



United States
Department of
Agriculture

In cooperation with
Illinois Agricultural Experiment Station

Natural
Resources
Conservation
Service

Soil Survey of St. Clair County, Illinois

Part II

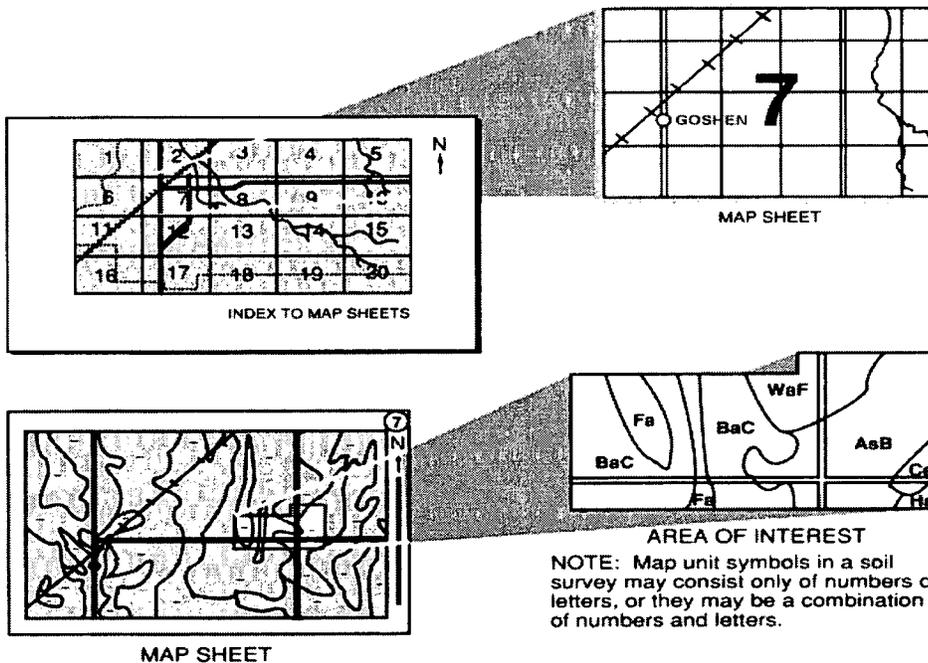


How To Use This Soil Survey

This survey is divided into three parts. Part I includes general information about the survey area, descriptions of the detailed soil map units and soil series in the area, and a description of how the soils formed. Part II describes the use and management of the soils and the major soil properties. This part may be updated as further information about soil management becomes available. Part III includes the maps.

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**, which precedes the soil maps. 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 **Index to Map Units**, which lists the map units by symbol and name and shows the page where each map unit is described.

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

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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 has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This survey was made cooperatively by the Natural Resources Conservation Service and the Illinois Agricultural Experiment Station. It is part of the technical assistance furnished to the St. Clair County Soil and Water Conservation District. Funding was provided by the St. Clair County Board and the Illinois Department of Agriculture.

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.

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Cover: A series of terraces conserve the soil on a hillside in St. Clair County.

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Foreword

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

This soil survey is designed for many different users. Farmers, 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.

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.

William J. Gradle
State Conservationist
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Soil Survey of St. Clair County, Illinois

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 erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

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

Interpretive ratings help engineers, planners, and others understand how soil properties influence important nonagricultural uses, such as building site development and construction materials. The ratings indicate the most restrictive soil features affecting the suitability of the soils for these uses.

Soils are rated in their natural state. No unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most of the limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

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 and 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.

The classification and extent of the soils in this survey area are shown in table 4—"Classification of the Soils" and table 5—"Acreage and Proportionate Extent of the Soils".

Agronomy

General management needed for crops and for hay and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider obtaining specific information from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

The soils in St. Clair County have good potential for continued crop production, especially if the latest crop production technology is applied. This soil survey can be used as a guide for applying the latest crop production technologies.

The demand for food and fiber has increased in recent years. As a result, some land of marginal quality has been used for crops. Much of this land is more susceptible to erosion than the more productive land. Also, the number of residential tracts has increased throughout the county. These tracts commonly are in areas of prime farmland. If these trends continue, they could result in a significant decline in the quality and quantity of the land used for food and fiber.

The major soil management concerns affecting cropland in the county are water erosion, excessive permeability, surface crusting, poor tilth, wetness, ponding, restricted permeability, and droughtiness.

Soil erosion is a potential problem on approximately 49 percent of the cropland. Erosion can be a problem on soils that have slopes of more than 2 percent, such as Blair, Bunkum, Redbud, and Wakenda soils.

Loss of the surface layer is damaging for several reasons. Soil productivity is reduced as the surface soil is removed and part of the subsoil is incorporated into the plow layer. The subsoil is generally lower in plant nutrients, lower in organic matter, and higher in clay content compared to the surface soil. As organic matter decreases and clay content increases in the plow layer, soil tilth deteriorates resulting in soil crusting and reduced water intake. Soil erosion results in the sedimentation of streams, rivers, road ditches, and lakes. Sediment pollution reduces water quality for agricultural, municipal, and recreational uses and for fish and wildlife. Removing the sediment generally is

expensive. Erosion control helps to minimize this pollution and improves water quality.

Erosion-control measures include both cultural and structural practices. The most widely used practice in the county is conservation tillage, such as mulch tillage and zero tillage. These systems can leave 30 to 90 percent of the surface covered with crop residue. Another cultural practice is a crop rotation that includes 1 or more years of close-growing grasses or legumes. If slopes are long and uniform, terraces and contour farming are also effective in controlling erosion.

Structural practices are needed in drainageways where concentrated runoff flows overland. Soil erosion can be controlled by establishing grassed waterways or constructing erosion-control structures.

Further information about erosion control measures suitable for each kind of soil is provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Soils with excessive permeability, such as Alvin and Rocher soils, have the potential for groundwater contamination. These soils contain sandy deposits within a depth of 40 inches and are very rapidly permeable in the lower part of the profile.

There are several measures to limit the amount of deep leaching of nutrients and pesticides that occurs. To begin, applications of fertilizer should be based on soil tests. The local office of the Cooperative Extension Service can help in determining the kinds and proper amounts of nutrients needed. Chemicals should be selected based on their solubility in water, their ability to bind with the soil, and the rate of their breakdown in the soil. Splitting chemical applications, particularly nitrogen, is beneficial. This practice reduces the chance for excessive leaching from a one time application. Another measure is planting legumes in a crop rotation or as a cover crop. This adds nitrogen to the soil thereby reducing the amount of nitrogen needed in chemical applications. The practice of crop rotation is also effective in limiting the build-up of weed and insect populations. This in turn reduces the amount of herbicides and insecticides needed per application. Finally the use of small grain cover crops following fertilized corn crops can be effective in taking up some residual nitrogen from the soil.

Drainage systems have been installed in most areas of poorly drained and somewhat poorly drained

soils used as cropland in the county. As a result, these soils are adequately drained for the crops commonly grown. Measures that maintain the drainage system are needed. Poorly drained soils, such as Cowden, Fosterburg, Mascoutah, and Virden soils, have subsurface drainage. In addition, some areas of poorly drained soils require surface tile inlets or shallow surface ditches to remove excess water. In some areas, somewhat poorly drained soils are wet long enough that in some years productivity is reduced unless they are artificially drained. Somewhat poorly drained soils, such as Bethalto, Edwardsville, Marine, and Oconee soils, have subsurface drainage.

Soil tilth is an important factor influencing the germination of seeds, the amount of runoff, and the rate of water infiltration. Soils that have good tilth are granular and porous and have a high organic matter content.

Surface crusting can be a problem in areas of Marine and Pierron soils, which have a surface layer of silt loam that is low in organic matter content. Generally, the structure of these soils is weak, and a crust forms on the surface during periods of intense rainfall. This crust is hard when dry. It inhibits seedling emergence, reduces the infiltration rate, and increases runoff and erosion. Regular additions of crop residue, manure, and other organic material improve soil structure and minimize crusting.

Poor tilth is also a problem on soils that have a surface layer of silty clay loam or silty clay. If poorly drained soils, such as Beaucoup and Darwin soils are plowed when wet, their surface layers become cloddy. The cloddiness hinders the preparation of a good seedbed. Tilling in the fall and leaving the soil surface rough with moderate amounts of crop residue generally result in good tilth in the spring. A system of strip or ridge tillage may also work well on these soils.

Restricted permeability can increase a soil's susceptibility to erosion. As water movement slows within a soil that chance for runoff increases. Slowly permeable Colp soils have a higher soil erodibility potential than moderately permeable Aviston soils. The effect restricted permeability has on the erosion hazard can be controlled by applying a cropping system that leaves crop residue on the surface after planting, incorporating green manure crops or crop residue into the soil, and using conservation cropping systems.

Restricted permeability can also limit the effectiveness of drainage systems. Slowly permeable Cowden soils require a narrower tile spacing than moderately permeable Mascoutah soils in order to be as effective in lowering the water table.

A low available water capacity limits the productivity of some soils used for crops in the county. The physical composition of these soils, such as Landes and Rocher soils, limits the amount of available water necessary for optimum plant growth. The effects of droughtiness in these soils can be minimized by reducing the amount of runoff and increasing the soils' water-holding

capacity. Using a conservation tillage system and returning crop residue and other organic material to the soil help to overcome droughtiness. Planting such crops as winter wheat can help to avoid the drought-prone season. Also, irrigation helps to overcome droughtiness.

Hay is a very important crop in the county for dairy and beef producers and for people who own small acreages and have horses for recreational purposes. The horse racing industry provides an additional market for hay. There are few permanent hay fields in the county, and a vast majority of producers rotate their hay seeding between 1 to several years of row crops, such as corn and soybeans.

Proper management is needed on hayland to prolong the life of desirable forage species, to maintain or improve the quality and quantity of forage, and to control erosion and reduce runoff. Hay may last as a vigorous crop for 4 or 5 years, depending on management and on the varieties seeded. Suitable hay plants include several legumes and cool-season grasses. Alfalfa is the most commonly grown legume for hay. It is often used in mixtures with smooth brome grass and orchardgrass. Alfalfa is best suited to well drained soils, such as Menfro and Wakenda soils. Red clover is also grown for hay. Measures that maintain or improve fertility are needed. The amount of lime and fertilizer to be added should be based on the results of soil tests, the needs of the plants, and the expected level of yields. Seed varieties should be selected in accordance with the soil properties and the drainage conditions of the tract of land.

Cropland Limitations and Hazards

The crop management concerns affecting the use of the detailed soil map units in the survey area for crops are shown in table 6—"Main Cropland Limitations and Hazards." The main concerns in managing cropland are controlling water erosion, soil wetness, and ponding; reducing surface crusting; improving poor tilth; and limiting the effects of excessive and restricted permeabilities and low available water capacity.

Generally, a combination of several practices is needed to control *water erosion*. Conservation tillage, strip cropping, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Wetness is a limitation in some cropland areas, and *ponding* is a hazard. Drainage systems consist of subsurface tile drains, surface inlet tile, open drainage ditches, or a combination of these. Measures that maintain the drainage system are needed.

Practices that reduce *surface crusting* and improve *poor tilth* include incorporating green manure crops, manure, or crop residue into the soil and using a

system of conservation tillage. Surface cloddiness can be controlled by avoiding tillage when the soil is too wet.

Excessive permeability. This limitation can cause deep leaching of nutrients and pesticides. Selecting appropriate chemicals and using split application methods reduce the hazard of groundwater contamination.

Restricted permeability. This limitation can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems.

Conserving moisture is needed where the soils have a *low available water capacity*. It primarily involves reducing the evaporation and runoff rates and increasing the water intake rate. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *flooding*, *depth to bedrock*, and *subsidence*.

Additional limitations and hazards are as follows:

Excessive lime—This limitation can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Also, crops may respond well to additions of phosphate fertilizer to soils that have a high content of lime.

Depth to bedrock—Rooting depth and available moisture may be limited by bedrock within a depth of 30 inches.

Flooding—Winter small grain crops can be damaged. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Gravelly—This limitation in the surface layer causes rapid wear of tillage equipment. It cannot be easily overcome.

Subsidence—It occurs as a result of shrinkage from drying, consolidation because of the loss of groundwater, compaction from tillage, wind erosion, burning, and biochemical oxidation. Limiting the amount of drainage, avoiding excessive tillage and tillage when the soil is wet, and using a system of conservation tillage that leaves crop residue on the surface after planting help to control subsidence.

Wind erosion—Using a system of conservation tillage that leaves crop residue on the surface after planting and keeping the surface rough help to control this hazard.

Following is an explanation of the criteria used to determine the limitations or hazards.

Crusting—The average organic matter content in the surface layer is less than 2.5 percent, and the clay content is greater than 20 percent.

Depth to bedrock—Bedrock is within a depth of 30 inches.

Excessive lime—The calcium carbonate equivalent is 15 percent or more and meets the calcic horizon classification criteria.

Excessive permeability—The upper limit of the permeability range is 6 inches or more within the soil profile.

Excessive sodium—The sodium adsorption ratio (SAR) is more than 12 between the depths of 0 to 30 inches.

Flooding—The component of the map unit is occasionally flooded or frequently flooded.

Gravelly—The percent gravel in the surface layer is greater than 15 percent.

High pH—The pH is more than 8.4 between the depths of 0 and 40 inches.

Low available water capacity—The weighted average of the available water capacity between the depths of 0 and 40 inches is 0.1 inches or less.

Low pH—The pH is less than 4.5 between the depths of 0 to 40 inches.

Ponding—A water table is above the surface.

Poor tilth—The component of the map unit has 27 percent or more clay in the surface layer.

Restricted permeability—Permeability is less than 0.2 inches per hour between the depths of 0 and 40 inches.

Subsidence—The decrease in surface elevation is more than 0 inches.

Water erosion—The surface K factor multiplied by the slope is greater than 0.8, and the slope is 3 percent or more.

Wetness—The component of the map unit has a water table within a depth of 1.5 feet.

Wind erosion—The wind erodibility group (WEG) is 1 or 2.

Crop Yield Estimates

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 7—“Land Capability and Yields per Acre of Crops and Pasture.” In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents (7, 10). Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, protection from flooding, the proper planting and seeding rates, suitable high-yielding crop varieties, appropriate and timely tillage, control of

weeds, plant diseases and harmful insects, favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium and trace elements for each crop, effective use of crop residue, barnyard manure and green manure crops, and harvesting that ensures the smallest possible loss.

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

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops

Pasture and Hayland Interpretations

Soils are assigned to pasture and hayland groups according to their suitability for the production of forage. The soils in each group are similar enough to be suited to the same species of grasses or legumes, have similar limitations and hazards, require similar management, and have similar productivity levels and other responses to management.

Under good management, proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

Yield estimates are often provided in animal unit months (AUM), or the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about forage yields other than those shown in table 7—"Land Capability and Yields per Acre of Crops and Pasture."

Pasture Limitations and Hazards

Growing legumes, cool season grasses and warm season grasses that are suited to the soils and the climate of the area helps to maintain a productive stand of pasture.

The management concerns affecting the use of the soils in the survey area for pasture are shown in table 8—"Main Pasture Limitations and Hazards." The major

management concerns affecting pasture are water erosion, soil fertility, low available water capacity, low pH, and equipment limitations.

Pastureland soils that are susceptible to water erosion meet the following criteria: The value of K factor multiplied by the slope is greater than 0.8 and the slope is equal to or greater than 3 percent.

Water erosion reduces the productivity of pastureland. It also results in onsite and offsite sedimentation, causes water pollution by sedimentation and increases the runoff of livestock manure and other added nutrients.

Measures that are effective in controlling water erosion include establishing or renovating stands of legumes and grasses. Controlling erosion during seedbed preparation is a major concern. If the soil is tilled for the reseeding of pasture or hay crops, planting winter cover crops, establishing grassed waterways, farming on the contour, and using a system of conservation tillage that leaves a protective cover of crop residue on the surface can help to minimize erosion.

Overgrazing or grazing when the soil is wet reduces the extent of plant cover and results in surface compaction and poor tilth, and thus it increases the susceptibility to erosion. Proper stocking rates, rotation grazing, and timely deferment of grazing, especially during wet periods, help to keep the pasture in good condition. The proper location of livestock watering facilities helps to prevent surface compaction or the formation of ruts by making it unnecessary for cattle to travel long distances up down the steep slopes.

Soils that have low fertility meet the following criteria: The average content of organic matter in the surface layer is less than 1 percent, and the cation exchange capacity is equal to or less than 7 milliequivalent per 100 grams of soil.

Low fertility levels affect the health and vigor of the plants and thus have direct impact on the quantity and quality of livestock produced. Additions of fertilizers and other organic material should be based on the results of soil tests, on the needs of specific plant species, and on the desired level of production.

Soils that have low pH, or low reaction, have a pH value equal to or less than 5.5 in the surface layer.

Low soil reaction inhibits the uptake of certain nutrients by the plants or accelerates the absorption of certain other elements to the level of toxic concentrations. Either of these conditions affects the health and vigor of plants. Applications of lime should be based on the results of soil tests. The goal is to achieve the optimum pH level for the uptake of the major nutrients by the specific grass, legume, or combination of grasses and legumes.

Available water capacity is low when it is a weighted average of less than 0.10 inch of water per inch of soil within a depth of 40 inches or when it is a weighted average of less than 3 inches in the root zone if the root zone is less than 40 inches thick. Available water

capacity refers to the capacity of soils to hold water available for use by most plants. The quality and quantity of the pasture may be reduced if the available water is inadequate for the maintenance of a healthy community of desired pasture species and thus the desired number of livestock. A poor quality pasture may increase the hazard of erosion and increase the runoff of pollutants. Planting drought-resistant species of grasses and legumes helps to establish a cover of vegetation. Irrigation may be needed.

In areas where slopes are 10 percent or more, the operation of farm equipment may be restricted.

In areas where the soils have more than 15 percent gravel in the surface layer, seedbed preparation and renovation practices may be hindered. The cobbles and stones can be removed or piled in a corner of the field.

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 take into account major and generally expensive landshaping 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 woodland, and for engineering purposes.

In the capability system, as described in "Land Capability Classification" (14), soils generally are grouped at three levels: capability class, subclass, and unit. These categories indicate the degree and kinds of limitations affecting mechanized farming systems that produce the more commonly grown field crops, such as corn, soybean, small grain, and hay. Only class and subclass are used in this survey.

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

If properly managed, soils in classes 1, 2, 3, and 4 are suitable for the mechanized production of commonly grown field crops and for pasture and woodland. The degree of the soil limitations affecting the production of cultivated crops increases progressively from class 1 to class 4. The limitations can affect levels of production and the risk of permanent soil deterioration caused by erosion and other factors.

Soils in classes 5, 6, and 7 are generally not suited to the mechanized production of commonly grown field

crops without special management, but they are suitable for plants that provide a permanent cover, such as grasses and trees. The severity of the soil limitations affecting crops increases progressively from class 5 to class 7. The local office of the Cooperative Extension Service or the Natural Resources Conservation Service can provide guidance on the use of these soils as cropland.

Areas in class 8 are generally not suitable for crops, pasture, or woodland without a level of management that is impractical. These areas may have potential for other uses, such as recreational facilities and wildlife habitat.

Capability subclasses identify the dominant kind of limitation in the class. They are designated by adding a capital 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 a 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.

There are no subclasses in class 1 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 mainly to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in table 7—"Land Capability and Yields per Acre of Crops and Pasture."

Prime Farmland

In this section, prime farmland is defined. The soils in the survey area that are considered prime farmland are listed in table 9—"Prime Farmland."

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. An adequate moisture supply and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources, and

farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They either are used for food and fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils commonly receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable, and the level of acidity or alkalinity and the content of salts and sodium are acceptable. The soils have few, if any, rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods, and they are not frequently flooded during the growing season or are protected from flooding. Slopes range mainly from 0 to 6 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland where these limitations are overcome by drainage measures, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information about the criteria for prime farmland can be obtained at the local office of the Natural Resources Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

About 192,168 acres, or nearly 45 percent of the survey area, would meet the criteria for prime farmland. Areas of this land are throughout the county.

The map units in the survey area that meet the criteria for prime farmland are listed in table 9—“Prime Farmland.” On some soils included in the table, measures that overcome limitations are needed. The need for these measures is indicated in parentheses after the map unit name. The location of each map unit is shown on the detailed soil maps. The soil qualities that affect use and management are described in the section “Soil Series and Detailed Soil Map Units.” This list does not constitute a recommendation for a particular land use.

Erosion Factors

Soil erodibility (K) and soil-loss tolerance (T) factors are used in an equation that predicts the amount of soil lost through water erosion in areas of cropland. The procedure for predicting soil loss is useful in guiding the selection of soil and water conservation practices.

Soil Erodibility (K) Factor

The soil erodibility factor (K) indicates the susceptibility of a soil to sheet and rill erosion by water. The soil properties that influence erodibility are those that affect the infiltration rate, the movement of water through the soil, and the water storage capacity of the soil and those that allow the soil to resist dispersion, splashing, abrasion, and the transporting forces of rainfall and runoff. The most important soil properties are the content of silt plus very fine sand, the content of sand coarser than very fine sand, the content of organic matter, soil structure, and permeability.

Fragment-Free Soil Erodibility (K_f) Factor

This is one of the factors used in the Revised Universal Soil Loss Equation. It shows the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Soil-Loss Tolerance (T) Factor

The soil-loss tolerance factor (T) is an estimate of the maximum annual rate of soil erosion that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons of soil loss per acre per year. Ratings of 1 to 5 are used, depending on soil properties and prior erosion. The criteria used in assigning a T factor to a soil include maintenance of an adequate rooting depth for crop production, potential reduction of crop yields, maintenance of water-control structures affected by sedimentation, prevention of gullyng, and the value of nutrients lost through erosion.

Wind Erodibility Groups

Wind erodibility is directly related to the percentage of dry, nonerodible surface soil aggregates larger than 0.84 millimeter in diameter. From this percentage, the wind erodibility index factor (I) is determined. This factor is an expression of the stability of the soil aggregates, or the extent to which they are broken down by tillage and the abrasion caused by windblown soil particles. Soils are assigned to wind erodibility groups (WEG) having similar percentages of dry soil aggregates larger than 0.84 millimeter.

Additional information about wind erodibility groups and K, K_f, T, and I factors can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service.

Hydric Soils

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

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetlands (3, 4, 9, 12). 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 (5). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

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 which identify those estimated soil properties unique to hydric soils have been established (6). 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" (15, 16) and in the "Soil Survey Manual" (11).

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 that can be used to make onsite determinations of hydric soils in St. Clair County are specified in "Field Indicators of Hydric Soils in the United States" (13).

Hydric soils are identified by examining and describing the soil 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 as deep as necessary for an understand of to understand the redoximorphic processes. Then, using the completed soil description, 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 one (or more) of the approved indicators is present.

This survey can be used to locate probable areas of hydric soils.

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 (9, 13).

- 31A—Pierron silt loam, 0 to 2 percent slopes
- 50A—Virden silt loam, 0 to 2 percent slopes
- 109A—Raccoon silt loam, 0 to 2 percent slopes
- 112A—Cowden silt loam, 0 to 2 percent slopes
- 385A—Mascoutah silty clay loam, 0 to 2 percent slopes
- 433A—Floraville silt loam, 0 to 2 percent slopes
- 468A—Lakaskia silt loam, 0 to 2 percent slopes
- 885A—Virden-Fosterburg silt loams, 0 to 2 percent slopes
- 993A—Cowden-Piasa silt loams, 0 to 2 percent slopes
- 1071A—Darwin silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded
- 1248A—McFain silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded
- 1288A—Petrolia silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded
- 2071L—Darwin-Urban Land complex, 0 to 2 percent slopes, occasionally flooded, long duration
- 3070L—Beaucoup silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration
- 3076A—Otter silt loam, 0 to 2 percent slopes, frequently flooded
- 3083L—Wabash silty clay, 0 to 2 percent slopes, frequently flooded, long duration
- 3288L—Petrolia silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration
- 3334L—Birds silt loam, 0 to 2 percent slopes, frequently flooded, long duration
- 3847L—Fluvaquents-Orthents complex, frequently flooded, long duration
- 8026A—Wagner silt loam, 0 to 2 percent slopes, occasionally flooded
- 8070A—Beaucoup silty clay loam, 0 to 2 percent slopes, occasionally flooded
- 8071L—Darwin silty clay, 0 to 2 percent slopes, occasionally flooded, long duration
- 8084A—Okaw silt loam, 0 to 2 percent slopes, occasionally flooded
- 8109A—Raccoon silt loam, 0 to 2 percent slopes, occasionally flooded
- 8162A—Gorham silty clay loam, 0 to 2 percent slopes, occasionally flooded
- 8464A—Fluvaquents, loamy, 0 to 2 percent slopes, frequently flooded
- 8524L—Zipp silty clay, 0 to 2 percent slopes, occasionally flooded, long duration
- 8591A—Fults silty clay, 0 to 2 percent slopes, occasionally flooded

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

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not originally support trees. Knowledge of how trees perform on such land can be gained only by observing and recording the performance of trees that have been planted and have survived. Many popular windbreak species are not indigenous to the areas in which they are planted.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters, a tree or shrub may grow well or grow poorly, depending on the characteristics of the soil. Each tree or shrub has definable potential heights in a given physiographic area and under a given climate. Accurate definitions of potential heights are necessary when a windbreak is planned and designed.

Table 10—"Windbreaks and Environmental Plantings" shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in this table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service or from a nursery.

Forestland

Hardwood forests originally covered about 295,000 acres of St. Clair county. There now is less than 20,000 acres of forestland left. Settlers cleared some of the forests for farms, homesteads, and fuel. An increase in population and new farming technology during the latter part of the 19th century resulted in a large decline in the acreage of forestland. The demand for agricultural production during the 20th century and urban expansion have accelerated this decline. Much of the remaining forestland is in areas that are too steep or too wet for cultivation. The soils in these areas have fair to good potential for trees of high quality if the forestland is properly managed.

Many of the stands can be improved by measures that thin out mature trees and remove undesirable species. Measures that exclude livestock, prevent fires, and control diseases and insects are also needed.

Assistance in establishing, improving or managing forestland is available from foresters or natural resources specialists.

Forestland Management and Productivity

Information about the productivity and management of the forested map units in the survey area is given in table 11—"Forestland Management and Productivity." Table 11 can be used by forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed.

Woodland Ordination System

Table 11—"Forestland Management and Productivity" lists the ordination (woodland suitability) symbol for each soil. The ordination system is a nationwide uniform system of labeling soils or groups of soils that are similar in use and management. The primary factors evaluated in the woodland ordination system are productivity of the forest overstory tree species and the principal soil properties resulting in hazards and limitations that affect forest management. There are three parts of the ordination system: class,

subclass, and group. The class and subclass are referred to as the ordination symbol.

Ordination Class Symbol

The first element of the ordination symbol is a number that denotes potential productivity in terms of cubic meters of wood per hectare per year for the indicator tree species. The larger the number, the greater the potential productivity. Potential productivity is based on site index and the corresponding culmination of mean annual increment. For example, the number 1 indicates a potential production of 1 cubic meter of wood per hectare per year (14.3 cubic feet per acre per year) and 10 indicates a potential production of 10 cubic meters of wood per hectare per year (143 cubic feet per acre per year).

Indicator species is a species that is common in the area and is generally, but not necessarily, the most productive on the soil. It is the species that determines the ordination class. It is the first species listed for a particular map unit in table 11—"Forestland Management and Productivity." This table shows the productivity for all species where data have been collected.

Site index is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The site indexes shown in the table 11 are averages based on measurements made at sites that are representative of the soil series. When the site index and forestland productivity of different soils are compared, the values for the same tree species should be compared. The higher the site index number, the more productive the soil for that species. Site index values are used in conjunction with yield tables to determine average annual yields. Indirectly, they are used to determine the productivity class in the ordination class symbol.

Ordination Subclass Symbol

The second element of the ordination symbol, or subclass, is a capital letter that indicates certain soil or physiographic characteristics that contribute to

important hazards or limitations to be considered in management. The subclasses are defined as follows:

Subclass X indicates that forestland use and management are limited by stones or rocks.

Subclass W indicates that forestland use and management are significantly limited by excess water, either seasonally or throughout the year. Restricted drainage, a high water table, or flooding can adversely affect either stand development or management.

Subclass T indicates that the root zone has toxic substances. Excessive alkalinity, acidity, sodium salts, or other toxic substances impede the development of desirable species.

Subclass D indicates that forestland use and management are limited by a restricted rooting depth. The rooting depth is restricted by hard bedrock, a hardpan, or other restrictive layers in the soil.

Subclass C indicates that forestland use and management are limited by the kind or amount of clay in the upper part of the soil.

Subclass S indicates that the soil is sandy, has a low available water capacity, and normally has a low content of available plant nutrients. The use of equipment is limited during dry periods.

Subclass F indicates that forestland use and management are limited by a high content of rock fragments that are larger than 2 millimeters and smaller than 10 inches. This subclass includes flaggy soils.

Subclass R indicates that forestland use and management are limited by excessive slope.

Subclass A indicates that no significant limitations affect forestland use and management.

Management Concerns

In table 11 the soils are rated for the erosion hazard, the equipment limitation, seedling mortality, the windthrow hazard, and plant competition.

The *erosion hazard* is *slight* if the expected soil loss is small; *moderate* if some measures are needed to control erosion during logging and road construction; and *severe* if intensive management or special equipment and methods are needed to prevent excessive soil loss.

The *equipment limitation* is *slight* if the use of equipment is not limited to a particular kind of

equipment or time of year; *moderate* if there is a short seasonal limitation or a need for some modification in the management of equipment; and *severe* if there is a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings are for seedlings that are from a good planting stock and that are properly planted during a period of average rainfall. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Windthrow hazard is *slight* if trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate* if some trees are blown down during periods of excessive soil wetness and strong winds; and *severe* if many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

Plant competition is *slight* if there is little or no competition from other plants; *moderate* if plant competition is expected to hinder the development of a fully stocked stand of desirable trees; and *severe* if plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed for the control of undesirable plants.

Potential Productivity

The potential productivity of merchantable or *common trees* is expressed as a site index, which is described under the heading "Potential productivity." Commonly grown trees are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The productivity class, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The column "*Suggested trees to plant*" is in table 11 lists trees that are suitable for commercial wood production and that are suited to the soils.

Recreation

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

Camp areas are tracts of land used intensively as sites for tents, trailers, and campers and for outdoor activities that accompany such sites. These 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 soils are rated on the basis of soil properties that influence the ease of developing camp areas and performance of the areas after development. Also considered are the soil properties that influence trafficability and promote the growth of vegetation after heavy use.

Picnic areas are natural or landscaped tracts of land that are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The soils are rated on the basis of soil properties that influence the cost of shaping the site, trafficability, and the growth of vegetation after development. The surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry.

Playgrounds are areas used intensively for baseball, football, soccer, or similar activities. These areas require a nearly level soil that is free of stones and that can withstand heavy foot traffic and maintain an adequate cover of vegetation. The soils are rated on the basis of soil properties that influence the cost of shaping the site, trafficability, and the growth of vegetation. Slope and stoniness are the main concerns

in developing playgrounds. The surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry.

Paths and trails are areas used for hiking and horseback riding. The areas should require little or no cutting and filling during site preparation. The soils are rated on the basis of soil properties that influence trafficability and erodibility. Paths and trails should remain firm under foot traffic and not be dusty when dry.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

The interpretative ratings in this table help engineers, planners, and others to understand how soil properties influence recreational uses. Ratings for proposed uses are given in terms of limitations. Only the most restrictive features are listed. Other features may limit a specific recreational use.

The degree of soil limitation is expressed as slight, moderate, or severe.

Slight means that soil properties are favorable for the rated use. The limitations are minor and can be easily overcome. Good performance and low maintenance are expected.

Moderate means that soil properties are moderately favorable for the rated use. The limitations can be overcome or modified by special planning, design, or maintenance. During some part of the year, the expected performance may be less desirable than that of soils rated *slight*.

Severe means that soil properties are unfavorable for the rated use. Examples of limitations are slope, bedrock near the surface, flooding, and a seasonal high water table. These limitations generally require major soil reclamation, special design, or intensive maintenance. Overcoming the limitations generally is difficult and costly.

The information in table 12 can be supplemented by other information in this survey, for example, interpretations for dwellings without basements and for local roads and streets in table 14, and interpretations for septic tank absorption fields in table 15.

Wildlife Habitat

In general, most lands in St. Clair County are not managed primarily for wildlife. Good land management practices, however, often improve an area's value for wildlife as well. For example, farm practices that leave crop residue on the fields during the fall and winter months not only help to control erosion but also provide winter cover and food for some wildlife species. Allowing grassed waterways, road ditches, fencelines, set-aside fields, and vacant properties to remain unmowed until early August provides much-needed habitat for ground-nesting wildlife, such as rabbits, pheasants, and many species of songbirds.

Many temporarily and seasonally flooded wetlands have been impacted by our land use practices. Development and cultivation in these wetlands should be avoided. Buffer strips surrounding wetland areas provide food and nesting cover for many wildlife species and prevent these areas from filling in with eroded sediment. Wetlands, streambanks, and woodlots should be fenced so that livestock are excluded. Fencing protects and maintains the native plant communities that support wildlife species, helps to control erosion, and improves water quality in our streams and rivers.

Soils affect the kind and amount of vegetation in an area and thus affect the kind and abundance of wildlife species that are likely to inhabit that area. When an area is being restored or managed for wildlife habitat, knowledge of the soils on the site is important. For example, poorly drained and very poorly drained soils have seasonal high water tables that are most likely to support vegetation tolerant of wet conditions. This kind of vegetation is likely to attract wetland wildlife species. Also in areas, poorly drained and very poorly drained soils have been drained by subsurface tile drains or drainage ditches. Such areas offer opportunities for the restoration of wetland habitat, provided that negative impacts on neighboring properties can be avoided.

Upland soils support plant communities that were once dominated by prairie grass and oak savannah habitats. These habitats can also be restored by applying management practices that promote or reestablish the native plant species while controlling or eliminating competing exotic vegetation.

Assistance with wildlife habitat projects is available from various local, State, and Federal agencies, including the Illinois Department of Conservation, the

U.S. Fish and Wildlife Service, the Natural Resources Conservation Service, and the local Soil and Water Conservation District.

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. If food, cover, or water is missing, inadequate, or inaccessible, wildlife will be scarce or will not inhabit the area.

If the soils have potential for habitat development, wildlife habitat can be created or improved by planting appropriate vegetation, properly managing the existing plant cover, and fostering the natural establishment of desirable plants.

Elements of Wildlife Habitat

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

In table 13, 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.

Grain and seed crops are domestic grains, and seed-producing herbaceous plants used by wildlife. Examples are wheat, rye, oats, and barley.

Grasses and legumes are domestic perennial grasses, and herbaceous legumes planted for wildlife food and cover. Examples are brome grass, timothy, orchardgrass, clover, alfalfa, and trefoil.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Examples are bluestem, indiagrass, blueberry, goldenrod, lambsquarters, dandelions, blackberry, ragweed, wheatgrass, and nightshade.

The major soil properties affecting the growth of grain and forage crops, and wild herbaceous plants are depth of the root zone, texture of the surface layer, the amount of water available to plants, wetness, salinity or sodicity, and flooding. The length of the growing season also is important.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage that wildlife eat. Examples are oak, poplar, boxelder, birch, maple, green ash, willow, and American elm. Examples of fruit-producing shrubs that are suitable for planting on soils that have good potential for these plants are hawthorn, honeysuckle, American plum, redosier dogwood, chokecherry, serviceberry, silver buffaloberry, and crabapple.

Coniferous plants are cone-bearing trees, shrubs, or ground cover that provide habitat or supply food in the form of browse, seed, or fruitlike cones. Examples are pine, spruce, hemlock, fir, yew, cedar, larch, and juniper.

The major soil properties affecting the growth of hardwood and coniferous trees, and shrubs are depth of root zone, the amount of water available to plants, and wetness.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded.

Wetland plants produce food or cover for wetland wildlife. Examples of these plants are smartweed, wild millet, rushes, sedges, bulrushes, wild rice, arrowhead, waterplantain, pickerelweed, and cattail.

The major soil properties affecting wetland plants are texture of the surface layer, wetness, acidity or alkalinity, and slope.

Shallow water areas have an average depth of less than 5 feet. They are useful as habitat for some wildlife species. They are naturally wet areas or are created by dams, levees, or water-control measures in marshes or streams. Examples are muskrat marshes, waterfowl feeding areas, wildlife watering developments, beaver ponds, and other wildlife ponds.

The major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability.

Kinds of Wildlife Habitat

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, and shrubs. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include Hungarian partridge, pheasant, meadowlark, field sparrow, killdeer, cottontail rabbit, and red fox.

Habitat for forestland wildlife consists of areas of hardwoods or conifers or a mixture of these and associated grasses, legumes, and wild herbaceous plants. The wildlife attracted to this habitat include wild turkey, thrushes, woodpeckers, owls, tree squirrels, porcupine, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy, shallow water areas that support water-tolerant plants. The wildlife attracted to this habitat include ducks, geese, herons, bitterns, rails, kingfishers, muskrat, otter, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. 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 estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations 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 grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground

cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, 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

Over the last two decades, St. Clair County has experienced a significant increase in population. This increase has had an important impact on land use.

Even though agricultural erosion accounts for most of the total eroded sediment because of the large acreage of farmland, urban erosion is quickly becoming a major factor affecting water quality. It is estimated that the rate of urban erosion and the resulting sediment may be as much as 300 to 400 times the erosion rate in agricultural areas. Urban land under development is commonly stripped for several years without adequate erosion control. Soil compaction and massive earth moving are more conducive to erosion than seedbed preparation for crop production.

Urban erosion-control practices utilize essentially the same concepts as those applied to agriculture. The soil surface should be protected from the impact of rain drops, and the runoff from accumulated rainwater must be controlled. Effective control of erosion and sediment involves three major elements. First, stabilizing the soil can be accomplished by maintaining a permanent or temporary vegetative cover, mulching, or using a variety of other practices. Second, conservation practices can be used to control runoff. These practices include installing diversions, grassed waterways or lined swales, storm sewers, or gully-control structures.

Third, sediment can be controlled by using sediment basins, sediment traps, or filter fences.

Erosion-control measures are effective alone or in combinations. The measures used and their effectiveness depend on the soil characteristics and topography. Information about the design of erosion-control measures is provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Table 14—"Building Site Development" shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

The limitations are considered: *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills generally are

limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, potential for frost action, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Methods of waste disposal have gradually evolved with changes in technology and with the increasing growth of St. Clair County. Electrification and the subsequent ability to easily bring water supplies into homes increased the need for disposal of expanding waste-water volumes. The population boom experienced in the county since the 1940's and changing lifestyles further expanded waste-water volumes. Onsite waste-water disposal methods became more complex as the population increased. Problems occurred when improper sites were used for disposal of waste-water. These problems, which created threats to the health and well-being of citizens, prompted a need for more control over the type, size, and location of waste-water disposal systems.

The method used for locating suitable septic field sites changed from percolation tests to a more scientific "soil suitability" test in the late 1980's. Professional soil scientists began investigating proposed septic system sites to determine the potential of the soils for both disposing of and treating waste-water. Another significant change involved the method of platting lots and subdivisions. Previously, subdivisions were platted with little or no regard to soil or site conditions. As a result, many septic systems were installed on sites that could not adequately treat or dispose of waste-water. Now the soils in potential subdivision sites are intensively mapped prior to the actual platting of lots. This procedure allows for each lot to have enough suitable soil for both a primary and backup septic field area and should prevent many of the problems older subdivision areas have experienced.

The waste-water disposal systems designed during and after the late 1980's are expected to last for long periods of time with proper maintenance. These larger, more sophisticated systems are being installed in many areas where it is unlikely that public sewer systems will ever become available to many rural subdivisions in the future.

Future plans include the provisions for a waste-water disposal plan for the county. This plan will detail how the county will handle individual waste-water disposal systems. It will also address the management and maintenance of traditional and innovative onsite systems. Proper planning will help to assure the protection of the public's health and the preservation and improvement of surface-water and ground-water quality.

Table 15—"Sanitary Facilities" shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. It also shows the suitability of the soils for use as a daily cover for landfill.

Soil properties are important in selecting sites for sanitary facilities and in identifying limiting soil properties and site features to be considered in planning, design, and installation. Soil limitation ratings of *slight*, *moderate*, or *severe* are given for septic tank absorption fields, sewage lagoons, and trench and area sanitary landfills. Soil suitability ratings of *good*, *fair*, and *poor* are given for daily cover for landfill.

A rating of *slight* or *good* indicates that the soils have no limitations or that the limitations can be easily overcome. Good performance and low maintenance can be expected. A rating of *moderate* or *fair* indicates that the limitations should be recognized but generally can be overcome by good management or special design. A rating of *severe* or *poor* indicates that overcoming the limitations is difficult or impractical. Increased maintenance may be required.

Septic tank absorption fields are areas in which subsurface systems of tile or perforated pipe distribute effluent from a septic tank into the natural soil. The centerline of the tile is assumed to be at a depth of 24 inches. Only the part of the soil between depths of 24 and 60 inches is considered in making the ratings. The soil properties and site features considered are those that affect the absorption of the effluent, those that affect the construction and maintenance of the system, and those that may affect public health.

The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured

bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Individuals need to contact the St. Clair County Health Department for procedures and local septic codes to determine site feasibility for septic tank absorption fields.

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, relatively impervious soil material. Aerobic lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Relatively impervious soil material for the lagoon floor and sides is desirable to minimize seepage and contamination of local ground water.

