Very limited		Very limited	
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00			Content of organic matter	1.00
28:							
Seffner	60	Not limited		Very limited		Not limited	
				Depth to saturated zone	1.00		
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.24		
Urban land	45	Not rated		Not rated		Not rated	

Table 9a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
30:							
Urban land----------	85	Not rated		Not rated		Not rated	
31:							
Urban land----------	45	Not rated		Not rated		Not rated	
Wabasso------------	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
32:							
Wulfert------------	80	Very limited		Very limited		Very limited	
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00			Content of organic matter	1.00

Table 9b.--Building Site Development

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville	50	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Somewhat limited Droughty	0.73
Urban land	40	Not rated		Not rated		Not rated	
3:							
Anclote	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone Droughty	1.00 0.03
4:							
Astatula	50	Not limited		Very limited Cutbanks cave	1.00	Very limited Droughty	1.00
Urban land	45	Not rated		Not rated		Not rated	
5:							
Astatula	50	Somewhat limited Slope	0.04	Very limited Cutbanks cave Slope	1.00 0.04	Very limited Droughty Slope	1.00 0.04
Urban land	45	Not rated		Not rated		Not rated	
6:							
Basinger	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated		Not rated	
7:							
Basinger	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
8:							
Beaches	95	Not rated		Not rated		Not rated	
9:							
Dumps	90	Not rated		Not rated		Not rated	
10:							
EauGallie	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
Urban land	35	Not rated		Not rated		Not rated	

Table 9b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
11:							
Felda	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone Droughty	1.00 0.89
Urban land	30	Not rated		Not rated		Not rated	
12:							
Felda	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone Droughty	1.00 0.89
13:							
Immokalee	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone Droughty	1.00 0.90
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone Cutbanks cave Flooding	1.00 1.00 0.80	Very limited Flooding Salinity Depth to saturated zone Droughty	1.00 1.00 1.00 0.05
15:							
Manatee	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
16:							
Matlacha	30	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 1.00	Very limited Droughty Too sandy	0.69 0.50
St. Augustine	25	Somewhat limited Depth to saturated zone	0.03	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Droughty Too sandy Depth to saturated zone	1.00 0.50 0.03
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone Droughty	1.00 0.17
Urban land	40	Not rated		Not rated		Not rated	

Table 9b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
18:							
Okeechobee	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
				Cutbanks cave	0.10		
19:							
Palm Beach	90	Not limited		Very limited		Very limited	
				Cutbanks cave	1.00	Droughty	1.00
20:							
Paola	35	Not limited		Very limited		Very limited	
				Cutbanks cave	1.00	Droughty	1.00
St. Lucie	25	Not limited		Very limited		Very limited	
				Cutbanks cave	1.00	Droughty	1.00
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Somewhat limited		Very limited		Very limited	
		Slope	0.04	Cutbanks cave	1.00	Droughty	1.00
				Slope	0.04	Slope	0.04
St. Lucie	30	Somewhat limited		Very limited		Very limited	
		Slope	0.04	Cutbanks cave	1.00	Droughty	1.00
				Slope	0.04	Slope	0.04
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Cutbanks cave	1.00	Droughty	1.00
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Cutbanks cave	1.00	Droughty	0.12
Urban land	40	Not rated		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Cutbanks cave	1.00		

Table 9b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
26:							
Pomello	60	Not limited		Very limited		Very limited	
				Cutbanks cave	1.00	Droughty	1.00
				Depth to saturated zone	0.99		
Urban land	35	Not rated		Not rated		Not rated	
27:							
Samsula	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
				Content of organic matter	1.00		
28:							
Seffner	60	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.10
				Depth to saturated zone	1.00		
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Not limited		Very limited		Very limited	
				Cutbanks cave	1.00	Droughty	1.00
				Depth to saturated zone	0.24		
Urban land	45	Not rated		Not rated		Not rated	
30:							
Urban land	85	Not rated		Not rated		Not rated	
31:							
Urban land	45	Not rated		Not rated		Not rated	
Wabasso	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Cutbanks cave	1.00	Droughty	0.59
32:							
Wulfert	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Subsidence	1.00	Flooding	1.00	Content of organic matter	1.00
		Flooding	1.00	Cutbanks cave	1.00	Salinity	1.00
				Content of organic matter	1.00	Flooding	1.00

Table 10a.--Sanitary Facilities

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
2:					
Adamsville	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated	
3:					
Anclote	95	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
4:					
Astatula	50	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.08
Urban land	45	Not rated		Not rated	
5:					
Astatula	50	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.04	Slope	1.00
Urban land	45	Not rated		Not rated	
6:					
Basinger	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated	
7:					
Basinger	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
8:					
Beaches	95	Not rated		Not rated	
9:					
Dumps	90	Not rated		Not rated	

Table 10a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
10:					
EauGallie	45	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Restricted permeability	0.82	Depth to saturated zone	1.00
Urban land	35	Not rated		Not rated	
11:					
Felda	60	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Filtering capacity	1.00	Seepage	1.00
		Restricted permeability	0.50		
Urban land	30	Not rated		Not rated	
12:					
Felda	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50		
13:					
Immokalee	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50		
Urban land	40	Not rated		Not rated	
14:					
Kesson	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
15:					
Manatee	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50	Seepage	0.50
16:					
Matlacha	30	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00

Table 10a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
16:					
St. Augustine	25	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Urban land	35	Not rated		Not rated	
17:					
Myakka	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Urban land	40	Not rated		Not rated	
18:					
Okeechobee	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Content of organic matter	1.00
		Filtering capacity	1.00	Seepage	1.00
		Subsidence	1.00	Depth to saturated zone	1.00
19:					
Palm Beach	90	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.32
20:					
Paola	35	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.80
St. Lucie	25	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.80
Urban land	30	Not rated		Not rated	
21:					
Paola	35	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	1.00
		Slope	0.04		
St. Lucie	30	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	1.00
		Slope	0.04		
Urban land	25	Not rated		Not rated	

Table 10a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22:					
Pineda	50	Very limited		Very limited	
		Restricted permeability	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Filtering capacity	1.00		
Urban land	40	Not rated		Not rated	
23:					
Pinellas	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50		
Urban land	40	Not rated		Not rated	
24:					
Pits	95	Not rated		Not rated	
25:					
Placid	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
26:					
Pomello	60	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Urban land	35	Not rated		Not rated	
27:					
Samsula	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
		Subsidence	1.00	Content of organic matter	1.00
28:					
Seffner	60	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Urban land	35	Not rated		Not rated	

Table 10a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
29:					
Tavares	50	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.08
		Depth to saturated zone	0.65	Depth to saturated zone	0.02
Urban land	45	Not rated		Not rated	
30:					
Urban land	85	Not rated		Not rated	
31:					
Urban land	45	Not rated		Not rated	
Wabasso	50	Very limited		Very limited	
		Restricted permeability	1.00	Seepage	1.00
				Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
		Filtering capacity	1.00		
32:					
Wulfert	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
				Depth to saturated zone	1.00
		Filtering capacity	1.00		
		Subsidence	1.00	Content of organic matter	1.00

Table 10b.--Sanitary Facilities

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Depth to saturated zone	0.24
Urban land	40	Not rated		Not rated		Not rated	
3:							
Anclote	95	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
4:							
Astatula	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
Urban land	45	Not rated		Not rated		Not rated	
5:							
Astatula	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.04	Seepage	1.00
		Slope	0.04			Slope	0.04
Urban land	45	Not rated		Not rated		Not rated	
6:							
Basinger	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
Urban land	40	Not rated		Not rated		Not rated	
7:							
Basinger	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
8:							
Beaches	95	Not rated		Not rated		Not rated	
9:							
Dumps	90	Not rated		Not rated		Not rated	

Table 10b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10:							
EauGallie	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too Sandy	1.00	Seepage	1.00	Too Sandy	1.00
		Seepage	1.00			Seepage	0.22
Urban land	35	Not rated		Not rated		Not rated	
11:							
Felda	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00			Seepage	1.00
		Too sandy	1.00	Seepage	1.00	Too sandy	0.50
Urban land	30	Not rated		Not rated		Not rated	
12:							
Felda	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Too Sandy	0.50
13:							
Immokalee	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Salinity	1.00
		Salinity	1.00				
15:							
Manatee	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too Sandy	1.00			Too Sandy	1.00
16:							
Matlacha	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Depth to saturated zone	0.47

Table 10b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
16:							
St. Augustine	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Depth to saturated zone	0.68
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Content of organic matter	1.00			Content of organic matter	1.00
19:							
Palm Beach	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
20:							
Paola	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
St. Lucie	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.04	Seepage	1.00
		Slope	0.04			Slope	0.04
St. Lucie	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.04	Seepage	1.00
		Slope	0.04			Slope	0.04
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00

Table 10b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22:							
Urban land----------	40	Not rated		Not rated		Not rated	
23:							
Pinellas----------	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
Urban land----------	40	Not rated		Not rated		Not rated	
24:							
Pits----------	95	Not rated		Not rated		Not rated	
25:							
Placid----------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
26:							
Pomello----------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Depth to saturated zone	0.24
Urban land----------	35	Not rated		Not rated		Not rated	
27:							
Samsula----------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
		Too acid	1.00			Too acid	1.00
28:							
Seffner----------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Depth to saturated zone	0.44
Urban land----------	35	Not rated		Not rated		Not rated	
29:							
Tavares----------	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00				
Urban land----------	45	Not rated		Not rated		Not rated	
30:							
Urban land----------	85	Not rated		Not rated		Not rated	

Table 10b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
31:							
Urban land----------	45	Not rated		Not rated		Not rated	
Wabasso----------	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
32:							
Wulfert----------	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Salinity	1.00
		Salinity	1.00				

Table 11a.--Construction Materials

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
2:					
Adamsville	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.54
		Thickest layer	0.00		
Urban land	40	Not rated		Not rated	
3:					
Anclote	95	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.30
		Thickest layer	0.00		
4:					
Astatula	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
Urban land	45	Not rated		Not rated	
5:					
Astatula	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
Urban land	45	Not rated		Not rated	
6:					
Basinger	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
Urban land	40	Not rated		Not rated	
7:					
Basinger	90	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
8:					
Beaches	95	Not rated		Not rated	
9:					
Dumps	90	Not rated		Not rated	
10:					
EauGallie	45	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
Urban land	35	Not rated		Not rated	

Table 11a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
11:					
Felda	60	Not rated		Not Rated	
		Bottom layer	0.00	Bottom layer	0.15
		Thickest layer	0.00		
Urban land	30	Not rated		Not rated	
12:					
Felda	85	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.15
		Thickest layer	0.00		
13:					
Immokalee	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.56
		Thickest layer	0.00		
Urban land	40	Not rated		Not rated	
14:					
Kesson	80	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.50
		Thickest layer	0.00		
15:					
Manatee	90	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.45
		Thickest layer	0.00		
16:					
Matlacha	30	Not rated		Good	
				Bottom layer	0.60
St. Augustine	25	Poor		Good	
		Bottom layer	0.00		
		Thickest layer	0.00		
Urban land	35	Not rated		Not rated	
17:					
Myakka	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
Urban land	40	Not rated		Not rated	
18:					
Okeechobee	90	Not rated		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Content of organic matter	0.00	Bottom layer	0.00
				Content of organic matter	0.00
19:					
Palm Beach	90	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		

Table 11a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
20:					
Paola	35	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
St. Lucie	25	Poor		Good	
		Bottom layer	0.00		
		Thickest layer	0.00		
Urban land	30	Not rated		Not rated	
21:					
Paola	35	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00		
St. Lucie	30	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.60
		Thickest layer	0.00		
Urban land	25	Not rated		Not rated	
22:					
Pineda	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.61
		Thickest layer	0.00		
Urban land	40	Not rated		Not rated	
23:					
Pinellas	50	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
				Bottom layer	0.00
Urban land	40	Not rated		Not rated	
24:					
Pits	95	Not rated		Not rated	
25:					
Placid	85	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.52
		Thickest layer	0.00		
26:					
Pomello	60	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.47
		Thickest layer	0.00		
Urban land	35	Not rated		Not rated	
27:					
Samsula	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
				Bottom layer	0.26
28:					
Seffner	60	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.53
		Thickest layer	0.00		

Table 11a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
28:					
Urban land----------	35	Not rated		Not rated	
29:					
Tavares----------	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.56
		Thickest layer	0.00		
Urban land----------	45	Not rated		Not rated	
30:					
Urban land----------	85	Not rated		Not rated	
31:					
Urban land----------	45	Not rated		Not rated	
Wabasso----------	50	Poor		Good	
		Bottom layer	0.00	Bottom layer	0.28
		Thickest layer	0.00		
32:					
Wulfert----------	80	Not rated		Fair	
		Bottom layer	0.00	Thickest layer	0.00
				Bottom layer	0.83

Table 11b.--Construction Materials

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville----------	50	Poor		Fair		Poor	
		Too sandy	0.00	Depth to saturated zone	0.98	Too sandy	0.00
		Droughty	0.86			Depth to saturated zone	0.98
		Wind erosion	0.00				
		Too acid	0.97				
		Low content of organic matter	0.00				
Urban land----------	40	Not rated		Not rated		Not rated	
3:							
Anclote------------	95	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Too sandy	0.00			Too sandy	0.00
		Low content of organic matter	0.00				
4:							
Astatula------------	50	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Droughty	0.03				
		Low content of organic matter	0.12				
		Too acid	0.68				
Urban land----------	45	Not rated		Not rated		Not rated	
5:							
Astatula------------	50	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.96
		Droughty	0.03				
		Low content of organic matter	0.12				
		Too acid	0.68				
Urban land----------	45	Not rated		Not rated		Not rated	
6:							
Basinger------------	50	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Too acid	0.68			Depth to saturated zone	0.00
		Wind erosion	0.00				0.00
		Low content of organic matter	0.00				
Urban land----------	40	Not rated		Not rated		Not rated	

Table 11b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
7:							
Basinger	90	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Too acid	0.68			Depth to saturated zone	0.00
		Wind erosion	0.00				0.00
		Low content of organic matter	0.00				
8:							
Beaches	95	Not rated		Not rated		Not rated	
9:							
Dumps	90	Not rated		Not rated		Not rated	
10:							
EauGallie	45	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Too acid	0.54				
		Low content of organic matter	0.00				
Urban land	35	Not rated		Not rated		Not rated	
11:							
Felda	60	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Droughty	0.28				
		Low content of organic matter	0.00				
Urban land	30	Not rated		Not rated		Not rated	
12:							
Felda	85	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Droughty	0.28				
		Low content of organic matter	0.00				
13:							
Immokalee	50	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Droughty	0.97				
		Low content of organic matter	0.00			Too acid	0.76
		Too acid	0.20				
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Salinity	0.00				
		Low content of organic matter	0.00			Salinity	0.00

Table 11b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
15:							
Manatee	90	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Low content of organic matter	0.12				
16:							
Matlacha	30	Poor		Fair		Poor	
		Too sandy	0.00	Depth to saturated zone	0.89	Too sandy	0.00
		Wind erosion	0.00			Rock fragments	0.28
		Low content of organic matter	0.00			Depth to saturated zone	0.89
		Droughty	0.52				
St. Augustine	25	Poor		Fair		Poor	
		Too sandy	0.00	Depth to saturated zone	0.76	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.76
		Droughty	0.37			Rock fragments	0.97
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Droughty	0.99			Too acid	0.92
		Low content of organic matter	0.00				
		Too acid	0.50				
Urban land	40	Not rated		Not rated		Not rated	
18:							
Okeechobee	90	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
						Content of organic matter	0.00
19:							
Palm Beach	90	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Rock fragments	0.12
		Low content of organic matter	0.00				
		Droughty	0.00				
20:							
Paola	35	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Low content of organic matter	0.00				
		Droughty	0.01				
		Too acid	0.68				

Table 11b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
20:							
St. Lucie	25	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Droughty	0.00				
		Low content of organic matter	0.00				
		Too acid	0.68				
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.96
		Low content of organic matter	0.00				
		Droughty	0.01				
		Too acid	0.68				
St. Lucie	30	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.96
		Droughty	0.00				
		Low content of organic matter	0.00				
		Too acid	0.68				
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Too acid	0.88				
		Low content of organic matter	0.00				
		Droughty	0.81				
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Low content of organic matter	0.00				
Urban land	40	Not rated		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Too acid	0.50				
		Low content of organic matter	0.12			Too acid	0.92