Table 15—"Sanitary Facilities" gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Trench sanitary landfill is an area where solid waste is disposed of by placing refuse in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil that is excavated from the trench. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. Soil properties that influence the risk of pollution, the ease of excavation, trafficability, and revegetation are the major considerations in rating the soils.

Area sanitary landfill is an area where solid waste is disposed of by placing refuse in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil that is imported from a source away from the site. A final cover of soil at least 2 feet thick is placed over the completed landfill. Soil properties that influence trafficability, revegetation, and the risk of pollution are

the main considerations in rating the soils for area sanitary landfills.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. The ratings in table 14 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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 suitability of a soil for use as cover is based on properties that affect workability and the ease of digging, moving, and spreading the material over the refuse daily during both wet and dry periods.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best daily cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

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 final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Waste Management

Soil properties are important when organic waste is applied as fertilizer and waste-water is applied in irrigated areas. They also are important when the soil is used as a medium for the treatment and disposal of the organic waste and waste-water. Unfavorable soil properties can result in environmental damage.

The use of organic waste and waste-water as production resources results in the conservation of energy and resources and minimizes the problems associated with waste disposal. If disposal is the goal, applying a maximum amount of the organic waste or the waste-water to a minimal area holds costs to a minimum and environmental damage is the main hazard. If reuse is the goal, a minimum amount should

be applied to a maximum area and environmental damage is unlikely.

Interpretations developed for waste management may include ratings for manure- and food-processing waste, municipal sewage sludge, use of waste-water for irrigation, and treatment of waste-water by slow rate, overland flow, and rapid infiltration processes.

Specific information regarding waste management is available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Construction Materials

Table 16—"Construction Materials" gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In table 16 the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel, or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have one or more of the following characteristics: a plasticity index of more than 10, a high shrink-swell potential, many stones, slopes of more than 25 percent, or a water table at a depth of less than 1 foot. They may have layers of

suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 15 only the probability of finding material in suitable quantity in or below the soil is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that has up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils generally is preferred for topsoil because of its organic matter content.

Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 17 "Water Management" 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 limitations are considered *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In the table "Water Management," 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 more 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.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding,

available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff.

Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of soil blowing, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features listed in tables are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 18—"Engineering Index Properties" gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given in the series descriptions in Part I of this survey.

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 (fig. 5). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier

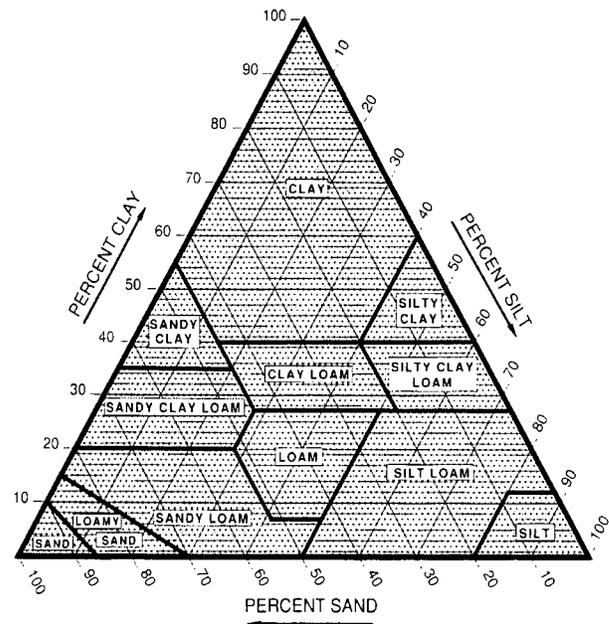


Figure 5.— Percentages of clay, silt, and sand in the basic USDA soil textural classes.

is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the system adopted by the American Association of State Highway and Transportation Officials (1) and the Unified soil classification system (2).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

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 oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are 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 omitted in the table.

Physical and Chemical Properties

The tables 19 — “Physical Properties of the Soils” and 20 — “Chemical Properties of the Soils” show estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given in the series descriptions in Part I of this survey.

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

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In the table “Physical Properties of the Soils,” the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems 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 major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For

others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table "Physical Properties of Soils," 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 or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, very fine sand, sand, and organic matter (as much as 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion.

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 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 resistance to soil blowing in cultivated areas. The groups indicate the susceptibility of soil to soil blowing. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils generally are not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are

highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams that have more than 5 percent finely divided calcium carbonate. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control soil blowing are used.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils have less than 5 percent finely divided calcium carbonate. These soils are moderately erodible. Crops can be grown if measures to control soil blowing are used.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils have less than 5 percent finely divided calcium carbonate. These soils are moderately erodible. Crops can be grown if ordinary measures to control soil blowing are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils have less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.

8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

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

Cation-exchange capacity is 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. 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. Soils having a high cation-exchange capacity can retain cations. The ability to retain cations helps to prevent the pollution of ground water.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for

fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the soil. 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.

Sodium adsorption ratio (SAR) expresses the relative activity of sodium ions in exchange reactions in the soil. SAR is a measure of the amount of sodium relative to calcium and magnesium in the water extract from saturated soil paste.

Water Features

Table 21—"Water Features" gives estimates of several important water features used in land use planning that involves engineering considerations. These features are described in the following paragraphs.

Hydrologic soil groups are groups of soils that, when saturated, have the same runoff potential under similar storm and ground cover conditions. The soil properties that affect the runoff potential are those that influence the minimum rate of infiltration in a bare soil after prolonged wetting and when the soil is not frozen. These properties include the depth to a seasonal high water table, the intake rate, permeability after prolonged wetting, and the depth to a very slowly permeable layer. The influences of ground cover and slope are treated independently and are not taken into account in hydrologic soil groups.

In the definitions of the hydrologic soil groups, the infiltration rate is the rate at which water enters the soil at the surface and is controlled by surface conditions. The transmission rate is the rate at which water moves through the soil and is controlled by properties of the soil layers.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of very 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 or well drained soils that have a moderately fine 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 that have a moderately fine 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 clayey soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in table 21, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflow from streams or by runoff from adjacent slopes. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in marshes and swamps or in closed depressions is considered to be ponding.

Table 21 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur. Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as none, rare, occasional, or frequent. *None* means flooding is not probable; *rare* that it is unlikely but is possible under unusual weather conditions (the chance of flooding is nearly 0 percent 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); and *frequent* that it occurs often under normal weather conditions (the chance of flooding is 50 percent in any year). The term *common* includes both frequent and occasional flooding.

Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 to 30 days), and *very long* (more than 30 days). The time of year that flooding is most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding 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 level of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is a zone of saturation at the highest average depth during the wettest season. It is at least 6 inches thick, persists in the soil for more than a few weeks, and is within 6 feet of the surface. Indicated in table 19 are the depth to the seasonal high water table, the kind of water table, and the months of the year when the water table usually is highest.



Figure 6.—Long duration ponding on Darwin silty clay, near East St. Louis. The farmstead is on a natural levee, Landes very fine sandy loam, 2 to 5 percent slopes, occasionally flooded.

An *apparent* water table is indicated by the level at which water stands in a freshly dug, unlined borehole after adequate time for adjustments in the surrounding soil.

A *perched* water table is one that is above an unsaturated zone in the soil. The basis for determining that a water table is perched may be general knowledge of the area. The water table is proven to be perched if the water level in a borehole is observed to fall when the borehole is extended.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation (*fig. 6*).

Soil Features

Table 22—"Soil Features" gives estimates of several important soil features used in land use planning that involves engineering considerations. These features are described in the following paragraphs.

Depth to bedrock is given if bedrock is within a depth of 80 inches. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It

is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are 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 mainly to pavements and other rigid structures.

A *low* potential for frost action indicates that the soil is rarely susceptible to the formation of ice lenses; a *moderate* potential indicates that the soil is susceptible to formation of ice lenses, resulting in frost heave and the subsequent loss of soil strength; and a *high* potential indicates that the soil is highly susceptible to formation of ice lenses, resulting in frost heave and the subsequent loss of soil strength.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves 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 in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel 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 is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

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Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

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.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

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.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

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

Back slope. The geomorphic component that forms the steepest inclined surface and principalelement of many hill slopes. Back slopes in profile are commonly steep and linear and descend to a foot slope. In terms of gradational process, back

slopes are erosional forms produced mainly by mass wasting and running water.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

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

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bluff. A high bank or bold headland, with a broad, precipitous, sometimes rounded cliff face overlooking a plain or body of water, especially on the outside of a stream meander.

Bottom land. The normal flood plain of a stream, subject to flooding.

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

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

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.

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.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

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.

Clayey soil. Silty clay, sandy clay, or clay.

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.

Closed depression. A low area completely surrounded by higher ground and having no natural outlet.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

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.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

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. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

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 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. Any tillage and planting system in which a cover of crop residue is maintained on at least 30 percent of the soil surface after planting in order to reduce the hazard of water erosion; in areas where soil blowing is the primary concern, a system that maintains a cover of at least 1,000 pounds of flat residue of small grain or the equivalent during the critical erosion period.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping (or contour farming).

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

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.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

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

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

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.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deep soil. A soil that is 40 to 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Deferred grazing. Postponing grazing or arresting grazing for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

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

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—These soils have very high and high hydraulic conductivity and a low water-holding capacity. They are not suited to crop production unless irrigated.

Somewhat excessively drained.—These soils have high hydraulic conductivity and a low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.

Well drained.—These soils have an intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.

Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless a drainage system is installed. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.

Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless a drainage system is installed. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.

Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.

Very poorly drained.—These soils are wet to the surface most of the time. The wetness prevents the growth of important crops (except rice) unless a drainage system is installed.

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

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or

lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

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.

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.

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, for example, fire, that exposes the surface.

Escarment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. The term is more often applied to cliffs resulting from differential erosion.

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

Fast intake (in tables). The rapid movement of water into the soil.

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

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry 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*.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

- Flat.** The low-lying, exposed, flat land of a lake delta or of a lake bottom.
- Flood plain.** A nearly level alluvial plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of the stream.
- Foot slope.** The geomorphic component that forms the inner, gently inclined surface at the base of a hill slope. The surface profile is dominantly concave. In terms of gradational processes, a foot slope is a transition zone between an upslope site of erosion (back slope) and a downslope site of deposition (toe slope).
- Forb.** Any herbaceous plant not a grass or a sedge.
- Frost action** (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.
- Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Glacial drift** (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.
- Glacial outwash** (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.
- Glacial till** (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.
- Glaciated uplands.** Land areas that were previously covered by continental or alpine glaciers and that are at a higher elevation than the flood plain.
- Glaciofluvial deposits** (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.
- Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.
- Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.
- 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 is 15 to 50 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** (geology). Water filling all the unblocked pores of underlying material below the water table.
- Gully.** A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage. A gullied map unit is one that has numerous gullies.
- Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- 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.
- 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. 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, the number 2 precedes the letter C.

Cr horizon.—Sedimentary beds of consolidated sandstone and semiconsolidated and consolidated shale. Generally, roots can penetrate this horizon only along fracture planes.

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

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

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

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

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

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

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	Very low
0.2 to 0.4	Low
0.4 to 0.75	Moderately low
0.75 to 1.25	Moderate
1.25 to 1.75	Moderately high
1.75 to 2.5	High
More than 2.5	Very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent ralleys containing streams flowing in the same general direction. 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.

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:
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.

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

Kame. A moundlike hill of glacial drift, composed chiefly of stratified sand and gravel.

Kame terrace. A terracelike ridge consisting of stratified sand and gravel that were deposited by a meltwater stream flowing between a melting glacier and a higher valley wall or lateral moraine and that remained after the disappearance of the ice. It is commonly pitted with kettles and has an irregular ice-contact slope.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A surface marking the floor of an extinct lake, filled in by well sorted, stratified sediments.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lake shore in front of a scarp line of low cliffs and later exposed when the water level falls.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy soil. Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Major land resource areas (MLRA). Major land resource areas (MLRA's) are geographically associated land resource areas. These are designated by Arabic numbers and identified by a descriptive geographic name.

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 carbonates, gypsum or other soluble salts, iron oxide, and manganese oxide.

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 deep soil. A soil that is 20 to 40 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Moraine. An accumulation of glacial drift in a topographic landform of its own, resulting chiefly from the direct action of glacial ice. Some types are lateral, recessional, and terminal.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, 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.

Natural levee. A long, broad low ridge or embankment of sand and coarse silt, built by a stream on its flood plain and along both sides of its channel,

especially in time of flood when water overflowing the normal banks is forced to deposit the coarsest part of its load. It has a gentle slope away from the river and toward the surrounding floodplain, and its highest elevation is closest to the river bank.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash plain. An extensive area of glaciofluvial material that was deposited by meltwater streams.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile.

Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	Less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate.....	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid.....	More than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

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

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of

moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

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.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid.....	Below 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

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.

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.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and

not wide enough to be an obstacle to farm machinery.

Ridge. A long, narrow elevation of the land surface, usually sharp crested with steep sides and forming an extended upland between valleys.

Riser. The vertical or steeply sloping surface, commonly one of a series, of natural steplike landforms, as those of a glacial stairway or of successive stream terraces.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy soil. Sand or loamy sand.

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.

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.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

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 or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

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

Shallow soil. A soil that is 10 to 20 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder slope. The uppermost inclined surface at the top of a hillside. It is the transition zone from the back slope to the summit of a hill or mountain. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side Slope. The slope bounding a drainageway and lying between the drainageway and the adjacent interfluvium. It is generally linear along the slope width and overland flow is parallel down the slope.

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.

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.

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 or 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 the following simple slope classes are recognized:

Nearly level.....	0 to 2 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 10 percent
Strongly sloping.....	10 to 18 percent
Steep.....	18 to 35 percent
Very steep	35 to 70 percent

The following complex slope classes are recognized:

Undulating	1 to 8 percent
Rolling	4 to 16 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

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 quality. Soil quality is the fitness of a specific kind of soil to function within its surroundings, support plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

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 underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 6 to 15 inches (15 to 38 centimeters) in length if flat.

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

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

Strippcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing 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 grain* (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 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 or loosen a layer that is restrictive to roots.
- Substratum.** The part of the soil below the solum.
- Subsurface layer.** Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.
- Summit.** A general term for the top, or highest level, of an upland feature, such as a hill or mountain. It commonly refers to a higher area that has a gentle slope and is flanked by steeper slopes.
- Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."
- Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.
- Terminal moraine.** A belt of thick glacial drift that generally marks the termination of important glacial advances. It commonly is a massive arcuate ridge or complex of ridges underlain by till and other types of drift.
- 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 is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.
- Terrace** (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.
- Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."
- Thin layer** (in tables). Otherwise suitable soil material too thin for the specified use.
- Till plain.** An extensive nearly level to gently rolling or moderately sloping area that is underlain by or consists of till and that has a slope of 0 to 8 percent.
- Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- Toe slope.** The outermost inclined surface at the base of a hill. Toe slopes are commonly gentle and linear in profile.
- 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.
- Tread.** The flat or gently sloping surface of natural step-like landforms, commonly one of a series, such as successive stream terraces.
- Understory.** Any plants in a forest community that grow to a height of less than 5 feet.
- Upland** (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.
- Urban land.** Areas covered by buildings, dwellings, roads, streets, parking lots, and lawns and gardens.
- Variation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.
- Very deep soil.** A soil that is more than 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.
- Very shallow soil.** A soil that is less than 10 inches deep over bedrock or to other material that restricts the penetration of plant roots.
- 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 oven-dry 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 action of uprooting and tipping over trees by the wind.

Tables

Table 4.-Classification of the Soils

(An asterisk in the first column indicates that some soil map units are taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Alvin-----	Coarse-loamy, mixed, superactive, mesic Typic Hapludalfs
Atlas-----	Fine, smectitic, mesic Aeric Chromic Vertic Epiaqualfs
Aviston-----	Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls
Bartelso-----	Fine, mixed, superactive, mesic Aquertic Argiudolls
Beaucoup-----	Fine-silty, mixed, superactive, mesic Fluvaquentic Endoaquolls
Bethalto-----	Fine-silty, mixed, superactive, mesic Udollic Endoaqualfs
Biddle-----	Fine, smectitic, mesic Aquertic Argiudolls
Birds-----	Fine-silty, mixed, superactive, nonacid, mesic Typic Fluvaquents
Blair-----	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Blake-----	Fine-silty, mixed, superactive, calcareous, mesic Aquic Udifluvents
Bold-----	Coarse-silty, mixed, superactive, calcareous, mesic Typic Udorthents
Bunkum-----	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Caseyville-----	Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs
Coffeen-----	Coarse-silty, mixed, superactive, mesic Fluvaquentic Hapludolls
Colp-----	Fine, smectitic, mesic Aquertic Chromic Hapludalfs
Coulterville-----	Fine-silty, mixed, superactive, mesic Aeric Epiaqualfs
Cowden-----	Fine, smectitic, mesic Vertic Albaqualfs
Darmstadt-----	Fine-silty, mixed, superactive, mesic Albic Natraqualfs
Darwin-----	Fine, smectitic, mesic Fluvaquentic Vertic Endoaquolls
Downsouth-----	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Drury-----	Fine-silty, mixed, superactive, mesic Dystric Eutrochrepts
Dupo-----	Coarse-silty over clayey, mixed over smectitic, superactive, nonacid, mesic Aquic Udifluvents
Edwardsville-----	Fine-silty, mixed, superactive, mesic Aquic Argiudolls
Floraville-----	Fine, smectitic, mesic Chromic Vertic Albaqualfs
Fluvaquents, loamy-----	Fluvaquents, loamy, mixed, superactive, nonacid, mesic
Fluvaquents-----	Fluvaquents, loamy, mixed, superactive, nonacid, mesic
Fosterburg-----	Fine, smectitic, mesic Vertic Argiaquolls
Fults-----	Fine, smectitic, mesic Vertic Endoaquolls
Geff-----	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Gorham-----	Fine-silty, mixed, superactive, mesic Fluvaquentic Endoaquolls
Grantfork-----	Fine-loamy, mixed, superactive, mesic Aeric Epiaqualfs
Haynie-----	Coarse-silty, mixed, superactive, calcareous, mesic Mollic Udifluvents
Herrick-----	Fine, smectitic, mesic Aquertic Argiudolls
Hickory-----	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Homen-----	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Hurst-----	Fine, smectitic, mesic Aeric Chromic Vertic Epiaqualfs
Lakaskia-----	Fine, mixed, superactive, mesic Vertic Argiaquolls
Landes-----	Coarse-loamy, mixed, superactive, mesic Fluventic Hapludolls
Lenzburg-----	Fine-loamy, mixed, active, calcareous, mesic Alfic Udarents
Littleton-----	Fine-silty, mixed, superactive, mesic Aquic Cumulic Hapludolls
Marine-----	Fine, smectitic, mesic Aeric Vertic Albaqualfs
Mascoutah-----	Fine-silty, mixed, superactive, mesic Typic Endoaquolls
McFain-----	Clayey over loamy, smectitic over mixed, superactive, mesic Fluvaquentic Endoaquolls
Meadowbank-----	Fine-silty, mixed, superactive, mesic Typic Argiudolls
Menfro-----	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Millstadt-----	Fine-silty, mixed, superactive, mesic Aeric Epiaqualfs
Morristown-----	Loamy-skeletal, mixed, active, calcareous, mesic Typic Udorthents
Nameoki-----	Fine, smectitic, mesic Aquertic Hapludolls
Negley-----	Fine-loamy, mixed, active, mesic Typic Paleudalfs
Oconee-----	Fine, smectitic, mesic Udollic Epiaqualfs
Okaw-----	Fine, smectitic, mesic Chromic Vertic Albaqualfs
Orion-----	Coarse-silty, mixed, superactive, nonacid, mesic Aquic Udifluvents
Orthents, acid substratum-----	Fine-silty, mixed, active, nonacid, mesic Aquic Udorthents
Orthents, loamy-----	Fine-loamy, mixed, active, nonacid, mesic Typic Udorthents
Orthents, silty-----	Fine-silty, mixed, active, nonacid, mesic Aquic Udorthents
Orthents-----	Fine-loamy, mixed, active, nonacid, mesic Aquic Udorthents
Otter-----	Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls
Petrolia-----	Fine-silty, mixed, superactive, nonacid, mesic Typic Fluvaquents
Piasa-----	Fine, smectitic, mesic Vertic Natraqualfs
Pierron-----	Fine, smectitic, mesic Chromic Vertic Albaqualfs
Raccoon-----	Fine-silty, mixed, superactive, mesic Typic Endoaqualfs
Redbud-----	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Ridgway-----	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Rocher-----	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Udifluvents
Ruma-----	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Shaffton-----	Fine-loamy, mixed, superactive, mesic Fluvaquentic Hapludolls
*Swanwick-----	Fine-silty, mixed, active, nonacid, mesic Alfic Udarents
Sylvan-----	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Tice-----	Fine-silty, mixed, superactive, mesic Fluvaquentic Hapludolls
Typic Hapludalfs-----	Typic Hapludalfs

Table 4.—Classification of the Soils—continued

Soil name	Family or higher taxonomic class
Ursa.....	Fine, smectitic, mesic Chromic Vertic Hapludalfs
Virden.....	Fine, smectitic, mesic Vertic Argiaquolls
Wabash.....	Fine, smectitic, mesic Cumulic Vertic Endoaquolls
Wagner.....	Fine, smectitic, mesic Vertic Albaqualfs
Wakeland.....	Coarse-silty, mixed, superactive, nonacid, mesic Aeric Fluvaquents
Wakenda.....	Fine-silty, mixed, superactive, mesic Typic Argiudolls
Wilbur.....	Coarse-silty, mixed, superactive, mesic Fluvaquentic Eutrochrepts
Winfield.....	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Worthen.....	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Zipp.....	Fine, mixed, active, nonacid, mesic Vertic Endoaquepts

Table 5.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
5C2	Blair silt loam, 5 to 10 percent slopes, eroded-----	216	*
5C3	Blair silt loam, 5 to 10 percent slopes, severely eroded-----	303	*
5D3	Blair silt loam, 10 to 18 percent slopes, severely eroded-----	315	*
8F2	Hickory silt loam, 18 to 35 percent slopes, eroded-----	636	0.1
31A	Pierron silt loam, 0 to 2 percent slopes-----	3,266	0.8
37A	Worthen silt loam, 0 to 2 percent slopes-----	456	0.1
37B	Worthen silt loam, 2 to 5 percent slopes-----	414	*
46A	Herrick silt loam, 0 to 2 percent slopes-----	14,629	3.4
50A	Virden silt loam, 0 to 2 percent slopes-----	2,049	0.5
75B	Drury silt loam, 2 to 5 percent slopes-----	488	0.1
79B	Menfro silt loam, 2 to 5 percent slopes-----	8,800	2.0
79C2	Menfro silt loam, 5 to 10 percent slopes, eroded-----	8,015	1.9
79C3	Menfro silt clay loam, 5 to 10 percent slopes, severely eroded-----	3,839	0.9
79D2	Menfro silt loam, 10 to 18 percent slopes, eroded-----	3,333	0.8
79D3	Menfro silty clay loam, 10 to 18 percent slopes, severely eroded-----	5,100	1.2
79F	Menfro silt loam, 18 to 35 percent slopes-----	4,901	1.1
79F3	Menfro silty clay loam, 18 to 35 percent slopes, severely eroded-----	3,315	0.8
79G	Menfro silt loam, 35 to 60 percent slopes-----	1,896	0.4
81A	Littleton silt loam, 0 to 2 percent slopes-----	376	*
90A	Bethalto silt loam, 0 to 2 percent slopes-----	3,464	0.8
109A	Racoon silt loam, 0 to 2 percent slopes-----	245	*
112A	Cowden silt loam, 0 to 2 percent slopes-----	2,109	0.5
113A	Oconee silt loam, 0 to 2 percent slopes-----	3,840	0.9
113B	Oconee silt loam, 2 to 5 percent slopes-----	2,128	0.5
267A	Caseyville silt loam, 0 to 2 percent slopes-----	3,705	0.9
267B	Caseyville silt loam, 2 to 5 percent slopes-----	830	0.2
283B	Downsouth silt loam, 2 to 5 percent slopes-----	1,730	0.4
283C2	Downsouth silt loam, 5 to 10 percent slopes, eroded-----	1,006	0.2
384A	Edwardsville silt loam, 0 to 2 percent slopes-----	7,852	1.8
384B	Edwardsville silt loam, 2 to 5 percent slopes-----	2,689	0.6
385A	Mascoutah silty clay loam, 0 to 2 percent slopes-----	3,794	0.9
423A	Millstadt silt loam, 0 to 2 percent slopes-----	5,606	1.3
423B	Millstadt silt loam, 2 to 5 percent slopes-----	1,856	0.4
433A	Floraville silt loam, 0 to 2 percent slopes-----	1,897	0.4
437B	Redbud silt loam, 2 to 5 percent slopes-----	1,542	0.4
437C2	Redbud silt loam, 5 to 10 percent slopes, eroded-----	2,262	0.5
438B	Aviston silt loam, 2 to 5 percent slopes-----	4,371	1.0
438C2	Aviston silt loam, 5 to 10 percent slopes, eroded-----	1,149	0.3
441B	Wakenda silt loam, 2 to 5 percent slopes-----	2,015	0.5
441C2	Wakenda silt loam, 5 to 10 percent slopes, eroded-----	1,957	0.5
466A	Bartelso silt loam, 0 to 2 percent slopes-----	3,183	0.7
468A	Lakaskia silt loam, 0 to 2 percent slopes-----	3,140	0.7
477B	Winfield silt loam, 2 to 5 percent slopes-----	11,061	2.6
477B2	Winfield silt loam, 2 to 5 percent slopes, eroded-----	612	0.1
477C3	Winfield silty clay loam, 5 to 10 percent slopes, severely eroded-----	858	0.2
477C2	Winfield silt loam, 5 to 10 percent slopes, eroded-----	4,515	1.0
491B2	Ruma silty clay loam, 2 to 5 percent slopes, eroded-----	1,249	0.3
491C3	Ruma silty clay loam, 5 to 10 percent slopes, severely eroded-----	1,710	0.4
491D3	Ruma silty clay loam, 10 to 18 percent slopes, severely eroded-----	2,297	0.5
515C3	Bunkum silty clay loam, 5 to 10 percent slopes, severely eroded-----	1,658	0.4
515C2	Bunkum silt loam, 5 to 10 percent slopes, eroded-----	361	*
515D3	Bunkum silty clay loam, 10 to 18 percent slopes, severely eroded-----	4,219	1.0
517A	Marine silt loam, 0 to 2 percent slopes-----	11,915	2.8
517B	Marine silt loam, 2 to 5 percent slopes-----	10,316	2.4
533	Urban land-----	10,208	2.4
536	Dumps-----	935	0.2
582B	Homen silt loam, 2 to 5 percent slopes-----	11,724	2.7
582B2	Homen silt loam, 2 to 5 percent slopes, eroded-----	1,665	0.4
582C2	Homen silt loam, 5 to 10 percent slopes, eroded-----	4,669	1.1
585F2	Negley loam, 18 to 35 percent slopes, eroded-----	973	0.2
801B	Orthents, silty, undulating-----	514	0.1
801D	Orthents, silty, steep-----	1,041	0.2
802B	Orthents, loamy, undulating-----	1,240	0.3
802D	Orthents, loamy, steep-----	2,465	0.6
821G	Morristown very stony silty clay loam, 35 to 70 percent slopes-----	3,623	0.8
824B	Swanwick silty clay loam, 1 to 5 percent slopes-----	462	0.1
825B	Lenzburg silty clay loam, acid substratum, 1 to 7 percent slopes-----	728	0.2
826D	Orthents, silty, acid substratum, rolling-----	323	*
864	Pits, quarries-----	673	0.2
865	Pits, gravel-----	73	*
866	Dumps, slurry-----	304	*
871B	Lenzburg gravelly silty clay loam, 1 to 7 percent slopes, stony-----	1,093	0.3

Table 5.—Acreage and Proportionate Extent of the Soils—continued

Map symbol	Soil name	Acres	Percent
871D	Lenzburg gravelly silty clay loam, 7 to 18 percent slopes, stony-----	2,304	0.5
871G	Lenzburg gravelly silty clay loam, 18 to 70 percent slopes, stony-----	4,009	0.9
878C3	Coulterville-Grantfork silty clay loams, 5 to 10 percent slopes, severely eroded----	9,065	2.1
880B2	Coulterville-Darmstadt silt loams, 2 to 5 percent slopes, eroded-----	7,781	1.8
882A	Oconee-Darmstadt-Coulterville silt loams, 0 to 2 percent slopes-----	6,552	1.5
882B	Oconee-Coulterville-Darmstadt silt loams, 2 to 5 percent slopes-----	4,436	1.0
884C3	Bunkum-Coulterville silty clay loams, 5 to 10 percent slopes, severely eroded-----	11,988	2.8
885A	Virден-Fosterburg silt loams, 0 to 2 percent slopes-----	2,063	0.5
886F3	Ruma-Ursa silty clay loams, 18 to 35 percent slopes, severely eroded-----	6,433	1.5
894A	Herrick-Biddle-Piasa silt loams, 0 to 2 percent slopes-----	5,577	1.3
897D3	Bunkum-Atlas silty clay loams, 10 to 18 percent slopes, severely eroded-----	7,036	1.6
906C3	Redbud-Hurst silty clay loams, 5 to 10 percent slopes, severely eroded-----	945	0.2
907D3	Redbud-Colp silty clay loams, 10 to 18 percent slopes, severely eroded-----	1,047	0.2
962F2	Sylvan-Bold silt loams, 18 to 35 percent slopes, eroded-----	4,825	1.1
962G	Sylvan-Bold silt loams, 35 to 60 percent slopes-----	1,941	0.4
993A	Cowden-Piasa silt loams, 0 to 2 percent slopes-----	12,651	2.9
1071A	Darwin silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded-----	1,632	0.4
1248A	McFain silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded-----	824	0.2
1288A	Petrolia silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded-----	2,337	0.5
2071L	Darwin-Urban land complex, 0 to 2 percent slopes, occasionally flooded, long duration-----	2,317	0.5
2079D	Menfro-Urban land complex, 8 to 15 percent slopes-----	744	0.2
2079E	Menfro-Urban land complex, 15 to 25 percent slopes-----	500	0.1
2183A	Shaffton-Urban land complex, 0 to 2 percent slopes, occasionally flooded-----	6,329	1.5
2384B	Edwardsville-Urban land complex, 1 to 4 percent slopes-----	2,842	0.7
2477B	Winfield-Urban land complex, 2 to 8 percent slopes-----	5,079	1.2
3038B	Rocher loam, 2 to 5 percent slopes, frequently flooded-----	226	*
3070L	Beaucoup silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration--	926	0.2
3076A	Otter silt loam, 0 to 2 percent slopes, frequently flooded-----	1,115	0.3
3083L	Wabash silty clay, 0 to 2 percent slopes, frequently flooded, long duration-----	1,506	0.3
3180A	Dupo silt loam, 0 to 2 percent slopes, frequently flooded-----	1,416	0.3
3288L	Petrolia silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration--	7,314	1.7
3333A	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded-----	31,924	7.4
3334L	Birds silt loam, 0 to 2 percent slopes, frequently flooded, long duration-----	3,865	0.9
3336A	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded-----	736	0.2
3391A	Blake silty clay loam, 0 to 2 percent slopes, frequently flooded-----	578	0.1
3394A	Haynie silt loam, 0 to 2 percent slopes, frequently flooded-----	492	0.1
3394B	Haynie silt loam, 2 to 5 percent slopes, frequently flooded-----	107	*
3415A	Orion silt loam, 0 to 2 percent slopes, frequently flooded-----	691	0.2
3428A	Coffeen silt loam, 0 to 2 percent slopes, frequently flooded-----	42	*
3847L	Fluvaquents-Orthents complex, frequently flooded, long duration-----	1,070	0.2
5079D	Menfro silt loam, karst, 12 to 25 percent slopes, severely eroded-----	2,614	0.6
5079G	Menfro silt loam, karst, 25 to 60 percent slopes-----	2,529	0.6
5079C	Menfro silt loam, karst, 4 to 12 percent slopes, severely eroded-----	790	0.2
8026A	Wagner silt loam, 0 to 2 percent slopes, occasionally flooded-----	428	*
8070A	Beaucoup silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	225	*
8071L	Darwin silty clay, 0 to 2 percent slopes, occasionally flooded, long duration-----	5,659	1.3
8084A	Okaw silt loam, 0 to 2 percent slopes, occasionally flooded-----	4,629	1.1
8109A	Racoon silt loam, 0 to 2 percent slopes, occasionally flooded-----	387	*
8122C	Colp silty clay loam, 5 to 10 percent slopes, severely eroded, occasionally flooded--	344	*
8122D	Colp silty clay loam, 10 to 18 percent slopes, severely eroded, occasionally flooded--	2,068	0.5
8131B	Alvin fine sandy loam, 2 to 5 percent slopes, occasionally flooded-----	549	0.1
8162A	Gorham silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	711	0.2
8180A	Dupo silt loam, 0 to 2 percent slopes, occasionally flooded-----	1,946	0.5
8183A	Shaffton clay loam, 0 to 2 percent slopes, occasionally flooded-----	3,296	0.8
8284A	Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	39	*
8304B	Landes very fine sandy loam, 2 to 5 percent slopes, occasionally flooded-----	2,046	0.5
8338B	Hurst silt loam, 2 to 5 percent slopes, eroded, occasionally flooded-----	1,108	0.3
8338C	Hurst silty clay loam, 5 to 10 percent slopes, eroded, occasionally flooded-----	1,626	0.4
8338A	Hurst silt loam, 0 to 2 percent slopes, occasionally flooded-----	800	0.2
8394A	Haynie silt loam, 0 to 2 percent slopes, occasionally flooded-----	218	*
8432A	Geff silt loam, 0 to 2 percent slopes, occasionally flooded-----	572	0.1
8434B	Ridgway silt loam, 2 to 5 percent slopes, occasionally flooded-----	436	0.1
8436B	Meadowbank silt loam, 2 to 5 percent slopes, occasionally flooded-----	387	*
8489A	Hurst silt loam, sandy substratum, 0 to 2 percent slopes, occasionally flooded-----	559	0.1
8524L	Zipp silty clay, 0 to 2 percent slopes, occasionally flooded, long duration-----	1,065	0.2
8591A	Fults silty clay, 0 to 2 percent slopes, occasionally flooded-----	2,140	0.5
8592A	Nameeki silty clay, 0 to 2 percent slopes, occasionally flooded-----	964	0.2
8646A	Fluvaquents, Loamy, 0 to 2 percent slopes, occasionally flooded-----	1,620	0.4
8812F	Typic Hapludalfs, 18 to 35 percent slopes, occasionally flooded-----	12	*
	Water-----	10,123	2.3
	Total-----	431,330	100

* Less than 0.1 percent.

Table 6.—Main Cropland Limitations and Hazards
(See text for a description of the limitations and hazards listed in this table)

Soil name and map symbol	Cropland limitations and hazards	Soil name and map symbol	Cropland limitations and hazards
5C2, 5C3, 5D3: Blair-----	Crusting, water erosion, wetness.	267B: Caseyville-----	Crusting, water erosion, wetness.
31A: Pierron-----	Crusting, low pH, ponding, restricted permeability.	283B, 283C2: Downsouth-----	Crusting, water erosion.
37A: Worthen-----	None.	384A: Edwardsville-----	Wetness.
37B: Worthen-----	Water erosion.	384B: Edwardsville-----	Water erosion, wetness.
46A: Herrick-----	Wetness.	385A: Mascoutah-----	Ponding, poor tilth.
50A: Virden-----	Ponding.	423A: Millstadt-----	Crusting, low pH, wetness.
75B: Drury-----	Water erosion.	423B: Millstadt-----	Crusting, low pH, water erosion, wetness.
79B, 79C2, 79D2: Menfro-----	Crusting, water erosion.	433A: Floraville-----	Crusting, low pH, ponding, restricted permeability.
79C3, 79D3: Menfro-----	Crusting, poor tilth, water erosion.	437B, 437C2: Redbud-----	Crusting, water erosion.
81A: Littleton-----	Wetness.	438B, 438C2: Aviston-----	Water erosion.
90A: Bethalto-----	Wetness.	441B, 441C2: Wakenda-----	Water erosion.
109A: Raccoon-----	Crusting, ponding, restricted permeability.	466A: Bartelso-----	Restricted permeability, wetness.
112A: Cowden-----	Crusting, ponding, restricted permeability.	468A: Lakaskia-----	Ponding, restricted permeability.
113A: Oconee-----	Crusting, restricted permeability, wetness.	477B, 477B2, 477C2: Winfield-----	Crusting, water erosion.
113B: Oconee-----	Crusting, restricted permeability, water erosion, wetness.	477C3: Winfield-----	Crusting, poor tilth, water erosion.
267A: Caseyville-----	Crusting, wetness.	491B2: Ruma-----	Crusting, poor tilth, water erosion.

Table 6.—Main Cropland Limitations and Hazards—continued

Soil name and map symbol	Cropland limitations and hazards	Soil name and map symbol	Cropland limitations and hazards
491C3, 491D3: Ruma-----	Crusting, poor tilth, water erosion.	Grantfork-----	Crusting, excessive sodium high pH, poor tilth, restricted permeability, water erosion, wetness.
515C2, 515C3, 515D3: Bunkum-----	Crusting, water erosion, wetness.	880B2: Coulterville-----	Crusting, excessive sodium restricted permeability, water erosion, wetness.
517A: Marine-----	Restricted permeability, wetness.	Darmstadt-----	Crusting, excessive sodium high pH, restricted permeability, water erosion, wetness.
517B: Marine-----	Restricted permeability, water erosion, wetness.	882A: Oconee-----	Crusting, restricted permeability, wetness.
533: Urban land-----	Nonsoil material.	Darmstadt-----	Crusting, excessive sodium high pH, restricted permeability, water erosion, wetness.
536: Dumps-----	Nonsoil material.	882B: Oconee-----	Crusting, restricted permeability, water erosion, wetness.
582B, 582B2, 582C2: Homen-----	Crusting, water erosion.	Darmstadt-----	Crusting, excessive sodium high pH, restricted permeability, wetness.
801B: Orthents, silty-----	Crusting, water erosion, wetness.	Coulterville-----	Crusting, excessive sodium restricted permeability, wetness.
8026A: Wagner-----	Crusting, flooding, ponding, restricted permeability.	882B: Oconee-----	Crusting, restricted permeability, water erosion, wetness.
802B: Orthents, loamy-----	Crusting, water erosion.	Coulterville-----	Crusting, excessive sodium restricted permeability, water erosion, wetness.
824B: Swanwick-----	Crusting, poor tilth, restricted permeability, water erosion.	Darmstadt-----	Crusting, excessive sodium high pH, restricted permeability, water erosion, wetness.
825B: Lenzburg, acid substratum	Crusting, low pH, poor tilth, water erosion.	884C3: Bunkum-----	Crusting, water erosion, wetness.
826D: Orthents, acid substratum	Crusting, low pH, water erosion, wetness.	Coulterville-----	Crusting, excessive sodium poor tilth, restricted permeability, water erosion, wetness.
878C3: Coulterville-----	Crusting, excessive sodium poor tilth, restricted permeability, water erosion, wetness.		

Table 6.—Main Cropland Limitations and Hazards—continued

Soil name and map symbol	Cropland limitations and hazards	Soil name and map symbol	Cropland limitations and hazards
885A: Virden-----	Ponding.	3288L: Petrolia-----	Crusting, flooding, ponding, poor tilth.
Fosterburg-----	Excessive sodium ponding, restricted permeability.	3333A: Wakeland-----	Flooding, wetness.
894A: Herrick-----	Wetness.	3334L: Birds-----	Crusting, flooding, ponding.
Biddle-----	Excessive sodium restricted permeability, wetness.	3336A: Wilbur-----	Flooding.
Piasa-----	Excessive sodium high pH, ponding, restricted permeability.	3394A: Haynie-----	Crusting, flooding.
897D3: Bunkum-----	Crusting, poor tilth, water erosion, wetness.	3394B: Haynie-----	Crusting, flooding, water erosion.
Atlas-----	Crusting, poor tilth, water erosion, wetness.	3415A: Orion-----	Flooding, wetness.
906C3: Redbud-----	Crusting, poor tilth, water erosion.	3428A: Coffeen-----	Crusting, flooding, wetness.
Hurst-----	Crusting, low pH, poor tilth, restricted permeability, water erosion, wetness.	5079C, 5079D: Menfro, karst-----	Crusting, water erosion.
993A: Cowden-----	Crusting, ponding, restricted permeability.	8070A: Beaucoup-----	Flooding, ponding, poor tilth.
Piasa-----	Excessive sodium high pH, ponding, restricted permeability.	8071L: Darwin-----	Flooding, ponding, poor tilth, restricted permeability.
3038B: Rocher-----	Excessive permeability flooding, water erosion.	8084A: Okaw-----	Crusting, flooding, low pH, ponding, restricted permeability.
3070L: Beaucoup-----	Flooding, ponding, poor tilth.	8109A: Racoon-----	Crusting, flooding, ponding, restricted permeability.
3076A: Otter-----	Flooding, ponding.	8122C: Colp-----	Crusting, flooding, poor tilth, restricted permeability, water erosion, wetness.
3180A: Dupo-----	Flooding, restricted permeability, wetness.		