Table 11b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
26:							
Pomello	60	Poor		Fair		Poor	
		Too sandy	0.00	Depth to saturated zone	0.98	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.98
		Droughty	0.98				
		Too acid	0.54			Too acid	0.98
		Low content of organic matter	0.88				
Urban land	35	Not rated		Not rated		Not rated	
27:							
Samsula	85	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Too acid	0.50			Content of organic matter	0.00
						Too acid	0.88
28:							
Seffner	60	Poor		Fair		Poor	
		Too sandy	0.00	Depth to saturated zone	0.91	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.91
		Too acid	0.88				
		Low content of organic matter	0.00				
Urban land	35	Not rated		Not rated		Not rated	
29:							
Tavares	50	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Too acid	0.76
		Droughty	0.04				
		Low content of organic matter	0.12				
		Too acid	0.50				
Urban land	45	Not rated		Not rated		Not rated	
30:							
Urban land	85	Not rated		Not rated		Not rated	
31:							
Urban land	45	Not rated		Not rated		Not rated	
Wabasso	50	Poor		Poor		Poor	
		Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
		Wind erosion	0.00			Depth to saturated zone	0.00
		Too acid	0.39			Too acid	0.92
		Low content of organic matter	0.00			Hard to reclaim	0.99
32:							
Wulfert	80	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Too acid	0.68			Salinity	0.00
		Low content of organic matter	0.00				
		Salinity	0.00				

Table 12.--Water Management

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table]

Map symbol and soil name	Pct. of	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Adamsville----------	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
						Depth to water	0.14
				Seepage	0.28		
Urban land----------	40	Not rated		Not rated		Not rated	
3:							
Anclote-------------	95	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.25		
4:							
Astatula------------	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.36	Depth to water	1.00
Urban land----------	45	Not rated		Not rated		Not rated	
5:							
Astatula------------	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.36	Depth to water	1.00
Urban land----------	45	Not rated		Not rated		Not rated	
6:							
Basinger------------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.36		
Urban land----------	40	Not rated		Not rated		Not rated	
7:							
Basinger------------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.36		
8:							
Beaches-------------	95	Not rated		Not rated		Not rated	
9:							
Dumps---------------	90	Not rated		Not rated		Not rated	
10:							
EauGallie-----------	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.36		
Urban land----------	35	Not rated		Not rated		Not rated	

Table 12.--Water Management--Continued

Map symbol and soil name	Pct. of	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
11:							
Felda	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.33		
Urban land	30	Not rated		Not rated		Not rated	
12:							
Felda	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.33		
13:							
Immokalee	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.31		
Urban land	40	Not rated		Not rated		Not rated	
14:							
Kesson	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Salinity	1.00	Salty water	1.00
				Seepage	0.30		
15:							
Manatee	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.18		
16:							
Matlacha	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.86	Cutbanks cave	1.00
				Seepage	0.57	Depth to water	0.06
St. Augustine	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.95	Cutbanks cave	1.00
				Seepage	0.95	Depth to water	0.02
Urban land	35	Not rated		Not rated		Not rated	
17:							
Myakka	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.37		
Urban land	40	Not rated		Not rated		Not rated	

Table 12.--Water Management--Continued

Map symbol and soil name	Pct. of	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
18:							
Okeechobee	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Content of organic matter	1.00	Cutbanks cave	0.10
				Depth to saturated zone	1.00		
19:							
Palm Beach	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.37	Depth to water	1.00
20:							
Paola	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.37	Depth to water	1.00
St. Lucie	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.93	Depth to water	1.00
Urban land	30	Not rated		Not rated		Not rated	
21:							
Paola	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.37	Depth to water	1.00
St. Lucie	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.45	Depth to water	1.00
Urban land	25	Not rated		Not rated		Not rated	
22:							
Pineda	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.42		
Urban land	40	Not rated		Not rated		Not rated	
23:							
Pinellas	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.64		
Urban land	40	Not limited		Not rated		Not rated	
24:							
Pits	95	Not rated		Not rated		Not rated	
25:							
Placid	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.25		
				Piping	0.01		
26:							
Pomello	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
						Depth to water	0.14
				Seepage	0.43		

Table 12.--Water Management--Continued

Map symbol and soil name	Pct. of	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
26:							
Urban land----------	35	Not rated		Not rated		Not rated	
27:							
Samsula----------	85	Very limited		Very liomited		Very limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
28:							
Seffner----------	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.84	Cutbanks cave	1.00
						Depth to water	0.07
				Seepage	0.26		
Urban land----------	35	Not rated		Not rated		Not rated	
29:							
Tavares----------	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.36	Cutbanks cave	1.00
						Depth to water	0.99
Urban land----------	45	Not rated		Not rated		Not rated	
30:							
Urban land----------	85	Not rated		Not rated		Not rated	
31:							
Urban land----------	45	Not rated		Not rated		Not rated	
Wabasso----------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.30		
32:							
Wulfert----------	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00	Salty water	1.00
				Salinity	1.00		

Table 13.--Engineering Index Properties

[Absence of an entry indicates that the data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
2:												
Adamsville------	0-6	Fine sand	SP-SM	A-2-4, A-3	0	0	100	100	90-100	5-12	0-14	NP
	6-17	Fine sand	SP-SM	A-2-4, A-3	0	0	100	100	90-100	5-12	0-14	NP
	17-80	Fine sand, sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	90-100	2-12	0-14	NP
Urban land.												
3:												
Anclote---------	0-16	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	95-100	85-100	2-12	0-14	NP
	16-80	Fine sand, loamy fine sand	SM, SP, SP-SM	A-2-4, A-3	0	0	100	95-100	85-100	2-20	0-14	NP
4:												
Astatula--------	0-3	Fine sand	SP, SP-SM	A-3	0	0	100	100	75-99	1-7	0-14	NP
	3-80	Fine sand	SP, SP-SM	A-3	0	0	100	100	75-99	1-7	0-14	NP
Urban land.												
5:												
Astatula--------	0-3	Fine sand	SP, SP-SM	A-3	0	0	100	100	75-99	1-7	0-14	NP
	3-80	Fine sand	SP, SP-SM	A-3	0	0	100	100	75-99	1-7	0-14	NP
Urban land.												
6:												
Basinger--------	0-5	Fine sand	SP	A-3	0	0	100	100	85-100	1-4	0-14	NP
	5-14	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	85-100	2-12	0-14	NP
	14-36	Fine sand	SP-SM, SP	A-2-4, A-3	0	0	100	100	85-100	2-12	0-14	NP
	36-80	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	85-100	2-12	0-14	NP
Urban land.												
7:												
Basinger--------	0-5	Fine sand	SP	A-3	0	0	100	100	85-100	1-4	0-14	NP
	5-14	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	85-100	2-12	0-14	NP
	14-36	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	85-100	2-12	0-14	NP
	36-80	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	85-100	2-12	0-14	NP
8:												
Beaches---------	0-6	Fine sand	SP	A-1, A-3	0	0	100	75-100	5-85	0-5	0-14	NP
	6-80	Fine sand, sand	SP	A-1, A-3	0	0	100	75-100	5-85	0-5	0-14	NP

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
9:												
Dumps	0-48	Variable	---	---	---	---	---	---	---	---	---	---
10:												
EauGallie	0-5	Fine sand	SP, SP-SM	A-3	0	0	100	100	80-98	2-5	0-14	NP
	5-23	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-98	5-20	0-14	NP
	23-47	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	80-98	2-12	0-14	NP
	47-59	Sandy clay loam, fine sandy loam	SC, SC-SM, SM	A-2-4, A-2-6	0	0	100	100	80-98	20-35	0-40	NP-20
	59-80	Sand, loamy sand, loamy fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-98	5-25	0-14	NP
Urban land.												
11:												
Felda	0-3	Fine sand	---	---	0	0	100	100	90-100	2-5	0-14	NP
	3-26	Fine sand			0	0	100	100	90-100	2-5	0-14	NP
	26-34	Fine sandy loam, sandy clay loam, sandy loam			0	0	100	100	90-100	17-25	0-40	NP-15
	34-80	Loamy sand, fine sand, sand			0	0	100	100	80-100	12-18	0-14	NP
Urban land.												
12:												
Felda	0-3	Fine sand	SP, SP-SM	A-3	0	0	100	100	90-100	2-5	0-14	NP
	3-26	Fine sand	SP, SP-SM	A-3	0	0	100	100	90-100	2-5	0-14	NP
	26-34	Sandy loam, fine sandy loam, sandy clay loam	SC, SC-SM, SM	A-2-4, A-2-6	0	0	100	100	90-100	20-25	0-40	NP-15
	34-80	Sand, fine sand, loamy sand	SP, SP-SM	A-2-4	0	0	100	100	80-100	12-18	0-14	NP
13:												
Immokalee	0-6	Fine sand	SP, SP-SM	A-3	0	0	100	100	70-100	2-10	0-14	NP
	6-35	Fine sand, sand	SP, SP-SM	A-3	0	0	100	100	70-100	2-10	0-14	NP
	35-50	Fine sand, sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-21	0-14	NP
	50-80	Fine sand, sand	SP, SP-SM	A-3	0	0	100	100	70-100	2-10	0-14	NP

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
13: Urban land.												
14:												
Kesson----------	0-5	Fine sand	SP-SM	A-2-4, A-3	0	0	100	100	95-100	5-12	0-14	NP
	5-26	Sand, fine sand	SP, SP-SM	A-3	0	0	90-100	90-100	90-100	2-10	0-14	NP
	26-42	Sand, fine sand	SP-SM, SP	A-3	0	0	70-100	65-95	60-95	2-10	0-14	NP
	42-80	Sand, fine sand	SP, SP-SM	A-3	0	0	90-100	90-100	90-100	2-10	0-14	NP
15:												
Manatee---------	0-18	Loamy fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	85-100	8-15	0-14	NP
	18-34	Fine sandy loam, sandy loam	SC, SC-SM	A-2-4	0	0	100	100	90-100	18-30	0-30	4-10
	34-44	Fine sandy loam, sandy loam, loamy fine sand	SC, SC-SM, SM	A-2-4	0	0	95-100	90-100	85-100	13-30	0-30	NP-10
	44-80	Fine sand, fine sandy loam, sandy loam, loamy fine sand	SC, SC-SM, SM	A-2-4	0	0	100	100	80-100	8-12	0-30	NP-10
16:												
Matlacha--------	0-42	Gravelly sand	SP, SP-SM	A-3	---	0-15	70-85	70-85	60-80	2-10	0-14	NP
	42-80	Fine sand	SP, SP-SM	A-3	0	0	100	100	85-100	2-10	0-14	NP
St. Augustine---	0-22	Sand		A-3	0	0	85-95	80-95	80-90	2-5	0-14	NP
	22-33	Loamy fine sand		A-2-4	0	0	85-95	80-95	80-90	12-17	0-14	NP
	33-48	Fine sand	SP, SP-SM		0	0	85-95	80-95	80-90	2-5	0-14	NP
	48-63	Sandy loam, fine sand, loamy fine sand, sand	SM, SP-SM		0	0	85-95	80-95	80-90	18-22	0-14	NP
	63-80	Sand			0	0	85-95	80-95	80-90	2-5	0-14	NP
Urban land.												
17:												
Myakka----------	0-4	Fine sand	SP, SP-SM	A-3	0	0	100	100	85-100	2-10	0-14	NP
	4-22	Sand, fine sand	SP, SP-SM	A-3	0	0	100	100	85-100	2-10	0-14	NP
	22-36	Sand, fine sand, loamy fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	85-100	5-20	0-14	NP
	36-80	Sand, fine sand	SP, SP-SM	A-3	0	0	100	100	85-100	2-8	0-14	NP

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
17:												
Urban land.												
18:												
Okeechobee------	0-26	Muck	PT	A-8	0	0	---	---	---	---	0-14	---
	26-80	Mucky peat	PT	A-8	0	0	---	---	---	---	0-14	---
19:												
Palm Beach------	0-4	Fine sand	SP, SW	A-1-b, A-2-4, A-3	0	0	100	75-100	15-90	1-4	0-14	NP
	4-80	Gravelly fine sand, gravelly sand	GP, SP	A-1, A-2-4, A-3	0	0	100	60-90	35-85	1-4	0-14	NP
20:												
Paola-----------	0-3	Fine sand	SP	A-3	0	0	100	100	85-100	1-2	0-14	NP
	3-22	Sand, fine sand	SP	A-3	0	0	100	100	85-100	1-2	0-14	NP
	22-80	Sand, fine sand	SP	A-3	0	0	100	100	80-100	1-4	0-14	NP
St. Lucie-------	0-3	Fine sand	SP	A-3	0	0	100	90-100	80-99	1-4	0-14	NP
	3-80	Sand, fine sand	SP	A-3	0	0	100	90-100	80-99	1-4	0-14	NP
Urban land.												
21:												
Paola-----------	0-3	Fine sand	SP	A-3	0	0	100	100	85-100	1-2	0-14	NP
	3-22	Sand, fine sand	SP	A-3	0	0	100	100	85-100	1-2	0-14	NP
	22-80	Sand, fine sand	SP	A-3	0	0	100	100	80-100	1-4	0-14	NP
St. Lucie-------	0-3	Fine sand	SP	A-3	0	0	100	90-100	80-99	1-4	0-14	NP
	3-80	Sand, fine sand	SP	A-3	0	0	100	90-100	80-99	1-4	0-14	NP
Urban land.												
22:												
Pineda----------	0-4	Fine sand	SP, SP-SM	A-3	0	0	100	100	80-95	2-8	0-14	NP
	4-37	Sand, fine sand	SP, SP-SM	A-3	0	0	100	100	80-95	2-10	0-14	NP
	37-55	Sandy loam, fine sandy loam, sandy clay loam	SC, SC-SM, SM	A-2-4, A-2-6	0	0	100	100	65-95	15-35	0-35	NP-20
	55-80	Sand, loamy sand, fine sand	SM, SP, SP-SM	A-2-4, A-3	0	0	95-100	90-100	80-95	5-15	0-14	NP
Urban land.												

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
23:												
Pinellas---------	0-18	Fine sand	SP	A-3	0	0	100	100	90-100	2-4	0-14	NP
	18-35	Sand, fine sand	SP-SM	A-2-4, A-3	0	0	100	100	90-100	5-12	0-14	NP
	35-54	Fine sandy loam, sandy clay loam	SC, SC-SM, SP-SM	A-2-4, A-2-6	0	0	100	100	90-100	16-20	20-30	5-13
	54-80	Sand, fine sand	SP, SP-SM	A-2-4, A-3	---	0-5	80-100	75-100	60-95	2-12	0-14	NP
Urban land.												
24:												
Pits------------	0-60	Variable	---	---	---	---	---	---	---	---	---	---
25:												
Placid----------	0-17	Fine sand	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	90-100	1-20	0-14	NP
	17-80	Fine sand, sand, loamy fine sand	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	90-100	1-20	0-14	NP
26:												
Pomello---------	0-44	Fine sand	SP, SP-SM	A-3	0	0	100	100	60-100	1-8	0-14	NP
	44-59	Fine sand, sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	60-100	6-15	0-14	NP
	59-80	Fine sand, sand	SP, SP-SM	A-3	0	0	100	100	60-100	4-10	0-14	NP
Urban land.												
27:												
Samsula---------	0-36	Muck	PT		---	---	---	---	---	---	---	---
	36-80	Sand, fine sand, loamy sand	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	80-100	2-20	0-14	NP
28:												
Seffner---------	0-16	Fine sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	85-100	1-12	0-14	NP
	16-29	Fine sand, sand	SP, SP-SM	A-2-4, A-3	0	0	100	100	85-100	1-12	0-14	NP
	29-80	Fine sand, sand	SP, SP-SM	A-2-4, A-3	0	0	97-100	75-100	70-100	1-12	0-14	NP
Urban land.												
29:												
Tavares---------	0-5	Fine sand	SP, SP-SM	A-3	0	0	100	95-100	85-100	2-10	0-14	NP
	5-80	Sand, fine sand	SP, SP-SM	A-3	0	0	100	95-100	85-100	2-10	0-14	NP
Urban land.												