Table 6.-Main Cropland Limitations and Hazards--continued

Soil name and map symbol	Cropland limitations and hazards	Soil name and map symbol	Cropland limitations and hazards
8131B: Alvin.....	Excessive permeability flooding, water erosion.	8394A: Haynie.....	Crusting, flooding.
8162A: Gorham.....	Excessive permeability flooding, ponding, poor tilth.	8432A: Geff.....	Crusting, excessive permeability flooding, wetness.
8180A: Dupo.....	Flooding, restricted permeability, wetness.	8434B: Ridgway.....	Crusting, excessive permeability flooding, water erosion.
8183A: Shaffton.....	Excessive permeability flooding, poor tilth, wetness.	8436B: Meadowbank.....	Excessive permeability flooding, water erosion.
8284A: Tice.....	Flooding, poor tilth, wetness.	8489A: Hurst, sandy substratum--	Crusting, flooding, low pH, restricted permeability, wetness.
8304B: Landes.....	Excessive permeability flooding, water erosion.	8524L: Zipp.....	Crusting, flooding, poor tilth, restricted permeability, ponding.
8338A: Hurst.....	Crusting, flooding, low pH, restricted permeability, wetness.	8591A: Fults.....	Flooding, ponding, poor tilth, restricted permeability.
8338B: Hurst.....	Crusting, flooding, low pH, restricted permeability, water erosion, wetness.	8592A: Nameoki.....	Flooding, poor tilth, restricted permeability, wetness.
8338C: Hurst.....	Crusting, flooding, low pH, poor tilth, restricted permeability, water erosion, wetness.		

Table 7.—Land Capability and Yields per Acre of Crops and Pasture
 (Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat, winter	Orchardgrass- alfalfa hay	Bromegrass- alfalfa
		Bu	Bu	Bu	Tons	AUM*
5C2 Blair.....	3E	89	31	41	3.5	5.8
5C3 Blair.....	4E	82	29	38	3.2	5.4
5D3 Blair.....	4E	78	27	36	3.0	5.0
8F2 Hickory.....	6E	---	---	---	2.0	3.4
31A Pierron.....	3W	100	30	42	3.7	6.2
37A Worthen.....	1	151	46	62	5.9	9.8
37B Worthen.....	2E	149	46	61	5.8	9.7
46A Herrick.....	2W	141	45	61	5.5	9.2
50A Virden.....	2W	144	46	60	---	---
75B Drury.....	2E	125	40	56	4.9	8.2
79B Menfro.....	2E	127	39	53	5.1	8.6
79C2 Menfro.....	3E	120	37	51	4.9	8.1
79C3 Menfro.....	4E	111	34	47	4.5	7.5
79D2 Menfro.....	4E	115	35	49	4.6	7.6
79D3 Menfro.....	4E	106	32	45	4.2	7.0
79F Menfro.....	6E	---	---	---	3.7	6.2
79F3 Menfro.....	7E	---	---	---	3.2	5.3
79G Menfro.....	7E	---	---	---	---	---
81A Littleton.....	1	159	50	63	6.1	10.2
90A Bethalto.....	2W	149	44	60	5.6	9.3
109A Raccoon.....	3W	108	35	48	4.1	6.8
112A Cowden.....	3W	120	37	53	4.8	8.0
113A Oconee.....	2W	120	36	54	5.0	8.3
113B Oconee.....	2E	119	36	53	4.9	8.2

See footnote at end of table.

Table 7.—Land Capability and Yields per Acre of Crops and Pasture—continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat, winter	Orchardgrass- alfalfa hay	Bromegrass- alfalfa
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>AUM*</u>
267A Caseyville-----	2W	134	41	54	5.2	8.7
267B Caseyville-----	2E	133	41	53	5.1	8.6
283B Downsouth-----	2E	146	43	57	5.4	9.1
283C2 Downsouth-----	3E	138	40	55	5.2	8.6
384A Edwardsville----	1	163	48	62	6.1	10.2
384B Edwardsville----	2E	161	48	61	6.0	10.1
385A Mascoutah-----	2W	152	48	57	---	---
423A Millstadt-----	2W	118	30	43	4.6	7.7
423B Millstadt-----	2E	117	30	43	4.5	7.6
433A Floraville-----	3W	103	31	42	3.8	6.3
437B Redbud-----	2E	115	36	50	5.0	8.4
437C2 Redbud-----	3E	109	34	47	4.8	7.9
438B Aviston-----	2E	143	45	60	5.4	9.1
438C2 Aviston-----	3E	135	42	57	5.2	8.6
441B Wakenda-----	2E	148	45	57	4.9	8.2
441C2 Wakenda-----	3E	140	42	55	4.7	7.8
466A Bartelso-----	2W	122	42	51	4.6	7.7
468A Lakaskia-----	3W	118	40	48	---	---
477B Winfield-----	2E	127	40	52	4.9	8.1
477B2 Winfield-----	2E	123	38	51	4.7	7.8
477C2 Winfield-----	3E	120	38	50	4.6	7.7
477C3 Winfield-----	4E	111	35	46	4.3	7.1
491B2 Ruma-----	2E	117	34	51	4.8	8.0
491C3 Ruma-----	4E	106	30	46	4.4	7.2

See footnote at end of table.

Table 7.—Land Capability and Yields per Acre of Crops and Pasture—continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat, winter	Orchardgrass- alfalfa hay	Bromegrass- alfalfa
		Bu	Bu	Bu	Tons	AUM*
491D3 Ruma-----	4E	101	29	44	4.0	6.7
515C2 Bunkum-----	3E	93	35	44	3.6	6.0
515C3 Bunkum-----	4E	86	32	41	3.3	5.5
515D3 Bunkum-----	4E	82	31	39	3.1	5.1
517A Marine-----	2W	102	30	43	3.6	7.2
517B Marine-----	2E	101	30	43	3.6	7.1
582B Homen-----	2E	101	34	48	4.1	6.8
582B2 Homen-----	2E	98	33	46	3.9	6.6
582C2 Homen-----	3E	96	32	45	3.8	6.4
585F2 Negley-----	6E	---	---	---	3.8	4.1
801B, 801D Orthents, silty-	---	---	---	---	---	---
802B, 802D Orthents, loamy-	---	---	---	---	---	---
821G Morristown-----	7E	---	---	---	---	---
824B Swanwick-----	2E	78	28	30	3.1	5.2
825B Lenzburg, acid substratum-----	2E	68	21	23	3.0	5.0
826D Orthents, acid substratum-----	---	---	---	---	---	---
871B Lenzburg-----	2S	74	23	26	3.4	5.4
871D Lenzburg-----	6S	---	---	---	3.1	5.0
871G Lenzburg-----	7E	---	---	---	---	2.8
878C3 Coulterville----	4E	72	24	32	2.6	4.6
Grantfork-----	4E					
880B2 Coulterville----	2E	87	30	39	3.2	5.3
Darmstadt-----	3E					

See footnote at end of table.

Table 7.—Land Capability and Yields per Acre of Crops and Pasture—continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat, winter	Orchardgrass- alfalfa hay	Bromegrass- alfalfa
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>AUM*</u>
882A Oconee-----	2W	102	33	47	4.1	7.0
Darmstadt-----	3W					
Coulterville----	2W					
882B Oconee-----	2E	104	33	47	4.1	7.1
Coulterville----	2E					
Darmstadt-----	3E					
884C3 Bunkum-----	4E	88	31	40	3.2	5.6
Coulterville----	4E					
885A Virden-----	2W	136	42	58	---	---
Fosterburg-----	3W					
886F3 Ruma-----	7E	---	---	---	2.0	3.3
Ursa-----	7E					
894A Herrick-----	2W	121	39	54	4.8	8.0
Biddle-----	2W					
Piasa-----	4W					
897D3 Bunkum-----	4E	62	22	27	2.4	4.0
Atlas-----	4E					
906C3 Redbud-----	4E	79	26	36	3.4	5.7
Hurst-----	4E					
907D3 Redbud-----	4E	74	24	33	3.1	5.2
Colp-----	4E					
962F2 Sylvan-----	6E	---	---	---	---	5.0
Bold-----	6E					
962G Sylvan-----	7E	---	---	---	---	---
Bold-----	7E					
993A Cowden-----	3W	98	32	45	---	---
Piasa-----	4W					
1071A Darwin, undrained-----	7W	---	---	---	---	---
1248A McFain, undrained-----	7W	---	---	---	---	---

See footnote at end of table.

Table 7.—Land Capability and Yields per Acre of Crops and Pasture—continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat, winter	Orchardgrass- alfalfa hay	Bromegrass- alfalfa
		Bu	Bu	Bu	Tons	AUM*
1288A Petrolia, undrained.....	7W	---	---	---	---	---
3038B Rocher.....	3W	87	31	40	---	---
3070L Beaucoup.....	4W	97	32	---	---	---
3076A Otter.....	3W	129	41	---	---	---
3083L Wabash.....	4W	74	24	---	---	---
3180A Dupo.....	3W	119	39	50	4.7	7.8
3288L Petrolia.....	3W	92	30	34	---	---
3333A Wakeland.....	3W	122	40	51	4.7	7.8
3334L Birds.....	4W	85	24	---	---	---
3336A Wilbur.....	3W	121	40	50	4.5	7.5
3391A Blake.....	3W	88	24	39	---	---
3394A Haynie.....	3W	86	32	38	---	---
3394B Haynie.....	3W	85	32	38	---	---
3415A Orion.....	3W	122	39	47	4.2	7.0
3428A Coffeen.....	3W	137	42	51	5.2	8.7
3847L Fluvaquents.....	---	---	---	---	---	---
Orthents.....	---	---	---	---	---	---
5079D Menfro, karst...	4E	106	32	45	4.2	7.0
5079G Menfro, karst...	7E	---	---	---	---	---
5079C Menfro, karst...	4E	111	34	47	4.5	7.5
8026A Wagner.....	3W	106	35	49	---	---
8070A Beaucoup.....	2W	138	46	55	---	---
8071L Darwin.....	4W	84	30	40	---	---
8084A Okaw.....	3W	84	28	41	---	---

See footnote at end of table.

Table 7.—Land Capability and Yields per Acre of Crops and Pasture—continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat, winter	Orchardgrass- alfalfa hay	Bromegrass- alfalfa
		Bu	Bu	Bu	Tons	AUM*
8109A Racgon.....	3W	108	35	48	---	---
8122C Colp.....	4E	65	24	33	2.7	4.6
8122D Colp.....	4E	59	22	30	2.5	4.1
8131B Alvin.....	2E	98	37	47	4.1	6.8
8162A Gorham.....	2W	141	46	56	---	---
8180A Dupo.....	2W	132	43	55	5.2	8.7
8183A Shaffton.....	2W	130	43	52	5.0	8.3
8284A Tice.....	2W	153	47	61	5.7	9.5
8304B Landes.....	2E	98	34	45	3.7	6.1
8338A Hurst.....	2W	87	32	45	3.6	6.0
8338B Hurst.....	2E	82	30	42	3.4	5.6
8338C Hurst.....	3E	79	29	41	3.3	5.5
8394A Haynie.....	2W	96	36	42	3.6	6.0
8432A Geff.....	2W	105	35	44	4.5	7.5
8434B Ridgway.....	2E	118	38	49	4.6	7.6
8436B Meadowbank.....	2E	142	43	57	5.3	8.9
8489A Hurst, sandy substratum.....	2W	73	25	25	3.1	5.2
8524L Zipp.....	4W	98	33	35	---	---
8591A Fults.....	3W	110	39	43	---	---
8592A Nameoki.....	2W	125	44	50	5.0	8.2
8646A Fluvaquents, loamy.....	---	---	---	---	---	---
8812F Typic Hapludalfs	6E	---	---	---	---	---

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 8.—Main Pasture Limitations and Hazards
(See text for a description of the limitations and hazards listed in this table)

Soil name and map symbol	Pasture limitations and hazards	Soil name and map symbol	Pasture limitations and hazards
5C2, 5C3: Blair-----	Low pH, water erosion.	423A: Millstadt-----	Low pH.
5D3: Blair-----	Equipment limitation, low pH, water erosion.	423B: Millstadt-----	Low pH, water erosion.
8F2: Hickory-----	Equipment limitation, low pH, water erosion.	433A: Floraville-----	Low pH, ponding, wetness.
31A: Pierron-----	Low pH, ponding, wetness.	437B, 43C2: Redbud-----	Low pH, water erosion.
75B: Drury-----	Water erosion.	438C2: Aviston-----	Low pH, water erosion.
79B, 79C2: Menfro-----	Low pH, water erosion.	441C2: Wakenda-----	Water erosion.
79C3: Menfro-----	Low fertility, low pH, water erosion.	477B, 477B2, 477C2, 477C3: Winfield-----	Low pH, water erosion, water erosion.
79D2, 79F: Menfro-----	Equipment limitation, low pH, water erosion.	491B2, 491C3: Ruma-----	Low fertility, low pH, water erosion.
79D3, 79F3: Menfro-----	Equipment limitation, low fertility, low pH, water erosion.	491D3: Ruma-----	Equipment limitation, low fertility, low pH, water erosion.
90A: Bethalto-----	Low pH.	515C2, 515C3: Bunkum-----	Low pH, water erosion.
109A: Racoon-----	Low pH, ponding, wetness.	515D3: Bunkum-----	Equipment limitation, low pH, water erosion.
112A: Cowden-----	Low pH, ponding, wetness.	517A: Marine-----	Low pH.
113A: Oconee-----	Low pH.	517B: Marine-----	Low pH, water erosion.
113B: Oconee-----	Low pH, water erosion.	582B, 582B2, 582C2: Homen-----	Low pH, water erosion.
267A: Caseyville-----	Low pH.	585F2: Negley-----	Equipment limitation, low pH, water erosion.
267B: Caseyville-----	Low pH, water erosion.	801B: Orthents, silty-----	Low fertility, low pH, water erosion.
283B, 283C2: Downsouth-----	Low pH, water erosion.		

Table 8.—Main Pasture Limitations and Hazards—continued

Soil name and map symbol	Pasture limitations and hazards	Soil name and map symbol	Pasture limitations and hazards
801D: Orthents, silty-----	Equipment limitation, low fertility, low pH, water erosion.	882B: Coulterville-----	Low fertility, low pH, water erosion.
802B: Orthents, loamy-----	Low fertility, water erosion.	Darmstadt-----	High pH, low pH, water erosion.
802D: Orthents, loamy-----	Equipment limitation, low fertility, water erosion.	884C3: Bunkum-----	Low pH, water erosion.
824B: Swanwick-----	Low fertility, low pH, water erosion.	Coulterville-----	Low fertility, low pH, water erosion.
825B: Lenzburg, acid substratum	Low fertility, low pH, water erosion.	894A: Piasa-----	High pH, ponding, wetness.
826D: Orthents, acid substratum	Equipment limitation, low fertility, low pH, water erosion.	897D3: Bunkum-----	Equipment limitation, low pH, water erosion.
871B: Lenzburg-----	Gravelly, water erosion.	Atlas-----	Equipment limitation, low fertility, low pH, water erosion.
871D: Lenzburg-----	Equipment limitation, gravelly, water erosion.	906C3: Redbud-----	Low fertility, low pH, water erosion.
878C3: Coulterville-----	Low fertility, low pH, water erosion.	Hurst-----	Low fertility, low pH, water erosion.
Grantfork-----	High pH, low fertility, low pH, water erosion.	907D3: Redbud-----	Equipment limitation, low fertility, low pH, water erosion.
880B2: Coulterville-----	Low fertility, low pH, water erosion.	Colp-----	Equipment limitation, low fertility, low pH, water erosion.
Darmstadt-----	High pH, low pH, water erosion.	962F2: Sylvan-----	Equipment limitation, water erosion.
882A: Oconee-----	Low pH.	BoId-----	Equipment limitation, water erosion.
Darmstadt-----	High pH low pH.	993A: Cowden-----	Low pH, ponding, wetness.
Coulterville-----	Low fertility, low pH.	Piasa-----	High pH, ponding, wetness.
882B: Oconee-----	Low pH, water erosion.	1288A: Petroliia, undrained-----	Flooding, ponding.

Table 8.—Main Pasture Limitations and Hazards—continued

Soil name and map symbol	Pasture limitations and hazards	Soil name and map symbol	Pasture limitations and hazards
3038B: Rocher.....	Flooding, low fertility, water erosion.	8122C: Colp.....	ponding, wetness. Flooding, low fertility, low pH, water erosion.
3180A: Dupo.....	Flooding.	8122D: Colp.....	Equipment limitation, flooding, low fertility, low pH, water erosion.
3288L: Petrolia.....	Flooding, ponding.	8131B: Alvin.....	Flooding, low fertility, low pH, water erosion.
3333A: Wakeland.....	Flooding.	8180A: Dupo.....	Flooding.
3334L: Birds.....	Flooding, low pH, ponding, wetness.	8338A: Hurst.....	Flooding, low pH.
3336A: Wilbur.....	Flooding.	8338B: Hurst.....	Flooding, low pH, water erosion.
3391A: Blake.....	Flooding.	8338C: Hurst.....	Flooding, low fertility, low pH, water erosion.
3394A: Haynie.....	Flooding.	8394A: Haynie.....	Flooding.
3394B: Haynie.....	Flooding, water erosion.	8432A: Geff.....	Flooding, low pH.
3415A: Orion.....	Flooding.	8434B: Ridgway.....	Flooding, low pH, water erosion.
3847L: Fluvaquents.....	Flooding, ponding.	8489A: Hurst, sandy substratum..	Flooding, low pH.
Orthents.....	Equipment limitation, low fertility, water erosion.	8524L: Zipp.....	Flooding, wetness.
5079C: Menfro, karst.....	Equipment limitation, low pH, water erosion.	8646A: Fluvaquents, loamy.....	Flooding, ponding.
5079D: Menfro, karst.....	Equipment limitation, low pH, water erosion.	8812F: Typic Hapludalfs.....	Equipment limitation, flooding, low pH, water erosion.
8026A: Wagner.....	Flooding, low pH, ponding, wetness.		
8084A: Okaw.....	Flooding, low pH, ponding, wetness.		
8109A: Raccoon.....	Flooding, low pH.		

Table 9.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
37A	Worthen silt loam, 0 to 2 percent slopes
37B	Worthen silt loam, 2 to 5 percent slopes
46A	Herrick silt loam, 0 to 2 percent slopes
50A	Virden silt loam, 0 to 2 percent slopes (where drained)
75B	Drury silt loam, 2 to 5 percent slopes
79B	Menfro silt loam, 2 to 5 percent slopes
81A	Littleton silt loam, 0 to 2 percent slopes
90A	Bethalto silt loam, 0 to 2 percent slopes (where drained)
109A	Raccoon silt loam, 0 to 2 percent slopes (where drained)
112A	Cowden silt loam, 0 to 2 percent slopes (where drained)
113A	Oconee silt loam, 0 to 2 percent slopes (where drained)
113B	Oconee silt loam, 2 to 5 percent slopes (where drained)
267A	Caseyville silt loam, 0 to 2 percent slopes (where drained)
267B	Caseyville silt loam, 2 to 5 percent slopes (where drained)
283B	Downsouth silt loam, 2 to 5 percent slopes
384A	Edwardsville silt loam, 0 to 2 percent slopes
384B	Edwardsville silt loam, 2 to 5 percent slopes
385A	Mascoutah silty clay loam, 0 to 2 percent slopes (where drained)
423A	Millstadt silt loam, 0 to 2 percent slopes (where drained)
423B	Millstadt silt loam, 2 to 5 percent slopes (where drained)
437B	Redbud silt loam, 2 to 5 percent slopes
438B	Aviston silt loam, 2 to 5 percent slopes
441B	Wakenda silt loam, 2 to 5 percent slopes
466A	Bartelso silt loam, 0 to 2 percent slopes
468A	Lakaskia silt loam, 0 to 2 percent slopes (where drained)
477B	Winfield silt loam, 2 to 5 percent slopes
477B2	winfield silt loam, 2 to 5 percent slopes, eroded
491B2	Ruma silty clay loam, 2 to 5 percent slopes, eroded
517A	Marine silt loam, 0 to 2 percent slopes (where drained)
517B	Marine silt loam, 2 to 5 percent slopes (where drained)
582B	Homen silt loam, 2 to 5 percent slopes
582B2	Homen silt loam, 2 to 5 percent slopes, eroded
824B	Swanwick silty clay loam, 1 to 5 percent slopes
885A	Virden-Fosterburg silt loams, 0 to 2 percent slopes (where drained)
3038B	Rocher loam, 2 to 5 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3070L	Beaucoup silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration (where drained and protected from flooding or not frequently flooded during the growing season)
3076A	Otter silt loam, 0 to 2 percent slopes, frequently flooded (where drained and protected from flooding or not frequently flooded during the growing season)
3180A	Dupo silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3288L	Petrolia silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration (where drained and protected from flooding or not frequently flooded during the growing season)
3333A	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded (where drained and protected from flooding or not frequently flooded during the growing season)
3334L	Birds silt loam, 0 to 2 percent slopes, frequently flooded, long duration (where drained and protected from flooding or not frequently flooded during the growing season)
3336A	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3391A	Blake silty clay loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3394A	Haynie silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3394B	Haynie silt loam, 2 to 5 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3415A	Orion silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3428A	Coffeen silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
8070A	Beaucoup silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained)
8109A	Raccoon silt loam, 0 to 2 percent slopes, occasionally flooded (where drained)
8131B	Alvin fine sandy loam, 2 to 5 percent slopes, occasionally flooded
8162A	Gorham silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained)
8180A	Dupo silt loam, 0 to 2 percent slopes, occasionally flooded
8183A	Shaffton clay loam, 0 to 2 percent slopes, occasionally flooded
8284A	Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded
8304B	Landes very fine sandy loam, 2 to 5 percent slopes, occasionally flooded
8394A	Haynie silt loam, 0 to 2 percent slopes, occasionally flooded
8432A	Geff silt loam, 0 to 2 percent slopes, occasionally flooded
8434B	Ridgway silt loam, 2 to 5 percent slopes, occasionally flooded
8436B	Meadowbank silt loam, 2 to 5 percent slopes, occasionally flooded

Table 10.—Windbreaks and Environmental Plantings

(The symbol < means less than; > means more than. Absence of an entry indicates that trees generally do not grow to the given height on that soil)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
5C2, 5C3, 5D3: Blair-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8F2: Hickory-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
31A: Pierron-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
37A, 37B: Worthen-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
46A: Herrick-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
50A: Virden-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, witchhazel, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
75B: Drury-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
79B, 79C2, 79C3, 79D2, 79D3, 79F, 79F3, 79G: Menfro-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
81A: Littleton-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
90A: Bethalto-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
109A: Raccoon-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, witchhazel, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
112A: Cowden-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
113A, 113B: Oconee-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
267A, 267B: Caseyville-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
283B, 283C2: Downsouth-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
384A: Edwardsville----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
384B: Edwardsville----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
385A: Mascoutah-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
423A, 423B: Millstadt-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
433A: Floraville-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
437B, 437C2: Redbud-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
438B, 438C2: Aviston-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
441B, 441C2: Wakenda-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
466A: Bartelso-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
468A: Lakaskia-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
477B, 477B2, 477C2, 477C3: Winfield-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
491B2, 491C3, 491D3: Ruma-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
515C2, 515C3, 515D3: Bunkum-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
517A, 517B: Marine-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
582B, 582B2, 582C2: Homen-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
585F2: Negley-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
801B, 801D: Orthents, silty-	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
802B, 802D: Orthents, loamy-	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
821G: Morristown-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, alternaleaf dogwood, hazel, eastern redcedar Iowa crab, nannyberry viburnum.	Green ash, eastern white pine.	---	---
824B: Swanwick-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.

Table 10.-Windbreaks and Environmental Plantings--continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
825B: Lenzburg, acid substratum-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
826D: Orthents, acid substratum-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, eastern redcedar, Iowa crab, American plum, blackhaw.	Shadbush, green ash, nannyberry viburnum.	Hackberry, yellow-poplar, Norway spruce, eastern white pine, baldcypress	Eastern cottonwood, pin oak.
871B, 871D 871G: Lenzburg-----	Black chokeberry, gray dogwood, American plum, mapleleaf arrowwood, blackhaw.	Shadbush, cock's-spur hawthorn, eastern redcedar, Iowa crab, eastern white pine, nannyberry viburnum.	Thornless honey locust, black locust.	---	---
878C3: Coulterville----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
Grantfork-----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
880B2: Coulterville----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
Darmstadt-----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
882A, 882B: Oconee-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
Darmstadt-----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
Coulterville---	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
884C3: Bunkum-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
Coulterville---	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
885A: Virden-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
885A: Fosterburg-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
886F3: Ruma-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
Ursa-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
894A: Herrick-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
Biddle-----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
Piasa-----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
897D3: Bunkum-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
Atlas-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
906C3: Redbud-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
Hurst-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
907D3: Redbud-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
Colp-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
962F2, 962G: Sylvan-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
Bold-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
993A: Cowden-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
Piasa-----	Common juniper.	Shadbush, hazel, common winterberry, eastern redcedar, Iowa crab.	Green ash, eastern white pine.	Blue spruce, Douglas-fir, black locust.	---
1071A: Darwin, undrained-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
1248A: McFain, undrained-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
1288A: Petrolia, Undrained-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
2071L: Darwin-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
2079D, 2079E: Menfro-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
2183A: Shaffton-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
2384B: Edwardsville----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
2477B: Winfield-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
3038B: Rocher-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
3070L: Beaucoup-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
3076A: Otter-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
3083L: Wabash-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
3180A: Dupo-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum.	Eastern redcedar, southern red oak, nannyberry viburnum, southern black haw.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
3288L: Petrolia-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
3333A: Wakeland-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
3334L: Birds-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
3336A: Wilbur-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
3391A: Blake-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
3394A, 3394B: Haynie-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
3415A: Orion-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
3428A: Coffeen-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
5079C, 5079D, 5079G: Menfro, karst---	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8026A: Wagner-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
8070A: Beaucoup-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
8071L: Darwin-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
8084A: Okaw-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
8109A: Racoon-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
8122C, 8122D: Colp-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
8131B: Alvin-----	Black chokeberry, gray dogwood, common winterberry, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, red haw, witchhazel, Iowa crab, blackhaw.	Green ash, eastern redcedar, yellow-poplar, southern red oak, baldcypress.	Hackberry, Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
8162A: Gorham-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
8180A: Dupo-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8183A: Shaffton-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8284A: Tice-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8304B: Landes-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress	Eastern white pine, eastern cottonwood, pin oak.
8338A, 8338B, 8338C: Hurst-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
8394A: Haynie-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8432A: Geff-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.

Table 10.—Windbreaks and Environmental Plantings—continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
8434B: Ridgway-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8436B: Meadowbank-----	Gray dogwood, red-osier dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, hazel, Iowa crab, American plum, blackhaw.	Shadbush, eastern redcedar, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.
8489A: Hurst, sandy substratum-----	Black chokeberry, gray dogwood, American plum, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, hazel, Washington hawthorn, Iowa crab, nannyberry viburnum, blackhaw.	Green ash, eastern redcedar, baldcypress.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
8524L: Zipp-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
8591A: Fults-----	Black chokeberry, gray dogwood, indiancurrant coralberry, mapleleaf arrowwood.	Roughleaf dogwood, Iowa crab, American plum, nannyberry viburnum, blackhaw.	Shadbush, hackberry, eastern redcedar.	Green ash, yellow-poplar, Norway spruce, eastern white pine, southern red oak, baldcypress.	Eastern cottonwood, pin oak.
8592A: Nameoki-----	Black chokeberry, silky dogwood, common winterberry, indiancurrant coralberry, mapleleaf arrowwood.	Shadbush, Iowa crab, American plum, southern blackhaw.	Washington hawthorn, green ash, eastern redcedar, southern red oak, nannyberry viburnum.	Hackberry, green ash, yellow-poplar, Norway spruce, baldcypress.	Eastern white pine, eastern cottonwood, pin oak.

Table 11.--Forestland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Productivity class*	
5C2: Blair-----	4A	Slight	Slight	Slight	Slight	Slight	White oak----- Bur oak----- Northern red oak--- Black oak----- Green ash-----	70 70 70 --- ---	4 4 4 --- ---	Pecan, green ash, white oak, bur oak, northern red oak, black oak.
5C3, 5D3: Blair-----	4A	Slight	Slight	Slight	Slight	Slight	White oak----- Bur oak----- Northern red oak--- Green ash-----	70 70 70 ---	4 4 4 ---	Pecan, green ash, white oak, bur oak, northern red oak, black oak.
8F2: Hickory-----	5R	Moderate	Moderate	Slight	Slight	Moderate	White oak----- Northern red oak--- Bitternut hickory-- Green ash----- Black oak-----	85 85 --- --- ---	5 5 --- --- ---	Northern red oak, Green ash, white oak, bur oak, sugar maple, yellow-poplar.
75B: Drury-----	5A	Slight	Slight	Slight	Slight	Moderate	White oak----- Northern red oak--- Green ash----- Sweetgum-----	85 85 --- ---	5 5 --- ---	Black walnut, white oak, northern red oak, pecan.
79B, 79C2, 79C3, 79D2, 79D3: Menfro-----	4A	Slight	Slight	Slight	Slight	Severe	Northern red oak--- White ash----- Black oak----- Sugar maple----- White oak-----	81 70 73 68 59	4 5 4 5 3	Bur oak, green ash, black walnut, yellow-poplar, white oak, sugar maple.
79F, 79F3: Menfro-----	4R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak--- White ash----- Black oak----- Sugar maple----- White oak-----	81 70 73 68 59	4 5 4 5 3	Bur oak, green ash, black walnut, yellow-poplar, white oak, sugar maple.
79G: Menfro-----	4R	Severe	Severe	Slight	Slight	Severe	Northern red oak--- White ash----- Black oak----- Sugar maple----- White oak-----	81 70 73 68 59	4 5 4 5 3	Bur oak, green ash, black walnut, white oak, sugar maple.
90A: Bethalto-----	4A	Slight	Slight	Slight	Slight	Moderate	White oak----- Green ash----- Northern red oak---	70 --- ---	4 --- ---	Green ash, northern red oak, white oak, yellow-poplar, bur oak.
109A: Raccoon-----	4W	Slight	Severe	Severe	Severe	Severe	Pin oak----- White oak----- Post oak----- Green ash-----	80 --- 80 ---	4 --- 4 ---	Swamp white oak, bur oak, pin oak, green ash, water tupelo, baldcypress.

Table 11.—Forestland Management and Productivity—continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Productivity class* m ³ /ha	
267A, 267B Caseyville-----	4A	Slight	Slight	Slight	Slight	Severe	White oak-----	75	4	White oak, northern red oak, green ash, yellow-poplar, pecan.
283B, 283C2: Downsouth-----	4A	Slight	Slight	Slight	Slight	Moderate	White oak----- Northern red oak----	70 ---	4 ---	Green ash, white oak, northern red oak, yellow-poplar, shagbark hickory.
423A: Millstadt-----	4A	Slight	Slight	Moderate	Moderate	Moderate	Northern red oak---- Shagbark hickory---- Post oak-----	70 --- 70	4 --- 4	White ash, white oak, bur oak, northern red oak.
423B: Millstadt-----	4A	Slight	Slight	Moderate	Moderate	Moderate	Northern red oak---- Shagbark hickory---- Post oak-----	70 --- 70	4 --- 4	White ash, white oak, bur oak, northern red oak, shagbark hickory.
437B, 437C2: Redbud-----	4A	Slight	Slight	Slight	Slight	Severe	White oak-----	75	4	White oak, green ash, yellow-poplar, northern red oak, black oak.
477B, 477B2, 477C2, 477C3: Winfield-----	3A	Slight	Slight	Slight	Slight	Severe	White oak----- Northern red oak---- Black oak-----	65 60 65	3 3 3	White oak, green ash, yellow-poplar, northern red oak, black oak.
491B2, 491C3, 491D3: Ruma-----	4A	Slight	Slight	Slight	Slight	Moderate	White oak-----	75	4	White oak, northern red oak, green ash, black walnut, yellow-poplar.
515C2, 515C3, 515D3: Bunkum-----	4A	Slight	Moderate	Slight	Slight	Severe	White oak-----	75	4	Pecan, green ash, white oak, bur oak, northern red oak, black oak.
517A, 517B: Marine-----	4A	Slight	Slight	Moderate	Moderate	Moderate	Northern red oak---- Shagbark hickory---- Post oak-----	70 --- 70	4 --- 4	Northern red oak, green ash, baldcypress, shagbark hickory, pin oak, bur oak.

Table 11.—Forestland Management and Productivity—continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Productivity class* m3/ha	
582B, 582B2, 582C2: Homen-----	4A	Slight	Slight	Slight	Slight	Severe	White oak-----	75	4	White oak, green ash, yellow-poplar, northern red oak, black oak, pecan.
585F2: Negley-----	5R	Moderate	Moderate	Slight	Slight	Moderate	Northern red oak---- Sugar maple----- Black walnut----- Black cherry----- White ash----- Yellow-poplar-----	94 --- --- --- --- 99	5 --- --- --- --- 7	Northern red oak, green ash, yellow-poplar, white oak.
821G: Morristown-----	4R	Severe	Severe	Moderate	Slight	Moderate	Northern red oak---- White ash----- American sycamore--- Eastern cottonwood-- White oak----- Black oak----- Black locust----- Eastern redcedar----	70 --- --- --- 60 70 --- ---	4 --- --- --- 3 4 --- ---	Northern red oak, eastern redcedar, swamp white oak, pin oak, hybrid poplar.
871B, 871D: Lenzburg-----	5A	Slight	Slight	Slight	Slight	Moderate	Sweetgum----- Eastern cottonwood-- Black walnut-----	76 --- 73	5 --- ---	White ash, green ash, black walnut, pecan, shellbark hickory.
871G: Lenzburg-----	5R	Severe	Severe	Slight	Slight	Moderate	Sweetgum----- Eastern cottonwood-- Black walnut-----	76 --- 73	5 --- ---	White ash, green ash, pecan, shellbark hickory.
878C3: Coulterville----	4A	Slight	Slight	Slight	Slight	Moderate	White oak----- Pignut hickory----- Black oak-----	70 --- ---	4 --- ---	White oak, green ash, eastern redcedar, black oak, shagbark hickory.
Grantfork-----	4T	Slight	Slight	Slight	Slight	Moderate	Black oak----- Shagbark hickory---- Post oak-----	70 --- ---	4 --- ---	White ash, green ash, eastern redcedar, black oak, shagbark hickory.
880B2: Coulterville----	4A	Slight	Slight	Slight	Slight	Moderate	White oak----- Pignut hickory----- Post oak----- Black oak-----	70 --- --- ---	4 --- --- ---	Green ash, eastern redcedar, white oak, pin oak, shagbark hickory.
Darmstadt-----	4T	Slight	Slight	Moderate	Slight	Slight	White oak----- Pignut hickory----- Post oak----- Black oak-----	70 --- --- 70	4 --- --- 4	Green ash, eastern redcedar, white oak, pin oak.

Table 11.—Forestland Management and Productivity—continued

Map symbol and soil name	Ordi-nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Produc-tivity class* m3/ha	
882A: Oconee.										
Darmstadt-----	4T	Slight	Slight	Moderate	Slight	Slight	White oak----- Pignut hickory----- Black oak-----	70 --- 70	4 --- 4	Green ash, eastern redcedar, white oak, white ash.
Coulterville----	4A	Slight	Slight	Slight	Slight	Moderate	White oak----- Pignut hickory----- Black oak-----	70 --- ---	4 --- ---	Green ash, eastern redcedar, white oak, black oak, shagbark hickory.
882B: Oconee.										
Coulterville----	4A	Slight	Slight	Slight	Slight	Moderate	White oak----- Pignut hickory----- Black oak-----	70 --- ---	4 --- ---	Green ash, eastern redcedar, white oak, white ash, shagbark hickory.
Darmstadt-----	4T	Slight	Slight	Moderate	Slight	Slight	White oak----- Pignut hickory----- Post oak----- Black oak-----	70 --- --- 70	4 --- --- 4	Green ash, eastern redcedar, white oak, pin oak, black oak.
884C3: Bunkum-----	4A	Slight	Moderate	Slight	Slight	Severe	White oak-----	75	4	Pecan, green ash, white oak, bur oak, northern red oak, black oak.
Coulterville----	4A	Slight	Slight	Slight	Slight	Moderate	White oak----- Pignut hickory----- Post oak----- Black oak-----	70 --- --- ---	4 --- --- ---	Green ash, eastern redcedar, white oak, pin oak, black oak.
886F3: Ruma-----	4A	Slight	Slight	Slight	Slight	Moderate	White oak-----	75	4	Pecan, green ash, white oak, bur oak, northern red oak, black oak.
Ursa-----	4R	Moderate	Moderate	Moderate	Slight	Slight	White oak----- Northern red oak---- Black oak----- Green ash-----	70 70 70 ---	4 4 4 ---	Green ash, eastern redcedar, pin oak, baldcypress, shagbark hickory.
897D3: Bunkum-----	4A	Slight	Moderate	Slight	Slight	Severe	White oak-----	75	4	Pecan, green ash, white oak, bur oak, northern red oak, black oak.

Table 11.—Forestland Management and Productivity—continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Productivity class* m3/ha	
Atlas-----	4C	Slight	Slight	Moderate	Moderate	Slight	White oak----- Bur oak----- Northern red oak---- Green ash-----	70 70 70 ---	4 4 4 ---	Green ash, pin oak, baldcypress, shellbark hickory, bur oak.
906C3: Redbud-----	4A	Slight	Slight	Slight	Slight	Severe	White oak-----	75	4	White oak, green ash, yellow-poplar, northern red oak, black oak.
Hurst-----	4C	Slight	Slight	Moderate	Moderate	Slight	White oak----- White ash----- Southern red oak---- Bur oak-----	70 --- 70 ---	4 --- 4 ---	Green ash, eastern redcedar, pin oak, baldcypress, bur oak, shellbark hickory.
907D3: Redbud-----	4A	Slight	Slight	Slight	Slight	Severe	White oak-----	75	4	White oak, green ash, yellow-poplar, northern red oak, black oak.
Colp-----	4A	Slight	Slight	Slight	Slight	Slight	Bur oak----- White ash----- White oak----- Northern red oak----	70 --- 70 70	4 --- 4 4	Bur oak, white oak, northern red oak, white ash, green ash, yellow-poplar.
962F2: Sylvan-----	4R	Moderate	Moderate	Moderate	Slight	Moderate	Northern red oak---- Black walnut----- White oak-----	80 --- 80	4 --- 4	Northern red oak, white oak, green ash, shagbark hickory.
Bold. 962G: Sylvan-----	4R	Severe	Severe	Severe	Slight	Moderate	Northern red oak---- Yellow-poplar----- Black walnut----- White oak-----	80 90 --- 80	4 6 --- 4	Northern red oak, white oak, green ash, shagbark hickory.
Bold. 1071A: Darwin, undrained-----	4W	Slight	Severe	Severe	Moderate	Severe	Pin oak----- American sycamore--- Eastern cottonwood-- Swamp white oak---- Green ash-----	80 --- --- --- ---	4 --- --- --- ---	Swamp white oak, bur oak, green ash, pin oak, baldcypress.
1288A: Petrolia, undrained-----	5W	Slight	Moderate	Moderate	Slight	Severe	Pin oak----- Sweetgum----- American sycamore--- Eastern cottonwood-- Cherrybark oak-----	90 --- --- 100 ---	5 --- --- 9 ---	Swamp white oak, bur oak, green ash, pin oak, water tupelo, baldcypress.

Table 11.—Forestland Management and Productivity—continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Productivity class* m3/ha	
3038B: Rocher-----	7A	Slight	Slight	Slight	Slight	Moderate	Yellow-poplar----- Sweetgum----- American sycamore--- Eastern cottonwood--	95 --- --- 105	7 --- --- 10	Swamp white oak, bur oak, baldcypress, pin oak, green ash.
3070L: Beaucoup-----	5W	Slight	Severe	Moderate	Moderate	Severe	Pin oak----- American sycamore--- Eastern cottonwood-- Sweetgum----- Cherrybark oak-----	90 --- 100 --- ---	5 --- 9 --- ---	Swamp white oak, bur oak, baldcypress green ash, pin oak.
3288L: Petrolia-----	5W	Slight	Moderate	Moderate	Slight	Severe	Pin oak----- Sweetgum----- American sycamore--- Eastern cottonwood-- Cherrybark oak-----	90 --- --- 100 ---	5 --- --- 9 ---	Swamp white oak, bur oak, green ash, pin oak, water tupelo, baldcypress.
3333A: Wakeland-----	5A	Slight	Severe	Slight	Moderate	Severe	Pin oak----- Boxelder----- Black walnut----- Green ash-----	90 --- --- ---	5 --- --- ---	White oak, northern red oak, green ash, green ash, pecan, shellbark hickory.
3334L: Birds-----	5W	Slight	Severe	Moderate	Moderate	Severe	Pin oak----- American sycamore--- Eastern cottonwood--	90 --- 100	5 --- 9	Swamp white oak, bur oak, pin oak, baldcypress, green ash.
3336A: Wilbur-----	8A	Slight	Moderate	Slight	Slight	Severe	Yellow-poplar-----	100	8	White oak, northern red oak, pecan, shagbark hickory, green ash.
3391A: Blake-----	12A	Slight	Slight	Slight	Slight	Slight	Eastern cottonwood-- Silver maple----- American sycamore---	115 --- ---	12 --- ---	Swamp white oak, bur oak, baldcypress, green ash.
3394A, 3394B: Haynie-----	11A	Slight	Slight	Slight	Slight	Moderate	Eastern cottonwood-- Green ash----- American sycamore--- Black walnut-----	110 --- 110 ---	11 --- 11 ---	Swamp white oak, bur oak, baldcypress, green ash.
3415A: Orion-----	2W	Slight	Moderate	Slight	Slight	Severe	Red maple----- Silver maple----- White ash-----	80 --- ---	2 --- ---	White oak, northern red oak, pecan, green ash, shagbark hickory.
3428A: Coffeen-----	5W	Slight	Moderate	Slight	Slight	Severe	Pin oak----- Green ash----- Eastern cottonwood--	90 --- 100	5 --- ---	Swamp white oak, pin oak, green ash, bur oak, baldcypress.