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
30:												
Urban land.												
31:												
Urban land.												
Wabasso---------	0-5	Fine sand	SP, SP-SM	A-3	0	0	100	100	95-100	2-10	0-14	NP
	5-26	Sand, fine sand	SP, SP-SM	A-3	0	0	100	100	95-100	2-10	0-14	NP
	26-36	Sand, fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	95-100	5-15	0-14	NP
	36-50	Fine sandy loam, sandy clay loam	SC, SC-SM	A-2-4, A-2-6	0	0	100	100	95-100	16-21	20-30	5-13
	50-80	Sand, fine sand, loamy sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	95-100	5-15	0-14	NP
32:												
Wulfert---------	0-35	Muck	PT	---	---	---	---	---	---	---	---	---
	35-80	Sand, fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	85-100	5-18	0-14	NP

Table 14.--Physical Properties of the Soils

[Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*					
2:												
Adamsville----------	0-6	1-8	1.35-1.65	6.00-20.00	0.05-0.10	0.0-2.9	0.5-2.0	.10	.10	5	1	180
	6-17	1-8	1.35-1.65	6.00-20.00	0.05-0.10	0.0-2.9	---	.10	.10			
	17-80	1-7	1.35-1.65	6.00-20.00	0.03-0.08	0.0-2.9	---	.10	.10			
Urban land.												
3:												
Anclote----------	0-16	2-8	1.30-1.45	6.00-20.00	0.10-0.15	0.0-2.9	2.0-9.0	.10	.10	5	2	134
	16-80	1-13	1.50-1.65	6.00-20.00	0.03-0.10	0.0-2.9	---	.10	.10			
4:												
Astatula----------	0-3	1-3	1.25-1.55	20.00-50.00	0.04-0.10	0.0-2.9	0.5-2.0	.10	.10	5	1	180
	3-80	1-3	1.45-1.60	20.00-50.00	0.02-0.05	0.0-2.9	0.0-0.5	.10	.10			
Urban land.												
5:												
Astatula----------	0-3	1-3	1.25-1.55	20.00-50.00	0.04-0.10	0.0-2.9	0.5-2.0	.10	.10	5	1	180
	3-80	1-3	1.45-1.60	20.00-50.00	0.02-0.05	0.0-2.9	0.0-0.5	.10	.10			
Urban land.												
6:												
Basinger----------	0-5	0-4	1.40-1.55	6.00-20.00	0.03-0.07	0.0-2.9	0.5-2.0	.10	.10	5	1	134
	5-14	0-4	1.40-1.55	6.00-20.00	0.05-0.10	0.0-2.9	---	.10	.10			
	14-36	1-6	1.40-1.65	6.00-20.00	0.10-0.15	0.0-2.9	---	.10	.10			
	36-80	1-3	1.50-1.70	6.00-20.00	0.05-0.10	0.0-2.9	---	.10	.10			
Urban land.												
7:												
Basinger----------	0-5	0-4	1.40-1.55	6.00-20.00	0.05-0.10	0.0-2.9	1.0-8.0	.10	.10	5	1	134
	5-14	0-4	1.40-1.55	6.00-20.00	0.05-0.10	0.0-2.9	---	.10	.10			
	14-36	1-3	1.40-1.65	6.00-20.00	0.10-0.15	0.0-2.9	---	.10	.10			
	36-80	1-3	1.50-1.70	6.00-20.00	0.05-0.10	0.0-2.9	---	.10	.10			
8:												
Beaches----------	0-6	0-1	1.35-1.85	6.00-20.00	0.03-0.05	0.0-2.9	0.0-0.1	.05	---	5	1	310
	6-80	0-1	1.35-1.85	6.00-20.00	0.03-0.05	0.0-2.9	0.0-0.1	.05	---			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*					
9:												
Dumps	0-48	1-10	1.35-1.55	6.00-20.00	0.02-0.08	0.0-2.9	0.0-0.5	.10	.05	5	2	134
10:												
EauGallie	0-5	0-5	1.25-1.50	6.00-20.00	0.02-0.07	0.0-2.9	2.0-8.0	.10	.10	5	2	134
	5-23	1-8	1.45-1.60	6.00-20.00	0.02-0.05	0.0-2.9	---	.15	.15			
	23-47	1-5	1.45-1.65	0.60-6.00	0.15-0.25	0.0-2.9	---	.10	.10			
	47-59	13-31	1.55-1.70	0.06-2.00	0.10-0.20	0.0-2.9	---	.20	.20			
	59-80	1-13	1.45-1.55	0.60-6.00	0.05-0.15	0.0-2.9	---	.15	.15			
Urban land.												
11:												
Felda	0-3	1-3	1.40-1.55	6.00-20.00	0.05-0.10	0.0-2.9	1.0-4.0	.10	.10	5	1	134
	3-26	1-3	1.45-1.55	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
	26-34	10-20	1.50-1.60	0.60-2.00	0.10-0.15	0.0-2.9	---	.24	.24			
	34-80	8-12	1.50-1.65	6.00-20.00	0.02-0.05	0.0-2.9	---	.17	.17			
Urban land.												
12:												
Felda	0-3	1-3	1.40-1.55	6.00-20.00	0.05-0.10	0.0-2.9	1.0-4.0	.10	.10	5	1	134
	3-26	1-3	1.45-1.55	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
	26-34	10-22	1.50-1.60	0.60-2.00	0.10-0.15	0.0-2.9	---	.24	.24			
	34-80	7-13	1.50-1.65	6.00-20.00	0.02-0.05	0.0-2.9	---	.17	.17			
13:												
Immokalee	0-6	1-5	1.20-1.50	6.00-20.00	0.05-0.10	0.0-2.9	1.0-2.0	.10	.10	5	1	134
	6-35	1-5	1.45-1.70	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
	35-50	2-7	1.30-1.70	0.60-2.00	0.10-0.25	0.0-2.9	---	.15	.15			
	50-80	1-5	1.40-1.70	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
Urban land.												
14:												
Kesson	0-5	1-4	1.35-1.50	6.00-20.00	0.10-0.15	0.0-2.9	1.0-3.0	.10	.10	5	1	134
	5-26	1-4	1.50-1.65	2.00-20.00	0.05-0.10	0.0-2.9	---	.10	.10			
	26-42	1-4	1.55-1.70	2.00-20.00	0.05-0.15	0.0-2.9	---	.10	.05			
	42-80	2-8	1.45-1.65	2.00-20.00	0.05-0.15	0.0-2.9	---	.10	.10			
15:												
Manatee	0-18	2-10	1.20-1.40	2.00-6.00	0.15-0.20	0.0-2.9	4.0-10	.10	.10	5	2	134
	18-34	10-20	1.50-1.65	0.60-2.00	0.10-0.15	0.0-2.9	0.0-0.5	.24	.24			
	34-44	6-20	1.55-1.70	0.60-2.00	0.08-0.15	0.0-2.9	0.0-0.5	.24	.24			
	44-80	2-8	1.55-1.70	0.60-2.00	0.08-0.15	0.0-2.9	0.0-0.5	.24	.17			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*					
16:												
Matlacha	0-42	3-8	1.65-1.75	2.00-6.00	0.05-0.08	0.0-2.9	---	.10	.10	5	2	134
	42-80	1-2	1.50-1.65	6.00-20.00	0.03-0.05	0.0-2.9	---	.17	.17			
St. Augustine	0-22	0-2	1.30-1.40	6.00-20.00	0.02-0.05	0.0-2.9	1.0-3.0	.10	.10	5	2	134
	22-33	8-12	1.40-1.55	2.00-20.00	0.05-0.10	0.0-2.9	---	.15	.10			
	33-48	0-2	1.30-1.40	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
	48-63	8-20	1.40-1.55	2.00-20.00	0.05-0.10	0.0-2.9	---	.15	.10			
	63-80	0-2	1.30-1.40	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
Urban land.												
17:												
Myakka	0-4	1-3	1.25-1.45	6.00-20.00	0.05-0.15	0.0-2.9	2.0-5.0	.10	.10	5	1	134
	4-22	0-2	1.45-1.60	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
	22-36	1-8	1.45-1.60	0.60-6.00	0.10-0.20	0.0-2.9	---	.15	.15			
	36-80	0-2	1.48-1.70	6.00-20.00	0.02-0.10	0.0-2.9	---	.10	.10			
Urban land.												
18:												
Okeechobee	0-26	0-0	0.15-0.30	6.00-20.00	0.30-0.50	0.0-2.9	60-99	---	---	3	2	134
	26-80	0-0	0.15-0.30	6.00-20.00	0.30-0.50	0.0-2.9	20-99	---	---			
19:												
Palm Beach	0-4	0-2	1.25-1.50	20.00-50.00	0.02-0.05	0.0-2.9	1.0-5.0	.10	.10	5	1	250
	4-80	0-2	1.20-1.45	20.00-50.00	0.01-0.04	0.0-2.9	---	.10	---			
20:												
Paola	0-3	0-2	1.20-1.45	20.00-50.00	0.02-0.05	0.0-2.9	0.0-0.5	.10	.10	5	1	310
	3-22	0-2	1.45-1.60	20.00-50.00	0.02-0.05	0.0-2.9	---	.10	.10			
	22-80	0-3	1.45-1.60	20.00-50.00	0.02-0.05	0.0-2.9	---	.10	.10			
St. Lucie	0-3	0-1	1.50-1.60	20.00-50.00	0.02-0.05	0.0-2.9	0.0-1.0	.10	.10	5	1	310
	3-80	0-1	1.50-1.60	20.00-50.00	0.02-0.03	0.0-2.9	---	.10	.10			
Urban land.												
21:												
Paola	0-3	0-2	1.20-1.45	20.00-50.00	0.02-0.05	0.0-2.9	0.0-0.5	.10	.10	5	1	310
	3-22	0-2	1.45-1.60	20.00-50.00	0.02-0.05	0.0-2.9	---	.10	.10			
	22-80	0-3	1.45-1.60	20.00-50.00	0.02-0.05	0.0-2.9	---	.10	.10			
St. Lucie	0-3	0-1	1.50-1.60	20.00-50.00	0.02-0.05	0.0-2.9	0.0-1.0	.10	.10	5	1	310
	3-80	0-1	1.50-1.60	20.00-50.00	0.02-0.03	0.0-2.9	---	.10	.10			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*					
21:												
Urban land.												
22:												
Pineda----------	0-4	1-6	1.25-1.60	6.00-20.00	0.05-0.10	0.0-2.9	0.5-6.0	.10	.10	5	1	134
	4-37	1-8	1.40-1.70	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
	37-55	10-25	1.50-1.70	0.06-0.20	0.10-0.15	0.0-2.9	---	.24	.24			
	55-80	3-10	1.45-1.60	2.00-6.00	0.02-0.05	0.0-2.9	---	.10	.10			
Urban land.												
23:												
Pinellas----------	0-18	1-3	1.15-1.50	6.00-20.00	0.02-0.05	0.0-2.9	1.0-4.0	.10	.10	5	1	134
	18-35	3-8	1.40-1.60	6.00-20.00	0.10-0.15	0.0-2.9	---	.17	.17			
	35-54	11-22	1.50-1.65	0.60-2.00	0.10-0.15	0.0-2.9	---	.24	.24			
	54-80	2-8	1.55-1.65	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
Urban land.												
24:												
Pits----------	0-60	---	---	---	---	---	---	---	---	---	---	---
25:												
Placid----------	0-17	0-10	1.20-1.40	6.00-20.00	0.15-0.20	0.0-2.9	2.0-10	.10	.10	5	1	180
	17-80	0-10	1.30-1.60	6.00-20.00	0.05-0.08	0.0-2.9	0.0-0.5	.10	.10			
26:												
Pomello----------	0-44	0-2	1.35-1.65	6.00-20.00	0.02-0.05	0.0-2.9	0.5-1.0	.10	.10	5	1	310
	44-59	0-2	1.45-1.60	2.00-6.00	0.10-0.30	0.0-2.9	---	.15	.15			
	59-80	0-2	1.35-1.65	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
Urban land.												
27:												
Samsula----------	0-36	0-0	0.10-0.50	6.00-20.00	0.20-0.25	0.0-2.9	20-99	---	---	2	2	134
	36-80	1-14	1.35-1.55	6.00-20.00	0.02-0.05	0.0-2.9	---	.17	.17			
28:												
Seffner----------	0-16	1-8	1.35-1.45	6.00-20.00	0.07-0.12	0.0-2.9	1.0-5.0	.10	.10	5	1	134
	16-29	1-8	1.35-1.45	6.00-20.00	0.07-0.12	0.0-2.9	---	.10	.10			
	29-80	1-8	1.50-1.60	6.00-20.00	0.04-0.08	0.0-2.9	---	.10	.10			
Urban land.												

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*					
29:												
Tavares	0-5	0-4	1.25-1.65	6.00-20.00	0.05-0.10	0.0-2.9	0.5-2.0	.10	.10	5	1	180
	5-80	0-4	1.40-1.70	6.00-20.00	0.02-0.05	0.0-2.9	0.0-0.5	.10	.10			
Urban land.												
30:												
Urban land.												
31:												
Urban land.												
Wabasso	0-5	1-5	1.25-1.50	6.00-20.00	0.03-0.08	0.0-2.9	1.0-4.0	.10	.10	4	1	134
	5-26	0-5	1.35-1.70	6.00-20.00	0.02-0.05	0.0-2.9	---	.10	.10			
	26-36	1-12	1.50-1.75	0.60-2.00	0.10-0.15	0.0-2.9	---	.15	.15			
	36-50	11-22	1.60-1.85	0.06-0.20	0.10-0.15	0.0-2.9	---	.24	.24			
	50-80	2-12	1.40-1.70	6.00-20.00	0.05-0.10	0.0-2.9	---	.10	.10			
32:												
Wulfert	0-35	0-1	0.20-0.40	6.00-20.00	0.20-0.25	---	---	---	---	2	2	134
	35-80	2-5	1.50-1.60	6.00-20.00	0.02-0.08	0.0-2.9	---	.17	.17			

Table 15.--Chemical Properties of the Soils

[Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Salinity	Sodium adsorption ratio
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*	*mmhos/cm*	
2:							
Adamsville	0-6	3.0-7.0	---	4.5-7.8	0	0	0
	6-17	3.0-7.0	---	4.5-7.8	0	0	0
	17-80	0.2-3.0	---	4.5-7.8	0	0	0
Urban land.							
3:							
Anclote	0-16	---	---	5.1-8.4	---	0	---
	16-80	---	---	5.1-8.4	---	0	---
4:							
Astatula	0-3	2.0-8.0	---	4.5-6.5	0	0	0
	3-80	0.3-2.0	---	4.5-6.5	0	0	0
Urban land.							
5:							
Astatula	0-3	2.0-8.0	---	4.5-6.5	0	0	0
	3-80	0.3-2.0	---	4.5-6.5	0	0	0
Urban land.							
6:							
Basinger	0-5	---	---	3.6-8.4	---	0	---
	5-14	---	---	3.6-7.3	---	0	---
	14-36	---	---	3.6-7.3	---	0	---
	36-80	---	---	3.6-7.3	---	0	---
Urban land.							
7:							
Basinger	0-5	---	---	3.6-7.3	---	0	---
	5-14	---	---	3.6-7.3	---	0	---
	14-36	---	---	3.6-7.3	---	0	---
	36-80	---	---	3.6-7.3	---	0	---
8:							
Beaches	0-6	---	---	5.1-7.8	0	4.0-32.0	0
	6-80	---	---	5.1-7.8	0	4.0-32.0	0
9:							
Dumps	0-48	---	---	6.6-8.4	---	0	---
10:							
EauGallie	0-5	---	---	4.5-6.0	---	0	---
	5-23	---	---	4.5-6.5	---	0	---
	23-47	---	---	4.5-7.8	---	0	---
	47-59	---	---	4.5-7.8	---	0	---
	59-80	---	---	4.5-7.8	---	0	---
Urban land.							
11:							
Felda	0-3	---	---	5.1-7.8	---	0	---
	3-26	---	---	5.1-7.8	---	0	---
	26-34	---	---	6.1-7.8	---	0	---
	34-80	---	---	6.1-8.4	---	0	---

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Salinity	Sodium adsorption ratio
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*	*mmhos/cm*	
11:							
Urban land.							
12:							
Felda	0-3	---	---	5.1-7.8	---	0	---
	3-26	---	---	5.1-7.8	---	0	---
	26-34	---	---	6.1-7.8	---	0	---
	34-80	---	---	6.1-8.4	---	0	---
13:							
Immokalee	0-6	---	---	3.6-6.0	---	0	---
	6-35	---	---	3.6-6.0	---	0	---
	35-50	---	---	3.6-6.0	---	0	---
	50-80	---	---	3.6-6.0	---	0	---
Urban land.							
14:							
Kesson	0-5	---	---	7.4-9.0	---	16.0-32.0	---
	5-26	---	---	7.4-9.0	---	16.0-32.0	---
	26-42	---	---	7.4-9.0	---	16.0-32.0	---
	42-80	---	---	7.4-9.0	---	16.0-32.0	---
15:							
Manatee	0-18	20-50	---	5.6-7.8	0	0.0-2.0	0
	18-34	20-40	---	6.6-7.8	0-5	0.0-2.0	0
	34-44	20-40	---	7.4-8.4	0-5	0.0-2.0	0
	44-80	20-40	---	7.4-8.4	0-5	0.0-2.0	0
16:							
Matlacha	0-42	---	---	5.6-8.4	---	0	---
	42-80	---	---	5.6-7.3	---	0	---
St. Augustine	0-22	---	---	6.1-8.4	---	0.0-2.0	---
	22-33	---	---	6.1-8.4	---	0.0-2.0	---
	33-48	---	---	6.1-8.4	---	0.0-2.0	---
	48-63	---	---	6.1-8.4	---	0.0-2.0	---
	63-80	---	---	6.1-8.4	---	0.0-2.0	---
Urban land.							
17:							
Myakka	0-4	---	---	3.6-6.5	---	0	---
	4-22	---	---	3.6-6.5	---	0	---
	22-36	---	---	3.6-6.5	---	0	---
	36-80	---	---	3.6-6.5	---	0	---
Urban land.							
18:							
Okeechobee	0-26	90-200	---	5.6-8.4	0	0	0
	26-80	60-200	---	5.6-8.4	0	0	0
19:							
Palm Beach	0-4	0.0-13	---	7.4-8.4	0-25	0	0
	4-80	0.0-13	---	7.4-8.4	0-30	0	0
20:							
Paola	0-3	---	---	3.6-7.3	---	0	---
	3-22	---	---	3.6-7.3	---	0	---
	22-80	---	---	3.6-7.3	---	0	---