Table 11.—Forestland Management and Productivity—continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Productivity class* m3/ha	
3847L: Fluvaquents-----	2W	Slight	Severe	Severe	Severe	Severe	White Ash----- Eastern cottonwood-- Red maple-----	40 75 46	2 5 2	Swamp white oak, bur oak, green ash, swamp chestnut oak, pin oak, baldcypress.
Orthents. 5079C: Menfro, karst---	4A	Slight	Slight	Slight	Slight	Severe	Northern red oak---- White ash----- Black oak----- Sugar maple----- White oak-----	81 70 73 68 59	4 5 4 5 3	White oak, northern red oak, black oak, green ash, yellow-poplar, pecan,
5079D: Menfro, karst---	4R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak---- White ash----- Black oak----- Sugar maple----- White oak-----	81 70 73 68 59	4 5 4 5 3	White oak, northern red oak, black oak, green ash, yellow-poplar, pecan,
5079G: Menfro, karst---	4R	Severe	Severe	Slight	Slight	Severe	Northern red oak---- White ash----- Black oak----- Sugar maple----- White oak-----	81 70 73 68 59	4 5 4 5 3	White oak, northern red oak, black oak, green ash, yellow-poplar, pecan,
8026A: Wagner-----	4W	Slight	Severe	Severe	Severe	Severe	Pin oak----- Blackjack oak----- Black oak-----	70 60 55	4 3 3	Water tupelo, swamp white oak, pin oak, baldcypress, bur oak, green ash.
8070A: Beaucoup-----	5W	Slight	Severe	Moderate	Moderate	Severe	Pin oak----- American sycamore--- Eastern cottonwood--	90 --- 100	5 --- 9	Swamp white oak, bur oak, baldcypress, green ash, pin oak.
8071L: Darwin-----	4W	Slight	Severe	Severe	Moderate	Severe	Pin oak----- American sycamore--- Eastern cottonwood-- Green ash----- Swamp white oak----	80 --- --- --- ---	4 --- --- --- ---	Green ash, swamp white oak, pin oak, bur oak, baldcypress.
8084A: Okaw-----	4W	Slight	Severe	Severe	Severe	Severe	Pin oak----- White oak----- Blackjack oak----- Post oak----- Black oak-----	70 --- 60 --- 55	4 --- 3 --- 3	Green ash, water tupelo, swamp white oak, pin oak, baldcypress, bur oak.

Table 11.—Forestland Management and Productivity—continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Productivity class*	
8109A: Raccoon-----	4W	Slight	Severe	Moderate	Severe	Severe	Pin oak----- Green ash----- White oak----- Post oak-----	80 --- --- 80	4 --- --- 4	Water tupelo, pin oak, baldcypress, bur oak, swamp white oak, green ash.
8122C: Colp-----	4A	Slight	Slight	Slight	Slight	Slight	Bur oak----- White ash----- White oak----- Northern red oak---	70 --- 70 70	4 --- 4 4	White ash, green ash, black walnut, yellow-poplar, white oak, northern red oak.
8122D: Colp-----	4A	Slight	Slight	Slight	Slight	Slight	Bur oak----- White ash----- White oak----- Northern red oak---	70 --- 70 70	4 --- 4 4	White ash, green ash, yellow-poplar, white oak, northern red oak, pecan.
8131B: Alvin-----	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak--- Black walnut----- White oak-----	80 --- 80	4 --- 4	Green ash, black walnut, yellow-poplar, white oak, northern red oak.
8162A: Gorham-----	5W	Slight	Severe	Moderate	Moderate	Severe	Pin oak----- American sycamore--- Eastern cottonwood--	90 --- 100	5 --- 9	Green ash, swamp white oak, cherrybark oak, pin oak, baldcypress, bur oak.
8284A: Tice-----	6A	Slight	Slight	Slight	Slight	Severe	Yellow-poplar----- White ash----- Sweetgum----- Pin oak----- Eastern cottonwood--	90 --- 86 96 ---	6 --- 7 5 ---	Green ash, yellow-poplar, cherrybark oak, white oak, northern red oak, pecan.
8338A: Hurst-----	4C	Slight	Slight	Moderate	Moderate	Slight	White oak----- White ash----- Post oak----- Black oak----- Bur oak-----	70 --- --- --- ---	4 --- --- --- ---	Green ash, eastern redcedar, bur oak, pin oak, baldcypress.
8338B, 8338C: Hurst-----	4C	Slight	Slight	Moderate	Moderate	Slight	Southern red oak--- White ash----- White oak----- Bur oak-----	70 --- --- ---	4 --- --- ---	Green ash, eastern redcedar, pin oak, baldcypress, shagbark hickory.
8394A: Haynie-----	11A	Slight	Slight	Slight	Slight	Moderate	Eastern cottonwood-- American sycamore--- Green ash----- Black walnut-----	110 110 --- ---	11 11 --- ---	Green ash, bur oak, swamp white oak, baldcypress.

Table 11.-Forestland Management and Productivity-continued

Map symbol and soil name	Ordi-nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Produc-tivity class* m ³ /ha	
8432A: Geff-----	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak---- Bur oak----- Green ash----- White oak-----	70 --- --- 70	4 --- --- 4	Northern red oak, green ash, yellow-poplar, white oak, pecan.
8434B: Ridgway-----	5A	Slight	Slight	Slight	Slight	Severe	White oak----- Green ash-----	85 76	5 5	Green ash, black walnut, white oak, northern red oak, pecan.
8489A: Hurst, sandy substratum-----	4W	Slight	Moderate	Slight	Slight	Slight	White oak----- White ash----- Southern red oak---- Bur oak-----	70 --- 70 ---	4 --- 4 ---	Eastern redcedar, swamp white oak, bur oak, baldcypress, green ash, pin oak.
8524L: Zipp-----	4W	Slight	Severe	Severe	Severe	Severe	White oak----- Pin oak----- Sweetgum-----	75 86 90	4 5 7	Swamp white oak, bur oak, baldcypress, green ash, pin oak.
8591A: Fults-----	4W	Slight	Severe	Severe	Moderate	Severe	Pin oak----- American sycamore--- Green ash----- Eastern cottonwood-- Swamp white oak----	80 --- --- --- ---	4 --- --- --- ---	Green ash, swamp white oak, baldcypress, bur oak, pin oak.
8646A: Fluvaquents, loamy-----	4W	Slight	Severe	Severe	Severe	Severe	Pin oak----- White ash----- Eastern cottonwood-- Red maple-----	70 40 75 46	4 2 5 2	Swamp chestnut oak, pin oak, swamp white oak, bur oak, baldcypress, green ash.
8812F: Typic Hapludalfs	5R	Moderate	Moderate	Slight	Slight	Severe	White oak----- Shagbark hickory---- Bur oak-----	85 --- ---	5 --- ---	Green ash, yellow-poplar, white oak, northern red oak, shagbark hickory, pecan.

*Productivity index is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

Table 12.—Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
5C2, 5C3: Blair-----	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
5D3: Blair-----	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
8F2: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
31A: Pierron-----	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.
37A: Worthen-----	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
37B: Worthen-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
46A: Herrick-----	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
50A: Virden-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
75B: Drury-----	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
79B: Menfro-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
79C2, 79C3: Menfro-----	Slight-----	Slight-----	Severe: slope.	Slight-----	Slight.
79D2, 79D3: Menfro-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
79F, 79F3, 79G: Menfro-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
81A: Littleton-----	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
90A: Bethalto-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

Table 12.-Recreational Development-continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
109A: Raccoon-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
112A: Cowden-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
113A, 113B: Oconee-----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
267A, 267B: Caseyville-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
283B: Downsouth-----	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
283C2: Downsouth-----	Moderate: wetness.	Moderate: wetness.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
384A, 384B: Edwardsville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
385A: Mascoutah-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
423A, 423B: Millstadt-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
433A: Floraville-----	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.
437B: Redbud-----	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Slight.
437C2: Redbud-----	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
438B: Aviston-----	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight-----	Slight.
438C2: Aviston-----	Moderate: wetness.	Moderate: wetness.	Severe: slope.	Slight-----	Slight.
441B: Wakenda-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
441C2: Wakenda-----	Slight-----	Slight-----	Severe: slope.	Slight-----	Slight.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
466A: Bartelso.....	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
468A: Lakaskia.....	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
477B, 477B2: Winfield.....	Slight.....	Slight.....	Moderate: slope.	Slight.....	Slight.
477C2, 477C3: Winfield.....	Slight.....	Slight.....	Severe: slope.	Slight.....	Slight.
491B2: Ruma.....	Slight.....	Slight.....	Moderate: slope.	Severe: erodes easily.	Slight.
491C3: Ruma.....	Slight.....	Slight.....	Severe: slope.	Severe: erodes easily.	Slight.
491D3: Ruma.....	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
515C2, 515C3: Bunkum.....	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
515D3: Bunkum.....	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
517A, 517B: Marine.....	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
582B, 582B2: Homen.....	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Slight.
582C2: Homen.....	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
585F2: Negley.....	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
801B: Orthents, silty	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Slight.
801D: Orthents, silty	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
802B: Orthents, loamy-	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight-----	Slight.
802D: Orthents, loamy-	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
821G: Morristown-----	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones	Severe: slope.	Severe: large stones, slope.
824B: Swanwick-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight-----	Slight.
825B: Lenzburg, acid substratum-----	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: erodes easily.	Moderate: large stones
826D: Orthents, acid substratum-----	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
871B: Lenzburg-----	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope.	Slight-----	Moderate: large stones
871D: Lenzburg-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: large stones
871G: Lenzburg-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
878C3: Coulterville----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
Grantfork-----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
880B2: Coulterville----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
Darmstadt-----	Severe: wetness, percs slowly, excess sodium.	Severe: excess sodium, percs slowly.	Severe: wetness, percs slowly.	Severe: erodes easily.	Severe: excess sodium.
882A: Ocone-----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Darmstadt-----	Severe: wetness, percs slowly, excess sodium.	Severe: excess sodium, percs slowly.	Severe: wetness, percs slowly.	Severe: erodes easily.	Severe: excess sodium.
Coulterville----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
882B: Oconee-----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Coulterville----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
Darmstadt-----	Severe: wetness, percs slowly, excess sodium.	Severe: excess sodium, percs slowly.	Severe: wetness, percs slowly.	Severe: erodes easily.	Severe: excess sodium.
884C3: Bunkum-----	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Coulterville----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
885A: Virden-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Fosterburg-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
886F3: Ruma-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Ursa-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
894A: Herrick-----	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Biddle-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Piasa-----	Severe: ponding, percs slowly, excess sodium.	Severe: ponding, excess sodium, percs slowly.	Severe: ponding, percs slowly, excess sodium.	Severe: ponding.	Severe: excess sodium, ponding.
897D3: Bunkum-----	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Atlas-----	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: slope, wetness, percs slowly.	Severe: wetness, erodes easily.	Severe: wetness.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
906C3: Redbud-----	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
Hurst-----	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
907D3: Redbud-----	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Colp-----	Moderate: slope, wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
962F2: Sylvan-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Bold-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
962G: Sylvan-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Bold-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
993A: Cowden-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Piasa-----	Severe: ponding, percs slowly, excess sodium.	Severe: ponding, excess sodium, percs slowly.	Severe: ponding, percs slowly, excess sodium.	Severe: ponding.	Severe: excess sodium, ponding.
1071A: Darwin, undrained-----	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, percs slowly.	Severe: too clayey, ponding, flooding.	Severe: ponding, too clayey.	Severe: ponding, flooding, too clayey.
1248A: McFain, undrained-----	Severe: flooding, ponding, too clayey.	Severe: ponding, too clayey.	Severe: too clayey, ponding, flooding.	Severe: ponding, too clayey.	Severe: ponding, flooding, too clayey.
1288A: Petrolia, undrained-----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
2071L: Darwin-----	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, percs slowly.	Severe: too clayey, ponding.	Severe: ponding, too clayey.	Severe: ponding, too clayey.
Urban land-----	---	---	---	---	---
2079D: Menfro-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Urban land-----	---	---	---	---	---
2079E: Menfro-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Urban land-----	---	---	---	---	---
2183A: Shaffton-----	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight-----	Moderate: flooding.
Urban land-----	---	---	---	---	---
2384B: Edwardsville---	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Urban land-----	---	---	---	---	---
2477B: Winfield-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
Urban land-----	---	---	---	---	---
3038B: Rocher-----	Severe: flooding.	Moderate: flooding.	Moderate: slope.	Moderate: flooding.	Severe: flooding.
3070L: Beaucoup-----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3076A: Otter-----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3083L: Wabash-----	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, percs slowly.	Severe: too clayey, ponding, flooding.	Severe: ponding, too clayey.	Severe: ponding, flooding, too clayey.
3180A: Dupo-----	Severe: flooding.	Moderate: flooding, wetness, percs slowly.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.
3288L: Petrolia-----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
3333A: Wakeland-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
3334L: Birds-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
3336A: Wilbur-----	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.
3391A: Blake-----	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3394A: Haynie-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3394B: Haynie-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3415A: Orion-----	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
3428A: Coffeen-----	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
3847L: Fluvaquents----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
Orthents-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
5079C: Menfro, karst---	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
5079D: Menfro, karst---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
5079G: Menfro, karst---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
8026A: Wagner-----	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
8070A: Beaucoup-----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
8071L: Darwin-----	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, percs slowly.	Severe: too clayey, ponding.	Severe: ponding, too clayey.	Severe: ponding, too clayey.
8084A: Okaw-----	Severe: flooding, ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.
8109A: Racoon-----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
8122C: Colp-----	Severe: flooding.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: flooding.
8122D: Colp-----	Severe: flooding.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: flooding, slope.
8131B: Alvin-----	Severe: flooding.	Slight-----	Moderate: slope.	Slight-----	Moderate: flooding.
8162A: Gorham-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
8180A: Dupo-----	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, flooding, percs slowly.	Moderate: wetness.	Moderate: wetness, flooding.
8183A: Shaffton-----	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight-----	Moderate: flooding.
8284A: Tice-----	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
8304B: Landes-----	Severe: flooding.	Slight-----	Moderate: slope.	Slight-----	Moderate: small stones
8338A: Hurst-----	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness, flooding.
8338B: Hurst-----	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness, flooding.

Table 12.—Recreational Development—continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
8338C: Hurst-----	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness, flooding.
8394A: Haynie-----	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
8432A: Geff-----	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8434B: Ridgway-----	Severe: flooding.	Slight-----	Moderate: slope, flooding.	Severe: erodes easily.	Moderate: flooding.
8436B: Meadowbank-----	Severe: flooding.	Slight-----	Moderate: slope, flooding.	Slight-----	Moderate: flooding.
8489A: Hurst, Sandy Substratum-----	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, flooding.
8524L: Zipp-----	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, percs slowly.	Severe: too clayey, ponding.	Severe: ponding, too clayey.	Severe: ponding, too clayey.
8591A: Fults-----	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
8592A: Nameoki-----	Severe: flooding, wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
8646A: Fluvaquents, Loamy-----	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
8812F: Typic Hapludalfs	Severe: flooding, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 13.—Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Forest- land wild- life	Wetland wild- life
5C2, 5C3, 5D3: Blair-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8F2: Hickory-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
31A: Pierron-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Fair	Good.
37A, 37B: Worthen-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
46A: Herrick-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
50A: Virden-----	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
75B: Drury-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
79B: Menfro-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
79C2, 79C3, 79D2, 79D3: Menfro-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
79F, 79F3: Menfro-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
79G: Menfro-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
81A: Littleton-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
90A: Bethalto-----	Poor	Poor	Poor	Poor	Poor	Fair	Fair	Good	Good	Fair.
109A: Raccoon-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
112A: Cowden-----	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
113A: Oconee-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
113B: Oconee-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
267A, 267B: Caseyville-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
283B, 283C2: Downsouth-----	Fair	Fair	Fair	Poor	Fair	Poor	Poor	Good	Good	Poor.

Table 13.-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	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Open-land wild-life	Forest-land wild-life	Wetland wild-life
384A: Edwardsville----	Poor	Poor	Poor	Poor	Poor	Fair	Fair	Good	Poor	Fair.
384B: Edwardsville----	Poor	Poor	Poor	Poor	Poor	Fair	Poor	Good	Poor	Poor.
385A: Mascoutah-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Poor	Good.
423A, 423B: Millstadt-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
433A: Floraville-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Fair	Good.
437B, 437C2: Redbud-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
438B, 438C2: Aviston-----	Fair	Fair	Fair	Poor	Fair	Poor	Poor	Good	Good	Poor.
441B: Wakenda-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
441C2: Wakenda-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
466A: Bartelso-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
468A Lakaskia-----	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
477B, 477B2: Winfield-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
477C2, 477C3: Winfield-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
491B2: Ruma-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
491C3, 491D3: Ruma-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
515C2, 515C3, 515D3: Bunkum-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
517A: Marine-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
517B: Marine-----	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
582B, 582B2: Homen-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
582C2: Homen-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

Table 13.—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	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Forest- land wild- life	Wetland wild- life
585F2: Negley-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
801B: Orthents, silty-	Good	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
801D: Orthents, silty-	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
802B: Orthents, loamy-	Good	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
802D: Orthents, loamy-	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
821G: Morristown-----	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
824B: Swanwick-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
825B: Lenzburg, acid substratum-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
826D: Orthents, acid substratum-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
871B: Lenzburg-----	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
871D: Lenzburg-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
871G: Lenzburg-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
878C3: Coulterville----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Grantfork-----	Fair	Good	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
880B2: Coulterville----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Darmstadt-----	Fair	Good	Poor	Good	Good	Fair	Poor	Fair	Good	Poor.
882A: Oconee-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Darmstadt-----	Fair	Good	Poor	Good	Good	Fair	Fair	Fair	Good	Fair.
Coulterville----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 13.-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	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Forest- land wild- life	Wetland wild- life
882B: Oconee-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Coulterville----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Darmstadt-----	Fair	Good	Poor	Good	Good	Fair	Poor	Fair	Good	Poor.
884C3: Bunkum-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Coulterville----	Fair	Good	Good	Good	Good	---	Fair	Good	Good	Fair.
885A: Virden-----	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Fosterburg-----	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
886F3: Ruma-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ursa-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
894A: Herrick-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Biddle-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Piasa-----	Poor	Fair	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.
897D3: Bunkum-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Atlas-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
906C3: Redbud-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Hurst-----	Fair	Good	Good	Good	Fair	Poor	Very poor.	Good	Good	Very poor.
907D3: Redbud-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Colp-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
962F2, 962G: Sylvan-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Bold-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
993A: Cowden-----	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
Piasa-----	Poor	Fair	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.

Table 13.—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	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Forest- land wild- life	Wetland wild- life
1071A: Darwin, undrained-----	Poor	Poor	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.
1248A: McFain, undrained-----	Good	Good	Good	Good	Fair	Good	Good	Good	Fair	Fair.
1288A: Petrolia, undrained-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
2071L: Darwin-----	Poor	Poor	Fair	Poor	Poor	Good	Good	Poor	Poor	Poor
Urban land-----	---	---	---	---	---	---	---	---	---	---
2079D: Menfro-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land-----	---	---	---	---	---	---	---	---	---	---
2079E: Menfro-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Urban land-----	---	---	---	---	---	---	---	---	---	---
2183A: Shaffton-----	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good.
Urban land-----	---	---	---	---	---	---	---	---	---	---
2384B: Edwardsville---	Poor	Poor	Poor	Poor	Poor	Fair	Poor	Good	Poor	Poor.
Urban land-----	---	---	---	---	---	---	---	---	---	---
2477B: Winfield-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land-----	---	---	---	---	---	---	---	---	---	---
3038B: Rocher-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
3070L: Beaucoup-----	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3076A: Otter-----	Good	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3083L: Wabash-----	Very poor.	Poor	Poor	Poor	Poor	Poor	Good	Poor	Poor	Fair.
3180A: Dupo-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
3288L: Petrolia-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3333A: Wakeland-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.

Table 13.-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	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Forest- land wild- life	Wetland wild- life
3334L: Birds-----	Good	Fair	Good	Good	Fair	Good	Good	Good	Good	Good.
3336A: Wilbur-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
3391A: Blake-----	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good.
3394A, 3394B: Haynie-----	Fair	Fair	Fair	Good	Poor	Poor	Poor	Fair	Fair	Poor.
3415A: Orion-----	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Good.
3428A: Coffeen-----	Fair	Fair	Fair	Good	Poor	Fair	Poor	Fair	Good	Poor.
3847L: Fluvaquents-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Orthents-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
5079C: Menfro, karst---	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
5079D: Menfro, karst---	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
5079G: Menfro, karst---	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
8026A: Wagner-----	Good	Good	Fair	Fair	Fair	Good	Good	Good	Fair	Fair.
8070A: Beaucoup-----	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
8071L: Darwin-----	Poor	Poor	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.
8084A: Okaw-----	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
8109A: Raccoon-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
8122C: Colp-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8122D: Colp-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8131B: Alvin-----	Good	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
8162A: Gorham-----	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
8180A: Dupo-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 13.—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	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Forest- land wild- life	Wetland wild- life
8183A: Shaffton-----	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good.
8284A: Tice-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
8304B: Landes-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8338A: Hurst-----	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair.
8338B, 8338C: Hurst-----	Fair	Good	Good	Good	Fair	Poor	Very poor.	Good	Good	Very poor.
8394A: Haynie-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
8432A: Geff-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8434B: Ridgway-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
8436B: Meadowbank-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
8489A: Hurst, sandy substratum-----	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair.
8524L: Zipp-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
8591A: Fults-----	Fair	Fair	Poor	Fair	Fair	Good	Fair	Fair	Fair	Fair.
8592A: Nameoki-----	Fair	Good	Fair	Good	Good	Poor	Good	Fair	Good	Fair.
8646A: Fluvaquents, loamy-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
8812F: Typic Hapludalfs	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

Table 14.—Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
5C2, 5C3: Blair-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate: wetness.
5D3: Blair-----	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: wetness, slope.
8F2: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
31A: Pierron-----	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
37A, 37B: Worthen-----	Slight-----	Slight-----	Slight-----	Slight-----	Severe: low strength, frost action.	Slight.
46A: Herrick-----	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
50A: Virden-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
75B: Drury-----	Slight-----	Slight-----	Slight-----	Slight-----	Severe: low strength, frost action.	Slight.
79B: Menfro-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
79C2, 79C3: Menfro-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
79D2, 79D3: Menfro-----	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
79F, 79F3, 79G: Menfro-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.

Table 14.—Building Site Development—continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
90A: Bethalto-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
109A: Raccoon-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
112A: Cowden-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
113A, 113B: Oconee-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, frost action, shrink-swell.	Moderate: wetness.
267A, 267B: Caseyville-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
283B: Downsouth-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Moderate: wetness.
283C2: Downsouth-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate: wetness.
384A, 384B: Edwardsville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
385A: Mascoutah-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
423A: Millstadt-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
423B: Millstadt-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
433A: Floraville-----	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.

Table 14.—Building Site Development—continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
437B: Redbud-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
437C2: Redbud-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
438B: Aviston-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
438C2: Aviston-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
441B: Wakenda-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
441C2: Wakenda-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
466A: Bartelso-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
468A: Lakaskia-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
477B, 477B2: Winfield-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
477C2, 477C3: Winfield-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
491B2: Ruma-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
491C3: Ruma-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
491D3: Ruma-----	Moderate: wetness, slope.	Moderate: shrink-swell, slope.	Moderate: wetness, slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.

Table 14.—Building Site Development—continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
515C2, 515C3: Bunkum-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
515D3: Bunkum-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength, wetness.	Severe: wetness.
517A, 517B: Marine-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
582B, 582B2: Homen-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
582C2: Homen-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
585F2: Negley-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
801B: Orthents, silty-	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
801D: Orthents, silty-	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
802B: Orthents, loamy-	Moderate: dense layer, wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
802D: Orthents, loamy-	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
821G: Morristown-----	Severe: slope.	Severe: slope, unstable fill.	Severe: slope, unstable fill.	Severe: slope, unstable fill.	Severe: slope, unstable fill.	Severe: large stones, slope.
824B: Swanwick-----	Moderate: dense layer, wetness.	Slight-----	Moderate: wetness.	Slight-----	Severe: low strength, frost action.	Slight.
825B: Lenzburg, acid substratum-----	Moderate: dense layer.	Severe: too acid.	Severe: too acid.	Severe: too acid.	Severe: low strength.	Moderate: large stones.

Table 14.-Building Site Development-continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
826D: Orthents, acid substratum-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength, wetness, frost action.	Severe: wetness.
871B: Lenzburg-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: large stones.
871D: Lenzburg-----	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: large stones.
871G: Lenzburg-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
878C3: Coulterville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
Grantfork-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
880B2: Coulterville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
Darmstadt-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Severe: excess sodium.
882A: Oconee-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, frost action, shrink-swell.	Moderate: wetness.
Darmstadt-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Severe: excess sodium.
Coulterville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
882B: Oconee-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, frost action, shrink-swell.	Moderate: wetness.
Coulterville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
Darmstadt-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Severe: excess sodium.

Table 14.—Building Site Development—continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
884C3: Bunkum-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Coulterville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
885A: Virden-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
Fosterburg-----	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
886F3: Ruma-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Ursa-----	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
894A: Herrick-----	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
Biddle-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
Piasa-----	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: excess sodium, ponding.
897D3: Bunkum-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength, wetness.	Severe: wetness.
Atlas-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
906C3: Redbud-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Hurst-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.

Table 14.—Building Site Development—continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2079E: Menfro-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Urban land-----	---	---	---	---	---	---
2183A: Shaffton-----	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Urban land-----	---	---	---	---	---	---
2384B: Edwardsville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
Urban land-----	---	---	---	---	---	---
2477B: Winfield-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Urban land-----	---	---	---	---	---	---
3038B: Rocher-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
3070L: Beaucoup-----	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3076A: Otter-----	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3083L: Wabash-----	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding, flooding, too clayey.
3180A: Dupo-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness, shrink-swell.	Severe: flooding.	Severe: low strength, flooding, frost action.	Severe: flooding.
3288L: Petrolia-----	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3333A: Wakeland-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.

Table 14.-Building Site Development--continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
3334L: Birds-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
3336A: Wilbur-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
3391A: Blake-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding, frost action.	Severe: flooding.
3394A, 3394B: Haynie-----	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding, frost action.	Severe: flooding.
3415A: Orion-----	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding, frost action.	Severe: flooding.
3428A: Coffeen-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: flooding.
3847L: Fluvaquents-----	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe: ponding, flooding.
Orthents-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
5079C: Menfro, karst---	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
5079D, 5079G: Menfro, karst---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
8026A: Wagner-----	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
8070A: Beaucoup-----	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.

Table 14.—Building Site Development—continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
8071L: Darwin-----	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding, too clayey.
8084A: Okaw-----	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
8109A: Raccoon-----	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.
8122C: Colp-----	Severe: wetness.	Severe: flooding, shrink-swell.	Severe: flooding, wetness.	Severe: flooding, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: flooding.
8122D: Colp-----	Severe: wetness.	Severe: flooding, shrink-swell.	Severe: flooding, wetness.	Severe: flooding, shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: flooding, slope.
8131B: Alvin-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
8162A: Gorham-----	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
8180A: Dupo-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness, shrink-swell.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.
8183A: Shaffton-----	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
8284A: Tice-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.
8304B: Landes-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: small stones.
8338A, 8338B, 8338C: Hurst-----	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Moderate: wetness, flooding.

Table 14.—Building Site Development—continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
8338B: Hurst-----	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Moderate: wetness, flooding.
8338C: Hurst-----	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Moderate: wetness, flooding.
8394A: Haynie-----	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: flooding.
8432A: Geff-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.
8434B: Ridgway-----	Moderate: dense layer, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: flooding.
8436B: Meadowbank-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: flooding.
8489A: Hurst, sandy substratum-----	Severe: cutbanks cave, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Moderate: wetness, flooding.
8524L: Zipp-----	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding, too clayey.
8591A: Fults-----	Severe: cutbanks cave, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness, too clayey.
8592A: Nameoki-----	Severe: cutbanks cave, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Severe: too clayey.
8646A: Fluvaquents, loamy-----	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe: ponding.
8812F: Typic Hapludalfs	Severe: slope.	Severe: flooding, slope.	Severe: flooding, slope.	Severe: flooding, slope.	Severe: slope.	Severe: slope.

Table 15.—Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
5C2, 5C3: Blair-----	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
5D3: Blair-----	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, slope, wetness.
8F2: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
31A: Pierron-----	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey, too acid	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
37A: Worthen-----	Slight-----	Moderate: seepage.	Slight-----	Slight-----	Good.
37B: Worthen-----	Slight-----	Moderate: seepage, slope.	Slight-----	Slight-----	Good.
46A: Herrick-----	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
50A: Virden-----	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
75B: Drury-----	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Good.
79B: Menfro-----	Slight-----	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
79C2, 79C3: Menfro-----	Slight-----	Severe: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
79D2, 79D3: Menfro-----	Moderate: slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
79F, 79F3, 79G: Menfro-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
81A: Littleton-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

Table 15.--Sanitary Facilities--continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
90A: Bethalto-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
109A: Racoon-----	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding, thin layer.
112A: Cowden-----	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
113A: Oconee-----	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
113B: Oconee-----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
267A, 267B: Caseyville-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
283B: Downsouth-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
283C2: Downsouth-----	Severe: wetness.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
384A, 384B: Edwardsville----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
385A: Mascoutah-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
423A: Millstadt-----	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness, too acid	Severe: wetness.	Poor: wetness, too acid
423B: Millstadt-----	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too acid	Severe: wetness.	Poor: wetness, too acid
433A: Floraville-----	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey, too acid	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
437B: Redbud-----	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.

Table 15.—Sanitary Facilities—continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
437C2: Redbud-----	Severe: wetness, percs slowly.	Severe: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
438B: Aviston-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
438C2: Aviston-----	Severe: wetness.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
441B: Wakenda-----	Moderate: wetness.	Moderate: seepage, slope, wetness.	Moderate: too clayey.	Moderate: wetness.	Fair: too clayey.
441C2: Wakenda-----	Moderate: wetness.	Severe: slope.	Moderate: too clayey.	Moderate: wetness.	Fair: too clayey.
466A: Bartelso-----	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
468A: Lakaskia-----	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
477B, 477B2: Winfield-----	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
477C2, 477C3: Winfield-----	Severe: wetness.	Severe: slope, wetness.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
491B2: Ruma-----	Moderate: wetness.	Moderate: seepage, slope, wetness.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey.
491C3: Ruma-----	Moderate: wetness.	Severe: slope.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey.
491D3: Ruma-----	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope.
515C2, 515C3, 515D3: Bunkum-----	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
517A, 517B: Marine-----	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

Table 15.—Sanitary Facilities—continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
582B, 582B2: Homen-----	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
582C2: Homen-----	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
585F2: Negley-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
801B: Orthents, silty	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
801D: Orthents, silty	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope.	Severe: wetness, slope.	Poor: slope.
802B: Orthents, loamy	Severe: percs slowly.	Moderate: slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
802D: Orthents, loamy	Severe: percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
821G: Morristown-----	Severe: slope, percs slowly, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope.
824B: Swanwick-----	Severe: percs slowly.	Moderate: slope, wetness.	Moderate: too clayey.	Slight-----	Fair: too clayey.
825B: Lenzburg, acid substratum-----	Severe: percs slowly.	Severe: seepage.	Severe: seepage, too acid	Slight-----	Fair: too clayey, small stones
826D: Orthents, acid substratum-----	Severe: wetness, percs slowly.	Severe: seepage, slope, wetness.	Severe: seepage, wetness, too acid	Severe: wetness.	Poor: wetness.
871B: Lenzburg-----	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, small stones
871D: Lenzburg-----	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.

Table 15.—Sanitary Facilities—continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
871G: Lenzburg-----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
878C3: Coulterville----	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Grantfork-----	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
880B2: Coulterville----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Darmstadt-----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, excess sodium.	Severe: wetness.	Poor: wetness, excess sodium.
882A: Oconee-----	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Darmstadt-----	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, excess sodium.	Severe: wetness.	Poor: wetness, excess sodium.
Coulterville----	Severe: wetness, percs slowly.	Slight-----	Severe: wetness.	Severe: wetness.	Poor: wetness.
882B: Oconee-----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Coulterville----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Darmstadt-----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, excess sodium.	Severe: wetness.	Poor: wetness, excess sodium.
884C3: Bunkum-----	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Coulterville----	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
885A: Virden-----	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Fosterburg-----	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.

Table 15.-Sanitary Facilities-continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
886F3: Ruma-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Ursa-----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
894A: Herrick-----	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Biddle-----	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
Piasa-----	Severe: ponding, percs slowly.	Slight-----	Severe: ponding, too clayey, excess sodium.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
897D3: Bunkum-----	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Atlas-----	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
906C3: Redbud-----	Severe: wetness, percs slowly.	Severe: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Hurst-----	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
907D3: Redbud-----	Severe: wetness, percs slowly.	Severe: slope.	Moderate: wetness, slope, too clayey.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Colp-----	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
962F2, 962G: Sylvan-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Bold-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
993A: Cowden-----	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Piasa-----	Severe: ponding, percs slowly.	Slight-----	Severe: ponding, too clayey, excess sodium.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.

Table 15.—Sanitary Facilities—continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1071A: Darwin, undrained-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
1248A: McFain, undrained-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
1288A: Petrolia, undrained-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
2071L: Darwin-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
Urban land-----	---	---	---	---	---
2079D: Menfro-----	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Urban land-----	---	---	---	---	---
2079E: Menfro-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Urban land-----	---	---	---	---	---
2183A: Shaffton-----	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
Urban land-----	---	---	---	---	---
2384B: Edwardsville---	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Urban land-----	---	---	---	---	---
2477B: Winfield-----	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Urban land-----	---	---	---	---	---
3038B: Rocher-----	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Fair: too sandy, thin layer.

Table 15.-Sanitary Facilities-continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
3070L: Beaucoup-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3076A: Otter-----	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3083L: Wabash-----	Severe: flooding, ponding, percs slowly.	Severe: flooding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
3180A: Dupo-----	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
3288L: Petrolia-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3333A: Wakeland-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3334L: Birds-----	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3336A: Wilbur-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
3391A: Blake-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
3394A, 3394B: Haynie-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
3415A: Orion-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3428A: Coffeen-----	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.

Table 15.—Sanitary Facilities—continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
3847L: Fluvaquents-----	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, ponding.	Poor: too sandy, ponding.
Orthents-----	Severe: percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
5079C: Menfro, karst---	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
5079D, 5079G: Menfro, karst---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
8026A: Wagner-----	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
8070A: Beaucoup-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
8071L: Darwin-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
8084A: Okaw-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
8109A: Racoon-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
8122C, 8122D: Colp-----	Severe: flooding, wetness, percs slowly.	Severe: flooding, slope.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
8131B: Alvin-----	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Poor: thin layer.
8162A: Gorham-----	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
8180A: Dupo-----	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.

Table 15.--Sanitary Facilities--continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
8183A: Shaffton-----	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
8284A: Tice-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack.
8304B: Landes-----	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.
8338A, 8338B: Hurst-----	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
8338C: Hurst-----	Severe: flooding, wetness, percs slowly.	Severe: flooding, slope.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
8394A: Haynie-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
8432A: Geff-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
8434B: Ridgway-----	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Fair: too clayey, thin layer.
8436B: Meadowbank-----	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Fair: too clayey, thin layer.
8489A: Hurst, sandy substratum-----	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
8524L: Zipp-----	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
8591A: Fulfs-----	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: too clayey, hard to pack, wetness.

Table 15.--Sanitary Facilities--continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
8592A: Nameoki-----	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
8646A: Fluvaquents, loamy-----	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, ponding.	Poor: too sandy, ponding.
8812F: Typic Hapludalfs	Severe: flooding.	Severe: flooding, slope.	Severe: flooding.	Severe: flooding.	Poor: slope.

Table 16.—Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
5C2, 5C3: Blair-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
5D3: Blair-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
8F2: Hickory-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
31A: Pierron-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness, too acid.
37A, 37B: Worthen-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
46A: Herrick-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
50A: Virden-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
75B: Drury-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Good.
79B, 79C2, 79C3: Menfro-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
79D2, 79D3: Menfro-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
79F, 79F3, 79G: Menfro-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
81A: Littleton-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
90A: Bethalto-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
109A: Raccoon-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

Table 16.—Construction Materials—continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
112A: Cowden-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
113A, 113B: Oconee-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
267A, 267B: Caseyville-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
283B, 283C2: Downsouth-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
384A, 384B: Edwardsville----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
385A: Mascoutah-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
423A, 423B: Millstadt-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
433A: Floraville-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness, too acid.
437B, 437C2: Redbud-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
438B, 438C2: Aviston-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
441B, 441C2: Wakenda-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
466A: Bartelso-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
468A: Lakaskia-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
477B, 477B2, 477C2: Winfield-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
477C3: Winfield-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

Table 16.-Construction Materials-continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
491B2, 491C3: Ruma-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
491D3: Ruma-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
515C2, 515C3, 515D3: Bunkum-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
517A, 517B: Marine-----	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
582B, 582B2 582C2: Homen-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
585F2: Negley-----	Poor: slope.	Probable-----	Probable-----	Poor: small stones, slope.
801B: Orthents, silty-	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
801D: Orthents, silty-	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
802B: Orthents, loamy-	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
802D: Orthents, loamy-	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope.
821G: Morristown-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
824B: Swanwick-----	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey, small stones
825B: Lenzburg, acid substratum-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
826D: Orthents, acid substratum-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, wetness.

Table 16.—Construction Materials—continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
871B, 871D: Lenzburg-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
871G: Lenzburg-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
878C3: Coulterville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Grantfork-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones
880B2: Coulterville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Darmstadt-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
882A: Ocone-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Darmstadt-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
Coulterville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
882B: Ocone-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Coulterville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Darmstadt-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
884C3: Bunkum-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Coulterville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
885A: Virden-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Fosterburg-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

Table 16.—Construction Materials—continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
886F3: Ruma-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Ursa-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
894A: Herrick-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Biddle-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Piasa-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
897D3: Bunkum-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Atlas-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
906C3: Redbud-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Hurst-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
907D3: Redbud-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Colp-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
962F2, 962G: Sylvan-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Bold-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
993A: Cowden-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Piasa-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
1071A: Darwin, undrained-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

Table 16.—Construction Materials—continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
1248A: McFain, undrained-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
1288A: Petrolia, undrained-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
2071L: Darwin-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Urban land-----	---	---	---	---
2079D: Menfro-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Urban land-----	---	---	---	---
2079E: Menfro-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Urban land-----	---	---	---	---
2183A: Shaffton-----	Fair: wetness.	Probable-----	Improbable: too sandy.	Good.
Urban land-----	---	---	---	---
2384B: Edwardsville---	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Urban land-----	---	---	---	---
2477B: Winfield-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Urban land-----	---	---	---	---
3038B: Rocher-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
3070L: Beaucoup-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3076A: Otter-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3083L: Wabash-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

Table 16.—Construction Materials—continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
3180A: Dupo-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
3288L: Petrolia-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3333A: Wakeland-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3334L: Birds-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3336A: Wilbur-----	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
3391A: Blake-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
3394A, 3394B: Haynie-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
3415A: Orion-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
3428A: Coffeen-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
3847L: Fluvaquents----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
Orthents-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope.
5079C: Menfro, karst---	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
5079D: Menfro, karst---	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
5079G: Menfro, karst---	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
8026A: Wagner-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
8070A: Beaucoup-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

Table 16.—Construction Materials—continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
8071L: Darwin-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
8084A: Okaw-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
8109A: Racoon-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
8122C, 8122D: Colp-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
8131B: Alvin-----	Good-----	Probable-----	Improbable: too sandy.	Fair: thin layer.
8162A: Gorham-----	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: too clayey, wetness.
8180A: Dupo-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
8183A: Shaffton-----	Fair: wetness.	Probable-----	Improbable: too sandy.	Good.
8284A: Tice-----	Fair: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
8304B: Landes-----	Good-----	Probable-----	Improbable: too sandy.	Fair: too sandy, small stones, thin layer.
8338A, 8338B, 8338C: Hurst-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, too acid.
8394A: Haynie-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
8432A: Geff-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
8434B: Ridgway-----	Good-----	Probable-----	Improbable: too sandy.	Fair: too clayey, small stones, area reclaim.