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Salinity	Sodium adsorption ratio
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*	*mmhos/cm*	
20:							
St. Lucie	0-3	---	---	3.6-7.3	---	0	---
	3-80	---	---	3.6-7.3	---	0	---
Urban land.							
21:							
Paola	0-3	---	---	3.6-7.3	---	0	---
	3-22	---	---	3.6-7.3	---	0	---
	22-80	---	---	3.6-7.3	---	0	---
St. Lucie	0-3	---	---	3.6-7.3	---	0	---
	3-80	---	---	3.6-7.3	---	0	---
Urban land.							
22:							
Pineda	0-4	---	---	4.5-7.3	---	0	---
	4-37	---	---	4.5-7.3	---	0	---
	37-55	---	---	5.1-8.4	---	0	---
	55-80	---	---	5.6-8.4	---	0	---
Urban land.							
23:							
Pinellas	0-18	---	---	5.6-7.8	---	0	---
	18-35	---	---	6.6-9.0	---	0	---
	35-54	---	---	6.6-9.0	---	0	---
	54-80	---	---	7.9-8.4	---	0	---
Urban land.							
24:							
Pits	0-60	---	---	---	---	---	---
25:							
Placid	0-17	---	10-20	3.6-5.5	0	0	0
	17-80	---	1.0-5.0	3.6-6.5	0	0	0
26:							
Pomello	0-44	---	---	4.5-6.0	---	0	---
	44-59	---	---	4.5-6.0	---	0	---
	59-80	---	---	4.5-6.0	---	0	---
Urban land.							
27:							
Samsula	0-36	---	---	4.5-5.5	---	0	---
	36-80	---	---	2.0-4.4	---	0	---
28:							
Seffner	0-16	---	---	4.5-7.3	---	0	---
	16-29	---	---	4.5-7.3	---	0	---
	29-80	---	---	4.5-7.3	---	0	---
Urban land.							
29:							
Tavares	0-5	---	3.0-6.0	3.6-6.0	0	0	0
	5-80	---	0.5-3.0	3.6-6.0	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Salinity	Sodium adsorption ratio
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*	*mmhos/cm*	
29:							
Urban land.							
30:							
Urban land.							
31:							
Urban land.							
Wabasso	0-5	---	---	3.6-6.5	---	0	---
	5-26	---	---	3.6-6.5	---	0	---
	26-36	---	---	4.5-7.3	---	0	---
	36-50	---	---	5.1-8.4	---	0	---
	50-80	---	---	7.4-8.4	---	0	---
32:							
Wulfert	0-35	---	---	5.6-7.3	---	16.0-32.0	---
	35-80	---	---	3.6-7.3	---	16.0-32.0	---

Table 16.--Soil Features

[See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Subsidence		Potential for frost action	Risk of corrosion	
	Initial	Total		Uncoated steel	Concrete
	In	*In*			
2:					
Adamsville	---	---	None	Low	Moderate
Urban land	---	---	None	---	---
3:					
Anclote	---	---	None	High	Moderate
4:					
Astatula	---	---	None	Low	High
Urban land	---	---	None	---	---
5:					
Astatula	---	---	None	Low	High
Urban land	---	---	None	---	---
6:					
Basinger	---	---	None	High	Moderate
Urban land	---	---	None	---	---
7:					
Basinger	---	---	None	High	Moderate
8:					
Beaches	---	---	None	High	High
9:					
Dumps	---	---	None	High	Moderate
10:					
EauGallie	---	---	None	High	Moderate
Urban land	---	---	None	---	---
11:					
Felda	---	---	None	High	Moderate
Urban land	---	---	None	---	---
12:					
Felda	---	---	None	High	High
13:					
Immokalee	---	---	None	High	High
Urban land	---	---	None	---	---
14:					
Kesson	---	---	None	High	Low
15:					
Manatee	---	---	None	Moderate	Low

Table 16.--Soil Features--Continued

Map symbol and soil name	Subsidence		Potential for frost action	Risk of corrosion	
	Initial	Total		Uncoated steel	Concrete
	In	*In*			
16:					
Matlacha	---	---	None	High	Low
St. Augustine	---	---	None	High	High
Urban land	---	---	None	---	---
17:					
Myakka	---	---	None	High	High
Urban land	---	---	None	---	---
18:					
Okeechobee	4-8	50-65	None	High	Low
19:					
Palm Beach	---	---	None	Low	Low
20:					
Paola	---	---	None	Low	High
St. Lucie	---	---	None	Low	Moderate
Urban land	---	---	None	---	---
21:					
Paola	---	---	None	Low	High
St. Lucie	---	---	None	Low	Moderate
Urban land	---	---	None	---	---
22:					
Pineda	---	---	None	High	Low
Urban land	---	---	None	---	---
23:					
Pinellas	---	---	None	High	Low
Urban land	---	---	None	---	---
24:					
Pits	---	---	None	---	---
25:					
Placid	---	---	None	High	High
26:					
Pomello	---	---	None	Low	High
Urban land	---	---	None	---	---
27:					
Samsula	16-20	30-36	None	High	High
28:					
Seffner	---	---	None	Low	Moderate
Urban land	---	---	None	---	---

Table 16.--Soil Features--Continued

Map symbol and soil name	Subsidence		Potential for frost action	Risk of corrosion	
	Initial	Total		Uncoated steel	Concrete
	In	*In*			
29:					
Tavares	---	---	None	Low	High
Urban land	---	---	None	---	---
30:					
Urban land	---	---	None	---	---
31:					
Urban land	---	---	None	---	---
Wabasso	---	---	None	Moderate	High
32:					
Wulfert	16-18	24-36	None	High	High

Table 17.--Water Features

[Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	*Ft*	*Ft*				
2:									
Adamsville	C	June	2.0-3.5	>6.0	---	---	None	---	None
		July	2.0-3.5	>6.0	---	---	None	---	None
		August	2.0-3.5	>6.0	---	---	None	---	None
		September	2.0-3.5	>6.0	---	---	None	---	None
		October	2.0-3.5	>6.0	---	---	None	---	None
		November	2.0-3.5	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
3:									
Anclote	D	June	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		July	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		August	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		September	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		October	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		November	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		December	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
4:									
Astatula	A	Jan-Dec	---	---	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
5:									
Astatula	A	Jan-Dec	---	---	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
6:									
Basinger	B/D	January	0.0-1.0	>6.0	---	---	None	---	None
		February	0.0-1.0	>6.0	---	---	None	---	None
		June	0.0-1.0	>6.0	---	---	None	---	None
		July	0.0-1.0	>6.0	---	---	None	---	None
		August	0.0-1.0	>6.0	---	---	None	---	None
		September	0.0-1.0	>6.0	---	---	None	---	None
		October	0.0-1.0	>6.0	---	---	None	---	None
		November	0.0-1.0	>6.0	---	---	None	---	None
		December	0.0-1.0	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	*Ft*	*Ft*				
7:									
Basinger	D	January	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		February	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		June	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		July	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		August	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
8:									
Beaches	D	Jan-Dec	0.0-2.0	>6.0	---	---	None	Long	Very frequent
9:									
Dumps	C	Jan-Dec	1.5-3.0	>6.0	---	---	None	---	None
10:									
EauGallie	B/D	January	0.5-1.5	>6.0	---	---	None	---	None
		February	0.5-1.5	>6.0	---	---	None	---	None
		March	0.5-1.5	>6.0	---	---	None	---	None
		June	0.5-1.5	>6.0	---	---	None	---	None
		July	0.5-1.5	>6.0	---	---	None	---	None
		August	0.5-1.5	>6.0	---	---	None	---	None
		September	0.5-1.5	>6.0	---	---	None	---	None
		October	0.5-1.5	>6.0	---	---	None	---	None
		November	0.5-1.5	>6.0	---	---	None	---	None
		December	0.5-1.5	>6.0	---	---	None	---	None
10:									
Urban land	D	Jan-Dec	---	---	---	---	None	---	None
11:									
Felda	B/D	June	0.0-1.0	>6.0	---	---	None	---	None
		July	0.0-1.0	>6.0	---	---	None	---	None
		August	0.0-1.0	>6.0	---	---	None	---	None
		September	0.0-1.0	>6.0	---	---	None	---	None
		October	0.0-1.0	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	*Ft*	*Ft*				
12:									
Felda	D	June	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		July	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		August	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
13:									
Immokalee	B/D	June	0.5-1.5	>6.0	---	---	None	---	None
		July	0.5-1.5	>6.0	---	---	None	---	None
		August	0.5-1.5	>6.0	---	---	None	---	None
		September	0.5-1.5	>6.0	---	---	None	---	None
		October	0.5-1.5	>6.0	---	---	None	---	None
		November	0.5-1.5	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
14:									
Kesson	D	Jan-Dec	0.0-0.5	>6.0	---	---	None	Very long	Very frequent
15:									
Manatee	B/D	June	0.0-1.0	>6.0	---	---	None	---	None
		July	0.0-1.0	>6.0	---	---	None	---	None
		August	0.0-1.0	>6.0	---	---	None	---	None
		September	0.0-1.0	>6.0	---	---	None	---	None
		October	0.0-1.0	>6.0	---	---	None	---	None
16:									
Matlacha	C	June	2.0-3.0	>6.0	---	---	None	---	Rare
		July	2.0-3.0	>6.0	---	---	None	---	Rare
		August	2.0-3.0	>6.0	---	---	None	---	Rare
		September	2.0-3.0	>6.0	---	---	None	---	Rare
		October	2.0-3.0	>6.0	---	---	None	---	Rare
St. Augustine	C	June	1.5-3.0	>6.0	---	---	None	---	Rare
		July	1.5-3.0	>6.0	---	---	None	---	Rare
		August	1.5-3.0	>6.0	---	---	None	---	Rare
		September	1.5-3.0	>6.0	---	---	None	---	Rare
		October	1.5-3.0	>6.0	---	---	None	---	Rare
Urban land	D	Jan-Dec	---	---	---	---	None	---	Rare

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	*Ft*	*Ft*				
17:									
Myakka	B/D	June	0.5-1.5	>6.0	---	---	None	---	None
		July	0.5-1.5	>6.0	---	---	None	---	None
		August	0.5-1.5	>6.0	---	---	None	---	None
		September	0.5-1.5	>6.0	---	---	None	---	None
		October	0.5-1.5	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
18:									
Okeechobee	B/D	January	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		February	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		March	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		April	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		June	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		July	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		August	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		September	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		October	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		November	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		December	0.0	>6.0	0.0-2.0	Very long	Frequent	---	None
19:									
Palm Beach	A	Jan-Dec	---	---	---	---	None	---	None
20:									
Paola	A	Jan-Dec	---	---	---	---	None	---	None
St. Lucie	A	Jan-Dec	---	---	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
21:									
Paola	A	Jan-Dec	---	---	---	---	None	---	None
St. Lucie	A	Jan-Dec	---	---	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
22:									
Pineda	B/D	June	0.0-1.0	>6.0	---	---	None	---	None
		July	0.0-1.0	>6.0	---	---	None	---	None
		August	0.0-1.0	>6.0	---	---	None	---	None
		September	0.0-1.0	>6.0	---	---	None	---	None
		October	0.0-1.0	>6.0	---	---	None	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	*Ft*	*Ft*				
22:									
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
23:									
Pinellas	B/D	June	0.5-1.5	>6.0	---	---	None	---	None
		July	0.5-1.5	>6.0	---	---	None	---	None
		August	0.5-1.5	>6.0	---	---	None	---	None
		September	0.5-1.5	>6.0	---	---	None	---	None
		October	0.5-1.5	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
24:									
Pits	---	Jan-Dec	---	---	---	---	None	---	None
25:									
Placid	B/D	January	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		February	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		March	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		June	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		July	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		August	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
26:									
Pomello	C	July	2.5-3.5	>6.0	---	---	None	---	None
		August	2.5-3.5	>6.0	---	---	None	---	None
		September	2.5-3.5	>6.0	---	---	None	---	None
		October	2.5-3.5	>6.0	---	---	None	---	None
		November	2.5-3.5	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
27:									
Samsula	B/D	June	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		July	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		August	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-2.0	Very long	Frequent	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	*Ft*	*Ft*				
28:									
Seffner	C	June	1.5-3.5	>6.0	---	---	None	---	None
		July	1.5-3.5	>6.0	---	---	None	---	None
		August	1.5-3.5	>6.0	---	---	None	---	None
		September	1.5-3.5	>6.0	---	---	None	---	None
		October	1.5-3.5	>6.0	---	---	None	---	None
		November	1.5-3.5	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
29:									
Tavares	A	June	3.5-6.0	>6.0	---	---	None	---	None
		July	3.5-6.0	>6.0	---	---	None	---	None
		August	3.5-6.0	>6.0	---	---	None	---	None
		September	3.5-6.0	>6.0	---	---	None	---	None
		October	3.5-6.0	>6.0	---	---	None	---	None
		November	3.5-6.0	>6.0	---	---	None	---	None
		December	3.5-6.0	>6.0	---	---	None	---	None
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
30:									
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
31:									
Urban land	---	Jan-Dec	---	---	---	---	None	---	None
Wabasso	B/D	June	0.5-1.5	>6.0	---	---	None	---	None
		July	0.5-1.5	>6.0	---	---	None	---	None
		August	0.5-1.5	>6.0	---	---	None	---	None
		September	0.5-1.5	>6.0	---	---	None	---	None
		October	0.5-1.5	>6.0	---	---	None	---	None
32:									
Wulfert	D	Jan-Dec	0.0-0.5	>6.0	---	---	None	Very long	Very frequent

Table 18.--Classification of the Soils

Soil name	Family or higher taxonomic class
Adamsville	Hyperthermic, uncoated Aquic Quartzipsamments
Anclote	Sandy, siliceous, hyperthermic Typic Endoaquolls
Astatula	Hyperthermic, uncoated Typic Quartzipsamments
Basinger	Siliceous, hyperthermic Spodic Psammaquents
EauGallie	Sandy, siliceous, hyperthermic Alfic Alaquods
Felda	Loamy, siliceous, superactive, hyperthermic Arenic Endoaqualfs
Immokalee	Sandy, siliceous, hyperthermic Arenic Alaquods
Kesson	Siliceous, hyperthermic Typic Psammaquents
Manatee	Coarse-loamy, siliceous, superactive, hyperthermic Typic Argiaquolls
Matlacha	Sandy, siliceous, hyperthermic Alfic Udarents
Myakka	Sandy, siliceous, hyperthermic Aeric Alaquods
Okeechobee	Euic, hyperthermic Hemic Haplosaprists
Palm Beach	Hyperthermic, uncoated Typic Quartzipsamments
Paola	Hyperthermic, uncoated Spodic Quartzipsamments
Pineda	Loamy, siliceous, active, hyperthermic Arenic Glossaqualfs
Pinellas	Loamy, siliceous, superactive, hyperthermic Arenic Endoaqualfs
Placid	Sandy, siliceous, hyperthermic Typic Humaquepts
Pomello	Sandy, siliceous, hyperthermic Oxyaquic Alorthods
Samsula	Sandy or sandy-skeletal, siliceous, dysic, hyperthermic Terric Haplosaprists
Seffner	Sandy, siliceous, hyperthermic Aquic Humic Dystrudepts
St. Augustine	Sandy, siliceous, hyperthermic Aquic Udipsamments
St. Lucie	Hyperthermic, uncoated Typic Quartzipsamments
Tavares	Hyperthermic, uncoated Typic Quartzipsamments
Wabasso	Sandy, siliceous, active, hyperthermic Alfic Alaquods
Wulfert	Sandy or sandy-skeletal, siliceous, euic, hyperthermic Terric Sulfisaprists

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