Table 16.—Construction Materials—continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
8436B: Meadowbank-----	Good-----	Probable-----	Improbable: too sandy.	Fair: small stones, area reclaim.
8489A: Hurst, sandy substratum-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
8524L: Zipp-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
8591A: Fults-----	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: too clayey, wetness.
8592A: Nameoki-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
8646A: Fluvaquents, loamy-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
8812F: Typic Hapludalfs	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 17.—Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
5C2, 5C3: Blair-----	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
5D3: Blair-----	Severe: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Slope, erodes easily, wetness.	Slope, erodes easily.
8F2: Hickory-----	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water--	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
31A: Pierron-----	Slight-----	Severe: ponding.	Severe: no water.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
37A: Worthen-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water--	Favorable-----	Erodes easily--	Erodes easily.
37B: Worthen-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water--	Slope-----	Erodes easily--	Erodes easily.
46A: Herrick-----	Slight-----	Severe: wetness.	Severe: slow refill.	Frost action--	Wetness-----	Erodes easily, wetness.	Erodes easily.
50A: Virden-----	Slight-----	Severe: wetness.	Severe: slow refill.	Frost action--	Wetness-----	Erodes easily, wetness.	Wetness, erodes easily.
75B: Drury-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water--	Slope, erodes easily.	Erodes easily--	Erodes easily.
79B, 79C2, 79C3: Menfro-----	Moderate: seepage, slope.	Slight-----	Severe: no water.	Deep to water--	Slope, erodes easily.	Erodes easily--	Erodes easily.
79D2, 79D3, 79F, 79f3, 79G: Menfro-----	Severe: slope.	Slight-----	Severe: no water.	Deep to water--	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
81A: Littleton-----	Moderate: seepage.	Severe: wetness, piping.	Moderate: slow refill.	Frost action--	Wetness-----	Erodes easily, wetness.	Wetness, erodes easily.
90A: Bethalto-----	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action--	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
109A: Raccoon-----	Slight-----	Severe: piping, ponding.	Severe: slow refill.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding.	Wetness, erodes easily, percs slowly.

Table 17.-Water Management-continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
112A: Cowden-----	Slight-----	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
113A: Oconee-----	Slight-----	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
113B: Oconee-----	Moderate: slope.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
267A: Caseyville-----	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
267B: Caseyville-----	Moderate: seepage, slope.	Severe: wetness.	Moderate: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
283B, 283C: Downsouth-----	Moderate: seepage, slope.	Severe: wetness.	Moderate: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
384A: Edwardsville----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action---	Wetness-----	Erodes easily, wetness.	Wetness, erodes easily.
384B: Edwardsville----	Moderate: seepage, slope.	Severe: piping, wetness.	Moderate: slow refill.	Frost action, slope.	Slope, wetness.	Erodes easily, wetness.	Wetness, erodes easily.
385A: Mascoutah-----	Moderate: seepage.	Severe: ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding-----	Erodes easily, ponding.	Wetness, erodes easily.
423A: Millstadt-----	Slight-----	Severe: wetness.	Severe: no water.	Frost action, too acid.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
423B: Millstadt-----	Moderate: slope.	Severe: wetness.	Severe: no water.	Frost action, slope, too acid.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
433A: Floraville-----	Slight-----	Severe: ponding.	Severe: no water.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
437B, 437C2: Redbud-----	Moderate: slope.	Moderate: wetness.	Severe: no water.	Frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily.
438B, 438C2: Aviston-----	Moderate: seepage, slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Frost action, slope.	Slope, wetness.	Erodes easily, wetness.	Erodes easily.

Table 17.—Water Management—continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
441B, 441C2: Wakenda-----	Moderate: seepage, slope.	Slight-----	Severe: no water.	Deep to water--	Slope-----	Favorable-----	Favorable.
466A: Bartelso-----	Slight-----	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
468A: Lakaskia-----	Slight-----	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
477B, 477B2, 47C2, 477C3: Winfield-----	Moderate: seepage, slope.	Moderate: thin layer, wetness.	Severe: no water.	Frost action, slope.	Slope, erodes easily.	Erodes easily, wetness.	Erodes easily.
491B2, 491C3: Ruma-----	Moderate: seepage, slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Deep to water--	Slope, erodes easily.	Erodes easily--	Erodes easily.
491D3: Ruma-----	Severe: slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Deep to water--	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
515C2, 515C3: Bunkum-----	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
515D3: Bunkum-----	Severe: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
517A: Marine-----	Slight-----	Moderate: thin layer, piping, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
517B: Marine-----	Moderate: slope.	Moderate: thin layer, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
582B, 582B2, 582C2: Homen-----	Moderate: slope.	Moderate: thin layer, wetness.	Severe: no water.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
585F2: Negley-----	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Deep to water--	Slope-----	Slope-----	Slope.
801B: Orthents, silty-	Moderate: seepage.	Severe: piping.	Severe: slow refill.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.

Table 17.-Water Management-continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
801D: Orthents, silty-	Severe: slope.	Severe: piping.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Slope, erodes easily, wetness.	Slope, erodes easily.
802B: Orthents, loamy-	Slight-----	Moderate: piping.	Severe: slow refill.	Deep to water--	Rooting depth, erodes easily.	Erodes easily--	Erodes easily, rooting depth.
802D: Orthents, loamy-	Severe: slope.	Moderate: piping.	Severe: slow refill.	Deep to water--	Slope, rooting depth, erodes easily.	Slope, erodes easily.	Slope, erodes easily, rooting depth.
821G: Morristown-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water--	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
824B: Swanwick-----	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water--	Percs slowly, rooting depth, slope.	Erodes easily--	Erodes easily, rooting depth.
825B: Lenzburg, acid substratum-----	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water--	Slope, erodes easily, too acid.	Large stones, erodes easily.	Erodes easily.
826D: Orthents, acid substratum-----	Severe: seepage, slope.	Severe: piping, wetness.	Severe: slow refill.	Frost action, slope, too acid.	Slope, wetness, erodes easily.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
871B: Lenzburg-----	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water--	Slope-----	Favorable-----	Favorable.
871D, 871G: Lenzburg-----	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water--	Slope-----	Slope-----	Slope.
878C3: Coulterville---	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
Grantfork-----	Moderate: slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
880B2: Coulterville---	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
Darmstadt-----	Moderate: slope.	Severe: excess sodium.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, excess sodium.
882A: Oconee-----	Slight-----	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Darmstadt-----	Slight-----	Severe: excess sodium.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, excess sodium.

Table 17.—Water Management—continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
882A: Coulterville----	Slight-----	Severe: piping.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
882B: Oconee-----	Moderate: slope.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Coulterville----	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
Darmstadt-----	Moderate: slope.	Severe: excess sodium.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, excess sodium.
884C3: Bunkum-----	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
Coulterville----	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
885A: Virden-----	Slight-----	Severe: wetness.	Severe: slow refill.	Frost action---	Wetness-----	Erodes easily, wetness.	Wetness, erodes easily.
Fosterburg-----	Slight-----	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, frost action.	Ponding, percs slowly.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
886F3: Ruma-----	Severe: slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Deep to water--	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Ursa-----	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water--	Slope, droughty, percs slowly.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
894A: Herrick-----	Slight-----	Severe: wetness.	Severe: slow refill.	Frost action---	Wetness-----	Erodes easily, wetness.	Erodes easily.
Biddle-----	Slight-----	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Piasa-----	Slight-----	Severe: hard to pack, ponding, excess sodium.	Severe: no water.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, excess sodium, erodes easily.
897D3: Bunkum-----	Severe: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
Atlas-----	Severe: slope.	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, droughty.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.

Table 17.—Water Management—continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
2183A: Shaffton-----	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Flooding-----	Wetness, flooding.	Erodes easily, wetness.	Erodes easily.
Urban Land-----	---	---	---	---	---	---	---
2384B: Edwardsville---	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action---	Wetness-----	Erodes easily, wetness.	Wetness, erodes easily.
Urban land-----	---	---	---	---	---	---	---
2477B: Winfield-----	Moderate: seepage, slope.	Moderate: thin layer, wetness.	Severe: no water.	Frost action, slope.	Slope, erodes easily.	Erodes easily, wetness.	Erodes easily.
Urban land-----	---	---	---	---	---	---	---
3038B: Rocher-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water--	Slope-----	Favorable-----	Favorable.
3070L: Beaucoup-----	Slight-----	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding-----	Wetness.
3076A: Otter-----	Moderate: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Erodes easily, ponding.	Wetness, erodes easily.
3083L: Wabash-----	Slight-----	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
3180A: Dupo-----	Moderate: seepage.	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
3288L: Petrolia-----	Slight-----	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding-----	Wetness.
3333A: Wakeland-----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
3334L: Birds-----	Slight-----	Severe: wetness.	Severe: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
3336A: Wilbur-----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
3391A: Blake-----	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Erodes easily.

Table 17.-Water Management-continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
3394A: Haynie-----	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water--	Erodes easily, flooding.	Erodes easily--	Erodes easily.
3394B: Haynie-----	Moderate: seepage, slope.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water--	Slope, erodes easily, flooding.	Erodes easily--	Erodes easily.
3415A: Orion-----	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness-----	Erodes easily, wetness.	Wetness, erodes easily.
3428A: Coffeen-----	Severe: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Wetness-----	Wetness.
3847L: Fluvaquents-----	Moderate: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, frost action.	Ponding, droughty.	Erodes easily, ponding, too sandy.	Wetness, erodes easily, droughty.
Orthents-----	Severe: slope.	Moderate: piping.	Severe: slow refill.	Deep to water--	Slope, rooting depth, erodes easily.	Slope, erodes easily.	Slope, erodes easily, rooting depth.
5079C, 5079D, 5079G: Menfro, karst--	Severe: slope.	Slight-----	Severe: no water.	Deep to water--	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
8026A: Wagner-----	Slight-----	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, percs slowly, flooding.	Wetness, percs slowly.	Wetness, percs slowly.
8070A: Beaucoup-----	Slight-----	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding-----	Wetness.
8071L: Darwin-----	Slight-----	Severe: hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
8084A: Okaw-----	Slight-----	Severe: hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
8109A: Raccoon-----	Slight-----	Severe: piping, ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
8122C: Colp-----	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
8122D: Colp-----	Severe: slope.	Moderate: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.

Table 17.—Water Management—continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
8131B: Alvin-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water--	Slope, soil blowing	Favorable-----	Favorable.
8162A: Gorham-----	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Flooding, frost action.	Wetness-----	Wetness, too sandy.	Wetness, rooting depth.
8180A: Dupo-----	Moderate: seepage.	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
8183A: Shaffton-----	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Flooding-----	Wetness, flooding.	Erodes easily, wetness.	Erodes easily.
8284A: Tice-----	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness-----	Wetness-----	Favorable.
8304B: Landes-----	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water--	Slope-----	Too sandy, soil blowing	Favorable.
8338A: Hurst-----	Slight-----	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
8338B, 8338C: Hurst-----	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
8394A: Haynie-----	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water--	Erodes easily, flooding.	Erodes easily--	Erodes easily.
8432A: Geff-----	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness, rooting depth, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.
8434B: Ridgway-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water--	Slope, erodes easily, flooding.	Erodes easily--	Erodes easily.
8436B: Meadowbank-----	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water--	Slope, flooding.	Favorable-----	Favorable.
8489A: Hurst, Sandy Substratum-----	Severe: seepage.	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
8524L: Zipp-----	Slight-----	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.

Table 17.-Water Management-continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
8591A: Fults-----	Severe: seepage.	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, frost action.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
8592A: Nameoki-----	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, frost action.	Wetness, slow intake, percs slowly.	Wetness-----	Wetness, percs slowly.
8646A: Fluvaquents, Loamy-----	Moderate: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, frost action.	Ponding, droughty.	Erodes easily, ponding, too sandy.	Wetness, erodes easily, droughty.
8812F: Typic Hapludalfs	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water--	Slope-----	Slope-----	Slope, rooting depth.

Table 18.—Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that 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	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
5C2: Blair-----	0-7 7-22	Silt loam----- Silty clay loam, clay loam, silt loam.	CL-ML, CL CL	A-4, A-6 A-6, A-7	0 0	0-2 0-5	95-100 95-100	90-100 90-100	90-100 90-100	85-95 80-100	20-35 30-50	5-15 15-30
	22-50	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-95	30-50	15-30
	50-80	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-90	20-40	10-25
5C3, 5D3: Blair-----	0-5 5-20	Silt loam----- Silty clay loam, clay loam, silt loam.	CL-ML, CL CL	A-4, A-6 A-6, A-7	0 0	0-2 0-5	95-100 95-100	90-100 90-100	90-100 90-100	85-95 80-100	20-35 30-50	5-15 15-30
	20-47	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-95	30-50	15-30
	47-80	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-90	20-40	10-25
8F2: Hickory-----	0-12 12-46	Silt loam----- Clay loam, silty clay loam, gravelly clay loam.	CL CL	A-6, A-4 A-6, A-7	0 0-1	0-5 0-5	95-100 85-100	90-100 70-100	75-100 65-95	55-100 50-85	20-35 30-50	8-15 15-30
	46-58	Sandy loam, loam, gravelly clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6, A-2	0-1	0-5	85-100	70-95	45-95	25-75	20-40	5-20
	58-80	Sandy loam, loam, gravelly clay loam.	CL-ML, CL, SC, SC-SM	A-4, A-6, A-2	0-1	0-5	85-100	70-95	45-95	25-75	20-40	5-20
31A: Pierron-----	0-8 8-20 20-36	Silt loam----- Silt loam, silt Silty clay, silty clay loam.	CL, CL-ML ML, CL-ML, CL CH	A-4, A-6 A-4, A-6 A-7-6	0 0 0	0 0 0	100 100 100	98-100 98-100 100	90-100 90-100 95-100	85-100 85-100 93-100	20-40 20-35 50-60	5-15 2-15 30-35
	36-66	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	93-100	40-60	20-35
	66-80	Silt loam, loam, clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	75-100	30-45	10-25
37A, 37B: Worthen-----	0-29 29-64 64-80	Silt loam----- Silt loam----- Silt loam-----	CL, CL-ML CL, CL-ML CL, CL-ML	A-4, A-6 A-4, A-6 A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	80-100 80-100 80-100	25-40 25-40 25-40	7-21 7-21 7-21

Table 18.-Engineering Index Properties-continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
				Pct	Pct					Pct		
46A: Herrick-----	0-17	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	17-43	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	25-40
	43-64	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-50	20-35
	64-80	Silt loam, loam, clay loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
50A: Virden-----	0-15	Silt loam-----	CL	A-7, A-6	0	0	100	100	95-100	95-100	30-45	10-20
	15-74	Silty clay, silty clay loam.	CH, CL	A-7-6	0	0	100	100	95-100	95-100	40-60	20-40
	74-86	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	30-50	10-25
75B: Drury-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	95-100	90-100	20-35	NP-15
	7-43	Silt loam-----	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-35	8-15
	43-80	Silt loam, loam, very fine sandy loam.	CL-ML, CL	A-4, A-6	0	0	100	95-100	95-100	55-95	20-30	5-15
79B: Menfro-----	0-10	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	10-62	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	62-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
79C2, 79D2: Menfro-----	0-7	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	7-56	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	56-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
79C3, 79D3, 79F3: Menfro-----	0-5	Silty clay loam	CL	A-6	0	0	100	100	95-100	90-100	25-40	11-20
	5-50	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	50-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
79F, 79G: Menfro-----	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	9-52	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	52-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
81A: Littleton-----	0-10	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	7-20
	10-33	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	7-20
	33-80	Silt loam-----	CL-ML, CL	A-4, A-6, A-7	0	0	100	100	95-100	80-100	20-45	5-20
90A: Bethalto-----	0-8	Silt loam-----	CL	A-6	0	0	100	100	95-100	92-100	30-35	10-15
	8-15	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	92-100	20-35	5-15
	15-70	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	98-100	95-100	30-45	10-20
	70-80	Silt loam-----	CL	A-6	0	0	100	100	98-100	95-100	30-35	10-15

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
109A: Racoon-----	0-6	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	20-40	8-20
	6-26	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-40	5-20
	26-39	Silty clay loam	CL, CH	A-6, A-7	0	0	100	100	95-100	90-100	35-60	15-30
	39-47	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-50	15-30
	47-60	Silty clay loam, silt loam, loam.	CL, ML, CL-ML	A-4, A-6, A-7	0	0	95-100	90-100	75-100	60-90	25-45	3-20
112A: Cowden-----	0-8	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	8-19	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	19-50	Silty clay loam, silty clay.	CH	A-7-6	0	0	100	100	95-100	95-100	50-60	30-35
	50-80	Silt loam, silty clay loam, loam.	CL, ML	A-6, A-7-6	0	0	100	95-100	85-100	70-100	30-50	15-30
113A, 113B: Oconee-----	0-8	Silt loam-----	cl	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	8-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	16-47	Silty clay loam, silty clay.	CH	A-7	0	0	100	100	95-100	90-100	50-60	30-35
	47-58	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	85-100	70-100	40-50	20-30
	58-80	Silt loam, loam	CL	A-6, A-7-6	0	0	100	100	90-100	85-100	30-40	15-25
267A, 267B: Caseyville-----	0-7	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	28-35	9-15
	7-16	Silt loam, silty clay loam.	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	9-20
	16-62	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	100	100	98-100	93-100	30-45	9-20
	62-80	Silt loam-----	CL	A-4, A-6	0	0	100	100	98-100	93-100	28-35	9-15
283B: Downsouth-----	0-13	Silt loam-----	CL, ML	A-6	0	0	100	100	98-100	95-100	30-40	9-15
	13-65	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	98-100	95-100	35-45	15-20
	65-80	Silt loam-----	CL, ML	A-6	0	0	100	100	98-100	95-100	30-40	9-15
283C2: Downsouth-----	0-9	Silt loam-----	CL, ML	A-6	0	0	100	100	98-100	95-100	30-40	9-15
	9-58	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	98-100	95-100	35-45	15-20
	58-80	Silt loam-----	CL, ML	A-6	0	0	100	100	98-100	95-100	30-40	9-15
384A, 384B: Edwardsville-----	0-15	Silt loam-----	CL, ML	A-6	0	0	100	100	98-100	95-100	28-40	9-20
	15-57	Silt loam, silty clay loam.	CL, ML	A-6, A-7-6	0	0	100	100	98-100	95-100	30-45	9-20
	57-80	Silt loam-----	CL, ML	A-6	0	0	100	100	98-100	95-100	28-35	9-15

Table 18.—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	
385A: Mascoutah-----	0-21	Silty clay loam	CL	A-6, A-7	0	0	100	100	98-100	95-100	30-45	15-24
	21-58	Silty clay loam	CL	A-6, A-7	0	0	100	100	98-100	95-100	30-45	15-24
	58-66	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
	66-80	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
423A, 432B: Millstadt-----	0-9	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	85-100	25-35	5-15
	9-18	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	85-100	25-40	5-20
	18-53	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	10-20
	53-80	Silty clay, silty clay loam, silt loam.	CL, CH	A-6, A-7-6	0	0	100	100	90-100	85-100	35-60	15-35
433A: Floraville-----	0-9	Silt loam-----	CL	A-6	0	0	100	98-100	90-100	85-100	30-40	10-20
	9-18	Silt loam, sand	CL	A-6	0	0	100	98-100	90-100	85-100	25-40	10-20
	18-44	Silty clay loam, silty clay.	CL, CH	A-7-6	0	0	100	100	95-100	93-100	40-60	20-30
	44-70	Silty clay, silty clay loam, silt loam.	CL, CH	A-7-6	0	0	100	100	90-100	85-100	40-70	20-45
	70-94	Silt loam, silty clay loam, silty clay.	CL, CH	A-6, A-7-6	0	0	100	100	90-100	85-100	35-60	15-35
437B: Redbud-----	0-9	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	93-100	25-35	5-15
	9-16	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	93-100	25-40	5-20
	16-45	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	15-24
	45-80	Silty clay loam, silty clay, silt loam.	CL, CH	A-6, A-7-6	0	0	100	100	90-100	85-100	35-60	15-35
437C2: Redbud-----	0-6	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	93-100	25-35	5-15
	6-12	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	93-100	25-40	5-20
	12-40	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	15-24
	40-80	Silty clay loam, silty clay, silt loam.	CL, CH	A-6, A-7-6	0	0	100	100	90-100	85-100	35-60	15-35

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
438B: Aviston-----	0-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	93-100	25-35	10-15
	16-67	Silty clay loam. silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	35-45	15-25
	67-80	Silt loam, silty clay loam.	CL	A-6	0	0	100	98-100	90-100	85-100	25-40	10-20
438C2: Aviston-----	0-10	Silt loam-----	CL	A-6	0	0	100	100	95-100	93-100	25-35	10-15
	10-57	Silty clay loam. silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	35-45	15-25
	57-80	Silt loam, silty clay loam.	CL	A-6	0	0	100	98-100	90-100	85-100	25-40	10-20
441B: Wakenda-----	0-13	Silt loam-----	CL, ML	A-6, A-4	0	0	100	100	100	90-100	30-40	5-15
	13-60	Silty clay loam. silt loam.	CL	A-6, A-7	0	0	100	100	100	90-100	35-45	15-25
	60-80	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	100	90-100	30-40	11-20
441C2: Wakenda-----	0-9	Silt loam-----	CL, ML	A-6, A-4	0	0	100	100	100	90-100	30-40	5-15
	9-52	Silty clay loam. silt loam.	CL	A-6, A-7	0	0	100	100	100	90-100	35-45	15-25
	52-80	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	100	90-100	30-40	11-20
466A: Bartelso-----	0-12	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	10-15
	12-35	Silty clay, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	40-50	20-30
	35-62	Silt loam, silty clay loam. silty clay.	CL	A-6, A-7	0	0	100	100	95-100	95-100	30-50	15-30
	62-80	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	0	100	100	79-100	85-100	30-50	10-30
468A: Lakaskia-----	0-13	Silt loam, silty clay loam.	CL, ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	10-20
	13-26	Silty clay loam. silty clay.	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-25
	26-60	Silty clay, silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	40-50	20-30
	60-80	Silty clay loam. clay loam. loam.	CL	A-6	0	0	95-100	90-100	80-100	65-100	30-50	15-25

Table 18.-Engineering Index Properties-continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number..				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
477B: Winfield-----	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
	9-13	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-25
	13-62	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	62-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
477B2, 477C2: Winfield-----	0-7	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
	7-56	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	56-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
477C3: Winfield-----	0-5	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	20-25
	5-48	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	48-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
491B2: Ruma-----	0-8	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	35-45	15-20
	8-56	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	15-24
	56-80	Silt loam-----	CL	A-4, A-6	0	0	100	98-100	90-100	85-93	25-35	9-15
491C3, 491D3: Ruma-----	0-5	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	35-45	15-20
	5-48	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	15-24
	48-80	Silt loam-----	CL	A-4, A-6	0	0	100	98-100	90-100	85-93	25-35	9-15
515C2: Bunkum-----	0-8	Silt loam-----	CL	A-4, A-6, A-7-6	0	0	100	100	98-100	95-100	30-45	9-20
	8-40	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-20
	40-58	Silt loam-----	CL	A-4, A-6	0	0	100	100	98-100	95-100	25-35	9-15
	58-80	Silt loam-----	CL	A-4, A-6	0	0	99-100	95-100	90-100	85-100	25-35	9-15
515C3, 515D3: Bunkum-----	0-8	Silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	98-100	95-100	30-45	9-20
	8-40	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-20
	40-58	Silt loam-----	CL	A-4, A-6	0	0	100	100	98-100	95-100	25-35	9-15
	58-80	Silt loam-----	CL	A-4, A-6	0	0	99-100	95-100	90-100	85-100	25-35	9-15
517A, 517B: Marine-----	0-9	Silt loam, silt	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	20-30	10-15
	9-17	Silt loam, silt	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	20-30	5-15
	17-34	Silty clay loam, silty clay.	CH	A-7	0	0	100	100	95-100	95-100	50-60	30-40
	34-62	Silty clay loam, silt loam.	CL, ML	A-6, A-7	0	0	100	100	95-100	85-100	30-50	15-30
	62-80	Silt loam, silty clay loam, loam.	CL, ML	A-4, A-6, A-7	0	0-1	98-100	95-100	85-100	60-95	30-50	10-30

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
582B: Homen-----	<u>In</u>											
	0-9	Silt loam-----	CL	A-4, A-6	0	0	100	100	98-100	95-100	28-35	9-15
	9-15	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	98-100	95-100	25-35	5-15
	15-58	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-20
	58-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	5-15
582B2, 582C2: Homen-----	0-7	Silt loam-----	CL	A-4, A-6	0	0	100	100	98-100	95-100	28-35	9-15
	7-50	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-20
	50-80	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	5-15
585F2: Negley-----	0-7	Loam-----	ML, CL-ML, CL	A-4, A-6	0	0	85-100	75-100	70-90	55-85	24-40	3-15
	7-50	Loam, gravelly clay loam, gravelly sandy loam.	SM, ML	A-4, A-2, A-6, A-7	0-2	0-5	70-95	50-90	35-80	20-60	25-45	3-17
	50-80	Gravelly sandy clay loam, sandy clay loam, sandy clay.	SC-SM, SC	A-2, A-4, A-7, A-6	0-2	0-5	70-95	50-90	40-80	25-50	20-50	5-24
801B, 801D: Orthents, silty-	0-60	Silt loam-----	CL-ML, CL	A-4, A-6, A-7	0	0	100	100	90-100	80-95	25-45	5-25
802B, 802D: Orthents, loamy-	0-6	Loam-----	CL	A-6	0	0-5	95-100	90-100	85-95	60-90	20-40	10-20
	6-60	Loam, silt loam, clay loam.	CL	A-6	0	0-5	95-100	90-100	85-95	60-90	20-40	10-20
821G: Morristown-----	0-6	Very stony silty clay loam.	CL, GC, SC	A-7, A-6	0	10-30	70-95	50-80	50-75	40-70	35-50	12-24
	6-60	Very gravelly silty clay loam, very cobble sandy clay loam.	GC, CL, CL-ML, GM-GC	A-7, A-6, A-4, A-2	0	10-25	35-75	25-65	20-65	15-60	25-50	4-24
824B: Swanwick-----	0-8	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	95-100	85-100	35-50	10-25
	8-23	Silty clay loam, silt loam, loam.	CL-ML, ML, CL	A-4, A-6, A-7	0	0	95-100	90-100	90-100	85-95	25-50	5-20
	23-63	Silty clay loam, clay loam.	ML, CL	A-6, A-7	0	0	95-100	90-100	85-100	80-95	35-50	10-25
	63-80	Silty clay loam, clay loam, gravelly loam.	ML, CL-ML, CL	A-4, A-6	0-2	0-5	90-100	90-100	85-95	70-80	20-40	2-20
825B: Lenzburg, acid substratum-----	0-5	Silty clay loam	CL	A-6	0	2-10	80-95	75-90	65-90	55-85	30-40	15-20
	5-32	Silty clay loam, silt loam, gravelly loam.	CL	A-6	0	5-15	75-95	70-90	65-85	60-85	30-40	10-20
	32-60	Fragmental material.	GW-GM, SW-SM, GP-GM	A-1	0	5-25	30-70	10-50	5-15	5-10	---	NP

Table 18.-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	
826D: Orthents, acid substratum-----	0-29 29-60	Silt loam----- Fragmental material.	CL-ML, CL GW-GM, GP-GM, SP-SM	A-4, A-6, A-7 A-1	0 0-5	0 5-25	100 30-70	100 10-50	90-100 5-15	80-95 5-10	25-45 ---	5-25 NP
871B, 871D, 871G: Lenzburg-----	0-3 3-26 26-60	Gravelly silty clay loam. Silt loam, silty clay loam, loam. Gravelly loam, gravelly silty clay loam, gravelly clay loam.	CL CL CL	A-6 A-6 A-6	0-3 0-1 0-5	3-15 0-10 3-25	80-95 80-95 70-95	75-90 75-90 60-90	65-90 70-90 55-90	50-85 55-85 50-90	30-40 30-40 30-40	15-20 10-20 10-20
878C3: Coulterville----	0-5 5-20 20-48 48-80	Silty clay loam Silty clay loam, silt loam. Silt loam, silty clay loam. Silt loam, silty clay loam, loam.	CL CL CL, ML CL-ML, CL, ML	A-6 A-6 A-4, A-6 A-4, A-6	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100 90-100	90-100 90-100 90-100 80-95	30-40 30-40 30-40 20-40	15-20 15-20 10-20 5-20
Grantfork-----	0-5 5-37 37-80	Silty clay loam Silty clay loam, clay loam, loam. Clay loam, loam, clay.	CL CL, ML CL, ML, MH, CH	A-6 A-6, A-7 A-6, A-7	0 0 0	0 0 0-5	100 100 95-100	95-100 90-100 85-95	85-95 80-90 70-80	80-90 70-80 55-75	30-40 30-40 30-60	15-20 10-20 10-30
880B2: Coulterville----	0-7 7-23 23-56 56-80	Silt loam----- Silty clay loam, silt loam. Silt loam, silty clay loam. Silt loam, silty clay loam, loam.	CL-ML, CL CL CL, ML CL-ML, CL, ML	A-4, A-6 A-6 A-4, A-6 A-4, A-6	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100 90-100	90-100 90-100 90-100 80-95	20-40 30-40 30-40 20-40	5-15 15-20 10-20 5-20
Darmstadt-----	0-7 7-21 21-39 39-80	Silt loam----- Silty clay loam, silty clay. Silty clay loam, silt loam. Silt loam, silty clay loam, loam.	CL, CL-ML CL CL CL, CL-ML	A-6, A-4 A-6 A-6 A-6, A-4	0 0 0 0	0 0 0 0	95-100 100 100 95-100	95-100 95-100 95-100 95-100	95-100 95-100 95-100 90-100	75-100 90-100 90-100 75-100	20-30 30-40 30-40 20-40	5-15 15-20 10-20 5-20

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
882A: Oconee-----	0-8	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	8-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	16-47	Silty clay loam, silty clay.	CL	A-7	0	0	100	100	95-100	90-100	50-60	30-35
	47-58	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	40-50	20-30
	58-80	Silt loam, loam	CL	A-6, A-7-6	0	0	100	100	85-100	70-100	30-40	15-25
Darmstadt-----	0-11	Silt loam-----	CL, CL-ML	A-6, A-4	0	0	95-100	95-100	95-100	75-100	20-30	5-15
	11-21	Silty clay loam, silty clay.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-20
	21-39	Silty clay loam, silt loam.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-20
	39-80	Silt loam, silty clay loam, loam.	CL, CL-ML	A-6, A-4	0	0	95-100	95-100	90-100	75-100	20-40	5-20
882A(cont): Coulterville----	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	20-40	5-15
	7-23	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-20
	23-56	Silt loam, silty clay loam.	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	10-20
	56-80	Silt loam, silty clay loam, loam.	CL-ML, CL, ML	A-4, A-6	0	0	100	100	90-100	80-95	20-40	5-20
882B: Oconee-----	0-8	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	8-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-25
	16-47	Silty clay loam, silty clay.	CH	A-7	0	0	100	100	95-100	90-100	50-60	30-35
	47-58	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	40-50	20-30
	58-80	Silt loam, loam	CL	A-6, A-7-6	0	0	100	100	85-100	70-100	30-40	15-25
Coulterville----	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	20-40	5-15
	7-23	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-20
	23-56	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7	0	0	100	100	95-100	90-100	30-40	10-20
	56-80	Silt loam, silty clay loam, loam.	CL-ML, CL	A-4, A-6, A-7	0	0	100	100	90-100	80-95	20-40	5-20
Darmstadt-----	0-11	Silt loam-----	CL, CL-ML	A-6, A-4	0	0	95-100	95-100	95-100	75-100	20-30	5-15
	11-21	Silty clay loam, silty clay.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-20
	21-39	Silty clay loam, silt loam.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-20
	39-80	Silt loam, silty clay loam, loam.	CL, CL-ML	A-6, A-4	0	0	95-100	95-100	90-100	75-100	20-40	5-20

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
884C3: Bunkum-----	0-8	Silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	98-100	95-100	30-45	9-20
	8-40	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-20
	40-58	Silt loam-----	CL	A-4, A-6	0	0	100	100	98-100	95-100	25-35	9-15
	58-80	Silt loam-----	CL	A-4, A-6	0	0	99-100	95-100	90-100	85-100	25-35	9-15
Coulterville----	0-5	Silty clay loam	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-20
	5-20	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-20
	20-48	Silt loam, silty clay loam.	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	10-20
	48-80	Silt loam, silty clay loam, loam.	CL-ML, CL, ML	A-4, A-6	0	0	100	100	90-100	80-95	20-40	5-20
885A: Virден-----	0-15	Silt loam-----	CL	A-7, A-6	0	0	100	100	95-100	95-100	30-45	10-20
	15-74	Silty clay, silty clay loam.	CH, CL	A-7-6	0	0	100	100	95-100	95-100	40-60	20-40
	74-86	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	30-50	10-25
Fosterburg-----	0-13	Silt loam-----	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-25
	13-41	Silty clay loam, silty clay.	CH	A-7-6	0	0	100	100	98-100	95-100	50-60	30-35
	41-71	Silty clay loam, silt loam.	CL, CH	A-7-6	0	0	100	100	98-100	95-100	40-55	20-35
	71-80	Silt loam-----	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-25
886F3: Ruma-----	0-5	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	35-45	15-20
	5-48	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	15-24
	48-80	Silt loam-----	CL	A-4, A-6	0	0	100	98-100	90-100	85-93	25-35	9-15
Ursa-----	0-3	Silty clay loam	CL	A-7, A-6	0	0	100	90-100	90-100	80-95	30-50	15-30
	3-68	Clay, clay loam, silty clay.	CH, CL	A-7	0	0-5	95-100	85-98	70-90	55-90	40-60	20-35
	68-80	Clay loam, loam, clay.	CL, CH	A-6, A-7	0-1	0-5	95-100	85-98	80-90	60-85	35-55	20-35
894A: Herrick-----	0-17	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	17-43	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	25-40
	43-64	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-50	20-35
	64-80	Silt loam, loam, clay loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
Biddle-----	0-16	Silt loam-----	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-25
	16-36	Silty clay loam, silty clay.	CL, CH	A-7-6	0	0	100	100	98-100	95-100	45-60	25-35
	36-62	Silty clay loam, silt loam.	CL, CH	A-6, A-7-6	0	0	100	100	98-100	95-100	40-55	20-30
	62-99	Silt loam-----	CL	A-6, A-7-6	0	0	100	95-100	90-100	85-100	35-45	15-25
Piasa-----	0-8	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-20
	8-12	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	15-20
	12-37	Silty clay, silty clay loam.	CH	A-7	0	0	100	100	95-100	95-100	50-60	30-35
	37-80	Silty clay loam, silt loam, clay loam.	CL	A-6, A-7	0	0	100	95-100	75-100	60-100	30-50	20-30
897D3: Bunkum-----	0-8	Silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	98-100	95-100	30-45	9-20
	8-40	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	98-100	95-100	35-45	15-20
	40-58	Silt loam-----	CL	A-4, A-6	0	0	100	100	98-100	95-100	25-35	9-15
	58-80	Silt loam-----	CL	A-4, A-6	0	0	99-100	95-100	90-100	85-100	25-35	9-15
Atlas-----	0-9	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	75-100	40-60	25-40
	9-31	Silty clay loam, clay, clay loam.	CH	A-7	0	0	100	95-100	95-100	75-95	50-70	30-45
	31-51	Silty clay loam, clay, clay loam.	CH	A-7	0	0	100	95-100	95-100	75-95	50-70	30-45
	51-80	Clay loam, clay, loam.	CH, CL	A-6, A-7	0	0	95-100	90-98	90-98	65-95	35-55	20-30
906C3: Redbud-----	0-5	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	35-45	17-24
	5-10	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	93-100	25-40	5-20
	10-40	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	15-24
	40-80	Silty clay loam, silty clay, silt loam.	CL, CH	A-6, A-7-6	0	0	100	100	90-100	85-100	35-60	15-35
Hurst-----	0-5	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	5-50	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	50-80	Stratified silty clay loam to silty clay.	CL, CH	A-6, A-7	0	0	100	100	90-100	85-100	35-55	15-30

Table 18.-Engineering Index Properties-continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
907D3: Redbud-----	0-5 5-10 10-40 40-80	Silty clay loam Silt loam, silty clay loam. Silty clay loam, silt loam. Silty clay loam, silty clay, silt loam.	CL CL-ML, CL CL CL, CH	A-6, A-7-6 A-4, A-6 A-6, A-7-6 A-6, A-7-6	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100 90-100	93-100 93-100 93-100 85-100	35-45 25-40 30-45 35-60	17-24 5-20 15-24 15-35
Colp-----	0-5 5-70 70-80	Silty clay loam Silty clay loam, silty clay. Stratified silty clay loam to silty clay.	CL MH, CH MH, CH	A-6, A-7 A-7 A-6, A-7	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	90-100 90-100 85-100	40-50 50-70 50-60	20-30 30-40 25-35
962F2, 962G: Sylvan-----	0-5 5-25 25-80	Silt loam----- Silty clay loam, silt loam. Silt loam, silt	CL-ML, CL CL CL, CL-ML	A-4, A-6 A-6, A-7 A-6, A-4	0 0 0	0 0 0	100 100 100	100 100 100	100 100 95-100	95-100 95-100 95-100	25-35 35-50 20-40	5-15 20-30 5-20
Bold-----	0-12 12-60	Silt loam----- Silt loam-----	ML, CL, CL-ML ML, CL, CL-ML	A-4, A-6 A-4, A-6	0 0	0 0	100 100	100 100	100 100	95-100 95-100	20-35 20-35	3-15 3-15
993A: Cowden-----	0-8 8-19 19-50 50-80	Silt loam----- Silt loam----- Silty clay loam, silty clay. Silt loam, silty clay loam, loam.	CL CL CL CL, ML	A-6 A-6 A-7-6 A-6, A-7-6	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 95-100	95-100 90-100 95-100 85-100	90-100 90-100 95-100 70-100	30-40 30-40 50-60 30-50	15-25 15-25 30-35 15-30
Piasa-----	0-8 8-12 12-37 37-80	Silt loam----- Silt loam----- Silty clay, silty clay loam. Silty clay loam, silt loam, clay loam.	CL CL CH CL	A-6 A-6 A-7 A-6, A-7	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 95-100	95-100 95-100 95-100 75-100	90-100 90-100 95-100 60-100	30-40 30-40 50-60 30-50	15-20 15-20 30-35 20-30
1071A: Darwin, undrained-----	0-20 20-64 64-80	Silty clay----- Silty clay, clay. Silty clay loam, silty clay.	CH, CL CH, CL CL, CH	A-7 A-7 A-7, A-6	0 0 0	0 0 0	100 100 100	100 100 100	100 100 95-100	90-100 85-100 90-100	45-85 45-85 35-70	25-55 25-55 20-45

Table 18.-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		
1248A: McFain, undrained-----	0-13 13-20 20-52 52-80	Silty clay----- Silty clay----- Silt loam, loam, sandy loam. Stratified fine sandy loam to silty clay loam.	CH, CL CH, CL CL-ML, CL, SC-SM, SC CL, SC	A-7 A-7 A-2, A-4, A-6 A-6	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 90-100	95-100 95-100 60-95 50-90	90-100 90-100 20-85 35-85	40-55 40-55 20-35 20-40	20-35 20-35 4-15 10-25
1288A: Petrolia, undrained-----	0-8 8-54 54-80	Silty clay loam Silty clay loam Silty clay loam, silt loam.	CL CL CL	A-6, A-7 A-6, A-7 A-4, A-6, A-7	0 0 0	0 0 0	100 100 100	95-100 95-100 95-100	90-100 90-100 80-100	80-100 85-100 60-100	35-45 35-45 30-45	15-22 15-22 11-22
2071L: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
Darwin-----	0-16 16-62 62-80	Silty clay----- Silty clay, clay. Silty clay loam, silty clay.	CH, CL CH, CL CL, CH	A-7 A-7 A-7, A-6	0 0 0	0 0 0	100 100 100	100 100 100	100 100 95-100	90-100 85-100 90-100	45-85 45-85 35-70	25-55 25-55 20-45
2079D, 2079E: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
Menfro-----	0-9 9-52 52-80	Silt loam----- Silty clay loam Silt loam-----	CL CL CL-ML, CL	A-6 A-6, A-7 A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	90-100 95-100 90-100	25-35 35-45 25-35	11-20 20-25 5-15
2183A: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
Shaffton-----	0-10 10-33 33-43 43-60	Clay loam----- loam. Loamy sand, sandy loam. Silty clay loam	CL CL, CL-ML SM, SC-SM, SP-SM CL	A-6 A-4, A-6 A-2 A-6, A-7	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	85-95 85-95 50-75 90-100	60-80 55-65 10-30 80-95	30-40 25-35 0-15 35-45	11-20 5-15 NP-5 15-25
2384B: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
Edwardsville---	0-15 15-57 57-80	Silt loam----- Silt loam, silty clay loam. Silt loam-----	CL, ML CL, ML CL, ML	A-6 A-6, A-7-6 A-6	0 0 0	0 0 0	100 100 100	100 100 100	98-100 98-100 98-100	95-100 95-100 95-100	28-40 30-45 28-35	9-20 9-20 9-15
2477B: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
Winfield-----	0-9 9-13 13-62 62-80	Silt loam----- Silty clay loam, silt loam. Silty clay loam Silt loam-----	CL CL CL CL-ML, CL	A-6 A-6, A-7 A-6, A-7 A-4, A-6	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100 95-100	90-100 90-100 95-100 90-100	25-40 35-45 35-45 25-35	10-20 15-25 20-25 5-15

Table 18.-Engineering Index Properties-continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
3038B: Rocher-----	0-5	Loam-----	CL-ML, CL	A-4	0	0	100	100	95-100	50-85	20-30	5-10
	5-53	Very fine sand, loamy very fine sand, silt loam.	ML, CL, CL-ML	A-4	0	0	100	100	95-100	50-85	10-30	NP-10
	53-62	Fine sand, loamy fine sand, loam.	ML, CL, SM, SC	A-4, A-2	0	0	100	100	90-100	30-90	0-20	NP-10
3070L: Beaucoup-----	0-16	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-25
	16-64	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-30
	64-80	Stratified very fine sandy loam to silty clay loam.	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	60-95	20-40	5-20
3076A: Otter-----	0-37	Silt loam-----	CL	A-6, A-7, A-4	0	0	100	95-100	90-100	80-100	25-45	7-20
	37-55	Silt loam, loam, silty clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	80-100	30-45	10-20
	55-80	Silt loam, sandy loam, silty clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6, A-7	0	0	90-100	80-100	55-95	45-85	25-45	5-20
3083L: Wabash-----	0-10	Silty clay-----	CH	A-7	0	0	100	100	95-100	90-100	50-75	30-50
	10-80	Silty clay-----	CH	A-7	0	0	100	100	95-100	95-100	50-75	30-55
3180A: Dupo-----	0-9	Silt loam-----	ML, CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-30	5-10
	9-25	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-30	5-10
	25-80	Silty clay, clay, silty clay loam.	CL, CH	A-7, A-6	0	0	100	100	100	98-100	50-70	30-45
3288L: Petrolia-----	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	80-100	35-45	15-22
	8-55	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	85-100	35-45	15-22
	55-80	Silty clay loam, silt loam.	CL	A-4, A-6, A-7	0	0	100	95-100	80-100	60-100	30-45	11-22
3333A: Wakeland-----	0-7	Silt loam-----	ML, CL-ML, CL	A-4	0	0	100	100	90-100	80-100	16-28	3-9
	7-29	Silt loam-----	ML, CL-ML, CL	A-4	0	0	100	100	90-100	80-100	16-28	3-9
	29-80	Silt loam, loam	ML, CL-ML, CL	A-4	0	0	100	100	85-100	60-100	16-28	3-9
3334L: Birds-----	0-8	Silt loam-----	CL	A-4, A-6	0	0	100	95-100	90-100	80-100	24-34	8-15
	8-80	Silt loam-----	CL	A-4, A-6	0	0	100	95-100	90-100	80-100	24-34	8-15
3336A: Wilbur-----	0-7	Silt loam-----	CL-ML, CL, ML	A-4	0	0	100	100	95-100	70-100	20-30	3-10
	7-32	Silt loam-----	CL-ML, CL, ML	A-4	0	0	100	100	95-100	80-100	20-30	3-10
	32-60	Silt loam, loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	80-100	60-100	20-35	3-15
3391A: Blake-----	0-6	Silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	85-95	35-50	15-30
	6-33	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	90-100	85-95	30-50	10-30
	33-60	Silt loam, loam, very fine sandy loam.	ML, CL	A-4, A-6	0	0	100	100	80-90	75-90	30-40	5-15

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
3394A, 3394B: Haynie-----	0-8 8-60	Silt loam----- Silt loam, very fine sandy loam.	CL-ML, CL CL-ML, CL	A-4, A-6 A-4, A-6	0 0	0 0	100 100	100 100	85-100 85-100	70-100 85-100	25-40 25-35	5-15 5-15
3415A: Orion-----	0-7 7-35 35-54 54-66	Silt loam----- Stratified silt loam to very fine sand. Silt loam, silty clay loam. Stratified silt loam to sand.	CL, CL-ML CL, CL-ML CL, CL-ML CL, CL-ML	A-4, A-6 A-4 A-6, A-4 A-4	0 0 0 0	0 0 0 0	100 100 100 80-100	100 100 100 80-100	85-100 90-100 85-100 80-100	80-100 70-80 85-100 80-100	25-35 20-30 20-40 20-30	4-12 4-10 4-18 4-10
3428A: Coffeen-----	0-10 10-47 47-60	Silt loam----- Silt loam----- Stratified silt loam to sandy loam.	CL, CL-ML ML, CL-ML, CL ML, SM, SC, CL	A-4, A-6 A-4 A-4, A-2	0 0 0	0 0 0	100 100 100	100 100 90-100	90-100 90-100 85-100	85-100 80-95 30-85	25-40 20-35 15-30	5-20 3-10 NP-10
3847L: Fluvaquents-----	0-10 10-60	Loam----- Sand, loam, sandy clay loam.	CL-ML, CL SM, SC, ML, CL	A-4, A-6 A-4, A-2-4, A-1-B	0 0	0 0	95-100 90-100	90-100 85-100	75-100 45-85	55-85 20-60	18-35 0-35	4-15 NP-20
Orthents-----	0-6 6-60	Loam----- Loam, silt loam, clay loam.	CL CL	A-6 A-6	0 0	0-5 0-5	95-100 95-100	90-100 90-100	85-95 85-95	60-90 60-90	20-40 20-40	10-20 10-20
5079C, 5079D: Menfro, karst---	0-5 5-50 50-80	Silt loam----- Silty clay loam Silt loam-----	CL CL CL-ML, CL	A-6 A-6, A-7 A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	90-100 95-100 90-100	25-35 35-45 25-35	11-20 20-25 5-15
5079G: Menfro, karst---	0-9 9-52 52-80	Silt loam----- Silty clay loam Silt loam-----	CL CL CL-ML, CL	A-6 A-6, A-7 A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	90-100 95-100 90-100	25-35 35-45 25-35	11-20 20-25 5-15
8026A: Wagner-----	0-9 9-17 17-67 67-80	Silt loam----- Silt loam----- Silty clay, silty clay loam. Silty clay loam	CL, CL-ML ML, CL-ML, CL CH, CL CL, CH	A-4, A-6 A-4, A-6 A-7 A-6, A-7	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100	90-100 90-100 90-100	24-35 20-35 45-60 35-55	6-15 3-15 25-40 15-30
8070A: Beaucoup-----	0-16 16-64 64-80	Silty clay loam Silty clay loam Stratified very fine sandy loam to silty clay loam.	CL CL CL, CL-ML	A-6, A-7 A-6, A-7 A-6, A-4	0 0 0	0 0 0	100 100 100	100 100 100	90-100 90-100 90-100	85-100 85-100 60-95	30-45 30-45 20-40	15-25 15-30 5-20
8071L: Darwin-----	0-16 16-62 62-80	Silty clay----- Silty clay, clay. Silty clay loam, silty clay.	CH, CL CH, CL CL, CH	A-7 A-7 A-7, A-6	0 0 0	0 0 0	100 100 100	100 100 100	100 100 95-100	90-100 85-100 90-100	45-85 45-85 35-70	25-55 25-55 20-45

Table 18.-Engineering Index Properties-continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
8084A: Okaw-----	0-7 7-15 15-54 54-80	Silt loam----- Silt loam, silty clay loam. Silty clay, clay, silty clay loam. Silty clay loam, silty clay, clay.	CL CL CH, MH CH, MH	A-6 A-6, A-7 A-7 A-7	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100 95-100	90-100 90-100 85-100 85-100	30-40 30-50 50-80 50-70	15-20 10-25 30-50 30-45
8109A: Racoon-----	0-6 6-30 30-59 59-73	Silt loam----- Silt loam----- Silty clay loam, silt loam. Loam, silt loam, silty clay loam.	CL CL, CL-ML CL, CL-ML CL, ML, CL-ML	A-4, A-6 A-4, A-6 A-6, A-7, A-4 A-4, A-5, A-7	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 90-100	95-100 95-100 95-100 75-100	90-100 90-100 90-100 60-90	20-40 20-40 35-50 25-45	8-20 5-20 15-30 3-20
8122C, 8122D: Colp-----	0-5 5-70 70-80	Silty clay loam Silty clay loam, silty clay. Stratified silty clay loam to silty clay.	CL MH, CH MH, CH	A-6, A-7 A-7 A-6, A-7	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	90-100 90-100 85-100	40-50 50-70 50-60	20-30 30-40 25-35
8131B: Alvin-----	0-9 9-47 47-80	Fine sandy loam Sandy loam, fine sandy loam. Sand, sandy loam.	SM, ML SM, SC, ML, CL-ML SP-SM, SM	A-4, A-2 A-2, A-4, A-6 A-2, A-3, A-4	0 0 0	0 0 0	100 95-100 95-100	100 95-100 90-100	80-95 75-90 70-95	30-60 20-80 5-40	0-25 15-40 0-20	NP-4 NP-15 NP-4
8162A: Gorham-----	0-14 14-36 36-62 62-80	Silty clay loam Silty clay loam, silty clay. Clay loam, sandy clay loam, loam. Fine sand, loamy fine sand, sandy loam.	CL CL, CH CL SM, SP-SM, SC, SC-SM	A-6, A-7 A-7 A-6, A-7 A-2, A-4	0 0 0 0	0 0 0 0	100 100 100 100	95-100 95-100 95-100 95-100	90-100 90-100 70-80 55-80	70-90 90-95 50-80 10-50	30-50 40-55 30-40 0-20	15-25 15-20 15-20 NP-10
8180A: Dupo-----	0-9 9-25 25-80	Silt loam----- Silt loam----- Silty clay, clay, silty clay loam.	ML, CL, CL-ML CL, CL-ML CL, CH	A-4, A-6 A-4, A-6 A-7, A-6	0 0 0	0 0 0	100 100 100	100 100 100	100 100 100	95-100 95-100 98-100	20-30 20-30 50-70	5-10 5-10 30-45
8183A: Shaffton-----	0-12 12-24 24-66 66-80	Clay loam----- Loam----- Loamy sand, sandy loam Coarse sand, fine sand, sand.	CL CL, CL-ML SM, SC-SM, SP-SM SW, SP, SW-SM, SP-SM	A-6 A-4, A-6 A-2 A-1	0 0 0 0	0 0 0 0	100 100 100 90-100	100 100 100 90-95	85-95 85-95 50-75 20-35	60-80 55-65 10-30 3-5	30-40 25-35 0-15 0-14	11-20 5-15 NP-5 NP

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
8284A: Tice-----	0-16	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	80-95	30-45	10-20
	16-72	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	95-100	85-95	40-55	15-30
	72-80	Stratified silty clay loam to loam.	CL-ML, CL	A-4, A-6, A-7	0	0	100	100	60-95	55-80	25-45	5-20
8304B: Landes-----	0-14	Very fine sandy loam.	SM, SC, SC-SM	A-4, A-2-4	0	0	100	70-100	70-95	20-50	5-25	NP-10
	14-39	Loam, very fine sandy loam, loamy fine sand.	SM, CL-ML, SC, SC-SM	A-4, A-2-4	0	0	100	85-100	70-100	15-60	0-25	NP-15
	39-80	Stratified sand to silt loam.	SM, SP-SM, SC, SC-SM	A-4, A-2-4	0	0	100	85-100	70-85	10-50	0-30	NP-15
8338A: Hurst-----	0-7	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	95-100	95-100	75-100	20-35	4-15
	7-12	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-35	5-15
	12-62	Silty clay loam, silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	62-80	Stratified silty clay loam to silty clay.	CL, CH	A-6, A-7	0	0	100	100	90-100	85-100	35-55	15-30
8338B: Hurst-----	0-6	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	95-100	95-100	75-100	20-35	4-15
	6-10	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-35	5-15
	10-56	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	56-80	Stratified silty clay loam to silty clay.	CL, CH	A-6, A-7	0	0	100	100	90-100	85-100	35-55	15-30
8338C: Hurst-----	0-5	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	5-50	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	50-80	Stratified silty clay loam to silty clay.	CL, CH	A-6, A-7	0	0	100	100	90-100	85-100	35-55	15-30
8394A: Haynie-----	0-8	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	70-100	25-40	5-15
	8-60	Silt loam, very fine sandy loam.	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	85-100	25-35	5-15

Table 18.-Engineering Index Properties-continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
8432A: Geff-----	0-5	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	95-100	95-100	20-35	4-15
	5-12	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	95-100	95-100	20-35	4-15
	12-33	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	95-100	95-100	90-100	90-100	35-45	15-25
	33-62	Silt loam, loam, sandy loam.	CL-ML, CL	A-4, A-6	0	0-2	90-100	80-100	70-100	50-90	15-30	4-15
	62-80	Sand, loamy sand.	SM, SP-SM	A-2, A-4	0	0-1	90-100	85-100	70-85	12-50	0-14	NP
8434B: Ridgway-----	0-8	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	95-100	95-100	90-100	20-35	3-15
	8-27	Silty clay loam, silt loam.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-25
	27-52	Clay loam, loam, sandy loam.	CL, SC, SC-SM, ML	A-4, A-6	0	0	90-100	85-100	80-90	35-70	20-40	3-15
	52-80	Fine sandy loam, fine sandy loam.	SM, SP-SM	A-2, A-1-B, A-3	0	0	75-100	50-100	20-60	5-30	0-14	NP
8436B: Meadowbank-----	0-17	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	95-100	95-100	90-100	20-35	3-15
	17-34	Silty clay loam	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-25
	34-53	Loam, sandy loam, clay loam.	CL, SC, SM, ML	A-4, A-6	0	0	90-100	85-100	80-90	35-70	20-40	3-15
	53-80	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2, A-1-B	0	0	75-100	50-100	20-60	10-50	0-14	NP
8489A: Hurst, sandy substratum-----	0-10	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	10-40	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	0	100	100	95-100	90-100	40-65	25-40
	40-60	Loamy sand, sand, sandy loam.	SM	A-2, A-1	0	0	100	90-100	40-80	15-35	0-20	NP-3
8524L: Zipp-----	0-8	Silty clay-----	CH, CL	A-7	0	0	100	100	95-100	90-95	40-55	15-30
	8-51	Silty clay-----	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	25-35
	51-80	Silty clay-----	CL, CH	A-7	0	0	100	100	90-100	75-95	45-60	25-35
8591A: Fulfs-----	0-12	Silty clay-----	CL, CH	A-7	0	0	100	100	100	95-100	45-65	20-40
	12-32	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	20-40
	32-42	Silty clay loam, sandy clay loam, sandy loam.	ML, SM	A-4, A-6, A-7	0	0	100	95-100	80-95	40-85	30-50	5-20
	42-80	Sandy loam, loamy sand, fine sand.	ML, SW-SM, SM, SP-SM	A-2, A-4, A-3	0	0	100	90-100	60-100	5-60	25-35	NP-10

Table 18.—Engineering Index Properties—continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<u>In</u>				<u>Pct</u>	<u>Pct</u>					<u>Pct</u>	
8592A: Nameoki-----	0-12	Silty clay-----	CH	A-7	0	0	100	100	100	90-100	50-65	25-40
	12-28	Silty clay, silty clay loam, clay.	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	20-40
	28-54	Silt loam, sandy loam, silty clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	100	95-100	80-95	40-85	25-40	5-15
	54-80	Very fine sand, silt loam, silty clay loam.	ML, CL, SM, SC	A-2, A-4, A-6, A-3	0	0	100	90-100	60-90	5-80	20-40	NP-15
8646A: Fluvaquents, loamy-----	0-10	Loam-----	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	75-100	55-85	18-35	4-15
	10-60	Sand, loam, sandy clay loam.	SM, SC, ML, CL	A-4, A-2-4, A-1-B	0	0	90-100	85-100	45-85	20-60	0-35	NP-20
8812F: Typic Hapludalfs	0-8	Silt loam-----	CL	A-6	0	0	95-100	95-100	90-100	85-100	30-40	15-25
	8-60	Variable-----	CL, SM, SC, ML	A-6, A-4, A-2-4	0	0-3	90-100	80-100	60-95	30-85	20-50	NP-30

Table 19.-Physical Properties of the Soils

(The symbol < means less than; > means more than. 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 was not available or was not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
5C2: Blair-----	0-7 7-22 22-50 50-80	20-27 25-35 18-35 20-35	1.35-1.55 1.45-1.60 1.45-1.60 1.35-1.60	0.60-2.00 0.20-0.60 0.20-0.60 0.20-0.60	0.15-0.24 0.16-0.21 0.16-0.21 0.19-0.22	Low----- Moderate- Moderate- Low-----	1.0-3.0 0.0-0.5 0.0-0.3 0.0-0.1	0.43 0.37 0.37 0.37	0.43 0.37 0.37 0.37	5	6	48
5C3, 5D3: Blair-----	0-5 5-20 20-47 47-80	20-27 25-35 18-35 20-35	1.35-1.55 1.45-1.60 1.45-1.60 1.35-1.60	0.60-2.00 0.20-0.60 0.20-0.60 0.20-0.60	0.15-0.24 0.16-0.21 0.16-0.21 0.19-0.22	Low----- Moderate- Moderate- Low-----	0.5-2.0 0.0-0.5 0.0-0.3 0.0-0.1	0.37 0.37 0.37 0.37	0.37 0.37 0.37 0.37	5	6	48
8F2: Hickory-----	0-12 12-46 46-58 58-80	19-25 24-35 15-32 15-30	1.30-1.50 1.45-1.65 1.50-1.70 1.50-1.75	0.60-2.00 0.60-2.00 0.60-2.00 0.60-2.00	0.20-0.22 0.15-0.19 0.11-0.19 0.10-0.15	Low----- Moderate- Low----- Low-----	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5	0.43 0.32 0.32 0.32	0.43 0.37 0.37 0.37	5	6	48
31A: Pierron-----	0-8 8-20 20-36 36-66 66-80	12-25 10-22 35-45 27-42 18-35	1.25-1.45 1.30-1.50 1.35-1.60 1.35-1.60 1.30-1.55	0.60-2.00 0.06-0.20 0.01-0.06 0.01-0.06 0.06-0.20	0.18-0.22 0.15-0.20 0.10-0.18 0.12-0.18 0.14-0.20	Low----- Low----- High----- High----- Moderate-	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5 0.0-0.5	0.43 0.55 0.37 0.37 0.37	0.43 0.55 0.37 0.37 0.37	5	5	56
37A, 37B: Worthen-----	0-29 29-64 64-80	12-22 15-26 15-24	1.20-1.40 1.20-1.40 1.20-1.40	0.60-2.00 0.60-2.00 0.60-2.00	0.22-0.24 0.20-0.22 0.20-0.22	Low----- Low----- Low-----	2.0-4.0 0.5-2.0 0.0-1.0	0.32 0.49 0.49	0.32 0.49 0.49	5	6	48
46A: Herrick-----	0-17 17-43 43-64 64-80	20-27 35-42 25-40 20-30	1.15-1.30 1.20-1.40 1.20-1.40 1.30-1.50	0.60-2.00 0.20-0.60 0.20-0.60 0.20-0.60	0.22-0.24 0.12-0.17 0.16-0.20 0.16-0.21	Moderate- High----- Moderate- Moderate-	3.0-4.0 0.2-1.0 0.0-0.4 0.0-0.2	0.28 0.37 0.37 0.49	0.28 0.37 0.37 0.49	5	6	48
50A: Virden-----	0-15 15-74 74-86	20-27 35-42 25-33	1.20-1.40 1.20-1.45 1.25-1.55	0.60-2.00 0.20-0.60 0.20-0.60	0.21-0.24 0.11-0.20 0.18-0.22	Moderate- High----- Moderate-	3.0-6.0 0.0-2.0 0.0-0.5	0.24 0.37 0.49	0.24 0.37 0.49	5	6	48
75B: Drury-----	0-7 7-43 43-80	10-20 18-25 15-20	1.20-1.40 1.25-1.45 1.30-1.50	0.60-2.00 0.60-2.00 0.60-2.00	0.20-0.24 0.20-0.22 0.12-0.21	Low----- Low----- Low-----	1.0-2.0 0.0-0.2 0.0-0.2	0.49 0.49 0.49	0.49 0.49 0.49	5	5	56
79B: Menfro-----	0-10 10-62 62-80	18-27 27-33 8-20	1.25-1.40 1.35-1.50 1.30-1.45	0.60-2.00 0.60-2.00 0.60-2.00	0.22-0.24 0.18-0.20 0.20-0.22	Low----- Moderate- Low-----	0.5-2.0 0.0-0.5 0.0-0.5	0.43 0.37 0.55	0.43 0.37 0.55	5	6	48
79C2, 79D2: Menfro-----	0-7 7-56 56-80	18-27 27-33 8-20	1.25-1.40 1.35-1.50 1.30-1.45	0.60-2.00 0.60-2.00 0.60-2.00	0.22-0.24 0.18-0.20 0.20-0.22	Low----- Moderate- Low-----	0.5-2.0 0.0-0.5 0.0-0.5	0.43 0.37 0.55	0.43 0.37 0.55	5	6	48
79C3, 79D3: Menfro-----	0-5 5-50 50-80	27-30 27-33 8-20	1.30-1.45 1.35-1.50 1.30-1.45	0.60-2.00 0.60-2.00 0.60-2.00	0.18-0.20 0.18-0.20 0.20-0.22	Moderate- Moderate- Low-----	0.5-1.0 0.0-0.5 0.0-0.5	0.37 0.37 0.55	0.37 0.37 0.55	5	7	38
79F, 79G: Menfro-----	0-9 9-52 52-80	18-27 27-33 8-20	1.25-1.40 1.35-1.50 1.30-1.45	0.60-2.00 0.60-2.00 0.60-2.00	0.22-0.24 0.18-0.20 0.20-0.22	Low----- Moderate- Low-----	0.5-2.0 0.0-0.5 0.0-0.5	0.43 0.37 0.55	0.43 0.37 0.55	5	6	48

Table 19.—Physical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
79F3: Menfro-----	0-5	27-30	1.30-1.45	0.60-2.00	0.18-0.20	Moderate-	0.5-1.0	0.37	0.37	5	7	38
	5-50	27-33	1.35-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-0.5	0.37	0.37			
	50-80	8-20	1.30-1.45	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.55	0.55			
81A: Littleton-----	0-10	18-27	1.20-1.45	0.60-2.00	0.20-0.24	Low-----	3.0-4.0	0.32	0.32	5	6	48
	10-33	22-27	1.20-1.40	0.60-2.00	0.22-0.24	Low-----	2.0-4.0	0.32	0.32			
	33-80	18-27	1.20-1.40	0.60-2.00	0.20-0.22	Low-----	0.5-2.0	0.49	0.49			
90A: Bethalto-----	0-8	18-27	1.20-1.30	0.60-2.00	0.22-0.24	Low-----	2.0-4.0	0.37	0.37	5	6	48
	8-15	15-25	1.30-1.40	0.60-2.00	0.20-0.22	Low-----	0.5-1.0	0.43	0.43			
	15-70	20-35	1.30-1.45	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37			
	70-80	18-27	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
109A: Raccoon-----	0-6	18-27	1.30-1.50	0.20-0.60	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	5	6	48
	6-26	18-27	1.35-1.55	0.20-0.60	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
	26-39	27-38	1.35-1.60	0.06-0.20	0.15-0.20	Moderate-	0.5-1.0	0.37	0.37			
	39-47	27-35	1.35-1.60	0.06-0.20	0.18-0.20	Moderate-	0.5-1.0	0.37	0.37			
	47-60	18-35	1.40-1.65	0.20-0.60	0.15-0.20	Moderate-	0.5-1.0	0.49	0.49			
112A: Cowden-----	0-8	17-27	1.30-1.50	0.60-2.00	0.22-0.24	Low-----	2.0-3.0	0.37	0.37	5	6	48
	8-19	17-27	1.25-1.45	0.06-0.20	0.18-0.20	Low-----	0.0-0.5	0.49	0.49			
	19-50	35-42	1.35-1.60	0.06-0.20	0.12-0.20	High-----	0.0-1.0	0.37	0.37			
	50-80	20-30	1.50-1.70	0.20-0.60	0.17-0.22	Moderate-	0.0-0.5	0.37	0.37			
113A, 113B: Oconee-----	0-8	20-27	1.20-1.30	0.60-2.00	0.22-0.24	Moderate-	2.0-3.0	0.37	0.37	5	6	48
	8-16	18-27	1.30-1.45	0.06-0.20	0.20-0.22	Moderate-	0.0-0.5	0.49	0.49			
	16-47	35-42	1.30-1.50	0.06-0.20	0.11-0.17	High-----	0.0-1.0	0.37	0.37			
	47-58	20-35	1.40-1.60	0.06-0.20	0.16-0.21	Moderate-	0.0-1.0	0.37	0.37			
	58-80	17-27	1.40-1.60	0.06-0.20	0.20-0.22	Moderate-	0.0-0.5	0.49	0.49			
267A, 267B: Caseyville-----	0-7	18-27	1.20-1.30	0.60-2.00	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	5	6	48
	7-16	15-30	1.30-1.40	0.60-2.00	0.20-0.22	Moderate-	0.5-1.0	0.49	0.49			
	16-62	20-35	1.30-1.45	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37			
	62-80	18-27	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
283B: Downsouth-----	0-13	18-27	1.20-1.30	0.60-2.00	0.22-0.24	Low-----	2.0-3.0	0.37	0.37	5	6	48
	13-65	24-35	1.25-1.40	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37			
	65-80	18-27	1.30-1.45	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
283C2: Downsouth-----	0-9	18-27	1.20-1.30	0.60-2.00	0.22-0.24	Low-----	2.0-3.0	0.37	0.37	5	6	48
	9-58	24-35	1.25-1.40	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37			
	58-80	18-27	1.30-1.45	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
384A, 384B: Edwardsville-----	0-15	20-30	1.20-1.35	0.60-2.00	0.22-0.24	Moderate-	4.0-6.0	0.28	0.28	5	6	48
	15-57	20-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.5-2.0	0.37	0.37			
	57-80	18-25	1.30-1.55	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
385A: Mascoutah-----	0-21	27-35	1.20-1.40	0.60-2.00	0.21-0.23	Moderate-	4.0-6.0	0.24	0.24	5	7	38
	21-58	27-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	1.0-2.0	0.37	0.37			
	58-66	20-32	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37			
	66-80	18-30	1.30-1.55	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
423A, 423B: Millstadt-----	0-9	12-25	1.25-1.45	0.60-2.00	0.20-0.24	Low-----	1.0-2.0	0.43	0.43	5	5	56
	9-18	12-30	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.0-0.5	0.49	0.49			
	18-53	22-35	1.35-1.60	0.20-0.60	0.16-0.20	Moderate-	0.0-0.5	0.37	0.37			
	53-80	24-55	1.35-1.60	0.06-0.20	0.10-0.18	High-----	0.0-0.5	0.37	0.37			

Table 19.—Physical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
433A: Floraville-----	0-9	12-25	1.25-1.45	0.60-2.00	0.18-0.22	Low-----	1.0-2.0	0.43	0.43	5	5	56
	9-18	10-22	1.30-1.50	0.06-0.20	0.15-0.20	Low-----	0.0-0.5	0.55	0.55			
	18-44	27-48	1.35-1.60	0.01-0.06	0.12-0.18	High-----	0.0-0.5	0.37	0.37			
	44-70	24-55	1.35-1.60	0.01-0.06	0.10-0.18	High-----	0.0-0.5	0.37	0.37			
	70-94	20-45	1.30-1.55	0.06-0.20	0.12-0.20	High-----	0.0-0.5	0.37	0.37			
437B: Redbud-----	0-9	12-25	1.25-1.45	0.60-2.00	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	5	5	56
	9-16	12-32	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.0-0.5	0.49	0.49			
	16-45	22-35	1.35-1.60	0.20-0.60	0.16-0.20	Moderate-	0.0-0.5	0.37	0.37			
	45-80	24-55	1.35-1.60	0.06-0.20	0.10-0.18	High-----	0.0-0.5	0.37	0.37			
437C2: Redbud-----	0-6	12-25	1.25-1.45	0.60-2.00	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	5	5	56
	6-12	12-32	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.0-0.5	0.49	0.49			
	12-40	22-35	1.35-1.60	0.20-0.60	0.16-0.20	Moderate-	0.0-0.5	0.37	0.37			
	40-80	24-55	1.35-1.60	0.06-0.20	0.10-0.18	High-----	0.0-0.5	0.37	0.37			
438B: Aviston-----	0-16	15-27	1.25-1.45	0.60-2.00	0.20-0.24	Low-----	2.0-4.0	0.28	0.28	5	6	48
	16-67	24-35	1.35-1.55	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37			
	67-80	15-30	1.35-1.60	0.60-2.00	0.18-0.22	Moderate-	0.0-0.5	0.37	0.37			
438C2: Aviston-----	0-10	15-27	1.25-1.45	0.60-2.00	0.20-0.24	Low-----	2.0-4.0	0.28	0.28	5	6	48
	10-57	24-35	1.35-1.55	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37			
	57-80	15-30	1.35-1.60	0.60-2.00	0.18-0.22	Moderate-	0.0-0.5	0.37	0.37			
441B: Wakenda-----	0-13	18-27	1.20-1.30	0.60-2.00	0.20-0.24	Low-----	3.0-4.0	0.28	0.28	5	6	48
	13-60	25-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.5-2.0	0.37	0.37			
	60-80	20-30	1.20-1.50	0.60-2.00	0.20-0.22	Moderate-	0.0-0.5	0.49	0.49			
441C2: Wakenda-----	0-9	18-27	1.20-1.30	0.60-2.00	0.20-0.24	Low-----	3.0-4.0	0.28	0.28	5	6	48
	9-52	25-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.5-2.0	0.37	0.37			
	52-80	20-30	1.20-1.50	0.60-2.00	0.20-0.22	Moderate-	0.0-0.5	0.49	0.49			
466A: Bartelso-----	0-12	18-28	1.20-1.30	0.60-2.00	0.22-0.24	Low-----	2.0-5.0	0.28	0.28	3	6	48
	12-35	36-42	1.25-1.40	0.06-0.20	0.12-0.17	High-----	0.5-1.0	0.32	0.32			
	35-62	22-42	1.35-1.55	0.06-0.20	0.15-0.18	Moderate-	0.2-0.5	0.37	0.37			
	62-80	18-42	1.30-1.50	0.06-0.20	0.12-0.20	Moderate-	0.0-0.5	0.43	0.43			
468A: Lakaskia-----	0-13	20-30	1.15-1.35	0.60-2.00	0.18-0.24	Low-----	2.0-3.0	0.24	0.24	5	6	48
	13-26	30-42	1.30-1.45	0.06-0.20	0.15-0.18	High-----	0.5-1.0	0.37	0.37			
	26-60	35-45	1.35-1.50	0.06-0.20	0.14-0.18	High-----	0.2-0.5	0.32	0.32			
	60-80	25-42	1.40-1.55	0.06-0.20	0.12-0.16	Moderate-	0.2-0.5	0.43	0.43			
477B: Winfield-----	0-9	20-27	1.30-1.50	0.60-2.00	0.22-0.24	Low-----	0.5-2.0	0.43	0.43	5	6	48
	9-13	22-30	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.49	0.49			
	13-62	24-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-0.5	0.37	0.37			
	62-80	20-27	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
477B2, 477C2: Winfield-----	0-7	20-27	1.30-1.50	0.60-2.00	0.22-0.24	Low-----	0.5-2.0	0.43	0.43	5	6	48
	7-56	24-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-0.5	0.37	0.37			
	56-80	20-27	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
477C3: Winfield-----	0-5	27-30	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.5-2.0	0.37	0.37	5	7	38
	5-48	24-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-0.5	0.37	0.37			
	48-80	20-27	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			

Table 19.—Physical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
491B2: Ruma-----	0-8 8-56 56-80	27-35 22-35 15-27	1.20-1.30 1.25-1.40 1.30-1.45	0.60-2.00 0.60-2.00 0.60-2.00	0.18-0.20 0.18-0.22 0.20-0.22	Moderate- Moderate- Low-----	0.5-1.0 0.0-0.5 0.0-0.5	0.43 0.37 0.37	0.43 0.37 0.37	5	6	48
491C3, 491D3: Ruma-----	0-5 5-48 48-80	27-35 22-35 15-27	1.20-1.30 1.25-1.40 1.30-1.45	0.60-2.00 0.60-2.00 0.60-2.00	0.18-0.20 0.18-0.22 0.20-0.22	Moderate- Moderate- Low-----	0.5-1.0 0.0-0.5 0.0-0.5	0.37 0.37 0.37	0.37 0.37 0.37	5	6	48
515C2, 515C3, 515D3: Bunkum-----	0-8 8-40 40-58 58-80	18-35 25-35 18-27 15-27	1.25-1.35 1.25-1.45 1.30-1.50 1.30-1.55	0.20-0.60 0.20-0.60 0.20-0.60 0.20-0.60	0.20-0.24 0.16-0.22 0.18-0.22 0.18-0.22	Moderate- Moderate- Low----- Low-----	1.0-2.0 0.5-1.0 0.5-1.0 0.0-0.5	0.43 0.37 0.49 0.37	0.43 0.37 0.49 0.37	5	7	38
517A, 517B: Marine-----	0-9 9-17 17-34 34-62 62-80	10-18 8-18 35-48 15-35 12-35	1.30-1.50 1.30-1.50 1.45-1.70 1.45-1.65 1.45-1.65	0.60-2.00 0.60-2.00 0.06-0.20 0.20-0.60 0.20-0.60	0.22-0.24 0.22-0.24 0.11-0.18 0.18-0.22 0.15-0.18	Low----- Low----- High----- Moderate- Low-----	1.0-2.0 0.2-0.5 0.1-0.5 0.0-0.2 0.0-0.2	0.43 0.49 0.37 0.37 0.49	0.43 0.49 0.37 0.37 0.49	3	5	56
582B: Homen-----	0-9 9-15 15-58 58-80	18-27 15-27 24-35 15-27	1.20-1.65 1.35-1.65 1.40-1.70 1.40-1.70	0.60-2.00 0.60-2.00 0.20-0.60 0.20-0.60	0.22-0.24 0.20-0.22 0.18-0.22 0.20-0.22	Low----- Low----- Moderate- Low-----	1.0-2.0 0.5-1.0 0.5-1.0 0.0-0.5	0.43 0.49 0.37 0.37	0.43 0.49 0.37 0.37	5	6	48
582B2, 582C2: Homen-----	0-7 7-50 50-80	18-27 24-35 15-27	1.20-1.65 1.40-1.70 1.40-1.70	0.60-2.00 0.20-0.60 0.20-0.60	0.22-0.24 0.18-0.22 0.20-0.22	Low----- Moderate- Low-----	1.0-2.0 0.5-1.0 0.0-0.5	0.43 0.37 0.37	0.43 0.37 0.37	5	6	48
585F2: Negley-----	0-7 7-50 50-80	12-27 18-35 22-38	1.30-1.50 1.30-1.60 1.20-1.60	2.00-6.00 0.60-6.00 0.60-6.00	0.16-0.22 0.10-0.16 0.06-0.14	Low----- Low----- Low-----	1.0-3.0 0.0-0.5 0.0-0.5	0.43 0.20 0.20	0.43 0.32 0.32	5	5	56
801B, 801D: Orthents, silty-	0-60	20-35	1.35-1.55	0.20-2.00	0.18-0.22	Moderate-	0.0-0.5	0.49	0.49	5	6	48
802B, 802D: Orthents, loamy-	0-6 6-60	22-30 22-30	1.70-1.75 1.70-1.80	0.20-0.60 0.20-0.60	0.18-0.22 0.16-0.20	Moderate- Moderate-	0.5-1.0 0.0-1.0	0.43 0.43	0.43 0.43	5	4	86
821G: Morristown-----	0-6 6-60	27-35 20-35	1.50-1.75 1.65-1.90	0.20-0.60 0.20-0.60	0.07-0.14 0.03-0.11	Moderate- Moderate-	0.0-0.5 0.0-0.3	0.32 0.43	0.64 0.64	5	8	---
824B: Swanwick-----	0-8 8-23 23-63 63-80	27-35 15-35 27-35 15-35	1.25-1.60 1.50-1.70 1.60-1.90 1.60-2.00	0.20-0.60 0.06-0.20 0.01-0.06 0.01-0.06	0.18-0.20 0.08-0.12 0.05-0.12 0.03-0.18	Moderate- Low----- Moderate- Low-----	0.0-0.5 0.0-1.0 0.0-1.0 0.0-1.0	0.32 0.43 0.43 0.43	0.32 0.43 0.43 0.43	4	7	38
825B: Lenzburg, acid substratum-----	0-5 5-32 32-60	27-35 20-35 0-5	1.30-1.60 1.40-1.70 1.50-2.00	0.20-0.60 0.20-0.60 0.60-6.00	0.17-0.20 0.11-0.17 0.01-0.07	Moderate- Moderate- Low-----	0.5-1.0 0.5-1.0 0.0-1.0	0.32 0.43 0.17	0.32 0.43 ---	4	4L	86
826D: Orthents, acid substratum-----	0-29 29-60	20-35 0-5	1.35-1.55 1.50-2.00	0.20-2.00 0.60-6.00	0.18-0.22 0.01-0.07	Moderate- Low-----	0.0-0.5 0.0-0.5	0.43 0.17	0.49 ---	4	6	48

Table 19.-Physical Properties of the Soils-continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
871B, 871D, 871G: Lenzburg-----	0-3 3-26 26-60	27-35 18-35 18-35	1.30-1.60 1.30-1.70 1.40-1.70	0.60-2.00 0.20-0.60 0.20-0.60	0.17-0.22 0.17-0.20 0.11-0.18	Moderate- Moderate- Moderate-	0.5-2.0 0.2-1.0 0.2-1.0	0.32 0.43 0.43	0.32 0.43 0.43	5	8	---
878C3: Coulterville----	0-5 5-20 20-48 48-80	27-35 22-35 18-35 15-30	1.35-1.55 1.40-1.60 1.45-1.60 1.40-1.60	0.20-0.60 0.06-0.20 0.06-0.20 0.20-0.60	0.14-0.19 0.14-0.24 0.10-0.15 0.05-0.10	Moderate- Moderate- Moderate- Low-----	0.5-1.0 0.0-0.5 0.0-0.5 0.0-0.5	0.37 0.37 0.37 0.49	0.37 0.37 0.37 0.49	5	7	38
Grantfork-----	0-5 5-37 37-80	27-30 20-30 20-48	1.35-1.55 1.40-1.60 1.65-1.80	0.20-0.60 0.20-0.60 0.06-0.20	0.15-0.18 0.15-0.20 0.07-0.10	Low----- Low----- Moderate-	0.5-1.0 0.0-0.2 0.0-0.1	0.37 0.37 0.37	0.37 0.37 0.37	5	7	38
880B2: Coulterville----	0-7 7-23 23-56 56-80	15-27 22-35 18-35 15-30	1.40-1.60 1.40-1.60 1.45-1.60 1.40-1.60	0.20-0.60 0.06-0.20 0.06-0.20 0.20-0.60	0.21-0.24 0.14-0.24 0.10-0.15 0.05-0.10	Low----- Moderate- Moderate- Low-----	0.5-1.0 0.0-0.5 0.0-0.5 0.0-0.5	0.43 0.37 0.37 0.49	0.43 0.37 0.37 0.49	5	6	48
Darmstadt-----	0-7 7-21 21-39 39-80	12-27 27-35 20-35 15-30	1.30-1.50 1.40-1.65 1.40-1.65 1.50-1.70	0.06-0.20 0.06-0.20 0.01-0.06 0.01-0.06	0.22-0.24 0.11-0.20 0.09-0.10 0.10-0.15	Low----- Moderate- Moderate- Low-----	0.5-2.0 0.0-1.0 0.0-1.0 0.0-1.0	0.43 0.37 0.37 0.49	0.43 0.37 0.37 0.49	3	6	48
882A: Oconee-----	0-8 8-16 16-47 47-58 58-80	20-27 18-27 35-42 20-35 17-27	1.20-1.30 1.30-1.45 1.30-1.50 1.40-1.60 1.40-1.60	0.60-2.00 0.06-0.20 0.06-0.20 0.06-0.20 0.06-0.20	0.22-0.24 0.20-0.22 0.11-0.17 0.16-0.21 0.20-0.22	Moderate- Moderate- High----- Moderate- Moderate-	2.0-3.0 0.0-0.5 0.0-1.0 0.0-1.0 0.0-0.5	0.37 0.49 0.37 0.37 0.49	0.37 0.49 0.37 0.37 0.49	5	6	48
Darmstadt-----	0-11 11-21 21-39 39-80	12-27 27-35 20-35 15-30	1.30-1.50 1.40-1.65 1.40-1.65 1.50-1.70	0.06-0.20 0.06-0.20 0.01-0.06 0.01-0.06	0.22-0.24 0.11-0.20 0.09-0.10 0.10-0.15	Low----- Moderate- Moderate- Low-----	0.5-2.0 0.0-1.0 0.0-1.0 0.0-1.0	0.43 0.37 0.37 0.49	0.43 0.37 0.37 0.49	3	6	48
Coulterville----	0-7 7-23 23-56 56-80	15-27 22-35 18-35 15-30	1.40-1.60 1.40-1.60 1.45-1.60 1.40-1.60	0.20-0.60 0.06-0.20 0.06-0.20 0.20-0.60	0.21-0.24 0.14-0.24 0.10-0.15 0.05-0.10	Low----- Moderate- Moderate- Low-----	0.5-1.0 0.0-0.5 0.0-0.5 0.0-0.5	0.43 0.37 0.37 0.49	0.43 0.37 0.37 0.49	5	6	48
882B: Oconee-----	0-8 8-16 16-47 47-58 58-80	20-27 18-27 35-42 20-35 17-27	1.20-1.30 1.30-1.45 1.30-1.50 1.40-1.60 1.40-1.60	0.60-2.00 0.06-0.20 0.06-0.20 0.06-0.20 0.06-0.20	0.22-0.24 0.20-0.22 0.11-0.17 0.16-0.21 0.20-0.22	Moderate- Moderate- High----- Moderate- Moderate-	2.0-3.0 0.0-0.5 0.0-1.0 0.0-1.0 0.0-0.5	0.37 0.49 0.37 0.37 0.49	0.37 0.49 0.37 0.37 0.49	5	6	48
Coulterville----	0-7 7-23 23-56 56-80	15-27 22-35 18-35 15-30	1.40-1.60 1.40-1.60 1.45-1.60 1.40-1.60	0.20-0.60 0.06-0.20 0.06-0.20 0.20-0.60	0.21-0.24 0.14-0.24 0.10-0.15 0.05-0.10	Low----- Moderate- Moderate- Low-----	0.5-1.0 0.0-0.5 0.0-0.5 0.0-0.5	0.43 0.37 0.37 0.49	0.43 0.37 0.37 0.49	5	6	48
Darmstadt-----	0-11 11-21 21-39 39-80	12-27 27-35 20-35 15-30	1.30-1.50 1.40-1.65 1.40-1.65 1.50-1.70	0.06-0.20 0.06-0.20 0.01-0.06 0.01-0.06	0.22-0.24 0.11-0.20 0.09-0.10 0.10-0.15	Low----- Moderate- Moderate- Low-----	0.5-2.0 0.0-1.0 0.0-1.0 0.0-1.0	0.43 0.37 0.37 0.49	0.43 0.37 0.37 0.49	3	6	48
884C3: Bunkum-----	0-8 8-40 40-58 58-80	18-35 25-35 18-27 15-27	1.25-1.35 1.25-1.45 1.30-1.50 1.30-1.55	0.20-0.60 0.20-0.60 0.20-0.60 0.20-0.60	0.20-0.24 0.16-0.22 0.18-0.22 0.18-0.22	Moderate- Moderate- Low----- Low-----	1.0-2.0 0.5-1.0 0.5-1.0 0.0-0.5	0.37 0.37 0.49 0.37	0.37 0.37 0.49 0.37	5	7	38

Table 19.—Physical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
884C3: Coulterville----	0-5	27-35	1.35-1.55	0.20-0.60	0.14-0.19	Moderate-	0.5-1.0	0.37	0.37	5	7	38
	5-20	22-35	1.40-1.60	0.06-0.20	0.14-0.24	Moderate-	0.0-0.5	0.37	0.37			
	20-48	18-35	1.45-1.60	0.06-0.20	0.10-0.15	Moderate-	0.0-0.5	0.37	0.37			
	48-80	15-30	1.40-1.60	0.20-0.60	0.05-0.10	Low-----	0.0-0.5	0.49	0.49			
885A: Viriden-----	0-15	20-27	1.20-1.40	0.60-2.00	0.21-0.24	Moderate-	3.0-6.0	0.24	0.24	5	6	48
	15-74	35-42	1.20-1.45	0.20-0.60	0.11-0.20	High-----	0.0-2.0	0.37	0.37			
	74-86	25-33	1.25-1.55	0.20-0.60	0.18-0.22	Moderate-	0.0-0.5	0.49	0.49			
Fosterburg-----	0-13	20-27	1.15-1.35	0.60-2.00	0.22-0.24	Moderate-	4.0-6.0	0.24	0.24	3	6	48
	13-41	35-42	1.25-1.45	0.06-0.20	0.16-0.20	High-----	1.0-2.0	0.37	0.37			
	41-71	24-40	1.30-1.50	0.06-0.20	0.18-0.22	High-----	0.5-1.0	0.37	0.37			
	71-80	18-27	1.30-1.55	0.20-0.60	0.20-0.22	Low-----	0.0-0.5	0.37	0.37			
886F3: Ruma-----	0-5	27-35	1.20-1.30	0.60-2.00	0.18-0.20	Moderate-	0.5-1.0	0.37	0.37	5	6	48
	5-48	22-35	1.25-1.40	0.60-2.00	0.18-0.22	Moderate-	0.0-0.5	0.37	0.37			
	48-80	15-27	1.30-1.45	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.37	0.37			
Ursa-----	0-3	35-40	1.40-1.60	0.20-0.60	0.11-0.19	Moderate-	0.5-1.0	0.28	0.28	2	4	86
	3-68	35-45	1.50-1.70	0.06-0.20	0.09-0.17	High-----	0.5-1.0	0.28	0.37			
	68-80	25-45	1.55-1.75	0.06-0.20	0.08-0.17	Moderate-	0.0-0.5	0.28	0.37			
894A: Herrick-----	0-17	20-27	1.15-1.30	0.60-2.00	0.22-0.24	Moderate-	3.0-4.0	0.28	0.28	5	6	48
	17-43	35-42	1.20-1.40	0.20-0.60	0.12-0.17	High-----	0.2-1.0	0.37	0.37			
	43-64	25-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate-	0.0-0.4	0.37	0.37			
	64-80	20-30	1.30-1.50	0.20-0.60	0.16-0.21	Moderate-	0.0-0.2	0.49	0.49			
Biddle-----	0-16	18-27	1.15-1.35	0.60-2.00	0.20-0.24	Low-----	2.0-4.0	0.28	0.28	5	6	48
	16-36	35-42	1.25-1.45	0.06-0.20	0.14-0.20	High-----	0.5-1.0	0.37	0.37			
	36-62	24-38	1.30-1.50	0.06-0.20	0.16-0.22	High-----	0.5-1.0	0.37	0.37			
	62-99	18-27	1.30-1.55	0.20-0.60	0.18-0.22	Low-----	0.0-0.5	0.37	0.37			
Piasa-----	0-8	18-27	1.25-1.45	0.20-0.60	0.22-0.24	Moderate-	2.0-4.0	0.37	0.37	2	6	48
	8-12	18-27	1.30-1.50	0.06-0.20	0.18-0.20	Moderate-	0.5-1.0	0.49	0.49			
	12-37	35-43	1.35-1.55	0.01-0.06	0.09-0.10	High-----	0.5-1.0	0.37	0.37			
	37-80	20-35	1.50-1.70	0.06-0.20	0.10-0.12	Moderate-	0.0-0.5	0.49	0.49			
897D3: Bunkum-----	0-8	18-35	1.25-1.35	0.20-0.60	0.20-0.24	Moderate-	1.0-2.0	0.37	0.37	5	7	38
	8-40	25-35	1.25-1.45	0.20-0.60	0.16-0.22	Moderate-	0.5-1.0	0.37	0.37			
	40-58	18-27	1.30-1.50	0.20-0.60	0.18-0.22	Low-----	0.5-1.0	0.49	0.49			
	58-80	15-27	1.30-1.55	0.20-0.60	0.18-0.22	Low-----	0.0-0.5	0.37	0.37			
Atlas-----	0-9	30-40	1.35-1.55	0.06-0.20	0.14-0.19	High-----	0.5-1.0	0.28	0.28	2	7	38
	9-31	35-45	1.35-1.55	0.01-0.06	0.07-0.19	High-----	0.0-1.0	0.28	0.32			
	31-51	30-45	1.35-1.55	0.01-0.06	0.07-0.19	High-----	0.0-1.0	0.28	0.32			
	51-80	20-30	1.35-1.60	0.06-0.20	0.07-0.18	Moderate-	0.0-1.0	0.28	0.32			
906C3: Redbud-----	0-5	27-35	1.35-1.55	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.37	0.37	5	7	38
	5-10	12-32	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.0-0.5	0.49	0.49			
	10-40	22-35	1.35-1.60	0.20-0.60	0.16-0.20	Moderate-	0.0-0.5	0.37	0.37			
	40-80	24-55	1.35-1.60	0.06-0.20	0.10-0.18	High-----	0.0-0.5	0.37	0.37			
Hurst-----	0-5	27-35	1.40-1.65	0.20-0.60	0.18-0.22	Moderate-	0.5-1.0	0.32	0.32	2	7	38
	5-50	35-48	1.45-1.70	0.01-0.06	0.10-0.17	High-----	0.0-0.2	0.32	0.32			
	50-80	20-45	1.50-1.70	0.01-0.06	0.10-0.18	High-----	0.1-0.4	0.32	0.32			

Table 19.—Physical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
Shaffton-----	0-10	27-30	1.45-1.55	0.60-2.00	0.20-0.22	Moderate-	2.0-3.0	0.24	0.24	5	6	48
	10-33	18-26	1.55-1.65	0.60-2.00	0.17-0.19	Moderate-	1.0-3.0	0.28	0.28			
	33-43	8-16	1.65-1.70	6.00-20.00	0.05-0.08	Low-----	0.0-0.5	0.24	0.24			
	43-60	28-32	1.45-1.50	0.60-2.00	0.17-0.19	Moderate-	0.0-0.5	0.32	0.32			
2384B: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
Edwardsville----	0-15	20-30	1.20-1.35	0.60-2.00	0.22-0.24	Moderate-	4.0-6.0	0.28	0.28	5	6	48
	15-57	20-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.5-2.0	0.37	0.37			
	57-80	18-25	1.30-1.55	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
2477B: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
Winfield-----	0-9	20-27	1.30-1.50	0.60-2.00	0.22-0.24	Low-----	0.5-2.0	0.43	0.43	5	6	48
	9-13	22-30	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.49	0.49			
	13-62	24-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-0.5	0.37	0.37			
	62-80	20-27	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
3038B: Rocher-----	0-5	10-18	1.55-1.75	2.00-6.00	0.20-0.24	Low-----	0.5-1.0	0.32	0.32	5	4L	86
	5-53	5-18	1.65-1.85	2.00-6.00	0.12-0.17	Low-----	0.5-1.0	0.24	0.24			
	53-62	2-15	1.50-1.90	2.00-6.00	0.05-0.10	Low-----	0.0-0.5	0.24	0.24			
3070L: Beaucoup-----	0-16	27-35	1.15-1.35	0.60-2.00	0.15-0.20	Moderate-	5.0-6.0	0.28	0.28	5	7	38
	16-64	27-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-2.0	0.32	0.32			
	64-80	10-30	1.40-1.65	0.60-2.00	0.18-0.22	Moderate-	0.0-1.0	0.37	0.37			
3076A: Otter-----	0-37	18-27	1.10-1.25	0.60-2.00	0.22-0.24	Low-----	3.0-10	0.32	0.32	5	6	48
	37-55	18-27	1.20-1.45	0.60-2.00	0.17-0.22	Moderate-	1.0-3.0	0.49	0.49			
	55-80	15-28	1.30-1.55	0.60-2.00	0.15-0.20	Low-----	0.5-2.0	0.49	0.49			
3083L: Wabash-----	0-10	40-55	1.20-1.30	0.01-0.06	0.13-0.15	Very high	2.0-4.0	0.24	0.24	5	4	86
	10-80	40-55	1.20-1.30	0.01-0.06	0.10-0.14	Very high	1.0-2.0	0.28	0.28			
3180A: Dupo-----	0-9	10-18	1.25-1.45	0.60-2.00	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	5	5	56
	9-25	10-18	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.55	0.55			
	25-80	35-45	1.35-1.60	0.06-0.20	0.08-0.19	High-----	0.2-1.0	0.28	0.28			
3288L: Petrolia-----	0-8	27-35	1.20-1.40	0.20-0.60	0.21-0.23	Moderate-	2.0-3.0	0.32	0.32	5	7	38
	8-55	27-35	1.35-1.45	0.20-0.60	0.18-0.20	Moderate-	0.2-1.0	0.32	0.32			
	55-80	20-35	1.40-1.60	0.20-0.60	0.18-0.20	Moderate-	0.2-1.0	0.32	0.32			
3333A: Wakeland-----	0-7	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	7-29	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	0.0-1.0	0.55	0.55			
	29-80	10-18	1.30-1.50	0.60-2.00	0.18-0.24	Low-----	0.0-0.5	0.55	0.55			
3334L: Birds-----	0-8	15-25	1.30-1.50	0.20-0.60	0.21-0.25	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-80	18-27	1.40-1.60	0.20-0.60	0.20-0.22	Low-----	0.0-2.0	0.49	0.49			
3336A: Wilbur-----	0-7	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	7-32	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	0.5-2.0	0.49	0.49			
	32-60	10-26	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.5-1.0	0.49	0.49			
3391A: Blake-----	0-6	27-38	1.25-1.30	0.60-2.00	0.20-0.22	Moderate-	1.0-3.0	0.32	0.32	5	4L	86
	6-33	22-35	1.25-1.30	0.60-2.00	0.20-0.22	Moderate-	0.0-1.0	0.32	0.32			
	33-60	10-20	1.30-1.35	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.55	0.55			

Table 19.—Physical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
3394A, 3394B: Haynie-----	0-8	15-25	1.20-1.35	0.60-2.00	0.18-0.23	Low-----	1.0-3.0	0.37	0.37	5	4L	86
	8-60	15-18	1.20-1.35	0.60-2.00	0.18-0.23	Low-----	0.5-1.0	0.32	0.32			
3415A: Orion-----	0-7	10-18	1.20-1.30	0.60-2.00	0.22-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	7-35	10-18	1.20-1.30	0.60-2.00	0.20-0.22	Low-----	1.0-3.0	0.55	0.55			
	35-54	10-30	1.25-1.45	0.60-2.00	0.18-0.22	Low-----	3.0-8.0	0.49	0.49			
	54-66	10-18	1.20-1.40	0.60-2.00	0.18-0.22	Low-----	0.0-0.5	0.55	0.55			
3428A: Coffeen-----	0-10	15-27	1.35-1.55	0.60-2.00	0.22-0.25	Low-----	2.0-3.0	0.32	0.32	5	6	48
	10-47	10-18	1.40-1.60	0.60-2.00	0.20-0.22	Low-----	0.0-2.0	0.49	0.49			
	47-60	5-15	1.50-1.70	0.60-6.00	0.11-0.19	Low-----	0.0-2.0	0.55	0.55			
3847L: Fluvaquents-----	0-10	12-24	1.25-1.40	0.60-2.00	0.20-0.24	Low-----	2.0-4.0	0.37	0.37	5	5	56
	10-60	5-24	1.30-1.55	0.60-2.00	0.06-0.17	Low-----	0.0-2.0	0.28	0.28			
Orthents-----	0-6	22-30	1.70-1.75	0.20-0.60	0.18-0.22	Moderate-	0.5-1.0	0.43	0.43	5	4	86
	6-60	22-30	1.70-1.80	0.20-0.60	0.16-0.20	Moderate-	0.0-1.0	0.43	0.43			
5079C, 5079D: Menfro, karst---	0-5	18-27	1.25-1.40	0.60-2.00	0.22-0.24	Low-----	0.5-2.0	0.37	0.37	5	6	48
	5-50	27-33	1.35-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-0.5	0.37	0.37			
	50-80	8-20	1.30-1.45	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.55	0.55			
5079G: Menfro, karst---	0-9	18-27	1.25-1.40	0.60-2.00	0.22-0.24	Low-----	0.5-2.0	0.43	0.43	5	6	48
	9-52	27-33	1.35-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-0.5	0.37	0.37			
	52-80	8-20	1.30-1.45	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.55	0.55			
8026A: Wagner-----	0-9	20-25	1.35-1.55	0.20-0.60	0.22-0.24	Low-----	2.0-3.0	0.37	0.37	3	6	48
	9-17	18-25	1.35-1.55	0.20-0.60	0.20-0.22	Low-----	0.2-0.5	0.49	0.49			
	17-67	35-47	1.35-1.55	0.00-0.06	0.09-0.20	High-----	0.2-1.0	0.32	0.32			
	67-80	35-40	1.35-1.55	0.00-0.06	0.18-0.20	Moderate-	0.2-0.5	0.37	0.37			
8070A: Beaucoup-----	0-16	27-35	1.15-1.35	0.60-2.00	0.15-0.20	Moderate-	5.0-6.0	0.28	0.28	5	7	38
	16-64	27-35	1.30-1.50	0.60-2.00	0.18-0.20	Moderate-	0.0-2.0	0.32	0.32			
	64-80	10-30	1.40-1.65	0.60-2.00	0.18-0.22	Moderate-	0.0-1.0	0.37	0.37			
8071L: Darwin-----	0-16	40-45	1.20-1.40	0.00-0.06	0.11-0.14	Very high	4.0-5.0	0.24	0.24	5	4	86
	16-62	45-60	1.30-1.50	0.00-0.06	0.11-0.14	Very high	0.0-2.0	0.28	0.28			
	62-80	30-55	1.40-1.60	0.06-0.20	0.10-0.20	High-----	0.0-0.5	0.28	0.28			
8084A: Okaw-----	0-7	15-27	1.20-1.40	0.60-2.00	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	3	6	48
	7-15	12-30	1.30-1.50	0.20-0.60	0.18-0.20	Low-----	0.5-1.0	0.49	0.49			
	15-54	35-60	1.35-1.60	0.01-0.06	0.09-0.18	High-----	0.0-0.5	0.32	0.32			
	54-80	35-55	1.50-1.70	0.01-0.06	0.08-0.20	High-----	0.0-0.5	0.37	0.37			
8109A: Racoon-----	0-6	20-27	1.30-1.50	0.20-0.60	0.22-0.24	Moderate-	1.0-2.0	0.43	0.43	5	6	48
	6-30	18-25	1.35-1.50	0.20-0.60	0.20-0.22	Moderate-	0.0-0.5	0.49	0.49			
	30-59	24-38	1.35-1.60	0.06-0.20	0.18-0.20	Moderate-	0.5-1.0	0.37	0.37			
	59-73	18-30	1.40-1.65	0.20-0.60	0.15-0.20	Moderate-	0.5-1.0	0.49	0.49			
8122C, 8122D: Colp-----	0-5	27-35	1.35-1.55	0.20-0.60	0.14-0.19	Moderate-	0.5-1.0	0.32	0.32	5	7	38
	5-70	35-50	1.45-1.70	0.06-0.20	0.10-0.17	High-----	0.0-0.5	0.32	0.32			
	70-80	30-45	1.50-1.70	0.06-0.20	0.10-0.18	High-----	0.0-0.5	0.37	0.37			
8131B: Alvin-----	0-9	8-15	1.45-1.65	2.00-6.00	0.14-0.18	Low-----	0.5-1.0	0.24	0.24	5	3	86
	9-47	15-18	1.45-1.65	2.00-6.00	0.14-0.16	Low-----	0.5-1.0	0.24	0.24			
	47-80	3-10	1.55-1.65	2.00-20.00	0.08-0.14	Low-----	0.5-1.0	0.24	0.24			

Table 19.—Physical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
8162A: Gorham-----	0-14	27-42	1.30-1.50	0.20-0.60	0.13-0.20	Moderate-	4.0-5.0	0.28	0.28	5	4	86
	14-36	27-42	1.35-1.55	0.20-0.60	0.11-0.18	Moderate-	0.2-1.0	0.32	0.32			
	36-62	22-30	1.40-1.65	0.60-2.00	0.15-0.19	Moderate-	0.0-0.5	0.32	0.32			
	62-80	5-15	1.50-1.75	2.00-20.00	0.05-0.13	Low-----	0.0-0.5	0.24	0.24			
8180A: Dupo-----	0-9	10-18	1.25-1.45	0.60-2.00	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	5	5	56
	9-25	10-18	1.30-1.50	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.55	0.55			
	25-80	35-45	1.35-1.60	0.06-0.20	0.08-0.19	High-----	0.2-1.0	0.28	0.28			
8183A: Shaffton-----	0-12	27-30	1.45-1.55	0.60-2.00	0.20-0.22	Moderate-	2.0-3.0	0.24	0.24	5	6	48
	12-24	18-26	1.55-1.65	0.60-2.00	0.17-0.19	Moderate-	1.0-3.0	0.28	0.28			
	24-66	8-16	1.65-1.70	6.00-20.00	0.05-0.08	Low-----	0.0-0.5	0.24	0.24			
	66-80	2-6	1.65-1.75	>20.00	0.03-0.05	Low-----	0.0-0.5	0.32	0.32			
8284A: Tice-----	0-16	27-35	1.25-1.45	0.60-2.00	0.21-0.24	Moderate-	2.0-4.0	0.28	0.28	5	7	38
	16-72	24-35	1.30-1.50	0.60-2.00	0.18-0.21	Moderate-	0.0-1.0	0.32	0.32			
	72-80	10-30	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.32	0.32			
8304B: Landes-----	0-14	7-20	1.40-1.60	2.00-6.00	0.13-0.20	Low-----	1.0-2.0	0.20	0.20	4	3	86
	14-39	5-18	1.60-1.70	2.00-6.00	0.10-0.15	Low-----	0.0-2.0	0.24	0.24			
	39-80	5-18	1.60-1.80	6.00-20.00	0.05-0.15	Low-----	0.0-2.0	0.24	0.24			
8338A: Hurst-----	0-7	20-27	1.25-1.45	0.20-0.60	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	3	6	48
	7-12	18-30	1.30-1.50	0.20-0.60	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
	12-62	35-48	1.45-1.70	0.01-0.06	0.10-0.17	High-----	0.0-0.5	0.32	0.32			
	62-80	20-45	1.50-1.70	0.01-0.06	0.10-0.18	High-----	0.0-0.5	0.32	0.32			
8338B: Hurst-----	0-6	20-27	1.25-1.45	0.20-0.60	0.22-0.24	Low-----	1.0-2.0	0.43	0.43	3	6	48
	6-10	18-30	1.30-1.50	0.20-0.60	0.20-0.22	Low-----	0.0-0.5	0.49	0.49			
	10-56	35-48	1.45-1.70	0.01-0.06	0.10-0.17	High-----	0.0-0.5	0.32	0.32			
	56-80	20-45	1.50-1.70	0.01-0.06	0.10-0.18	High-----	0.0-0.5	0.32	0.32			
8338C: Hurst-----	0-5	27-35	1.40-1.65	0.20-0.60	0.18-0.22	Moderate-	0.5-1.0	0.43	0.43	3	7	38
	5-50	35-48	1.45-1.70	0.01-0.06	0.10-0.17	High-----	0.0-0.5	0.32	0.32			
	50-80	20-45	1.50-1.70	0.01-0.06	0.10-0.18	High-----	0.0-0.5	0.32	0.32			
8394A: Haynie-----	0-8	15-25	1.20-1.35	0.60-2.00	0.18-0.23	Low-----	1.0-3.0	0.37	0.37	5	4L	86
	8-60	15-18	1.20-1.35	0.60-2.00	0.18-0.23	Low-----	0.5-1.0	0.32	0.32			
8432A: Geff-----	0-5	18-27	1.15-1.35	0.60-2.00	0.22-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	5-12	18-27	1.35-1.45	0.60-2.00	0.20-0.22	Low-----	0.5-1.0	0.49	0.49			
	12-33	24-35	1.35-1.55	0.60-2.00	0.18-0.20	Moderate-	0.5-1.0	0.37	0.37			
	33-62	15-30	1.40-1.75	0.60-2.00	0.15-0.18	Low-----	0.5-1.0	0.32	0.32			
	62-80	1-5	1.55-1.75	6.00-20.00	0.03-0.08	Low-----	0.5-1.0	0.17	0.17			
8434B: Ridgway-----	0-8	14-27	1.15-1.35	0.60-2.00	0.22-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-27	22-35	1.35-1.55	0.60-2.00	0.16-0.20	Moderate-	0.0-2.0	0.37	0.37			
	27-52	10-30	1.45-1.65	0.60-6.00	0.11-0.18	Low-----	0.0-1.0	0.32	0.32			
	52-80	2-10	1.55-1.85	6.00-20.00	0.05-0.10	Low-----	0.0-0.5	0.17	0.17			
8436B: Meadowbank-----	0-17	15-27	1.20-1.40	0.60-2.00	0.22-0.24	Low-----	3.0-5.0	0.28	0.28	4	6	48
	17-34	27-35	1.35-1.55	0.60-2.00	0.16-0.19	Moderate-	0.0-2.0	0.37	0.37			
	34-53	10-30	1.45-1.65	0.60-6.00	0.10-0.18	Low-----	0.0-0.5	0.32	0.32			
	53-80	2-10	1.55-1.80	6.00-20.00	0.05-0.10	Low-----	0.0-0.5	0.17	0.17			

Table 19.-Physical Properties of the Soils-continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
8489A: Hurst, sandy substratum-----	0-10	20-27	1.25-1.45	0.20-0.60	0.22-0.24	Moderate-	1.0-2.0	0.43	0.43	3	6	48
	10-40	35-48	1.45-1.70	0.01-0.06	0.10-0.20	High-----	0.0-0.4	0.32	0.32			
	40-60	2-15	1.50-1.70	2.00-6.00	0.05-0.13	Low-----	0.0-0.4	0.17	0.17			
8524L: Zipp-----	0-8	40-50	1.40-1.60	0.06-0.20	0.12-0.14	High-----	1.0-3.0	0.24	0.24	5	4	86
	8-51	40-55	1.45-1.65	0.06-0.20	0.11-0.13	High-----	0.5-1.0	0.28	0.28			
	51-80	40-55	1.50-1.70	0.01-0.20	0.08-0.10	High-----	0.2-1.0	0.28	0.28			
8591A: Fults-----	0-12	40-60	1.20-1.40	0.01-0.06	0.12-0.20	High-----	3.0-4.0	0.24	0.24	5	4	86
	12-32	35-60	1.30-1.50	0.01-0.06	0.11-0.18	High-----	0.2-1.0	0.28	0.28			
	32-42	10-35	1.40-1.70	0.60-6.00	0.12-0.16	Moderate-	0.0-0.2	0.32	0.32			
	42-80	3-20	1.60-1.80	0.60-6.00	0.05-0.13	Low-----	0.0-0.1	0.24	0.24			
8592A: Nameoki-----	0-12	40-60	1.20-1.40	0.01-0.06	0.12-0.21	High-----	2.0-4.0	0.24	0.24	5	4	86
	12-28	35-60	1.30-1.50	0.01-0.06	0.11-0.18	High-----	0.5-1.0	0.28	0.28			
	28-54	15-35	1.45-1.70	0.60-2.00	0.12-0.20	Moderate-	0.0-0.5	0.32	0.32			
	54-80	5-30	1.50-1.80	0.60-2.00	0.05-0.18	Low-----	0.0-0.5	0.24	0.24			
8646A: Fluvaquents, loamy-----	0-10	12-24	1.25-1.40	0.60-2.00	0.20-0.24	Low-----	2.0-4.0	0.37	0.37	5	5	56
	10-60	5-24	1.30-1.55	0.60-2.00	0.06-0.17	Low-----	0.0-2.0	0.28	0.28			
8812F: Typic Hapludalfs	0-8	15-27	1.35-1.65	0.06-2.00	0.18-0.20	Moderate-	1.0-3.0	0.43	0.43	5	6	48
	8-60	10-40	1.45-1.80	0.06-6.00	0.08-0.16	Moderate-	0.0-1.0	0.32	0.32			

Table 20.—Chemical Properties of the Soils

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
5C2: Blair-----	0-7	20-27	14.0-22.0	5.1-7.3	---	---
	7-22	25-35	15.0-23.0	4.5-6.0	---	---
	22-50	18-35	11.0-22.0	5.1-7.8	0-5	---
	50-80	20-35	12.0-17.0	5.6-7.8	0-20	0-3
5C3, 5D3: Blair-----	0-5	20-27	14.0-22.0	5.1-7.3	---	---
	5-20	25-35	15.0-23.0	4.5-6.0	---	---
	20-47	18-35	11.0-22.0	5.1-7.8	0-5	---
	47-80	20-35	12.0-17.0	5.6-7.8	0-20	0-3
8F2: Hickory-----	0-12	19-25	14.0-19.0	4.5-7.3	---	---
	12-46	24-35	16.0-22.0	4.5-7.3	---	---
	46-58	15-32	9.0-19.0	5.1-7.8	---	---
	58-80	15-30	5.0-15.0	5.6-8.4	0-25	---
31A: Pierron-----	0-8	12-25	5.0-15.0	4.5-7.3	---	---
	8-20	10-22	5.0-10.0	4.5-7.3	---	---
	20-36	35-45	20.0-35.0	3.5-5.5	---	---
	36-66	27-42	15.0-30.0	4.5-7.3	---	---
	66-80	18-35	10.0-20.0	5.1-8.4	0-5	---
37A, 37B: Worthen-----	0-29	12-22	15.0-21.0	5.6-7.3	---	---
	29-64	15-26	11.0-14.0	5.6-7.8	---	---
	64-80	15-24	9.0-14.0	6.1-8.4	0-25	---
46A: Herrick-----	0-17	20-27	18.0-24.0	5.1-7.3	---	---
	17-43	35-42	21.0-25.0	4.5-6.0	---	---
	43-64	25-40	15.0-25.0	5.6-7.3	---	---
	64-80	20-30	12.0-18.0	5.6-8.4	---	---
50A: Virden-----	0-15	20-27	23.0-28.0	5.6-7.8	---	---
	15-74	35-42	21.0-27.0	5.6-7.8	---	---
	74-86	25-33	15.0-20.0	5.6-8.4	---	---
75B: Drury-----	0-7	10-20	8.0-16.0	5.6-8.4	---	---
	7-43	18-25	11.0-15.0	5.6-7.3	---	---
	43-80	15-20	9.0-12.0	6.1-7.8	0-15	---
79B: Menfro-----	0-10	18-27	10.0-16.0	5.1-7.3	---	---
	10-62	27-33	15.0-20.0	5.1-7.3	---	---
	62-80	8-20	5.0-10.0	5.1-7.3	---	---
79C2, 79D2: Menfro-----	0-7	18-27	10.0-16.0	5.1-7.3	---	---
	7-56	27-33	15.0-20.0	5.1-7.3	---	---
	56-80	8-20	5.0-10.0	5.1-7.3	---	---
79C3, 79D3, 79F3: Menfro-----	0-5	27-30	16.0-20.0	5.1-7.3	---	---
	5-50	27-33	15.0-20.0	5.1-7.3	---	---
	50-80	8-20	5.0-10.0	5.1-7.3	---	---
79F, 79G: Menfro-----	0-9	18-27	10.0-16.0	5.1-7.3	---	---
	9-52	27-33	15.0-20.0	5.1-7.3	---	---
	52-80	8-20	5.0-10.0	5.1-7.3	---	---
81A: Littleton-----	0-10	18-27	15.0-25.0	5.6-7.8	---	---
	10-33	22-27	15.0-25.0	5.6-7.8	---	---
	33-80	18-27	11.0-18.0	5.6-7.8	---	---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
90A: Bethalto-----	0-8	18-27	16.0-24.0	5.6-7.3	---	---
	8-15	15-25	10.0-18.0	5.1-7.3	---	---
	15-70	20-35	15.0-28.0	5.1-7.8	---	---
	70-80	18-27	12.0-20.0	5.6-8.4	0-15	---
109A: Raccoon-----	0-6	18-27	13.0-20.0	4.5-7.3	---	---
	6-26	18-27	11.0-17.0	4.5-7.3	---	---
	26-39	27-38	17.0-25.0	4.5-5.5	---	---
	39-47	27-35	17.0-23.0	4.5-6.0	---	---
	47-60	18-35	12.0-23.0	4.5-6.0	---	---
112A: Cowden-----	0-8	17-27	14.0-22.0	5.6-7.3	---	---
	8-19	17-27	10.0-17.0	4.5-6.0	---	---
	19-50	35-42	21.0-27.0	4.5-7.3	---	---
	50-80	20-30	12.0-17.0	5.6-7.8	---	---
113A, 113B: Oconee-----	0-8	20-27	12.0-18.0	5.6-7.8	---	---
	8-16	18-27	10.0-18.0	4.5-7.3	---	---
	16-47	35-42	21.0-26.0	4.5-6.0	---	---
	47-58	20-35	12.0-21.0	5.1-6.5	---	---
	58-80	17-27	10.0-16.0	5.6-7.8	---	---
267A, 267B: Caseyville-----	0-7	18-27	16.0-24.0	5.6-7.3	---	---
	7-16	15-30	10.0-18.0	5.1-6.5	---	---
	16-62	20-35	15.0-28.0	5.1-6.5	---	---
	62-80	18-27	12.0-20.0	5.6-7.8	0-15	---
283B: Downsouth-----	0-13	18-27	15.0-25.0	5.1-7.3	---	---
	13-65	24-35	20.0-28.0	5.1-7.3	---	---
	65-80	18-27	12.0-20.0	5.6-7.8	0-15	---
283C2: Downsouth-----	0-9	18-27	15.0-25.0	5.1-7.3	---	---
	9-58	24-35	20.0-28.0	5.1-7.3	---	---
	58-80	18-27	12.0-20.0	5.6-7.8	0-15	---
384A, 384B: Edwardsville----	0-15	20-30	20.0-30.0	5.6-7.3	---	---
	15-57	20-35	20.0-30.0	5.1-7.8	---	---
	57-80	18-25	12.0-20.0	5.6-7.8	0-15	---
385A: Mascoutah-----	0-21	27-35	25.0-40.0	6.1-7.3	---	---
	21-58	27-35	25.0-35.0	6.1-7.8	---	---
	58-66	20-32	20.0-30.0	6.6-7.8	0-5	---
	66-80	18-30	12.0-20.0	6.6-8.4	0-15	---
423A, 423B: Millstadt-----	0-9	12-25	5.0-15.0	5.1-7.3	---	---
	9-18	12-30	5.0-10.0	4.5-7.3	---	---
	18-53	22-35	20.0-30.0	3.5-6.0	---	---
	53-80	24-55	15.0-35.0	4.5-7.8	0-5	---
433A: Floraville-----	0-9	12-25	5.0-15.0	5.1-7.3	---	---
	9-18	10-22	5.0-10.0	4.5-7.3	---	---
	18-44	27-48	20.0-32.0	3.5-6.0	---	---
	44-70	24-55	15.0-35.0	4.5-7.8	0-5	---
	70-94	20-45	10.0-30.0	5.6-8.4	0-15	---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
437B: Redbud-----	0-9	12-25	12.0-20.0	5.1-7.3	---	---
	9-16	12-32	10.0-18.0	5.1-7.3	---	---
	16-45	22-35	20.0-30.0	4.5-6.5	---	---
	45-80	24-55	18.0-32.0	4.5-8.4	0-5	---
437C2: Redbud-----	0-6	12-25	12.0-20.0	5.1-7.3	---	---
	6-12	12-32	10.0-18.0	5.1-7.3	---	---
	12-40	22-35	20.0-30.0	4.5-6.5	---	---
	40-80	24-55	18.0-32.0	4.5-8.4	0-5	---
438B: Aviston-----	0-16	15-27	15.0-25.0	5.6-7.3	---	---
	16-67	24-35	20.0-35.0	5.1-7.3	---	---
	67-80	15-30	10.0-20.0	5.6-7.8	---	---
438C2: Aviston-----	0-10	15-27	15.0-25.0	5.6-7.3	---	---
	10-57	24-35	20.0-35.0	5.1-7.3	---	---
	57-80	15-30	10.0-20.0	5.6-7.8	---	---
441B: Wakenda-----	0-13	18-27	12.0-22.0	5.6-7.3	---	---
	13-60	25-35	20.0-30.0	5.6-7.3	---	---
	60-80	20-30	10.0-20.0	5.6-7.3	---	---
441C2: Wakenda-----	0-9	18-27	12.0-22.0	5.6-7.3	---	---
	9-52	25-35	20.0-30.0	5.6-7.3	---	---
	52-80	20-30	10.0-20.0	5.6-7.3	---	---
466A: Bartelso-----	0-12	18-28	15.0-25.0	5.6-7.3	---	---
	12-35	36-42	20.0-30.0	5.1-7.8	0-5	---
	35-62	22-42	20.0-30.0	6.1-8.4	0-20	---
	62-80	18-42	12.0-20.0	6.1-8.4	0-10	---
468A: Lakaskia-----	0-13	20-30	14.0-25.0	5.6-7.3	---	---
	13-26	30-42	20.0-27.0	5.6-7.8	0-5	---
	26-60	35-45	21.0-28.0	6.1-8.4	0-20	---
	60-80	25-42	15.0-25.0	6.6-8.4	0-10	---
477B: Winfield-----	0-9	20-27	10.0-15.0	5.6-7.3	---	---
	9-13	22-30	12.0-17.0	5.6-7.3	---	---
	13-62	24-35	13.0-18.0	4.5-6.5	---	---
	62-80	20-27	10.0-14.0	5.1-6.5	---	---
477B2, 477C2: Winfield-----	0-7	20-27	10.0-15.0	5.6-7.3	---	---
	7-56	24-35	13.0-18.0	4.5-6.5	---	---
	56-80	20-27	10.0-14.0	5.1-6.5	---	---
477C3: Winfield-----	0-5	27-30	14.0-17.0	5.6-7.3	---	---
	5-48	24-35	13.0-18.0	4.5-6.5	---	---
	48-80	20-27	10.0-14.0	5.1-6.5	---	---
491B2: Ruma-----	0-8	27-35	15.0-25.0	5.6-7.3	---	---
	8-56	22-35	18.0-28.0	4.5-6.5	---	---
	56-80	15-27	12.0-20.0	5.1-7.3	---	---
491C3, 491D3: Ruma-----	0-5	27-35	15.0-25.0	5.6-7.3	---	---
	5-48	22-35	18.0-28.0	4.5-6.5	---	---
	48-80	15-27	12.0-20.0	5.1-7.3	---	---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
515C2, 515C3, 515D3: Bunkum-----	0-8 8-40 40-58 58-80	18-35 25-35 18-27 15-27	17.0-23.0 18.0-24.0 12.0-22.0 10.0-20.0	5.1-7.3 4.5-6.5 5.1-7.3 5.1-7.3	--- --- --- ---	--- --- --- ---
517A, 517B: Marine-----	0-9 9-17 17-34 34-62 62-80	10-18 8-18 35-48 15-35 12-35	9.0-15.0 5.0-10.0 20.0-30.0 10.0-20.0 6.0-16.0	5.1-7.3 4.5-6.5 4.5-5.5 5.1-7.3 5.1-7.8	--- --- --- --- ---	--- --- --- --- ---
582B: Homen-----	0-9 9-15 15-58 58-80	18-27 15-27 24-35 15-27	15.0-25.0 15.0-22.0 18.0-28.0 12.0-20.0	5.6-7.3 4.5-6.5 4.5-6.0 5.1-6.5	--- --- --- ---	--- --- --- ---
582B2, 582C2: Homen-----	0-7 7-50 50-80	18-27 24-35 15-27	15.0-25.0 18.0-28.0 12.0-20.0	5.6-7.3 4.5-6.0 5.1-6.5	--- --- ---	--- --- ---
585F2: Negley-----	0-7 7-50 50-80	12-27 18-35 22-38	6.0-22.0 7.0-21.0 9.0-23.0	4.5-7.3 4.5-6.5 4.5-6.0	--- --- ---	--- --- ---
801B, 801D: Orthents, silty-	0-60	20-35	8.0-20.0	5.1-6.5	---	---
802B, 802D: Orthents, loamy-	0-6 6-60	22-30 22-30	9.0-12.0 9.0-20.0	5.6-7.3 5.6-7.3	--- ---	--- ---
821G: Morristown-----	0-6 6-60	27-35 20-35	10.0-21.0 8.0-21.0	6.1-8.4 7.4-8.4	0-20 0-20	--- ---
824B: Swanwick-----	0-8 8-23 23-63 63-80	27-35 15-35 27-35 15-35	16.0-22.0 9.0-22.0 16.0-22.0 9.0-22.0	5.1-7.8 4.5-8.4 4.5-8.4 4.5-8.4	--- 0-20 0-20 0-20	--- --- --- ---
825B: Lenzburg, acid substratum-----	0-5 5-32 32-60	27-35 20-35 0-5	17.0-29.0 8.0-21.0 1.0-3.0	6.6-8.4 6.6-8.4 2.0-3.6	0-10 0-10 ---	--- --- ---
826D: Orthents, acid substratum-----	0-29 29-60	20-35 0-5	8.0-20.0 1.0-3.0	5.1-7.8 3.5-4.4	--- ---	--- ---
871B, 871D, 871G: Lenzburg-----	0-3 3-26 26-60	27-35 18-35 18-35	17.0-29.0 8.0-21.0 8.0-21.0	6.6-8.4 6.6-8.4 6.6-8.4	0-20 0-25 0-25	--- --- ---
871G: Lenzburg-----	0-3 3-26 26-60	27-35 18-35 18-35	17.0-29.0 8.0-21.0 8.0-21.0	6.6-8.4 6.6-8.4 6.6-8.4	0-20 0-25 0-25	--- --- ---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
878C3:						
Coulterville----	0-5	27-35	16.0-23.0	5.1-7.8	---	0-10
	5-20	22-35	16.0-22.0	4.5-7.8	---	5-15
	20-48	18-35	11.0-22.0	7.4-8.4	0-10	5-15
	48-80	15-30	9.0-19.0	6.6-8.4	0-20	5-15
Grantfork-----	0-5	27-30	17.0-20.0	4.5-7.8	---	0-10
	5-37	20-30	12.0-18.0	5.1-9.0	0-20	5-15
	37-80	20-48	12.0-18.0	7.4-9.0	0-30	5-15
880B2:						
Coulterville----	0-7	15-27	9.0-18.0	5.6-7.8	---	0-5
	7-23	22-35	16.0-22.0	4.5-7.8	---	5-15
	23-56	18-35	11.0-22.0	7.4-8.4	0-10	5-15
	56-80	15-30	9.0-19.0	6.6-8.4	0-20	5-15
Darmstadt-----	0-7	12-27	7.0-20.0	5.1-7.3	---	0-5
	7-21	27-35	16.0-23.0	4.5-7.8	---	10-20
	21-39	20-35	16.0-23.0	6.6-9.0	0-20	10-25
	39-80	15-30	9.0-20.0	7.4-9.0	0-30	5-20
882A:						
Oconee-----	0-8	20-27	12.0-18.0	5.6-7.8	---	---
	8-16	18-27	10.0-18.0	4.5-7.3	---	---
	16-47	35-42	21.0-26.0	4.5-6.0	---	---
	47-58	20-35	12.0-21.0	5.1-6.5	---	---
	58-80	17-27	10.0-16.0	5.6-7.8	---	---
Darmstadt-----	0-11	12-27	7.0-20.0	5.1-7.3	---	0-5
	11-21	27-35	16.0-23.0	4.5-7.8	---	10-20
	21-39	20-35	16.0-23.0	6.6-9.0	0-20	10-25
	39-80	15-30	9.0-20.0	7.4-9.0	0-30	5-20
Coulterville----	0-7	15-27	9.0-18.0	5.6-7.8	---	0-5
	7-23	22-35	16.0-22.0	4.5-7.8	---	5-15
	23-56	18-35	11.0-22.0	7.4-8.4	0-10	5-15
	56-80	15-30	9.0-19.0	6.6-8.4	0-20	5-15
882B:						
Oconee-----	0-8	20-27	12.0-18.0	5.6-7.8	---	---
	8-16	18-27	10.0-18.0	4.5-7.3	---	---
	16-47	35-42	21.0-26.0	4.5-6.0	---	---
	47-58	20-35	12.0-21.0	5.1-6.5	---	---
	58-80	17-27	10.0-16.0	5.6-7.8	---	---
Coulterville----	0-7	15-27	9.0-18.0	5.6-7.8	---	0-5
	7-23	22-35	16.0-22.0	4.5-7.8	---	5-15
	23-56	18-35	11.0-22.0	7.4-8.4	0-10	5-15
	56-80	15-30	9.0-19.0	6.6-8.4	0-20	5-15
Darmstadt-----	0-11	12-27	7.0-20.0	5.1-7.3	---	0-5
	11-21	27-35	16.0-23.0	4.5-7.8	---	10-20
	21-39	20-35	16.0-23.0	6.6-9.0	0-20	10-25
	39-80	15-30	9.0-20.0	7.4-9.0	0-30	5-20
884C3:						
Bunkum-----	0-8	18-35	17.0-23.0	5.1-7.3	---	---
	8-40	25-35	18.0-24.0	4.5-6.5	---	---
	40-58	18-27	12.0-22.0	5.1-7.3	---	---
	58-80	15-27	10.0-20.0	5.1-7.3	---	---
Coulterville----	0-5	27-35	16.0-23.0	5.1-7.8	---	0-10
	5-20	22-35	16.0-22.0	4.5-7.8	---	5-15
	20-48	18-35	11.0-22.0	7.4-8.4	0-10	5-15
	48-80	15-30	9.0-19.0	6.6-8.4	0-20	5-15
885A:						
Virden-----	0-15	20-27	23.0-28.0	5.6-7.8	---	---
	15-74	35-42	21.0-27.0	5.6-7.8	---	---
	74-86	25-33	15.0-20.0	5.6-8.4	---	---

Table 20.-Chemical Properties of the Soils-continued

Map symbol and soil name	Depth		Cation- exchange capacity meq/100g	Soil reaction pH	Calcium carbonate Pct	Sodium adsorption ratio
	In	Pct				
Fosterburg-----	0-13 13-41 41-71 71-80	20-27 35-42 24-40 18-27	20.0-27.0 22.0-30.0 20.0-28.0 12.0-20.0	6.1-7.8 6.1-8.4 6.1-8.4 6.6-8.4	--- 0-15 0-15 0-5	0-5 5-15 5-10 0-10
886F3: Ruma-----	0-5 5-48 48-80	27-35 22-35 15-27	15.0-25.0 18.0-28.0 12.0-20.0	5.6-7.3 4.5-6.5 5.1-7.3	--- --- ---	--- --- ---
Ursa-----	0-3 3-68 68-80	35-40 35-45 25-45	22.0-26.0 21.0-27.0 15.0-27.0	4.5-7.3 4.5-7.3 5.6-8.4	--- --- 0-5	--- --- ---
894A: Herrick-----	0-17 17-43 43-64 64-80	20-27 35-42 25-40 20-30	18.0-24.0 21.0-25.0 15.0-25.0 12.0-18.0	5.1-7.3 4.5-6.0 5.6-7.3 5.6-8.4	--- --- --- ---	--- --- --- 0-5
Biddle-----	0-16 16-36 36-62 62-99	18-27 35-42 24-38 18-27	20.0-27.0 22.0-30.0 20.0-28.0 12.0-20.0	5.6-7.3 5.6-8.4 6.1-8.4 6.6-8.4	--- 0-5 0-15 0-15	--- 5-15 5-10 0-10
Piasa-----	0-8 8-12 12-37 37-80	18-27 18-27 35-43 20-35	11.0-16.0 11.0-16.0 21.0-26.0 12.0-21.0	5.6-7.8 5.6-7.8 6.1-9.0 6.6-9.0	--- --- --- ---	0-5 0-5 10-20 5-20
897D3: Bunkum-----	0-8 8-40 40-58 58-80	18-35 25-35 18-27 15-27	17.0-23.0 18.0-24.0 12.0-22.0 10.0-20.0	5.1-7.3 4.5-6.5 5.1-7.3 5.1-7.3	--- --- --- ---	--- --- --- ---
Atlas-----	0-9 9-31 31-51 51-80	30-40 35-45 30-45 20-30	19.0-26.0 21.0-29.0 18.0-29.0 12.0-20.0	4.5-7.3 4.5-7.3 4.5-7.8 6.1-7.8	--- --- --- 0-5	--- --- --- ---
906C3: Redbud-----	0-5 5-10 10-40 40-80	27-35 12-32 22-35 24-55	16.0-22.0 10.0-18.0 20.0-30.0 18.0-32.0	5.1-7.3 5.1-7.3 4.5-6.5 4.5-8.4	--- --- --- 0-5	--- --- --- ---
Hurst-----	0-5 5-50 50-80	27-35 35-48 20-45	17.0-22.0 21.0-29.0 12.0-27.0	4.5-7.3 3.5-7.8 5.1-8.4	--- --- 0-5	--- --- ---
907D3: Redbud-----	0-5 5-10 10-40 40-80	27-35 12-32 22-35 24-55	16.0-22.0 10.0-18.0 20.0-30.0 18.0-32.0	5.1-7.3 5.1-7.3 4.5-6.5 4.5-8.4	--- --- --- 0-5	--- --- --- ---
Colp-----	0-5 5-70 70-80	27-35 35-50 30-45	17.0-23.0 21.0-31.0 18.0-28.0	5.1-7.8 4.5-5.0 4.5-8.4	--- --- 0-15	--- --- ---
962F2, 962G: Sylvan-----	0-5 5-25 25-80	20-27 25-35 10-27	14.0-20.0 15.0-22.0 6.0-18.0	5.6-7.3 5.6-7.3 6.6-8.4	--- --- 0-35	--- --- ---
Bold-----	0-12 12-60	12-18 12-18	8.0-15.0 7.0-12.0	7.4-8.4 7.4-8.4	10-40 10-50	--- ---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
993A:						
Cowden-----	0-8	17-27	14.0-22.0	5.6-7.3	---	---
	8-19	17-27	10.0-17.0	4.5-6.0	---	---
	19-50	35-42	21.0-27.0	4.5-7.3	---	---
	50-80	20-30	12.0-17.0	5.6-7.8	---	---
Piasa-----	0-8	18-27	11.0-16.0	5.6-7.8	---	0-5
	8-12	18-27	11.0-16.0	5.6-7.8	---	0-5
	12-37	35-43	21.0-26.0	6.1-9.0	---	10-20
	37-80	20-35	12.0-21.0	6.6-9.0	---	5-20
1071A:						
Darwin, undrained-----	0-20	40-45	32.0-37.0	6.1-7.8	---	---
	20-64	45-60	27.0-40.0	6.1-7.8	---	---
	64-80	30-55	18.0-34.0	6.6-8.4	0-15	---
1248A:						
McFain, undrained-----	0-13	40-45	25.0-35.0	6.1-7.8	---	---
	13-20	40-45	25.0-35.0	6.1-7.8	---	---
	20-52	10-20	6.0-12.0	6.6-8.4	0-25	---
	52-80	15-30	9.0-18.0	7.9-8.4	10-25	---
1288A:						
Petrolia, undrained-----	0-8	27-35	20.0-25.0	5.6-8.4	---	---
	8-54	27-35	15.0-20.0	6.1-7.3	---	---
	54-80	20-35	10.0-20.0	4.5-7.8	---	---
2071L:						
Urban land-----	---	---	---	---	---	---
Darwin-----	0-16	40-45	32.0-37.0	6.1-7.8	---	---
	16-62	45-60	27.0-40.0	6.1-7.8	---	---
	62-80	30-55	18.0-34.0	6.6-8.4	0-15	---
2079D, 2079E:						
Urban land-----	---	---	---	---	---	---
Menfro-----	0-9	18-27	10.0-16.0	5.1-7.3	---	---
	9-52	27-33	15.0-20.0	5.1-7.3	---	---
	52-80	8-20	5.0-10.0	5.1-7.3	---	---
2183A:						
Urban land-----	---	---	---	---	---	---
Shaffton-----	0-10	27-30	25.0-30.0	5.1-7.3	---	---
	10-33	18-26	20.0-25.0	4.5-6.0	---	---
	33-43	8-16	10.0-15.0	4.5-6.0	---	---
	43-60	28-32	25.0-30.0	5.1-6.5	---	---
2384B:						
Urban land-----	---	---	---	---	---	---
Edwardsville----	0-15	20-30	20.0-30.0	5.6-7.3	---	---
	15-57	20-35	20.0-30.0	5.1-7.8	---	---
	57-80	18-25	12.0-20.0	5.6-7.8	0-15	---
2477B:						
Urban land-----	---	---	---	---	---	---
Winfield-----	0-9	20-27	10.0-15.0	5.6-7.3	---	---
	9-13	22-30	12.0-17.0	5.6-7.3	---	---
	13-62	24-35	13.0-18.0	4.5-6.5	---	---
	62-80	20-27	10.0-14.0	5.1-6.5	---	---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
3038B: Rocher-----	0-5	10-18	7.0-12.0	6.6-8.4	0-20	---
	5-53	5-18	4.0-12.0	7.4-8.4	5-30	---
	53-62	2-15	2.0-10.0	6.6-8.4	5-30	---
3070L: Beaucoup-----	0-16	27-35	26.0-33.0	5.6-7.8	---	---
	16-64	27-35	16.0-25.0	5.6-7.8	---	---
	64-80	10-30	6.0-20.0	6.1-8.4	0-5	---
3076A: Otter-----	0-37	18-27	16.0-36.0	6.1-7.8	---	---
	37-55	18-27	12.0-22.0	6.1-7.8	---	---
	55-80	15-28	10.0-21.0	6.1-8.4	---	---
3083L: Wabash-----	0-10	40-55	22.0-32.0	5.1-7.3	---	---
	10-80	40-55	20.0-30.0	5.1-7.8	---	---
3180A: Dupo-----	0-9	10-18	8.0-15.0	5.6-8.4	---	---
	9-25	10-18	6.0-12.0	5.6-8.4	---	---
	25-80	35-45	21.0-29.0	6.6-7.8	0-5	---
3288L: Petrofia-----	0-8	27-35	20.0-25.0	5.6-8.4	---	---
	8-55	27-35	15.0-20.0	6.1-7.3	---	---
	55-80	20-35	10.0-20.0	4.5-7.8	---	---
3333A: Wakeland-----	0-7	10-18	4.0-12.0	5.6-7.3	---	---
	7-29	10-18	4.0-12.0	5.6-7.8	---	---
	29-80	10-18	4.0-12.0	5.6-7.8	---	---
3334L: Birds-----	0-8	15-25	11.0-21.0	5.6-7.8	---	---
	8-80	18-27	11.0-20.0	5.1-7.8	---	---
3336A: Wilbur-----	0-7	10-18	4.0-16.0	5.6-7.3	---	---
	7-32	10-18	4.0-15.0	5.6-7.8	---	---
	32-60	10-26	4.0-16.0	5.6-7.8	---	---
3391A: Blake-----	0-6	27-38	25.0-35.0	7.4-8.4	0-20	---
	6-33	22-35	20.0-30.0	7.4-8.4	5-30	---
	33-60	10-20	10.0-20.0	7.4-8.4	5-30	---
3394A, 3394B: Haynie-----	0-8	15-25	10.0-15.0	7.4-8.4	0-20	---
	8-60	15-18	9.0-12.0	7.4-8.4	5-30	---
3415A: Orion-----	0-7	10-18	7.0-20.0	5.6-7.8	---	---
	7-35	10-18	7.0-20.0	5.6-7.8	---	---
	35-54	10-30	10.0-35.0	5.6-7.8	---	---
	54-66	10-18	5.0-15.0	5.6-7.8	---	---
3428A: Coffee-----	0-10	15-27	13.0-22.0	5.6-7.8	---	---
	10-47	10-18	6.0-15.0	5.6-7.3	---	---
	47-60	5-15	3.0-13.0	5.6-7.3	---	---
3847L: Fluvaquents-----	0-10	12-24	8.0-23.0	5.6-7.3	---	---
	10-60	5-24	2.0-19.0	5.6-7.8	0-25	---
Orthents-----	0-6	22-30	9.0-12.0	5.6-7.3	---	---
	6-60	22-30	9.0-12.0	5.6-7.3	---	---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
5079C, 5079D: Menfro, karst---	0-5	18-27	10.0-16.0	5.1-7.3	---	---
	5-50	27-33	15.0-20.0	5.1-7.3	---	---
	50-80	8-20	5.0-10.0	5.1-7.3	---	---
5079G: Menfro, karst---	0-9	18-27	10.0-16.0	5.1-7.3	---	---
	9-52	27-33	15.0-20.0	5.1-7.3	---	---
	52-80	8-20	5.0-10.0	5.1-7.3	---	---
8026A: Wagner-----	0-9	20-25	16.0-21.0	5.1-8.4	---	---
	9-17	18-25	11.0-16.0	5.1-8.4	---	---
	17-67	35-47	21.0-30.0	4.5-7.3	0-5	---
	67-80	35-40	21.0-25.0	6.6-8.4	0-15	---
8070A: Beaucoup-----	0-16	27-35	26.0-33.0	5.6-7.8	---	---
	16-64	27-35	16.0-25.0	5.6-7.8	0-5	---
	64-80	10-30	6.0-20.0	6.1-8.4	0-15	---
8071L: Darwin-----	0-16	40-45	32.0-37.0	6.1-7.8	---	---
	16-62	45-60	27.0-40.0	6.1-7.8	---	---
	62-80	30-55	18.0-34.0	6.6-8.4	0-15	---
8084A: Okaw-----	0-7	15-27	10.0-20.0	4.5-7.3	---	---
	7-15	12-30	10.0-15.0	4.5-6.5	---	---
	15-54	35-60	24.0-36.0	3.6-7.3	0-5	---
	54-80	35-55	21.0-35.0	4.5-8.4	0-15	---
8109A: Raccoon-----	0-6	20-27	14.0-20.0	4.5-7.3	---	---
	6-30	18-25	11.0-16.0	4.5-7.3	---	---
	30-59	24-38	15.0-23.0	4.5-5.5	---	---
	59-73	18-30	12.0-20.0	5.6-7.3	---	---
8122C, 8122D: Colp-----	0-5	27-35	17.0-23.0	5.1-7.3	---	---
	5-70	35-50	21.0-31.0	4.5-7.8	0-5	---
	70-80	30-45	18.0-28.0	4.5-8.4	0-15	---
8131B: Alvin-----	0-9	8-15	4.0-11.0	4.5-7.3	---	---
	9-47	15-18	7.0-8.0	4.5-6.0	---	---
	47-80	3-10	2.0-3.0	5.1-8.4	---	---
8162A: Gorham-----	0-14	27-42	24.0-35.0	5.1-7.8	---	---
	14-36	27-42	16.0-26.0	6.1-7.8	---	---
	36-62	22-30	13.0-19.0	6.1-7.8	---	---
	62-80	5-15	3.0-10.0	6.1-7.8	0-10	---
8180A: Dupo-----	0-9	10-18	8.0-15.0	5.6-8.4	---	---
	9-25	10-18	6.0-12.0	5.6-8.4	---	---
	25-80	35-45	21.0-29.0	6.6-7.8	0-5	---
8183A: Shaffton-----	0-12	27-30	25.0-30.0	5.1-7.3	---	---
	12-24	18-26	20.0-25.0	4.5-6.0	---	---
	24-66	8-16	10.0-15.0	4.5-6.0	---	---
	66-80	2-6	5.0-10.0	6.1-7.3	---	---
8284A: Tice-----	0-16	27-35	20.0-27.0	6.1-7.8	---	---
	16-72	24-35	16.0-23.0	5.1-7.3	---	---
	72-80	10-30	9.0-20.0	5.1-7.8	0-5	---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
8304B: Landes-----	0-14	7-20	6.0-16.0	5.6-8.4	---	---
	14-39	5-18	3.0-15.0	5.6-8.4	0-10	---
	39-80	5-18	3.0-15.0	5.6-8.4	0-20	---
8338A: Hurst-----	0-7	20-27	14.0-20.0	5.1-7.3	---	---
	7-12	18-30	11.0-19.0	3.5-6.0	---	---
	12-62	35-48	21.0-29.0	3.5-7.8	0-5	---
	62-80	20-45	12.0-27.0	5.1-8.4	0-15	---
8338B: Hurst-----	0-6	20-27	14.0-20.0	5.1-7.3	---	---
	6-10	18-30	11.0-19.0	3.5-6.0	---	---
	10-56	35-48	21.0-29.0	3.5-7.8	0-5	---
	56-80	20-45	12.0-27.0	5.1-8.4	0-15	---
8338C: Hurst-----	0-5	27-35	17.0-22.0	4.5-7.3	---	---
	5-50	35-48	21.0-29.0	3.5-7.8	0-5	---
	50-80	20-45	12.0-27.0	5.1-8.4	0-15	---
8394A: Haynie-----	0-8	15-25	10.0-15.0	7.4-8.4	0-20	---
	8-60	15-18	9.0-12.0	7.4-8.4	5-30	---
8432A: Geff-----	0-5	18-27	13.0-22.0	5.6-7.3	---	---
	5-12	18-27	12.0-18.0	4.5-7.3	---	---
	12-33	24-35	14.0-21.0	4.5-6.0	---	---
	33-62	15-30	9.0-18.0	4.5-7.3	---	---
	62-80	1-5	1.0-3.0	5.1-7.3	---	---
8434B: Ridgway-----	0-8	14-27	10.0-20.0	5.1-7.3	---	---
	8-27	22-35	18.0-25.0	4.5-7.3	---	---
	27-52	10-30	8.0-22.0	4.5-6.5	---	---
	52-80	2-10	2.0-10.0	5.6-7.3	---	---
8436B: Meadowbank-----	0-17	15-27	14.0-26.0	5.1-7.3	---	---
	17-34	27-35	22.0-29.0	5.1-7.3	---	---
	34-53	10-30	12.0-20.0	4.5-7.3	---	---
	53-80	2-10	2.0-8.0	5.1-7.3	---	---
8489A: Hurst, sandy substratum-----	0-10	20-27	14.0-20.0	4.5-5.5	---	---
	10-40	35-48	21.0-29.0	4.5-7.3	---	---
	40-60	2-15	1.0-9.0	4.5-7.3	---	---
8524L: Zipp-----	0-8	40-50	18.0-36.0	5.6-7.3	---	---
	8-51	40-55	16.0-35.0	5.6-7.3	---	---
	51-80	40-55	16.0-35.0	6.6-7.8	0-15	---
8591A: Fults-----	0-12	40-60	30.0-44.0	5.6-7.8	---	---
	12-32	35-60	21.0-38.0	5.6-7.8	---	---
	32-42	10-35	6.0-20.0	5.6-7.8	---	---
	42-80	3-20	1.0-12.0	5.6-7.8	0-10	---
8592A: Nameoki-----	0-12	40-60	28.0-44.0	5.6-7.8	---	---
	12-28	35-60	21.0-38.0	5.6-7.8	---	---
	28-54	15-35	9.0-22.0	5.6-7.8	0-5	---
	54-80	5-30	3.0-19.0	5.6-7.8	0-10	---

Table 20.—Chemical Properties of the Soils—continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	
8646A: Fluvaquents, loamy-----	0-10	12-24	8.0-23.0	5.6-7.3	---	---
	10-60	5-24	2.0-19.0	5.6-7.8	0-25	---
8812F: Typic Hapludalfs	0-8	15-27	10.0-20.0	5.1-7.3	---	---
	8-60	10-40	10.0-25.0	4.5-7.8	0-20	---

Table 21.—Water Features

("Flooding" and "water table" and terms such as "occasional," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Flooding			High water table and ponding			
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Maximum ponding depth
					<u>Ft</u>			<u>Ft</u>
5C2, 5C3, 5D3: Blair-----	C	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---
8F2: Hickory-----	B	None-----	---	---	>6.0	---	---	---
31A: Pierron-----	D	None-----	---	---	0.0-1.0	Perched	Dec-Apr	0.5
37A, 37B: Worthen-----	B	None-----	---	---	>6.0	---	---	---
46A: Herrick-----	B	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---
50A: Virden-----	B	None-----	---	---	0.0-1.0	Apparent	Dec-Apr	0.5
75B: Drury-----	B	None-----	---	---	>6.0	---	---	---
79B, 79C2, 79C3, 79D2, 79D3, 79F, 79F3, 79G: Menfro-----	B	None-----	---	---	>6.0	---	---	---
81A: Littleton-----	B	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---
90A: Bethalto-----	B	None-----	---	---	0.5-2.0	Apparent	Dec-Apr	---
109A: Racoon-----	C	None-----	---	---	0.0-1.0	Apparent	Dec-Apr	0.5
112A: Cowden-----	D	None-----	---	---	0.0-1.0	Perched	Dec-Apr	0.5
113A, 113B: Oconee-----	C	None-----	---	---	0.5-2.0	Apparent	Dec-Apr	---
267A, 267B: Caseyville-----	B	None-----	---	---	0.5-2.0	Apparent	Dec-Apr	---
283B, 283C2: Downsouth-----	B	None-----	---	---	2.0-3.5	Apparent	Dec-Apr	---
384A, 384B: Edwardsville-----	B	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---
385A: Mascoutah-----	B	None-----	---	---	0.0-1.0	Apparent	Dec-Apr	0.5
423A, 423B: Millstadt-----	C	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---
433A: Floraville-----	D	None-----	---	---	0.0-1.0	Perched	Dec-Apr	0.5
437B, 437C2: Redbud-----	C	None-----	---	---	2.0-3.5	Perched	Dec-Apr	---
438B, 438C2: Aviston-----	B	None-----	---	---	2.0-3.5	Apparent	Dec-Apr	---

Table 21.—Water Features—continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Maximum ponding depth	
					Ft				Ft
441B, 441C2: Wakenda-----	B	None-----	---	---	4.0-6.0	Apparent	Dec-Apr	---	
466A: Bartelso-----	D	None-----	---	---	1.0-2.0	Perched	Dec-Apr	---	
468A: Lakaskia-----	D	None-----	---	---	0.0-1.0	Perched	Dec-Apr	0.5	
477B, 477B2, 477C2, 477C3: Winfield-----	B	None-----	---	---	2.0-3.5	Apparent	Dec-Apr	---	
491B2, 491C3, 491D3: Ruma-----	B	None-----	---	---	4.0-6.0	Apparent	Dec-Apr	---	
515C2, 515C3, 515D3: Bunkum-----	C	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---	
517A, 517B: Marine-----	C	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
582B, 582B2, 582C2: Homen-----	B	None-----	---	---	2.0-3.5	Perched	Dec-Apr	---	
585F2: Negley-----	B	None-----	---	---	4.0-6.0	Apparent	Jan-Apr	---	
801B, 801D: Orthents, silty	C	None-----	---	---	1.0-3.5	Apparent	Dec-Apr	---	
802B, 802D: Orthents, loamy	B	None-----	---	---	3.5-6.0	Apparent	Dec-Apr	---	
821G: Morristown-----	C	None-----	---	---	>6.0	---	---	---	
824B: Swanwick-----	D	None-----	---	---	3.5-5.0	Perched	Dec-Apr	---	
825B: Lenzburg, Acid Substratum-----	B	None-----	---	---	>6.0	---	---	---	
826D: Orthents, Acid Substratum-----	C	None-----	---	---	0.5-2.0	Apparent	Nov-May	---	
871B, 871D, 871G: Lenzburg-----	B	None-----	---	---	>6.0	---	---	---	
878C3: Coulterville----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
Grantfork-----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
880B2: Coulterville----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
Darmstadt-----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	

Table 21.—Water Features—continued

Map symbol and soil name	Hydro-logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Maximum ponding depth	
					<u>Ft</u>				<u>Ft</u>
882A: Oconee-----	C	None-----	---	---	0.5-2.0	Apparent	Dec-Apr	---	
Darmstadt-----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
Coulterville----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
882B: Oconee-----	C	None-----	---	---	0.5-2.0	Apparent	Dec-Apr	---	
Coulterville----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
Darmstadt-----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
884C3: Bunkum-----	C	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---	
Coulterville----	D	None-----	---	---	0.5-2.0	Perched	Dec-Apr	---	
885A: Viriden-----	C	None-----	---	---	0.0-1.0	Apparent	Dec-Apr	0.5	
Fosterburg-----	D	None-----	---	---	0.0-1.0	Apparent	Dec-Apr	0.5	
886F3: Ruma-----	B	None-----	---	---	4.0-6.0	Apparent	Dec-Apr	---	
Ursa-----	C	None-----	---	---	4.0-6.0	Perched	Dec-Apr	---	
894A: Herrick-----	B	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---	
Biddle-----	C	None-----	---	---	1.0-2.0	Perched	Dec-Apr	---	
Piasa-----	D	None-----	---	---	0.0-1.0	Perched	Dec-Apr	0.5	
897D3: Bunkum-----	C	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---	
Atlas-----	D	None-----	---	---	0.5-1.5	Perched	Dec-Apr	---	
906C3: Redbud-----	C	None-----	---	---	2.0-3.5	Perched	Dec-Apr	---	
Hurst-----	D	None-----	---	---	1.0-2.0	Perched	Dec-Apr	---	
907D3: Redbud-----	C	None-----	---	---	2.0-3.5	Perched	Dec-Apr	---	
Colp-----	C	None-----	---	---	1.0-2.5	Perched	Dec-Apr	---	
962F2, 962G: Sylvan-----	B	None-----	---	---	>6.0	---	---	---	
Bold-----	B	None-----	---	---	>6.0	---	---	---	
993A: Cowden-----	D	None-----	---	---	0.0-1.0	Perched	Dec-Apr	0.5	
Piasa-----	D	None-----	---	---	0.0-1.0	Perched	Dec-Apr	0.5	
1071A: Darwin, undrained-----	D	Frequent---	Very long	Jan-Jun	0.0-0.5	Apparent	Oct-Sep	2.0	
1248A: McFain, undrained-----	C	Frequent---	Very long	Jan-Jun	0.0-0.5	Apparent	Oct-Sep	2.0	

Table 21.—Water Features—continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding			
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Maximum ponding depth
					<u>Ft</u>			<u>Ft</u>
1288A: Petroliia, undrained-----	D	Frequent---	Very long	Jan-Jun	0.0-0.5	Apparent	Oct-Sep	2.0
2071L: Darwin-----	D	Occasional-	Long-----	Jan-Jun	0.0-1.0	Apparent	Nov-May	0.5
Urban land-----	---	---	---	---	---	---	---	---
2079D, 2079E: Menfro-----	B	None-----	---	---	>6.0	---	Jan-Apr	---
Urban land-----	---	---	---	---	---	---	---	---
2183A: Shaffton-----	B	Occasional-	Brief-----	Jan-Jun	1.0-2.0	Apparent	Dec-Apr	---
Urban land-----	---	---	---	---	---	---	---	---
2384B: Edwardsville----	B	None-----	---	---	1.0-2.0	Apparent	Dec-Apr	---
Urban land-----	---	---	---	---	---	---	---	---
2477B: Winfield-----	B	None-----	---	---	2.0-3.5	Apparent	Dec-Apr	---
Urban land-----	---	---	---	---	---	---	---	---
3038B: Rocher-----	B	Frequent---	Brief-----	Jan-Jun	>6.0	---	---	---
3070L: Beaucoup-----	B/D	Frequent---	Long-----	Jan-Jun	0.0-1.0	Apparent	Nov-May	0.5
3076A: Otter-----	B/D	Frequent---	Brief-----	Jan-Jun	0.0-1.0	Apparent	Dec-Apr	0.5
3083L: Wabash-----	D	Frequent---	Long-----	Jan-Jun	0.0-0.5	Apparent	Nov-May	2.0
3180A: Dupo-----	C	Frequent---	Brief-----	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---
3288L: Petroliia-----	C/D	Frequent---	Long-----	Jan-Jun	0.0-1.0	Apparent	Nov-May	0.5
3333A: Wakeland-----	C	Frequent---	Brief-----	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---
3334L: Birds-----	C/D	Frequent---	Long-----	Jan-Jun	0.0-1.0	Apparent	Nov-May	0.5
3336A: Wilbur-----	B	Frequent---	Brief-----	Jan-Jun	1.5-2.0	Apparent	Dec-Apr	---
3391A: Blake-----	B	Frequent---	Brief-----	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---
3394A, 3394B: Haynie-----	B	Frequent---	Brief-----	Jan-Jun	3.5-6.0	Apparent	Dec-Apr	---
3415A: Orion-----	C	Frequent---	Brief-----	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---
3428A: Coffeen-----	B	Frequent---	Brief-----	Jan-Jun	1.0-2.0	Apparent	Dec-Apr	---

Table 21.-Water Features-continued

Map symbol and soil name	Hydro-logic group	Flooding			High water table and ponding			
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Maximum ponding depth
					<u>Ft</u>			
3847L: Fluvaquents-----	C	Frequent---	Long-----	Jan-Dec	0.0-1.0	Apparent	Nov-May	0.5
Orthents-----	B	None-----	---	---	3.5-6.0	Apparent	Dec-Apr	---
5079C, 5097D, 5079G: Menfro, karst---	B	None-----	---	---	4.0-6.0	Apparent	Jan-Apr	---
8026A: Wagner-----	D	Occasional-	Brief-----	Feb-Jun	0.0-1.0	Perched	Dec-Apr	0.5
8070A: Beaucoup-----	B	Occasional-	Brief-----	Jan-Jun	0.0-1.0	Apparent	Dec-Apr	0.5
8071L: Darwin-----	D	Occasional-	Long-----	Jan-Jun	0.0-1.0	Apparent	Nov-May	0.5
8084A: Okaw-----	D	Occasional-	Brief-----	Feb-Jun	0.0-1.0	Perched	Dec-Apr	0.5
8109A: Raccoon-----	C	Occasional-	Brief-----	Feb-Jun	0.0-1.0	Apparent	Dec-Apr	0.5
8122C, 8122D: Colp-----	C	Occasional-	Brief-----	Feb-May	1.0-2.5	Perched	Dec-Apr	---
8131B: Alvin-----	B	Occasional-	Brief-----	Feb-Apr	>6.0	---	---	---
8162A: Gorham-----	B	Occasional-	Brief-----	Jan-Jun	0.0-1.0	Apparent	Dec-Apr	0.5
8180A: Dupo-----	C	Occasional-	Brief-----	Jan-Jun	0.5-2.0	Perched	Dec-Apr	---
8183A: Shaffton-----	B	Occasional-	Brief-----	Jan-Jun	1.0-2.0	Apparent	Dec-Apr	---
8284A: Tice-----	B	Occasional-	Brief-----	Jan-Jun	1.0-2.0	Apparent	Dec-Apr	---
8304B: Landes-----	B	Occasional-	Brief-----	Jan-Jun	>6.0	---	---	---
8338A, 8338B, 8338C: Hurst-----	D	Occasional-	Brief-----	Feb-May	0.5-2.0	Perched	Dec-Apr	---
8394A: Haynie-----	B	Occasional-	Brief-----	Jan-Jun	3.5-6.0	Apparent	Dec-Apr	---
8432A: Geff-----	C	Occasional-	Brief-----	Feb-May	1.0-2.0	Apparent	Dec-Apr	---
8434B: Ridgway-----	B	Occasional-	Brief-----	Feb-May	>6.0	---	---	---
8436B: Meadowbank-----	B	Occasional-	Brief-----	Feb-May	>6.0	---	---	---
8489A: Hurst, sandy substratum-----	D	Occasional-	Brief-----	Feb-May	0.5-2.0	Perched	Dec-Apr	---
8524L: Zipp-----	D	Occasional-	Long-----	Jan-Jun	0.0-0.5	Apparent	Nov-May	2.0

Table 21.-Water Features-continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding			
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Maximum ponding depth
					<u>Ft</u>			<u>Ft</u>
8591A: Fults-----	D	Occasional	Brief-----	Jan-Jun	0.0-1.0	Apparent	Dec-Apr	0.5
8592A: Nameoki-----	D	Occasional	Brief-----	Jan-Jun	1.0-2.0	Apparent	Dec-Apr	---
8646A: Fluvaquents, loamy-----	C	Occasional	Long-----	Jan-Dec	0.0-1.0	Apparent	Nov-May	0.5
8812F: Typic Hapludalfs	B	Occasional	Brief-----	Feb-May	>6.0	---	---	---

Table 22.—Soil Features

(The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
5C2, 5C3, 5D3: Blair-----	>80	---	High-----	High-----	High.
8F2: Hickory-----	>80	---	Moderate----	Moderate----	Moderate.
31A: Pierron-----	>80	---	High-----	High-----	High.
37A, 37B: Worthen-----	>80	---	High-----	Low-----	Low.
46A: Herrick-----	>80	---	High-----	High-----	High.
50A: Virden-----	>80	---	High-----	High-----	Moderate.
75B: Drury-----	>80	---	High-----	Moderate----	Moderate.
79B, 79C2, 79C3, 79D2, 79D3, 79F 79F3, 79G: Menfro-----	>80	---	High-----	Low-----	Moderate.
81A: Littleton-----	>80	---	High-----	High-----	Low.
90A: Bethalto-----	>80	---	High-----	High-----	Moderate.
109A: Raccoon-----	>80	---	High-----	High-----	High.
112A: Cowden-----	>80	---	High-----	High-----	Moderate.
113A, 113B: Oconee-----	>80	---	High-----	High-----	High.
267A, 267B: Caseyville-----	>80	---	High-----	High-----	Moderate.
283B, 283C2: Downsouth-----	>80	---	High-----	Moderate----	Moderate.
384A, 384B: Edwardsville----	>80	---	High-----	High-----	Moderate.
385A: Mascoutah-----	>80	---	High-----	High-----	Low.
423A: Millstadt-----	>80	---	High-----	High-----	High.
423B: Millstadt-----	>80	---	High-----	High-----	High.
433A: Floraville-----	>80	---	High-----	High-----	High.
437B, 437C2: Redbud-----	>80	---	High-----	High-----	High.

Table 22.—Soil Features—continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
438B, 438C2: Aviston-----	>80	---	High-----	High-----	Moderate.
441B, 441C2: Wakenda-----	>80	---	High-----	Low-----	Moderate.
466A: Bartelso-----	>80	---	High-----	High-----	High.
468A: Lakaskia-----	>80	---	High-----	High-----	Low.
477B, 477B2, 477C2, 477C3: Winfield-----	>80	---	High-----	Moderate---	Moderate.
491B2, 491C3, 491D3: Ruma-----	>80	---	High-----	High-----	High.
515C2, 515C3, 515D3: Bunkum-----	>80	---	High-----	High-----	High.
517A, 517B: Marine-----	>80	---	High-----	High-----	High.
582B, 582B2, 582C2: Homen-----	>80	---	High-----	High-----	High.
585F2: Negley-----	>80	---	Moderate---	Low-----	High.
801B, 801D: Orthents, silty-	>80	---	High-----	High-----	Moderate.
802B, 802D: Orthents, loamy-	>80	---	Moderate---	Moderate---	Moderate.
821G: Morristown-----	>80	---	Moderate---	Moderate---	Low.
824B: Swanwick-----	>80	---	High-----	Moderate---	High.
825B: Lenzburg, acid substratum-----	>80	---	Moderate---	Moderate---	Low.
826D: Orthents, acid substratum-----	>80	---	High-----	High-----	High.
871B, 871D, 871G: Lenzburg-----	>80	---	Moderate---	Moderate---	Low.
878C3: Coulterville----	>80	---	High-----	High-----	High.
Grantfork-----	>80	---	High-----	High-----	Low.
880B2: Coulterville----	>80	---	High-----	High-----	High.
Darmstadt-----	>80	---	High-----	High-----	High.

Table 22.-Soil Features-continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	<u>In</u>				
882A: Oconee.....	>80	---	High.....	High.....	High.
Darmstadt.....	>80	---	High.....	High.....	High.
Coulterville....	>80	---	High.....	High.....	High.
882B: Oconee.....	>80	---	High.....	High.....	High.
Coulterville....	>80	---	High.....	High.....	High.
Darmstadt.....	>80	---	High.....	High.....	High.
884C3: Bunkum.....	>80	---	High.....	High.....	High.
Coulterville....	>80	---	High.....	High.....	High.
885A: Virden.....	>80	---	High.....	High.....	Moderate.
Fosterburg.....	>80	---	High.....	High.....	Low.
886F3: Ruma.....	>80	---	High.....	High.....	High.
Ursa.....	>80	---	Moderate....	High.....	Moderate.
894A: Herrick.....	>80	---	High.....	High.....	High.
Biddle.....	>80	---	High.....	High.....	Moderate.
Piasa.....	>80	---	High.....	High.....	Low.
897D3: Bunkum.....	>80	---	High.....	High.....	High.
Atlas.....	>80	---	High.....	High.....	Moderate.
906C3: Redbud.....	>80	---	High.....	High.....	High.
Hurst.....	>80	---	Moderate....	High.....	High.
907D3: Redbud.....	>80	---	High.....	High.....	High.
Colp.....	>80	---	High.....	High.....	High.
962F2, 962G: Sylvan.....	>80	---	High.....	Moderate....	Moderate.
Bold.....	>80	---	High.....	Low.....	Low.
993A: Cowden.....	>80	---	High.....	High.....	Moderate.
Piasa.....	>80	---	High.....	High.....	Low.
1071A: Darwin, undrained.....	>80	---	Moderate....	High.....	Low.
1248A: McFain, undrained.....	>80	---	High.....	High.....	Low.

Table 22.—Soil Features—continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
1288A: Petrolia, undrained.....	>80	---	High.....	High.....	Low.
2071L: Darwin.....	>80	---	Moderate....	High.....	Low.
Urban land.....	---	---	---	---	---
2079D, 2097E: Menfro.....	>80	---	High.....	Low.....	Moderate.
Urban land.....	---	---	---	---	---
2183A: Shaffton.....	>80	---	Moderate....	High.....	High.
Urban land.....	---	---	---	---	---
2384B: Edwardsville....	>80	---	High.....	High.....	Moderate.
Urban land.....	---	---	---	---	---
2477B: Winfield.....	>80	---	High.....	Moderate....	Moderate.
Urban land.....	---	---	---	---	---
3038B: Rocher.....	>80	---	Moderate....	Low.....	Low.
3070L: Beaucoup.....	>80	---	High.....	High.....	Low.
3076A: Otter.....	>80	---	High.....	High.....	Low.
3083L: Wabash.....	>80	---	High.....	High.....	Moderate.
3180A: Dupo.....	>80	---	High.....	High.....	Moderate.
3288L: Petrolia.....	>80	---	High.....	High.....	Low.
3333A: Wakeland.....	>80	---	High.....	Moderate....	Low.
3334L: Birds.....	>80	---	High.....	High.....	Moderate.
3336A: Wilbur.....	>80	---	High.....	Moderate....	Low.
3391A: Blake.....	>80	---	High.....	High.....	Low.
3394A, 3394B: Haynie.....	>80	---	High.....	Low.....	Low.
3415A: Orion.....	>80	---	High.....	High.....	Low.
3428A: Coffeen.....	>80	---	High.....	High.....	Moderate.

Table 22.--Soil Features--continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	<u>In</u>				
3847L: Fluvaquents-----	>80	---	High-----	High-----	Moderate.
Orthents-----	>80	---	Moderate---	Moderate---	Moderate.
5079C, 5079D, 5079G: Menfro, karst---	>80	---	High-----	Low-----	Moderate.
8026A: Wagner-----	>80	---	Moderate---	High-----	High.
8070A: Beaucoup-----	>80	---	High-----	High-----	Low.
8071L: Darwin-----	>80	---	Moderate---	High-----	Low.
8084A: Okaw-----	>80	---	High-----	High-----	High.
8109A: Raccoon-----	>80	---	High-----	High-----	High.
8122C, 8122D: Colp-----	>80	---	High-----	High-----	High.
8131B: Alvin-----	>80	---	Moderate---	Low-----	High.
8162A: Gorham-----	>80	---	High-----	High-----	Low.
8180A: Dupo-----	>80	---	High-----	High-----	Moderate.
8183A: Shaffton-----	>80	---	Moderate---	High-----	High.
8284A: Tice-----	>80	---	High-----	High-----	Low.
8304B: Landes-----	>80	---	Moderate---	Low-----	Low.
8338A, 8338B, 8338C: Hurst-----	>80	---	Moderate---	High-----	High.
8394A: Haynie-----	>80	---	High-----	Low-----	Low.
8432A: Geff-----	>80	---	High-----	High-----	High.
8434B: Ridgway-----	>80	---	High-----	Moderate---	Moderate.
8436B: Meadowbank-----	>80	---	High-----	Moderate---	Moderate.
8489A: Hurst, sandy substratum-----	>80	---	Moderate---	High-----	High.
8524L: Zipp-----	>80	---	Moderate---	High-----	Low.
8591A: Fults-----	>80	---	High-----	High-----	Moderate.

Table 22.-Soil Features-continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	<u>In</u>				
8592A: Nameoki-----	>80	---	High-----	High-----	Moderate.
8646A: Fluvaquents, loamy-----	>80	---	High-----	High-----	Moderate.
8812F: Typic Hapludalfs	>80	---	None	Moderate----	Moderate.